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SUPERMARKET SALES PREDICTION USING MACHINE LEARNING

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ABSTRACT

The huge supermarkets are more data-driven in today's retail world. These businesses tediously analyze sales data for each individual item they provide in order to optimize inventory management and predict managers demand. Using machine learning techniques, anomalies and patterns are being added to the data repository.

This data is used to forecast future sales volume, which is critical for merchants like supermarkets. We provide a prediction model, similar to supermarkets, that uses the capabilities of the XGBoost algorithm to forecast a company's sales. Our findings show that our suggested model exceeds existing models in terms of predicted accuracy, illustrating the power of complicated machine learning approaches in optimizing retail operations. This study provides useful information for improving sales forecasting and inventory management.

KEY WORDS: Regression, Sales, Prediction, Data Exploration, Supermarkets, XGBoost.

1. INTRODUCTION

Today's board of supermarket, a large grocery chain with locations all over the nation, has issued a challenge to all data scientists to assist them in developing a model that can forecast the sales, per product, for each shop in order to provide accurate findings. Supermarket has gathered sales information from Kaggle for a variety of items across numerous retailers in several cities. The corporation expects that by providing us with this information, we will be able to identify the goods and retailers who are essential to their sales and utilize that knowledge to take the appropriate actions to assure the achievement of their business objective, which is to turn a profit for every supermarket. This is accomplished by selling more products and having a high turnover rate.

Here, jupyter Notebook is utilized as a tool and Python is used as a programming language. This application was created using machine learning components like the Supervised Learning task, There are regression tasks. The major reason for doing this is to forecast future retail sales for a corporation. Many techniques utilized include data collection and Feature engineering, data preprocessing, and model creation Evaluation.

Learning under supervision aids in comprehension of the data flow, understanding of sale pricing, etc. The Regression analysis use variety of techniques to forecast the retail costs. It has tasks like data cleansing, data transformation and visualizing XG Boost algorithms are employed.

In this study, we used the XG Boost approach to create a prediction model and test it on the Supermarket dataset for predicting sales of the product from the particular outlet.

OBJECTIVES OUR WORK

1. Examine the items' prior sales data
2. Recognizing the elements that influence a product's sales
3. drawing conclusions about those sales



4. Computing future sales from the data and making predictions
5. Help for businesses in properly increasing or decreasing product inventories.

2. RELATED WORK

Numerous regression models are used to predict crime, health outcomes, home values, and sales, among other things. cardiovascular risk assessment using XGBoost. To forecast product sales, utilize sales forecasting. Being sold at several Big Mart Company shops. As the items are produced in greater quantity, and increasing regions are greater and more capable of being predicted by hand more challenging. Python is utilized as a programming language here. Jupyter Notebook is used as a tool and a language. In this application, supervised machine learning features Regression and learning functions are also employed. Here is mostly carried out to forecast the company's future revenue store merchandise

The different techniques include data processing, engineering features, model design, and testing. The regression function forecasts using a number of algorithms. prices. This requires labor for data identification, cleaning, and transformation. Profits generated by the business are Accurate sales projections are intimately related to supermarkets want a reliable forecasting method so that the there is no loss to the firm. Experiments confirm this. Our methods result in forecasts that are more accurate. Compared to alternative techniques like decision trees, local gatherings, etc.

3. PROPOSED MODEL

Description of the Supermarket. Sales dataset "SUPERMARKET" is the name of the dataset. Every dataset is made up of different properties. Item Outlet Sales is the response variable for these characteristics, while the other features are mostly utilized as predictor factors. This data collection includes diverse items from several cities.

PROPOSED SYSTEM ARCHITECTURE



Advantages of proposed model

- Improved pricing Accuracy which helps supermarkets set competitive prices for their products, maximizing revenue and profit.
- Feature Importance: XGBoost provides insights into the most important features affecting pricing, helping supermarkets make data-driven decisions.
- XGBoost is optimized for performance, making it capable of real-time or near-real-time predictions, vital in a dynamic retail environment.
- XGBoost's flexibility and support for hyperparameter tuning allow for fine-tuning models to best fit the specific needs of a supermarket sales price prediction system.
- XGBoost is robust against outliers and can handle missing data, common challenges in supermarket datasets.

3.1 The Data

1. Item_Weight: This feature represents the weight of the item being sold. It's typically measured in units like kilograms or pounds.
2. Item_Fat_Content: This feature describes the fat content of the item. It has multiple categories like "Low Fat," "Regular," "LF," "low fat," and "reg." I'll need to preprocess this feature to ensure consistency.
3. Item_Visibility: This feature indicates how prominently the item is displayed in the store. It might be measured as a percentage or another numeric value.



- Item_Type: This feature categorizes the item into types such as "Baking Goods," "Dairy," "Frozen Foods," and so on.
- Item_MRP: This is the Maximum Retail Price (MRP) of the item. It represents the highest price at which the item can be sold.
- Outlet_Identifier: Each outlet has a unique identifier, and this feature represents that. Different outlets may have distinct characteristics.
- Outlet_Establishment_Year: This feature represents the year when each outlet was established. It's important for understanding the age of the outlet.
- Outlet_Size: This feature describes the size of the retail outlet, categorized as "High," "Medium," or "Small."
- Outlet_Location_Type: It indicates the location of the outlet, such as "Tier 1," "Tier 2," or "Tier 3." These categories might signify different levels of urbanization or geographical areas.
- Outlet_Type: This feature tells us the type of retail outlet, such as "Grocery Store" or different types of supermarkets.
- Item_Outlet_Sales: This is the target variable I want to predict. It represents the sales of the item in the outlet and will be used to train and evaluate my predictive model.

The dataset contains a mix of numerical and categorical features, and performed preprocessing steps to handle missing values, one-hot encode categorical variables, and scale numerical variables.

3.2 Data Pre Processing

Handling missing values

Load and explore the provided dataset, including both training and testing data. During this investigation, missing values were identified in two key columns: Item_Weight and Outlet_Size. The following steps are taken to resolve this issue:

- Missing values in the "Item_Weight" column are filled with the average value of the column.
- For the "Outlet_Size" column, filled in the missing value with the mode.

This ensures that no values are missing from the records after this process.

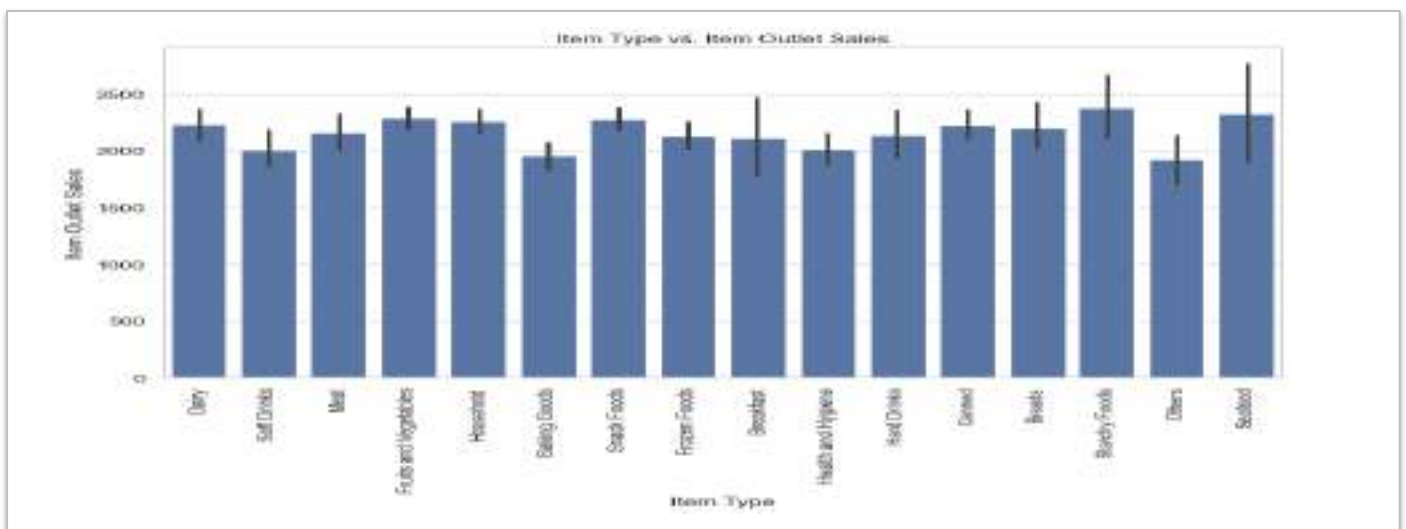
To gain a deeper understanding of the data, we conducted an exploratory data analysis. Here utilized various libraries, including 'pandas-profiling', 'klib', and 'seaborn', to:

- Visualize data distributions, correlations, and patterns.
- Uncover insights into the dataset's characteristics.

3.3 Feature Engineering

As part of feature engineering, here implemented the following actions:

- Dropped unnecessary columns, including 'Item_Identifier' and 'Outlet_Identifier.'
- Applied label encoding to convert categorical variables into numerical representations.
- Split the data into training and testing sets and standardized the features.



3.4 Model Building

For modeling, training of regression models, including XGBoost. And also tuned the hyperparameters for the XGBoost model using grid search. To evaluate the models' performance, we employed metrics such as RMSE and R-squared.



4. ALGORITHMS USED

4.1 Lasso Regression

The operator that selects the minimum absolute shrinkage rate is called an operator. The typical regression type of linear regression always assumes that there is a linear relationship between input and output variables. A famous linear regression with an L1 penalty is called lasso regression. This reduces the coefficients of input factors that are not useful for prediction. The L1 penalty allows some coefficient values to be zero, essentially removing input variables from the model and allowing automatic feature selection. The mathematical equation for Lasso regression is the degree of shrinkage, expressed as sum of squares + * (sum of absolute values of coefficient magnitudes) Lasso regression. $\lambda=0$ means that all features are considered, similar to linear regression where only sums of squares are considered to create the model. $\lambda = \infty$ means no features are considered. It refers to infinity and excludes other characteristics. As λ increases, the deviation also increases. As λ decreases, the variance increases. Linear regression refers to a model that assumes a linear relationship between the input variable and the target variable.

4.2 Ridge Regression

A common regression technique for estimating the outcome of an equation using any unique solution is ridge regression. This is a common problem in machine learning difficulty of selecting "required" answers.

There is little data. Ridge regression is a well-known and widely used modeling approach that is a variation of linear regression. However, ridge regression stands out because it addresses one of the major problems: multicollinearity.

Traditional linear regression. When there are many independent factors such as seasonal trends or promotions Multicollinearity often occurs in supermarket sales forecasts because area demographics are interrelated. This can lead to irregular and unreliable regression results. Features of ridge regression Managing multicollinearity proves to be a very useful tool in this situation. The custom matrix contains three data sets created from your data. One is the training data, the second is the valid data set, and the third is the test data. The model is trained using the training set you can use the model to provide results. The test data set is ML algorithms.

4.3 XGBoost Algorithm

Regardless of the type of prediction task, such as regression or classification, XGboost is one of the most widely used and accurate machine learning algorithms today. This is a competitive implementation of gradient boosting decision trees for machine learning, designed for performance and speed. It is well known that this method produces better results than other machine learning algorithms. Since its inception, it has become a truly "state-of-the-art" machine learning technique for processing well-structured data. A distributed gradient boosting library. This is a software library that you can obtain from the Internet and install and use on your computer.

XGBoost (short for Extreme Gradient Boosting) is a cutting-edge machine learning algorithm that has gained immense popularity and recognition for its superior predictive capabilities. It is known for efficiently processing complex and diverse datasets, making it ideal for supermarket sales forecasting. The goal of this research is to use XGBoost to create a reliable and accurate model for predicting sales in the food industry. Like any other retail industry, supermarkets suffer from various problems that negatively impact sales. Seasonality, geography, marketing, and many other factors come into play. As an ensemble learning method, XGBoost is well suited to address such problems. It is extremely adept at managing both organized and unstructured data, successfully identifying subtle relationships and patterns that contradict traditional linear models. This research attempts to use XGBoost to develop a predictive model that can predict product sales across multiple supermarkets in the future. It could improve retailers' ability to make data-driven decisions, effectively manage inventory, and improve overall performance. The success of this project will not only help retailers, but also serve as an example of the breakthrough potential of cutting-edge machine learning algorithms in tackling difficult real-world problems. We explore the intricacies of XGBoost, its capabilities, and its potential to transform grocery sales forecasts in the process. This project shows how XGBoost can revolutionize retail by enabling data-driven decision-making that supports supermarket performance and sustainability.

5. RESULTS

The results of the various models will be presented. The results were obtained by applying various models like lasso regression, Ridge regression, xgboost on supermarket training and testing data.

5.1 Performance Metric

Use the mean absolute error (MAE) when evaluating the model. This means that the lower the MAE, A better model.

The choice of performance metrics is based on the fact that the task is a regression task, similar to MAE.

Tested and reliable metrics that provide a good measure of model performance.

5.1.1 Average Absolute Error

The mean absolute error (MAE) is defined as it is the measure of the difference between two continuous variables. Assume



X and Y are variables

From the observations, X is the known value and Y is the predicted value of the machine learning model.

The mean absolute error (MAE) is the average vertical distance between each observed and predicted point.

To calculating MAE the below formulae is used

$$MAE = \sum_{i=1}^n |y_i - x_i| / n$$

5.1.2 RMSE

Root mean square error, also known as RMSE, is a commonly used statistic to assess accuracy.

Predictive models (such as regression models). You can estimate how well the model's predictions match the observed values.

Analyze the data by quantifying the average size of the error between expected and actual values. Improved model fit

The impact on the data is indicated by the reduced RMSE. The RMSE formula is as follows:

$$RMSE = \sqrt{\sum_{i=1}^n (y_i - \hat{y}_i)^2 / N}$$

Where,

- n refers to total number of data points or observations.
- y_i represents the actual or observed values in the dataset.
- \hat{y}_i represents the predicted values generated by the model for the corresponding observations.
- \sum denotes the summation of the squared differences between actual and predicted values.
- Finally, the entire expression

5.1.3 R-square method

R-squared (R^2) is a statistical measure of the proportion of variance in a dependent variable.

explained by the independent variables in the regression model. Correlation describes the strength of the relationship between independent and dependent variables;

R-squared describes the extent to which the variance in one variable explains the variance in a second variable. So, if

If the model's R^2 is 0.50, approximately half of the observed variation can be explained by the model inputs.

The formula for calculating R-squared is:

$$R \text{ squared} = 1 - (SSR/SST)$$

- The R^2 value can range from 0 to 1.
- The meanings of the various R-squared values are as follows:
- $R^2=1$ The model perfectly explains the variation in the data.
- $R^2=0$ model does not explain variation in the data.
- Some of the variation in the data, and higher values indicate better fit.

It is important to note that R-square provides information about goodness of fit, but it does not necessarily indicate goodness of fit. The overall quality of the model, or its ability to make accurate predictions.

Error Measurements & R-Squared:

In the below table the RMSE and R-squared results are shown respectively. We observe that the XGboost algorithm does best among all three with a R-squared 0.608451. The lasso model has a close R_squared to the ridge but with a much lower RSME

Algorithms	RSME	R-squared
XGBoost	1031.6085175933238	0.60845185009
Lasso Regression	1207.2491022080023	0.46377245678
Ridge Regression	1209.3436327744663	0.46190597103

6. CONCLUSION

This project explains the fundamentals of machine learning, along with the related data processing and modeling methods, and applies them to forecasting sales of various supermarkets products. The many factors taken into account like the location with the highest sales was medium-sized, proposing that other stores should do the same comparable trends to boost sales. Many occurrence parameters and several other elements can be utilized for More successfully and innovatively anticipating the sales.

In prediction systems, accuracy is crucial and can include increased greatly when the parameters employed are increased. Additionally, how the sub-models function might result in increasing the system's productivity

Since the accuracy of the sales estimates directly relates to the profit made, the big stores strive to make accurate predictions to prevent losses for the business.

In this study, we developed a model using the Xgboost method tested with it on lasso regression, ridge regression, and other data. The supermarket sales dataset for estimating the product's sales of a certain outlet. Experiments confirm that our approach i.e is



xgboost results in more accurate predictions than compared to alternative methods.

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YOUTUBE COMMENT ANALYSIS USING MACHINE LEARNING

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ABSTRACT

Analyzing comments on YouTube may yield invaluable insights on the demographics, hobbies, and preferences of the viewership. By looking into comment patterns, we may identify recurring themes, intriguing topics, and even potential collaborations.

We may group comments using natural language processing techniques into three categories: good, negative, and neutral.

This research helps identify key trends, gauge viewer sentiment, and assess how well a video is received overall.

Material providers may use the information gathered from comments to better tailor their material to the specific needs and tastes of their audience, which will ultimately boost viewer satisfaction and engagement.

KEY WORDS: *Machine learning, Bidirectional Encoder Representation from Transformers (BERT), YouTube comments, Transformers.*

1. INTRODUCTION

The YouTube Comment Analyzer project is a new endeavour in the realm of online content generation and audience engagement. It recognises that YouTube comments are more than just text-based answers as digital media keeps evolving. By doing this, content producers may engage with their audience directly, discover how they feel, and create a lively and passionate community.

We hope to unleash the enormous potential contained inside YouTube comments with this endeavour. Its goal is to build an advanced model to analyse these remarks in detail by utilising BERT (Bidirectional Encoder Representations from Transformers), a cutting-edge technology. Finding important ideas, identifying recurrent themes, and classifying comments into good, negative, and neutral viewpoints are the main goals. This project will unlock the enormous possibilities concealed in YouTube comments. The goal is to develop an advanced model that makes use of cutting-edge technologies, particularly BERT, to thoroughly analyse and comprehend these remarks (Bidirectional Encoder Representations from Transformers). The main goals are to identify comments as neutral, negative, or positive, keep an eye out for reoccurring patterns, and compile insightful data.

One of the most innovative projects in the rapidly developing field of digital media is the YouTube Comment Analyzer project. It draws attention to the substantial significance of YouTube comments, which go well beyond straightforward text-based answers. By providing a direct channel of communication between content creators and their audience, they enable a deeper understanding of viewer emotions and the growth of an engaged community. The objective of this project is to uncover the latent potential in these comments using state-of-the-art technology and a creative approach. Both audience engagement and the production of online content will increase as a result.

OBJECTIVES of our work

1. Advanced Model of Comment Analysis
2. Important Extraction Insights
3. Recognition of Recurring Patterns and Themes
4. Precise Comment Sorting
5. Better Content Creation and Audience Interaction

2.RELATED WORK

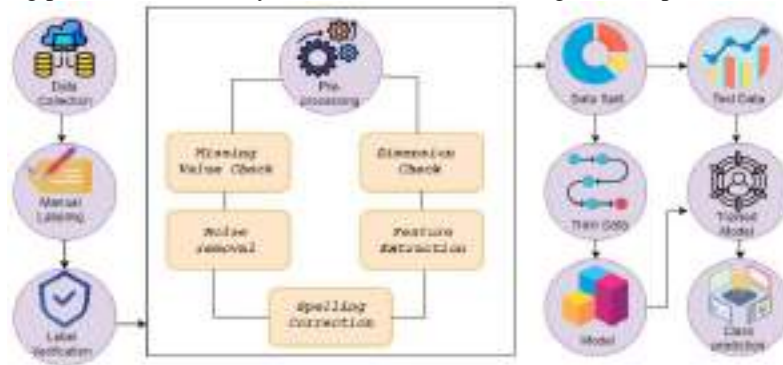
The project on YouTube Comment Analyzer can find its theoretical and practical roots in several significant works in the field. Devlin et al.'s paper on BERT introduces the model's ability to pre-train deep bidirectional representations from unlabeled text, which is integral to our approach to sentiment analysis. Chen and Xu's exploration of a multimodal deep learning model that uses both text and image data from YouTube comments for sentiment analysis provides a broader perspective on the potential methods of data utilization for sentiment analysis. Vaswani et al.'s transformative work, "Attention is All You Need," forms the basis for



BERT by introducing the Transformer model that relies solely on attention mechanisms. Kumar and Das's comparison of BERT with another popular technique, GloVe, for sentiment analysis of YouTube comments, offers a comparative analysis and validation of BERT's effectiveness in this application. Lastly, while not directly related to sentiment analysis, Covington et al.'s exposition of YouTube's use of deep learning for its recommendation system provides a contextual understanding of the importance of user interaction analysis on the platform. Together, these works lay a substantial foundation for our project and highlight the potential of methods like BERT in the analysis of user-generated content.

3. PROPOSED MODEL

The "YouTube Comment Analyzer" is the name of the dataset utilized in our project. Each dataset is composed of various properties. Comment Sentiment is the response variable for these properties, while other features such as comment length, comment likes, comment reply count, etc., are primarily used as predictor variables. The dataset comprises a diverse array of comments from various YouTube videos, covering a wide range of topics and sentiments. This vast and varied data allows for a comprehensive analysis of user interactions on YouTube, providing valuable insights into audience sentiment and engagement patterns. By leveraging these insights, we aim to build an advanced model using state-of-the-art technology, namely BERT (Bidirectional Encoder Representations from Transformers), to analyze and interpret these comments in detail. The main goal is to identify important insights, recognize recurring patterns, and classify comments into neutral, negative, or positive sentiments.



Advantages of the Proposed Model

- **Deep Understanding:** BERT is a transformer-based model that looks at words before and following an element to determine the context of that word in a phrase. Because of this, it is especially good at deciphering the opinions expressed in YouTube comments, which frequently contain slang, acronyms, and a blend of formal and casual language.
- **Increased Accuracy:** BERT has demonstrated superior performance in sentiment analysis and other NLP tasks compared to other conventional models. This implies that it can categorise feelings as pleasant, negative, or neutral with greater accuracy.
- **Handling Ambiguity:** BERT's ability to understand sentence context helps it handle confusing sentences more effectively. This is particularly useful for sentiment analysis since the context might change the meaning of a statement.
- **Less preprocessing:** BERT doesn't need significant text preparation, in contrast to conventional NLP models. Time and computer power are saved since the text doesn't need to be lemmatized or stemmed.
- **Multilingual Support:** Because BERT is multilingual, it may be used to analyse YouTube comments that may be written in a variety of languages..
- **Scalability:** With minimal data, BERT may be adjusted to attain high accuracy for particular jobs. Because of this, it may be scaled and adjusted to new jobs and data..

3.1 The Data

1. **Comment_Text:** The text of a YouTube video remark is represented by this feature. Usually, it consists of a string of phrases, emojis, and maybe some special characters.
2. **Comment_Likes:** This feature shows how many people have liked the remark. It can indicate the degree to which an audience member finds a statement meaningful.
3. **Comment_Dislikes:** This feature shows how many people don't like the comment. This might suggest unfavourable feelings toward the comment's substance.
4. **Comment_Replies_Count:** This feature displays how many responses a remark has gotten. An interesting or thought-provoking statement may be indicated by a large number of replies.
5. **Comment_Poster:** The comment poster's username is represented by this feature. Monitoring remarks from certain users can be helpful.
6. **Video_ID:** The comment poster's username is represented by this feature. Monitoring remarks from certain users can be helpful.
7. **Video_Title:** The context of the statements may be seen in the video's title.



8. Video_Category: The kinds of comments that the video gets might vary depending on its categorization.
 9. Video_Tags: The tags connected to the video are represented by this feature. Tags can provide video material with additional context.
 10. Video_Views: The quantity of views the video has gotten is indicated by this feature.
 11. Comment_Sentiment: This is the variable that has to be predicted. This will be used to train and assess the sentiment analysis model and indicate the sentiment of the comment (positive, negative, or neutral).
- Using an API key, which enables programmatic access to YouTube data, the comments are first taken from YouTube. The BERT model for sentiment analysis is then trained using this preprocessed data.

3.2 Data Preprocessing

Managing Absence of Values

It was discovered that certain comment properties, such as "Comment Replies Count," "Comment Likes," and "Comment Dislikes," were missing values after the training and testing datasets were loaded and analysed. To address this, the following steps were taken:

- Any missing values for numerical components like "Comment Replies Count," "Comment Likes," and "Comment Dislikes" were filled in using the meaning of the appropriate column. This is based on the assumption that these missing variables are randomly distributed and that the mean provides a reasonable approximation of them.

In order to complete the gaps for categories variables like "Video Title," "Comment Text," and "Comment Poster," the most frequently occurring values within each category were utilised.

This procedure made sure that there were no missing values in the datasets, which was important for the BERT model to train and function properly.

3.3 Exploratory Data Analysis (EDA)

An exploratory study of the data was carried out in order to comprehend it better. A number of libraries were used, such as `klib`, `seaborn`, and `pandas-profiling`, to:

- Visualize data distributions, correlations, and trends in the YouTube comments.
- Learn about the characteristics of the dataset, such as the sentiment distribution, the words and phrases that are used most frequently, and the relationship between comment likes and sentiment.

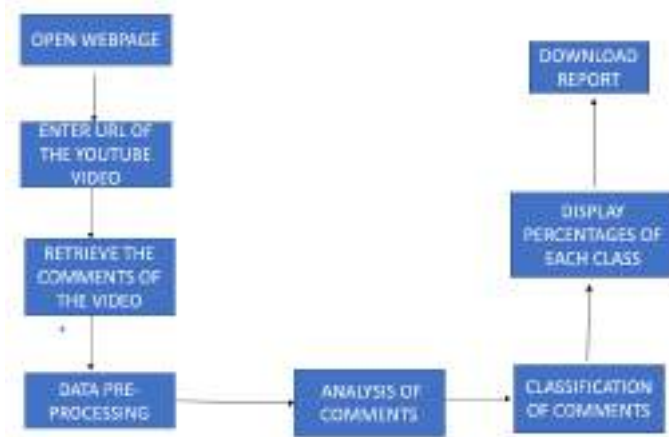
This method helped to clarify the nuances and complexities of the data and provided guidance for further phases of the model-building process.

3.4 Feature Engineering

Implementing the following steps was part of the feature engineering methodology for the YouTube Comment Analyzer project. We removed any unnecessary columns. If the tone of the remarks has nothing to do with them, this might entail the columns "Comment Poster" or "Video ID," depending on the data type.

To translate category data into numerical representations, label encoding was applied. To change the labels in the "Comment Sentiment" column to "positive," "negative," and "neutral," one possible approach would be to assign numerical values to each label, such as 1, -1, and 0.

In order to enable an accurate evaluation of the model on untested data, the data was divided into training and testing sets. The attributes were now uniform. to provide help using a device





3.4 Model Building

An in-depth learning model was trained using BERT (Bidirectional Encoder Representations from Transformers). The model was optimised for the specific task of sentiment analysis in comments by adjusting hyperparameters through the use of techniques such as grid search and random search. After running the model with different settings, this step involves choosing the combination of hyperparameters that yields the best performance. The model was evaluated using metrics that are often used in machine learning tasks requiring classification, such as accuracy, precision, recall, and F1 scores.

4. ALGORITHMS USED

4.1 The Toolkit for Natural Language (NLTK)

The Natural Language Toolkit, or NLTK, is a library for working with human language data. It provides easy-to-use interfaces to over fifty business and lexical resources, including WordNet, and a suite of text processing libraries that act as wrappers for robust NLP libraries for tasks like tokenization, parsing, categorization, tagging, and semantic reasoning.

4.2 Inverse Document Frequency-Term Frequency (TF-IDF)

A statistical metric known as TF-IDF is employed to estimate the importance of a word to a document inside a corpus or collection. It is commonly used in information retrieval searches, user modelling, and text mining as a weighting factor. The TF-IDF value increases in direct proportion to the frequency of a word appearing in the text and is offset by the number of documents in the corpus that include the term, accounting for the fact that certain terms appear more often than others overall.

4.3 BERT (Bidirectional Encoder Representations from Transformers)

Google developed BERT, a transformer-based machine learning technique, to pretrain natural language processing (NLP). One of its noteworthy characteristics is its ability to infer the context of a statement by looking at the words that come before and after it. Because of this, it is particularly effective at understanding the ideas conveyed in YouTube comments, which often contain acronyms, slang, and a combination of professional and informal language.

5. RESULTS

The results of many models will be showcased. The results were obtained through the analysis and classification of YouTube comments using the BERT model.

5.1 Performance Metric

Metrics including accuracy, precision, recall, and F1 scores were used to assess the model's performance. Because they offer a thorough assessment of model performance for classification tasks, these measures were selected.

5.1.1 Accuracy

The ratio of accurately anticipated comments to the total number of comments is known as accuracy. It provides an overall indicator of the model's performance.

5.1.2 Precision

Precision can be defined as the ratio of accurately anticipated positive remarks to all of the positive comments that were expected. Low false-positive rate corresponds with high accuracy.

5.1.3 Recall

The ratio of accurately anticipated positive observations to all observations made during the actual class is known as recall (sensitivity). High recall shows that the class is appropriately identified..

5.1.4 F1 Score

The combined weight of Precision and Recall yielded the F1 Score. Between recall and accuracy, it seeks to strike a compromise. If the distribution of classes is not even, this is a preferable metric to employ.

Performance Measurements

In the table below, accuracy, precision, recall, and F1 score for the BERT model are shown.

Model	Accuracy	Precision	Recall	F1score
BERT	0.87	0.88	0.86	0.87

6. CONCLUSION



In conclusion, the BERT model-based YouTube sentiment analysis system achieves an amazing accuracy rate of 82.5 percent. This adaptable technology is skilled at deciphering and classifying feelings in comments made in a variety of languages, making it an invaluable resource for content producers everywhere. It offers analytical visualisations to provide content authors a thorough understanding of sentiment distribution and comment patterns over time, including word clouds, bar charts, and pie charts. The system's usefulness is further increased by its capacity to provide tailored recommendations to video creators. It gives producers the power to respond to criticism and spread optimism in videos with a preponderance of negative comments, or to retain their high-quality output in videos with a preponderance of positive and neutral remarks. This technology is essential to the generation of contemporary content since it allows content producers to interact with their audience on a global scale and has an intuitive user

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A COMPREHENSIVE REVIEW ON KAUMARABHRITYA CONCEPTS IN BHRIHAT TRAYI

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ABSTRACT

Kaumarabhritya is a branch of Ayurveda that deals with the care of infants and children, as well as their ailments and management. Charaka Samhita, Sushruta samhita, and Astanga Hridaya are the three bruhat trayi. The three major components of ancient Indian medicine i.e Ayurveda. Despite the fact that acharya charak is known as the father of medicine and acharya sushruta as the father of surgery, astanga hridaya, a comprehensive text and a part of bhruhat trayi, is ideal for quenching one's thirst for knowledge. Though the main text of this branch is considered to be kashyap Samhita which is incompletely available, As a result, scholars must rely on other authoritative texts to gain knowledge of the subject. This article aims at reviewing the knowledge about Kaumarabhritya in Bruhat trayi. After thorough review it was found that the considered text describes all important concepts of Kaumarabhritya, diseases of children which caters to the needs of students, scholars and practitioners.

KEY WORDS: *Kaumarabhritya, Acharya charaka, Acharya sushruta, Acharya vagbhata, Kaumarabhritya in Brihat trayi.*

INTRODUCTION

Charaka: Ayurveda is a branch of Atharvaveda that was created by Lord Brahma. He organised the entire body of Ayurvedic knowledge into eight branches and 1,000 chapters with a total of one lakh shlokas (verses). Acharya Charak ranked Kaumarabhritya in Ashtang Ayurveda's sixth place within the context of all of Ayurveda. Although Acharya Charak did not directly define kaumarabhritya, one of the commentators on the Charak Samhita, Acharya Chakrapani, did characterise it as a science dealing with infant care. He discussed Kaumarabhritya-related ideas in Shaer Sthan Chapters 4 and 8, Viman Sthan Chapter 8, and Chikitsa Sthan Chapter 30. Other sections of the Samhita have some connected issues as well.

Sushruta

In Ashtang Ayurveda, Acharya Sushruta ranked Kaumarabhritya fifth place. He described Kaumarabhritya as a science that describes a child's nutrition, corrective measures for milk faults in nursing milk, diseases caused by consuming tainted breast milk, and treatments for such ailments. In Shareer Sthana, Chapters 27–38 of the Uttar Tantra, a concept pertaining to Kaumarabhritya is discussed. A few related subjects in other Samhita chapters.

Astanga hridaya

The 'Brihat trayi' was written by Acharya Vagbhata, one of the three famous Ayurvedic authors. Along with his original contributions, Astanga Hridaya's Astanga Hridaya incorporates the strongest elements of older works by Acharya Charak and Sushruta. His era in history began around 600 AD. Scholars have always been interested in Astanga Hridaya since it is thorough and simple to learn. This samhita, as its name implies, has a wealth of information about Astanga Ayurveda, including information about Kaumarabhritya. However, the remaining material is dispersed throughout the entire Samhita. Many of the crucial issues in this branch are covered in Uttar Tantra. The philosophy and significant contributions made by this samhita in the realm of Kaumarabhritya are revealed by taking a comprehensive look at the samhita.

CHARAKA SAMHTA IN KAUMARBHRITYA

Astanga Ayurveda (eight branches of Ayurveda):

The charaka classified eight branches of Ayurveda viz: kayachikitsa, shalakyā, shalya, visha gara, bhuta, kaumara bhritya, rasayana, vajikaran.¹



Chakrapani Datta mention the definition of Kaumarabhritya as Focusing primarily on Kumara's Bharana, Bharna denotes the act of obtaining, carrying, and bearing, maintenance, supporting, and nourishing. Kaumara Brutya explains how the womb is protected from preconception through conception and even after delivery.

EMBRYOLOGY

Definition of Garbha (embryo)

The combination of Sukra (sperm), Shonita (ovum), and Jiwa (Atma with Sattwa) inside the Kukshi (uterus) is known as Garbha (embryo).²

Factors forming the foetus

Garbha (embryo), which is created by the six garbha sambhav bhava - matrutaha (mother), pitrutaha (father), aatmataha (self), satmyataha (suitability), rasataha (nutrition), and satvataha (psyche) - is formed³.

Masanumasika-vriddhi (Monthwise development of fetus)⁴

First Month: The Atma (soul) possessing all the attributes takes the form of Garbha (embryo). During the first month gets mixed up with all the dhatu (Mahabhutas) and the embryo appears as Kheta bhut (i.e. jelly structure similar to Kapha) with no particular shape and with limbs emergent and latent (presence of body-parts in subtle form and absence in gross form).

Second Month: The embryo takes a compact form as solid mass in the shape of Pinda (oval), Peshi (elongated) or Arbuda (rounded). If the shape of solid mass is ghana (pindakara) it indicates male progeny, peshi indicates female progeny and arbuda shape indicates hermaphrodites.

Third Month: All indriyas (senses) and angavayava (body parts) are manifest.

Fourth Month: The fetus achieves stability.

Fifth Month: There is more nourishment or accumulation of mansa (muscula tissue) and rakta (blood) in fetus in comparison to other months.

Sixth Month: There is increase in bala (strength) and varna (complexion) in fetus in comparison to other months

Seventh Month: All the component of fetus is properly nourished or developed the commentator Chakrapani has taken mansa shonita etc, as all the component.

Eighth Month: Due to the immaturity of the fetus in the eighth month, the ojas s repeatedly exchanged from the mother to the fetus and from the fetus to the mother through the rasavaha channels, so the mother becomes happy and dull alternately, likewise, the fetus. Therefore, if the delivery takes place in this month, life becomes doubtful due to the unstability of ojas. Therefore, skilled physician consider the eighth month as inaccessible (not eligible) for delivery.

Factors for Normal Growth of Foetus

The foetus develops in the womb as a result of the mother's excellent procreative abilities, her excellent behaviour, the mother's proper mechanisms for "upsnehan" (nourishment) and "upswedan" (heating), as well as the passage of time and natural occurrences.⁵

Care of newborn at birth (care of child just after delivery)

Acharya Charak gives a very good explanation of sadyojat paricharya.

A newborn who has lost vital breath due to distress can regain it by rubbing stone pieces at the base of the ear and applying cold or hot water to the face.⁶

Nabhi Upakalpana (cutting of umbilical cord)

After fixing the point at 8 fingers from the umbilical attachment the cutting point should be held tightly on both the sides and cut with a sharp, half edge instrument made of gold, silver or steel. The end of the attached portion should be tied with a thread and attached



loosely to the neck of the fetus. If the cut part of the cord gets wet, it should be rubbed with oil made from lodhra paste, madhuka, priyangu, devadaru and haridra. A mixture of the above medicines can also be applied to this part.⁷

Complications due to improper cutting of umbilical cord with treatment

Due to improper processing cutting of umbilical cord there is fear of manifestation of complication such as: 1. Ayama Uttundita (Vertical swelling). 2. Vyayama Uttundita (horizontal swelling).

3. Pindilika (Hard nodular protuberance), 4. Vinamika (Margins, slightly swelled) 5. Vijrambhika (umbilical hernia). These should be managed after carefully observing seriousness of involved Desha or mildness of condition treated with massaging, anointing and irrigating Ghrita processed with the drugs which do not cause burning sensation and pacify Vata and Pitta.⁸

Jatakarma (birth rites)

The first child should be allowed to swallow the combination honey and ghee treated with mantras as prescribed in scriptures. Then you should start breastfeeding.⁹

Raksha Vidhana (protective measures)

Adani, Khadira, Karkandhu, Pilu, and Parushak branches should surround the maternity home. The maternity home should be covered in rice, kankanika, mustard, and linseed seeds. Up until the naming rite is over, the offering of rice to the fire should be made continuously twice daily. A wooden pestle should be kept obliquely at the door after the threshold. Keep a cloth packet with kushtha, choraka, hingu, mustard, linseed, garlic, kakanika, and other medicines to ward off evil spirits by the front door. Both the mother and the child should wear it around their necks, and it should also be placed in the cot, water jars, cooking pots, and both door panels. The maternity home must have a fire burning constantly, fuelled by kakanika and tinduka wood. The women who are present and the best friends should stay awake all night close to the mother for 10 to 12 days. In addition, gifts Auspicious Rituals, Blessings, Praises, Songs, Making Music Instruments must be played continuously at home Adequate food and drink should be provided And be filled with loving and happy people. Brahmins who have mastered Atharvaveda should also do this Both are constantly making penance offerings to the fire Not only time for the welfare of children, mother.¹⁰

Naming ceremony ¹¹

Namakarna samskara is done on 10th day .It is of 2types

1. Aabhiprayik
2. Nakshatrika

Examination of the baby

After the naming ceremony is over, one should initiate the physical examination of the neonate to ascertain his life span. The features of the child blessed with good longevity are following. hair that is black, deep rooted, oily, sparse, and discrete. Thick and firm skin. Naturally endowed, proportionate, slightly larger-than-average, and head-shaped like an umbrella. Broad, solid, even,

and well-aligned with temporal. Upper signs (three transverse lines), corpulence, wrinkles, and a half-moon-shaped forehead are present. Thick ears with big, even flaps, equally long and depressed at the back, a compact tragus, and a large meatus. Disjointed, even, large, compact, and slightly drooping eyebrows. Equal-sized eyes with clear division and subdivisions, focused vision, strong lustre, and lovely front and corners. Straight, well-ridged nose with broad nostrils that are slightly depressed at the tip large, erect, and with teeth that are well-positioned. A normal-looking tongue with enough length and breath, which is smooth and thin. Smooth developed, hot, and red palate. Prolific, sweet, echoing, and profoundly raised voice. Lips that are the right thickness and width and cover the mouth are ideal, the colour red, wide jaws, small and rounded in size, well-developed chest that is broad. The vertebral column and xiphisternum are concealed, remote breast nodule. Stable and unbending sides. Round, developed, and long fingers; legs; and arms, large and developed hands and feet. Round, unctuous, coppery, high, and tortoise-shaped nails that are stable. Deep clockwise navel whirl even with well-developed muscles, waist 1/3 less wide than chest. round, well-developed, and not overly elevated buttocks, tapering downward, rounded, and well-developed thighs. Antler-like shanks that are neither too thick nor too thin, with hidden blood vessels, bones, and joints. neither too fat nor too thin in the ankles. In addition to these anatomical details, the functional aspects of the flatus, urine, stool, and sexual organs are also important. ¹² **Kumaragara (nursery)**

After that, words were used to describe the nursery-style construction of Kumaragara. An experienced architect should provide guidance and oversight as the nursery is built. It must be roomy, beautiful, devoid of darkness and direct wind entry, but ventilated from one side, strong, inaccessible to Swapada (an animal with legs like a tiger), other animals with fangs like rats, and Patanga



(birds, grasshoppers, or moths); well-defined places for keeping water, mortar, as well as the lavatory, bathroom, and kitchen; and comfortable during the (specific) season. Cot, a chair, and appropriate season-appropriate bedding should also be provided. In addition to this, all other preventative measures, sacrifices, sacred rites, oblation offerings, and the performance of expiatory rites should be carried out (in advance before the child enters). Additionally, there should be plenty of devoted or affectionate people, doctors, and elderly, clean people in the nursery. Thus was the nursery's approach, Kumaragara, described.¹³

Drugs used for fumigation of clothes Fumigation of cloths, bedding, sheets etc. should be done with Yava, Sarshapa, Atasi, Hingu, Guggulu, Vacha, Choraka, Vayastha (Brahmi), Golomi (Sweta Durva), Jatila (Mamsi), Palankasha, Ashoka and Rohini and also slough of snake all together and added with Ghrita(ghee).¹⁴

Dharaniya Mani (usable amulets) The amulet to be worn by the child should be made from the tips of right horn of alive Khanga, Ruru, Gawayya and Vrishabha etc. drugs as well as Jivaka and Rushabhaka and what so ever other articles are advised or praised by Brahmanas exponent in Atharwaveda.¹⁵

Toys for Child The toys for the child should be Vichitra (variegated), Ghoshava (sound producing), Atyabhirama (delightful), Aguru (not heavy), Atikshna (without sharp ends) and Na Asya Pravesha (those which cannot enter the mouth), Apranaharani (should neither be killer or may injure or kill the child), Avitrasana (nor frightening).¹⁶

Selection of Dhatri (wet-nurse)

Samanvarna (wet nurse belonging to same caste)

Youvanawastha (youthful), Nibhrutam (submissive)

Anaturam (free from impatience), Avyngam (free from deformity)

Avyasanam (non-addictive)

Avirupam (ugliness)

ajuguptisam(non-loathsomeness) deshjatiyam(born in same place) akshudra-akshudrakarmini(not mean minded or indulged in mean acts) kulejata(born in good family) vatsalam(having affectionate disposition) aroga(disease free) jivadvatsa puvatsa(having living male child) dogdhri(having profuse lactation) Along with above qualities the wet nurse should be skilled in management, not sleeping on excrements, clean, endowed with excellence of breast and breastmilk.¹⁷

Kaumarabhritya in sushruta Samhita

Garbha vigyana (Embryology) Sushruta gave a detailed description starting with the cellular structure and continuing through the development of various tissues and organs, starting with intrauterine, while describing the method of conception. He did not only describe the anatomical situations of various structures, but also the development of various tissues and organs.

Garbhotpatti- genesis of the foetus- According to Sushruta, during sexual activity, Tej (energy) is released, which, along with Vayu, stimulates Shukra (spermatozoa) to enter the vagina where it joins Artava (ovum). Agneya Artava and Saumya Shukra combine to create the foetus known as Garbha.¹⁸

Masanumasika-vriddhi (Monthwise development of fetus)¹⁹

First month: Kalala (Mucoid shape mass)

Second month: By the action of sita (shlesma), pitta and vayu over mahabhutas it solidifies and becomes pinda, peshi and arbuda shaped in male, female or hermaphrodite respectively.

Third month: Panch Pindika i.e. two hands, two legs and the head are formed, the division of the body parts occur in sukshma (subtle) form.

Fourth month: All the body parts become conspicuous including garbha hridya so chetana dhatu (consciousness) also expressed, because the place of consciousness is the heart.

Fifth month: Mana becomes niore enlightened, that is, awake.

Sixth month: Buddhi becomes more enlightened.

Seventh month: All the body parts are more conspicuous.

Eighth month: Ojas is unstable in the eighth month, so the child born at this time does not survive due to the absence of ojas and being influence of nairrita portion. By the opinion of the commentator Dalhana, this nairrita part is part of the rakshas (devil) which is given by Rudra to the child, it is described in Kumaratantra.



Nābhi nādi- umbilical cord-The umbilical cord (nabhi nadi) of the foetus is connected to the rasavah nadi (vessels carrying rasa dhatu) of the mother; this cord transmits the essence of food and vitality from the mother (to the foetus), and the foetus is fed by this substance as it develops. The foetus receives nourishment by upaseha through the rasavaha dhamani (blood vessels), which are spread obliquely (in all directions) in all of its body parts, from the time that semen is deposited (into the vagina) until all the major and minor parts, which are undeveloped, become clearly differentiated and developed fully. This allows the foetus to survive.²⁰

Prasavottara karma- post- delivery activities-

Navajat Sheeshu Paricharya (Neonatal care after delivery) ²¹

- According to Acharya Sushruta, after the baby is born, its Ulva (vernix caseosa) and mouth should be cleared with a mixture of Saindhava lavana (rock salt) and Ghrita (ghee), and a cotton swab smeared with Ghrita should be kept on his head.
- The umbilical cord is then cut after being tied with thread and pulled up to a length of 8 Angula (fingerbreadth). One end of it is loosely tied around the newborn's neck.
- The newborn is then forced to lick Madhu (honey), ghee, and powdered Ananta (gold) with their ring fingers during the Jatkarma (birth ceremony).
- The newborn is then bathed in a warm decoction of medicinal plants appropriate to the season, Dosha, and power, and is then anointed with Balatail.

Vaya (age) is classified ²²

There are three different types of vaya: balya (youth), madhya (middle age), and vridhha (old age). Balya - Those under the age of 16 are referred to as Baala (children). They are further separated into 3 smaller groups:

Kshirapa - A child under the age of one who consumes milk

Kshirannada - A child under the age of two who eats both food and milk.

Annada - Child over 2 years old who only eats solid food

Bālopacāra- care of the new born —

The child (new born) should be wrapped in soft linen and placed on the bed covered with sheets of soft linen; fanned with twigs (branches) of pilu, badari, nimba or paruṣaka; cotton pad soaked in oil should be kept on its head often; it should be exposed to fumes of raksoghna drugs (such as vacā etc. protective against evil spirits, bacteira etc) raksoghna drugs should be tied to its hands, feet, head and neck; powder of tila, atasī, sarsapa should be sprinkled all around; fire should be lit in the dwelling chamber; other procedures described in vranitopāsana (ch. 19 of sūtra sthāna) should be perused and adopted.²³

Namakarana- naming ceremony- Next, on the tenth day (after birth) parents, should perform rites, recite sacred hymns and then give a name to the child which is desired by them or the name of the star constellation in which it is born.²⁴

Stanya (breast milk)

Stanyapana (breast feeding) ²⁵: How to breastfeed a baby has been described by Acharya. On a auspicious day, the child should be bathed and dressed in new clothes. The wet nurse should sit facing east with the child on her lap, facing north. Her right breast should then be washed, lightly pressed, and a small amount of milk should be expressed out. She should then be instructed to feed the child after sanctifying the milk with a hymn.

Stanya Naasha (lack of breast milk) ²⁶: Anger, grief and lack of affection etc cause loss (non-production) of breast. milk in women, Hence in order to help production of milk she should be advised to develop calm and well composed mind ,affection towards the baby, and given foods prepared from yava, godhuma, shali, sastika, meat soup, surā(beer) sauviraka (beer) pinyaka, (paste of tila added with jaggery), lashuna, matsya (fish) kaseruka, Sringataka, bisa, vidirikanida, madhuka, Katavari malik albu kālašāka and such others.

Stanya Pariksha (examination of breast milk) ²⁷: The investigation of Shudha Stanya (pure breast milk) was mentioned by acharya. Breast milk is considered to be pure or not vitiated by Dosha if it is cool, transparent, thin, and resembles a conch shell in colour. It should also mix with water uniformly, have no threads or froth, and neither float nor sink in the water. The health, physical development, and increased strength of the child are all benefits of this milk. It is not advisable to feed a child the milk of a woman who is depressed, pregnant, or sick with a fever. After taking into account the kid's condition and determining the necessary amount, if the breast milk is not sufficient to meet the child's needs, the infant may be given goat or cow milk.



Shishu Poshana (nourishing the child)²⁸: In order to improve the health, strength, intelligence, and longevity of the kid, Acharya Sushruta recommended giving ghee cooked with various medicines at each stage of Balyavastha.

Shishu Rakshana (care of the child)²⁹: According to Acharya, in order to avoid vitiating the dosha, a kid should not be abruptly awakened from sleep, should be held pleasantly, should not be scared, should not be hoisted up or let down, etc. In order for him to develop disease-free, Prasanna Man (happy), and Satva Sampanna (excellence of mind), he should be shielded from Vata (winds), Atapa (sunlight), Vidhyuta (lightning), Nimna (deep pits), etc.

Raksha Karma (protective rites)³⁰

Every effort should be done, in Acharya's opinion, to shield the child from Graha (possession by bad spirits), in order to shield him from the negative effects or sicknesses brought on by Graha.

Sanskaras

Namkarana Sanskara (naming ceremony)³¹: It is done on 10th day.

Anna Prashana (giving solid food)³²: Acharya said at 6 months of age child should be given Anna (solid food) which is Laghu (easily digestible) and Hitta (beneficial/suitable for the child).

Karna Vyadha Sanskara (piercing the ear lobe):³³

Importance: Children's ears are pierced for the purposes of raksha (evil-prevention) and abhushan (accessorising). During 6th or 7th month, the karna vyadhana sanskara should be done.

Complications of karna vyadhana:

Kalika, Marmarika, Lohitika

Vidyarjana (initiation of study):³⁴

After knowing that the child has attained strength (to undergo studentship) he should be initiated to the study, appropriate to his caste.

Shishu Chikitsa (Treatment of children):

Shleshma increases greatly during Balyavastha (young age), Pitta increases greatly during Madhyavastha (middle age) and Vata increases greatly during Vriddhavastha (old age); so treatments should be planned accordingly; use of Agni (thermal cautery), Kshara (alkali) and Virechana (purgation) therapies should be avoided during young and old age in diseases curable by these treatments or (if very necessary) these should be done mildly and slowly. Leech therapy, also known as jalauka avcharana, is thought to be the simplest and most practical way to cleanse the body of contaminated blood, particularly in the case of royalty, the affluent, children, the elderly, the fearful, the disabled, women, and those with delicate constitutions.³⁵

Aushadha Matra (Dose of medicines)³⁶

Kshirapa: After one month of age, the dosage of medication should be equal to Anguliparvadvaya (which sticks to two fingers dipped into a liquid that contains medicine, honey, or ghee and then removed).

Kshirannad: The dosage of the medication must be equal to the size of a Kola-Asthi (a Ziziphus jujuba Lam. seed).

Annad: The dosage of the medication ought to be equivalent to the size of the kola

Graha rogas

In 11 chapters of the Uttartantra, from chapters 27 to 37, Acharya Sushruta provides a detailed explanation of Balagrahas (evil spirits that kidnap infants), their origin, characteristics, and methods of healing. He has listed the names of the Navagraha, including Skanda, Skandapasmar, Shakuni, Revati, Putana, Andhputana, Shitaputana, Mukhmandika, and Naigamesha³⁶.

Kaumarabhritya in asthanga hridaya (vagbhata)

Navjata Shishu Paricharya (Concept of Neonatal Care) Ashtanga Hridaya describes in detail the care of a baby after birth including Ulva Parimarjana (cleaning of the vernix caseosa), Pranapratyagaman (resuscitative measures), Naal Chedan (cutting of umbilical cord),



Snana (bathing), Pichu Dharan (external oleation), Swarnaprashan (ingestion of gold Bhasma with Medhya herbs), Garbhodaka Vamana (cleaning of stomach by emesis) and Jata Karma (initiation of feeding of newborn). The vernix of the newborn should be removed shortly after birth with Saindhava (rock salt) and Ghee. This dries the baby, provides adequate tactile input for breathing, and prevents hypothermia. Two stones should be rubbed together to generate a noise around the base of the baby's ear or mastoid process³⁸. This activates the auditory nerve and aids in the commencement of breathing. Chanting the sacred Mantras is also advised. When the baby can breathe and cry properly, his umbilical cord should be cut four Angula (fingers) from the umbilicus, tied with a thread, suspended by the neck, and 'Kustha Taila' put to it to prevent sepsis³⁹. After that, apply oil-soaked cotton to the scalp's anterior fontanel. After that, oil-soaked cotton should be applied⁴⁰.

This reduces the risk of hypothermia and injury. Herb decoction should be used for baby washing⁴¹. These have antibacterial effects as well as a pleasant fragrance. The baby's stomach should be cleaned by making him vomit with Saindhav, Ghee, and Vacha (Acorus calamus)⁴². This helps to eliminate ingested amniotic fluid and blood and reduces vomiting after feedings. Ghee and honey are used to start feeding after a stomach wash. This provides energy and activates passive immunity. On the second and third days, Lakshmana-treated ghee is recommended, followed by exclusive breast feeding⁴³. Raksha Karma is also reported, which uses herbs to disinfect and prevent sepsis via baby's garments, cot, or hospital room.⁴⁴

Masanumasika-vridhhi (Monthwise development of fetus)

First month: The embryo is in Avyakta (not conspicuous) and in form of Kalala from 1st week onwards. The commentator, Arunadatta, has considered the embryo is like a solid mass of Kapha before one week.⁴⁵

Second month: There is formation of ghana, peshi or arbuda and the born progeny will be male, female or hermaphrodite respectively.⁴⁶

Third month: The formation of the Gatrapanchak (head, both legs, both arms), all the sukshma body parts are formed. The fetus can appreciate happiness and sorrow.⁴⁷

Fourth month: All the body parts become conspicuous.⁴⁸

Fifth month: Chetana (consciousness) develops.⁴⁹

Sixth month: Development of tendons, vessels, body hairs, strength, complexion, nails and skin.⁵⁰

Seventh month: All the body parts completely developed and proper nourishment of all the components of the fetus⁵¹.

Eighth month: Ojas is unstable moving to mother and to fetus respectively so they are happy and exhausted alternately. The child delivered in this month does not survive due to the absence of ojas and the life of the mother is doubtful.⁵²

Bala samskaras

Samskaras are rituals performed to instill beneficial attributes in people. Samskara are dispositions, character qualities, or behavioural tendencies that exist by default from birth or that a person prepares and perfects over their lifetime. The goals of childhood Samskara are to properly prepare the newborn for extra uterine life, to build good feeding habits, to ensure adequate nourishment, to prevent diseases, to adapt to the environment for future survival, to give the kid an individual identity, and to educate the child. Acharya Vagbhata prescribes 'Prajapatya Vidhi' in Jata Karma Samskara, as mentioned in Dharmashastra literature⁵³. Vagbhata has also stated that Namakarana Samskara should be performed on the 10th or 12th day⁵⁴, and that the sixth month is the best period for Annaprashan⁵⁵. Karnavedhana, or ear lobe piercing, is both decorative and protects the baby from infections. This rite is best performed during the age of six, seven, or eight months, according to Ashtanga Hridaya. It should be done preferably in a chilly climate.⁵⁶ Vagbhata has specified the fifth month as the ideal time for Upvishtana Samskara, or sitting ritual.

Garbha Vyapada (Fetal Anomalies)

Vagbhata describes Upavishtaka, Nagodara, and Lina Garbha, as well as their treatment. These are pregnancy problems in which the foetus is post dated and intrauterine growth is slowed. Upavishtaka is a condition in which there is copious vaginal discharge, but the foetus does not increase in size and instead remains inside the womb creating throbbing, indicating that the foetus is alive but growing slowly. Nagodara is another condition in which the foetus is dry and malnourished because the mother is under great mental and physical stress and has vaginal leakage, which causes Vata Dosha to worsen with a post-term foetus. Lina Garbha is the one with no throbbing.⁵⁷

Vayovibhajan (Classification of Age)⁵⁸

Vagbhata has classified age into three stages

Baala (childhood): The period up to sixteen years of age



Madhya (youth and middle age): the period up to seventy years

Old age: after seventy years

Baala is further separated into three stages: Kshiravartan, Ubhayavartan, and Annavartan, which refer to children who predominantly consume milk, milk plus solid food, and solid food, respectively⁵⁹.

Concept of Lehana

Gold is one of the components of the drug combinations described by Acharya Vagbhata as Swarna (Gold) or Swaran (Gold), Matsyakshak, Shankhapushpi (Convolvulus pluricaulis) or Kaidarya (Murraya koenigi), Swaran (Gold) and Vacha (Acorus calamus). When these four drug types are taken along with honey and ghee over the course of a year, they promote healthy bodily development, mental acuity, physical stamina, and overall well health. The formulas Ashtanga Ghrita, Saraswat Ghrita, and Vachadi Ghrita are employed in Lehan Karma⁶⁰.

Navjaat Shishu Parikshan (Examination of Newborn)

Additionally, Vagbhata advised wise physician to check infants from the head down in order to determine their lifespan based on the characteristics stated in "Prakriti Bhediya" chapter⁶¹. In this chapter, Acharya describes characteristics of several physical parts, including the forehead, veins, face, head, tongue, mouth, eyes, and chest, as well as the associated life span of a person with those characteristics.⁶²

Dantubhedjanya Vyadhiyan (Dentition related diseases)

For illnesses like Jwara (fever), Atisara (diarrhoea), Kasa (cough), Chardi (vomiting), Shirashoola (headache), Abhishyanda (conjunctivitis), Pothaki (stye), and Visarpa (skin disease), it is said that tooth eruption is the cause. When teeth erupt, every Dosha becomes vitiated, causing discomfort in every part of the body⁶³. The cause of late dentition and nighttime teeth grinding is thought to be a Vata Dosha predominance⁶⁴. Also mentioned by Vagbhata are Krimidanta (dental cavities) and Dantaharsha (extreme tooth sensitivity)⁶⁵. A condition known as "Kukunaka" that only affects children whose teeth are erupting. The child's eyes are swollen, coppery-red in colour, and his vision is blurry. His eyelids are also painful and sticky. The little child frequently scratches his eyes, nose, and ears⁶⁶.

Balshosha (Malnutrition in children)

Vagbhata describes the nutritional illness known as balashosha. He asserts that drinking cold water, sleeping excessively during the day, and consuming breast milk that has been tainted by Kapha are all responsible for blocking the Rasavaha srotas. Loss of appetite, nasal congestion, fever, and cough appear in the child. The infant gets thin and has oily, white eyes and a pale face. Herbs that nourish and increase Agni are used to cure this illness⁶⁷.

Bala Grahas (Specific disorders of childhood)

The names of all the twelve Balgraha are Skanda, Skandapsmara, Naigmesha, Shava, Pitra, Shakuni, Pootana, Sheetpootana, Andhpootana, Revati, Shushakrevati, and Mukhmandika, with the first five being Purasha Graha (male) and the last seven being Stri Graha (female), according to Acharya Vagbhata.⁶⁸

Prasvakaleenjanya Abhighat (Birth Injuries)

According to Ashtanga Hridaya, a disorder called "Upshirshak" that resembles birth injury, or caput succedaneum, is known. According to the definition, it is a disorder that develops when vitiated Vata enters the fetus's scalp during delivery, causing a swelling that is painless and the same colour as the skin. For this, there is no need for treatment.⁶⁹

CONCLUSION

The great texts of Ayurveda known as the "Bruhatrayi" include the Charak Samhita, Sushruta Samhita, and Astanga Hridya, which have contributed significantly to the fields of medicine and surgery, respectively, since antiquity. The Charak Samhita, Sushruta Samhita, and Astanga Hridya are some of the revered Ayurvedic works referred to as the "Bruhatrayi." which, throughout antiquity, have made major contributions to the fields of medicine and surgery, respectively. The Charak Samhita, Sushruta Samhita, and Astanga Hridya are among the great Ayurvedic works together referred to as the "Bruhatrayi." As such, it appropriately has a place in the Brihat Trayi, the great Ayurvedic treatise. Three Acharyas who have extensive understanding of all the ideas of Kaumarbhritya gave a briefing on neonatology and explained them all, including the care of newborns, breastfeeding, protecting children, neonatal nurseries, toys, and grahas. A lot more hidden facts need to be investigated further, in addition to the research that has already been done.



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ROLE OF ELECTRIC RICKSHAWS IN LANKA TOWN AND ITS HINDER LANES OF HOJAI DISTRICT, ASSAM

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ABSTRACT

Electric rickshaws are three wheeler battery operated para transit vehicles. From economic point of view they are far better than auto rickshaws which are run on petrol or diesel. India, Govt. had been funding with the help of Ministry of Non-conventional energy sources (MNES) to design and develop more safe and economic variety of E-rickshaws since 2000 till date. The present study on E-rickshaw is made to know role of E-rickshaws in passenger movement in Lanka town and its hinder lanes. Drivers of para transit was interviewed to know their socio-economic status and how it provide employment to poor literate in habitant of Lanka to serve their family livelihood. It is a cheap and environment friendly means of transport in town areas which produces negligible air pollution. Hence, conventional (petrol/diesel) auto-rickshaws are going to become past and E-rickshaws are going to become future day by day.

KEY WORDS: E-rickshaw, livelihood, para transit, hinder lanes.

INTRODUCTION

E-rickshaws have shown their identity as new era means of transportation in most of the cities of India. They have become a new source of income for many unskilled or semiskilled less educated People of Lanka town and its hinder lanes. E-rickshaws run on rechargeable battery and charging cost is very low than the cost of diesel or petrol hence economical. It provide mobility to the passengers from railway station Lanka to bus stands Nagaon, Kheroni, Lumding and Umrangshu and vice-versa. It also provide door to door service within the town and its hinder lanes. By operating E-rickshaw a driver can earn Rs 600 to Rs 1000 per day. Due to increasing number of rickshaws in the town it create congestion and hence slow down the traffic movement.

In the year 2000, under the auspices of the Government of India, an innovative individual conceptualized and fabricated the very first electric rickshaw in the country. This pioneering creation was christened as "ELECSHA" and successfully acquired a trademark. These electric rickshaws, powered by batteries with zero carbon emissions, earned recognition as an exceptionally eco-friendly mode of transportation. They are not only user-friendly but also boast minimal maintenance and operating costs. Moreover, they offer a favourable return on investment for their owners. Requiring a modest initial investment and demanding relatively little human effort, they serve as a means of livelihood, especially for those with limited education, literacy, or vocational skills.

E-rickshaws have now become a cornerstone of local transportation for shorter distances, particularly in the state of Assam and India as a whole. They have gained immense popularity as a cost-effective mode of urban and rural conveyance, especially in areas where other transportation services are scarce or prohibitively expensive. E-rickshaws have outshone traditional cycle rickshaws due to their efficiency, speed, and affordability. Notably, in rural areas like Lanka in the Hojai district of Assam, E-rickshaws play a crucial role in providing transportation services to remote regions devoid of regular bus services, thus facilitating connectivity among villages. Consequently, this study aims to examine the significant impact of E-rickshaws on the rural transport system in Lanka, Hojai district, Assam.

OBJECTIVES

- E-rickshaws' role in creating jobs and serving as a new form of transportation.
- Examine the demographic characteristics of drivers within the study region.
- To research the socioeconomic position of their group.

METHODOLOGY

For study and analysis both primary and secondary data were collected. Primary data are collected through direct personal interviews of the drivers during the month of March-April/2023. A total of 100 E-rickshaw drivers were interviewed from different parking places beside the roads of Lanka town and its hinder lanes. Secondary data were collected from different publish and unpublished



source like books, journals ,internet etc. Collected data are tabulated below and analyse by simple statistical tools, like percentage analysis.

STUDY AREA

The town of Lanka is located in the Hojai District of Assam, about 11 kilometers from Sankardev Nagar, the district headquarters. Because of its unique location between the Mikir Hills to the east and the Western Jaintia Hills to the west, it has a peculiar rain-shadow characteristic at latitude 25.9329083 and longitude 92.9379687. Lanka railway station, railway station to Hawaipur , railway station to Nagaon centigate, station to Bamun gaon and vice –versa.

RESULTS AND ANALYSIS

Data Tables (Source- Field Survey):

Table-1.1. Location Distribution of E-rickshaw Drivers

Location	Distance from Lanka railway station (in Km)	No. of Respondents
Lanka railway station	0	20
Nagaon centigate	1.5	20
Bamun gaon	7	20
Hawaipur	15	20
Islam patty	3	20
Total		100

Table 1.2. Sex Distribution of the E-rickshaw Drivers

Sex	No. of E-rickshaw Drivers	E-rickshaw Drivers (in %)
Male	100	100.00
Female	0	0.00
Total	100	100.00

Table 1.3. Age Composition of the E-rickshaw Drivers

Age (in Years)	No. of E-rickshaw Drivers	E-rickshaw Drivers (in %)
15 - 25	25	25
25 - 35	60	60
35 - 45	10	10
45 - 55	5	5
Total	100	100.00

Source: Field Survey

Table 1.4. Marital Status of the E-rickshaw Drivers

Marital Status	No. of E-rickshaw Drivers	E-rickshaw Drivers (in %)
Married	60	60
Unmarried	40	40
Total	100	100.00

Table-1.5. Educational Status of the E-rickshaw Drivers

Educational Status	No. of E-rickshaw Drivers	E-rickshaw Drivers (in %)
Illiterate	0	0
Upto Class-IV	5	5
Upto Class-VIII	10	10
Upto Class-X	40	40
Upto Class-XII	35	35
Graduate & Above	10	10
Total	100	100.00

Table 1.7 Family Size of the E-rickshaw Drivers

Family Size	No. of E-rickshaw Drivers	E-rickshaw Drivers (in %)
Less than 5	60	60
5 - 8	40	40
9 - 12	0	0
Above 12	0	0
Total	100	100.00

Table 1.8. Daily Working Hours of the E-rickshaw Drivers

Average Daily Working Hours	No. of E-rickshaw Drivers	E-rickshaw Drivers (in %)
0 - 6	30	30
6 - 12	70	70
12 & Above	0	0
Total	100	100.00

Table 1.9 Daily Income of the E-rickshaw Drivers

Average Daily Income (in Rs.)	No. of E-rickshaw Drivers	E-rickshaw Drivers (in %)
Less than 600	30	30
600 - 800	50	50
800-1000	20	20
Above 1000	0	0.00
Total	100	100.00

Table-1.10 Daily Battery Charging Cost of the E-rickshaws

Daily Battery Charging Cost (in Rs.)	No. of E-rickshaw Drivers	E-rickshaw Drivers (%)
100	60	60
140	40	40
200	0	0
Total	140	100.00

Table-1.11 Ownership Status of the E-rickshaws

Ownership Status	No. of E-rickshaw Drivers	E-rickshaw Drivers (in %)
Owned	75	75
Rented	25	25
Total	100	100.00



Table-1.6. Religion Distribution of the E-rickshaw Drivers

Religion	No. of E-rickshaw Drivers	E-rickshaw Drivers (in %)
Hindu	65	65
Islam	35	35
Others	0	0.00
Total	100	100.00

Table-1.12. Duration of Experiences of the E-rickshaw Drivers

Duration of Experience	No. of E-rickshaw	E-rickshaw Drivers
Less than 3	20	20
3 - 6	30	30
6 - 12	40	40
12 - 24	10	10
Above 24	0	0
Total	100	100.00

DISCUSSION

The location distribution of E-rickshaw drivers in Lanka, Assam, is an interesting and significant aspect of the local transportation system. E-rickshaws, or electric rickshaws, have gained popularity in recent years as an eco-friendly and affordable means of transportation in many parts of India, including Assam. These vehicles are not only an efficient mode of commuting but also provide sustainable employment opportunities for many individuals, particularly in semi-urban and rural areas like Lanka, Assam. Lanka is a picturesque town in the Hojai district of Assam, located in the northeastern region of India. E-rickshaws have become a lifeline for the local population, offering a convenient way to navigate through the narrow lanes and busy streets.

E-rickshaw drivers are concentrated in and around the town center, market areas, educational institutions, residential areas, rural outskirts where most of the commercial and retail activity takes place. This is where passengers often require short-distance transportation, making E-rickshaws an ideal choice for commuting within the town. They serve as feeder services, helping passengers reach their final destinations from these major transit points. The location distribution of E-rickshaw drivers in Lanka, Assam, not only supports the local economy but also promotes sustainable and environmentally friendly transportation. This mode of commuting provides income opportunities for many individuals and addresses the transportation needs of the community. Moreover, it aligns with the broader trend of adopting eco-friendly and energy-efficient transportation solutions to reduce carbon emissions and promote a greener future.

Table 1.2 shows that most of the E-rickshaw drivers are male and no female are allowed act as driver in our Indian society. Table 1.3 shows that 60% drivers are of age group 25-35 years who will have to take more financial responsibility. Table 1.4 shows that 60% drivers are married and rest are unmarried. Table 1.5 gives educational status of drivers who are from illiterate to even graduate also. Table 1.6 shows that most of drivers are from Hindu community(65%) but Muslim community is also coming up in this profession. Table 1.7 shows family sizes of the drivers. Table 1.8 and 1.9 shows their working hours which is generally 6-12 hours and they can earn up to Rs1000 per day. Table 1.10 shows their battery charging cost which very less in comparison to petrol or diesel cost. Table 1.11 shows that most of the drivers are having their own vehicles(75%) and rest are having rented vehicles for which they will have to pay Rs200 per day to vehicle owners. Table 1.12 shows experiences of the drivers. Drivers also reported that cost of 4 seater Tuk-Tuki is around Rs2 lac and 3 seater new model E-rickshaw (Mahindra) is 4 lac which heavy and comfortable.

Problems created by E-rickshaw services

- Traffic congestion possibility of accidents: Due to in adequate widths of streets and increasing number of E-rickshaws in the town creates congestion and some times accidents to pedestrians. Some times accidents occurred due to hitting by trucks, buses and cars.

RECOMMENDATIONS/ SUGGESTIONS

- Banks should provide easy loans to unemployed youths for purchasing new advanced type of E-rickshaw.
- Main road within the Lanka town is under construction and has been widen but it is not marked for lane separations for different speed of vehicles and a separate lane must be provided specially for E-rickshaws.
- Fixed parking spots/ places must be provided for E-rickshaws.

CONCLUSION

The study highlights the significant role of E-rickshaws in providing both transportation for local short distances and a source of income in rural areas of Lanka town, Hojai district, Assam. E-rickshaws benefit many people by offering daily income opportunities and improving connectivity in the rural region, despite occasional challenges faced by drivers. These vehicles have gained popularity as a mode of transport for short distances and as a new source of livelihood for numerous families in the study area. To support this, the government can consider providing subsidized loans for purchasing E-rickshaws under a self-employment scheme.



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COMPUTER AIDED DRUG DESIGN OF PDE 4 INHIBITORS FOR POTENTIAL THERAPY AGAINST CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) is an inflammatory disease. it is collection of lung diseases including chronic bronchitis, emphysema and chronic obstructive airways disease. COPD is characterized by persistent airflow limitation that is usually progressive and is associated with an enhanced chronic inflammatory response in the airways and lungs to noxious particles and gases. In the inflammatory cells cAMP plays the role of a negative regulator of the primary activating pathways such as cytokine release by T-cells. Levels of cAMP on the other hand are regulated by cAMP-specific PDE isozymes (e.g., PDE4 predominantly expressed in inflammatory and immune cells in addition to brain). Inhibition of the PDE4 in these cells effectively elevates the intracellular cAMP levels, thereby activating specific protein phosphorylation cascades that elicit a variety of functional responses. Additionally, elevation of intracellular cAMP levels via inhibition of PDE4 activity led to smooth muscle relaxation and thereby bronchodilation that is beneficial for the management of respiratory diseases like COPD.

KEY WORDS- Chronic Obstructive Pulmonary Disease (COPD), Chronic Bronchitis, Emphysema, T-cells, protein phosphorylation, bronchodilation.

1. INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is an inflammatory disease. it is collection of lung diseases including chronic bronchitis, emphysema and chronic obstructive airways disease. COPD is characterized by persistent airflow limitation that is usually progressive and is associated with an enhanced chronic inflammatory response in the airways and lungs to noxious particles and gases. It is a major public health burden, with a global prevalence of 10.1%, causing 3 million deaths worldwide in 2011 and predicted to be the fourth leading cause of death by 2030.

Mechanism of inflammation in COPD: The processes underlying COPD are not yet fully understood, however chronic inflammation appears to have an important role.

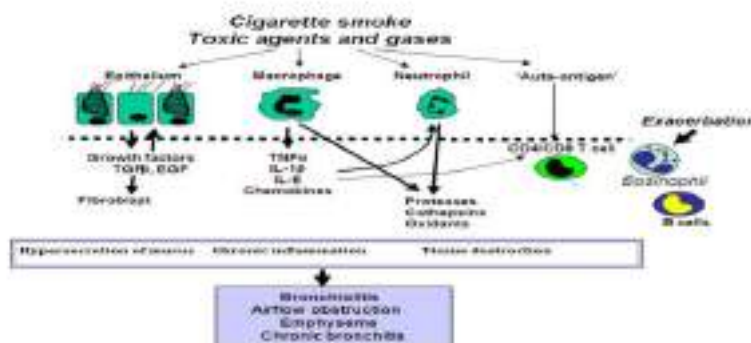


Figure 1: Mechanism of action of COPD



Inflammation plus structural alterations occurring in the small airways and lung parenchyma, such as fibrosis, smooth muscle hypertrophy, goblet cell metaplasia and lumen occlusion by mucus plugging, are major contributors to the airflow limitation and accelerated decline of forced expiratory volume in one second (FEV₁) observed in COPD.

Risk factors for COPD: The main cause of COPD is smoking. The likelihood of developing COPD increases with smoking. Over many years, the inflammation leads to permanent changes in the lung. The walls of the airways thicken and more mucus is produced. Damage to the delicate walls of the air sacs in the lungs causes emphysema and the lungs lose their normal elasticity. The smaller airways also become scarred and narrowed. These changes cause the symptoms of breathlessness, cough and phlegm associated with COPD.

Phosphodiesterase 4 (PDE4)

Phosphodiesterase 4 (PDE4) is the predominant cAMP-degrading enzyme expressed in inflammatory cells. PDE4 family is comprised of 4 genes (PDE4A to D) with a unique chromosomal location per gene.³⁴ Due to alternative splicing of the genes, multiple splice variants are reported and classified into two main groups, the long and short forms. All subtypes provide a conserved catalytic domain of (~ 270 amino acids) and the absence or presence, respectively, of the short and long form, two additional regions UCR1 (Upstream conserved region) and UCR2 within the N-terminus. PDE4A, PDE4B and PDE4D gene products are found in most immune and inflammatory cells.

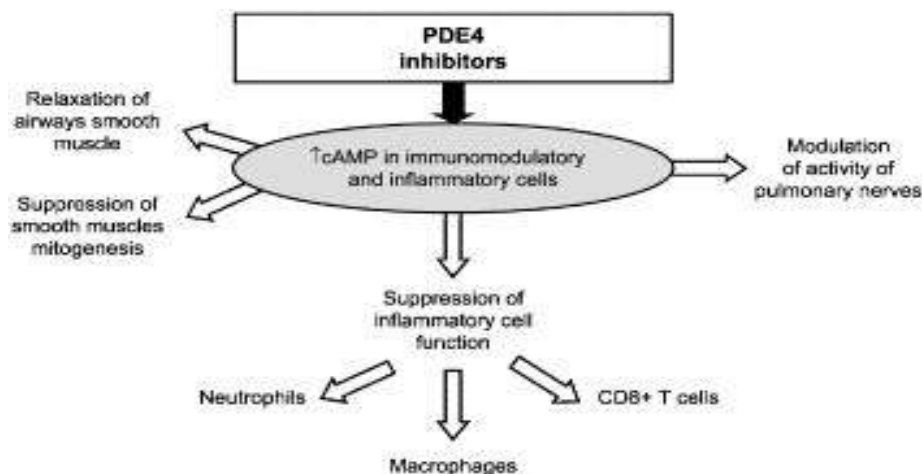


Figure 2: Mechanism of action of PDE 4

2. RESEARCH ENVISAGED AND PLAN OF WORK

COPD is characterized by persistent airflow limitation that is usually progressive and is associated with an enhanced chronic inflammatory response in the airways and lungs to noxious particles, gases and tobacco smoke. It is a major public health burden, with a global prevalence of 10.1%, causing 3 million deaths worldwide in 2011 and predicted to be the fourth leading cause of death by 2030. The drugs used in the treatment of COPD have not appreciably changed in the last 25 years and as a result there is clearly a need for novel therapeutic agents to reduce disease progression and possibly reverse the decline in lung function seen with disease.

Phosphodiesterase 4 (PDE4) is a cAMP specific phosphodiesterase expressed in inflammatory cells such as eosinophils. Inhibition of PDE4 results in elevation of cAMP in these cells, which in turn down regulates the inflammatory response.

3. EXPERIMENTAL (SAR)

The Computer aided drug design (CADD) studies were performed in Window based system Intel Core Pentium processor. QSAR studies were performed on V-Life MDS (Molecular Design Suite) provided by V-Life Sciences Technologies Pvt. Ltd., Pune, India.

QSAR analysis (Quantitative Structure Activity relationship)

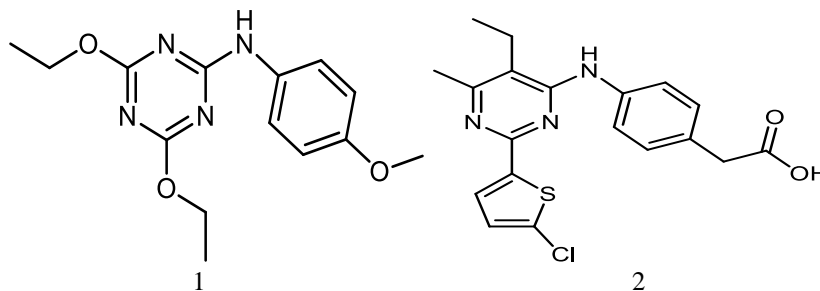
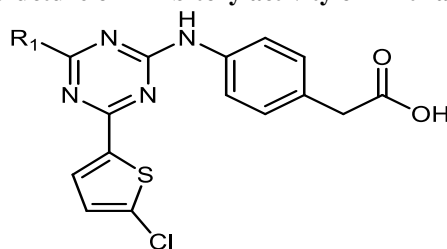
Quantitative structure-activity relationships (QSAR) studies are used for prediction of biological activities of the compound. It is an attempt to correlate 2D and 3D properties (descriptors) of compounds with biological activities. The QSAR relationship can be expressed as a mathematical equations and graphical plots.

**2D-QSAR**

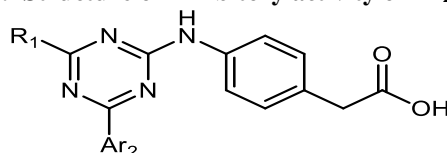
1. Molecule sketching (Chemdraw ultra 12.0)
2. Energy minimization (Molecular Merck force field)
3. Calculation of 2d descriptors
4. Data selection
5. Selection of training and test set (Using random data selection)
6. Statistical analysis (using pls regression)

Molecular sketching:

All structure of the compounds were sketched by using Chemdraw Ultra 12.0 software. 2D structures were converted into 3D by importing to V-Life MDS and saved as .mol2 file.

**Figure 3: Structure of lead compound 1 and 2****Table 1: Structure of Inhibitory activity of R1 triazine analogs**

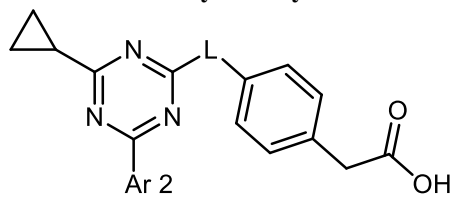
S. No.	R	IC50	-log IC50
3.		1287	-3.10958
4.		1945	-3.28892
5.		383	-2.5832
6.		2447	-3.38863

Table 2: Structure of Inhibitory activity of Ar2 analogs



S.NO	R ₁	Ar ₂	IC ₅₀	-log IC ₅₀
7			251	-2.39967
8			237	-2.37475
9			3770	-3.57634
10	-CH ₃		18755	-4.27312
11			1437	-3.15746
12			1460	-3.16435
13			2777	-3.44358

Table 3: Structure of Inhibitory activity of linker modified analogs

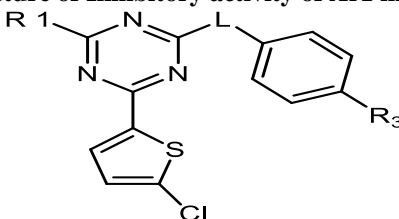


S. No	L	Ar ₂	IC ₅₀	-log IC ₅₀
14	NHCH ₂		2282	-3.35832
15	NHCH ₂		845	-2.92686



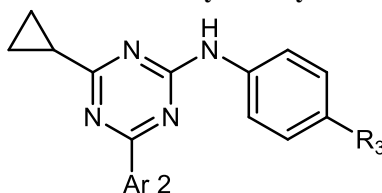
16	O		1862	-3.26998
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Table 4: Structure of Inhibitory activity of Ar1 modified analogs



S. No.	R ₁	R ₃	IC ₅₀	-log IC ₅₀
17	-CH ₃	-CO ₂ H	4048	-3.60724
18	-CH ₂ CH ₃	-CO ₂ H	261	-2.41664
19	-CH ₂ CH ₃	-F	1394	-3.14426
20		-CO ₂ H	220	-2.34242
21		-F	8815	-3.94522

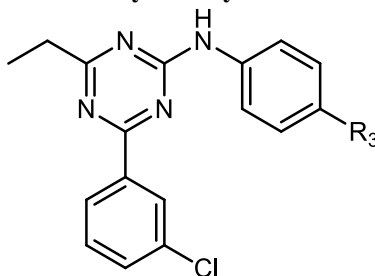
Table 5: Structure of Inhibitory activity of Ar1 substitution



S. No.	Ar ₂	R ₃	IC ₅₀	-log IC ₅₀
22		-CO ₂ H	46	-1.66276
23		-CO ₂ H	135	-2.13033
24			135	-2.13033
25			Inactive	#VALUE!



Table 6: Inhibitory activity of Ar1 substitution



S. No	R ₃	IC ₅₀	-log IC ₅₀
26	CH ₂ CO ₂ H	781	-2.89265
27	-CO ₂ H	281	-2.38202
28	CN	12	-1.07918
29	CH ₂ CN	165	-2.21748
30		126	-2.10037
31		69	-1.83885
32		402	-2.60423
33		1090	-3.03743
34		1574	-3.197

4. RESULTS AND DISCUSSION

Results of 2D-QSAR analysis

QSAR models were generated by using partial least square (PLS) regression method coupled with stepwise forward-backward method. Various models were generated and the best model was chosen based on the value of the statistical parameters. Summary of the best model is given below:

**Table 7: Best Models of 2D QSAR**

S. No	Model I	Model II	Model III
N	23	23	23
Df	20	20	20
r ²	0.7876	0.7637	0.7231
q ²	0.7146	0.6153	0.6307
F _{test}	37.0776	32.3165	26.1088
r ² _{se}	0.3470	0.4604	0.3883
q ² _{se}	0.4023	0.5875	0.4484
pred_r ²	0.6225	0.6165	0.6367
pred_r ² _{se}	0.3374	0.4341	0.4364

Test Set	1, 3, 9, 12, 16, 17, 19, 24, 32, 34	
Statistical	n=23	degree of freedom= 20
Parameters	r ² =0.7876	q ² = 0.7146
	F-test= 37.0776	r ² _{se} = 0.347
	q ² _{se} = 0.4023	pred_r ² =0.622
	pred_r ² _{se} = 0.3374	
Equation	pIC ₅₀ =0.2373 Saa CHE - index -0.3692 Sss CH2 Count + 0.0083 SA Hydrophobic Area	

The equation explains 78 % ($r^2 = 0.7876$) of the total variance in the training set. It also has an internal (q^2) and external (pred_r^2) predictive ability of ~71 % and ~62% respectively. Low standard error of $r^2_{se} = 0.33$, $q^2_{se} = 0.40$ and $\text{pred}_r^2_{se} = 0.34$ demonstrates accuracy of the model. The F-test = 37.5323 shows the statistical significance of 99.99% of the model which means that probability of failure of the model is 1 in 10000. In addition, the randomization test shows confidence of ~ 99.9 % that the generated model is not random and hence it is chosen as the QSAR model.

The plot of observed vs. predicted activity (Fig.) provides an idea about how well the model was trained and how well it predicts the activity of the external test set. From the plot it can be seen, model is able to predict the activity of training set quite well (all red points are close to regression line) as well as external test set up to ~60% (only 1 blue point is relatively apart from the regression line) providing confidence in predictive ability of the model.

5. SUMMARY AND CONCLUSION

Chronic obstructive pulmonary disease (COPD) is an inflammatory disease. it is collection of lung diseases including chronic bronchitis, emphysema and chronic obstructive airways disease.. It is the fourth leading cause of death worldwide. PDE4 has 20 isoenzymes encoded by 4 genes (PDE4A, PDE4B, PDE4C and PDE4D). Through research it has been found that inhibition of PDE4D is responsible for the dose related side effects. Selective inhibitors of PDE4B can alleviate the disease as well as combat the dose related side effects.

2D-QSAR

QSAR analysis was performed by using V-life MDS software 4.4. Partial least square regression analysis was used to derive 2D QSAR model. The best model was selected on the basis of high correlation coefficient, less standard error of estimation, high internal predictivity and high F- value.



CONCLUSION

In the model, three descriptors viz. Saa CHE, SsssCH₂ count and SA Hydrophobic area were found to show good correlation with the biological activity. Out of the three, Saa CHE and SA Hydrophobic Area are directly proportional to the activity while SsssCH₂ count is inversely proportional to the activity. Saa CHE-index: Electrotopological state indices for number of –CH group connected with two aromatic bonds. SsssCH₂ count, This descriptor defines the total number of –CH₂ group connected with two single bonds will have poor biological activity. SA Hydrophobic Area, vdW surface descriptor showing hydrophobic surface area. This observation is supported by molecules of the Triazines series on which the study was performed.

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UDC 591

DAMAGE OF ANACANTHOTERMES TERMITES IN NATURAL CONDITIONS AND PREVENTIVE MEASURES TO FIGHT AGAINST THEM

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SUMMARY

In this article, the pest characteristics of Anacanthotermes termites in the natural, anthropogenically transformed areas of Karakalpakstan and the development of modern technology of using ecological pesticides for their protection are highlighted.

KEYWORDS: *termites, chemical preparations, prevention, ecological, chemicals, insects, garden, alfalfa, vegetable and melon crops.*

INTRODUCTION

The increase in global temperature and the increase in arid areas have created high opportunities for the development of termites. Therefore, termite pest activity worldwide is considered a real disaster of buildings, wooden products, archival libraries, textile clothing and agrocenosis field and wild plant world in all tropical and warm countries, causing them to become unusable. Especially today, the increase in the number of termites in the natural conditions of Karakalpakstan is causing serious damage to the development of wild, forest ecosystem plants adapted for the region, to agrocenosis fields in anthropogenically transformed places, and to all products and reforms created by the slave of humanity.

From this point of view, the damage characteristics of termites in natural conditions and anthropogenic-transformed places, monitoring of their distribution, adaptation of the pest to the area from a seasonal point of view, the diversity of the food unit, the degree of damage to people's houses, social, mineral-heritage, strategic objects, as well as to pests Ensuring the construction of durable buildings and implementing improved preventive measures against them are important issues.

Almost all parts of the natural conditions of Karakalpakstan are dry and sandy areas, and due to the extremely hot weather in summer, termites are suitable places for termites. The distribution of the pest is very wide in nature, it lives in communities in various ecological environments, mainly in groves, steppes and semi-arid areas. it is often observed in deserts and foothills. 2 species belonging to the Anacanthotermes (Jacobs) genus: Turkestan and Greater Caspian (*A.turkestanicus* Jacobs., *A.ahngerianus* Jacobs.) distribution of termites in anthropogenically transformed areas is known to depend directly on the capabilities of mankind.

In the results of several researches on preventive control measures against termites belonging to the genus Anacanthotermes (Jacobs, 1904) in the natural conditions of the Republic of Uzbekistan, Karakalpakstan and in anthropogenically transformed areas, the total destruction of the pest was not ensured, only temporary control was carried out, because it is natural that their hidden way of life and large number and high ability to regenerate will cause difficulties. If we bring clarity to such cases, that is, by the middle of 2002, termites in the Republic of Karakalpakstan made up 870 km², and in the next 2 years, they expanded their area by another 30 km². To date, 3019 houses and 14 historical monuments are known to be severely damaged by termites. It is also known that termites completely destroy living and dry plants in places that have become dehydrated and dry in the natural ecosystem, which leads to the death of orchards and negative consequences in the development of livestock farming [1; 3].

From this point of view, in the natural conditions of Uzbekistan, Karakalpakstan, the study of the seasonal phenological calendar, the development of constant control of the damage, distribution monitoring and preventive measures against termites belonging to the genus Anacanthotermes (Jacobs, 1904) are of great scientific and practical importance. is enough.



OBJECT AND METHODOLOGY OF RESEARCH

In the conditions of Karakalpakstan during the years 2019-2023, mainly in the conditions of the natural ecosystem - along the Koyi Amudarya delta, from the deserts of Qizilkum, Orolkum, Nukusqum, the plain of Ustyurt, Beruniy, Ellikkala, Tortkul, Moynoq, Kungiro, Kanlikul, Shumanay, Khodzheyli, Nukus, Kegeyli, Chimboy, Monitoring work and anthropogenic-transformed in the agroecosis fields of Bozotov, Karauzyak, Takhtakopir districts - Citizens' gathering of Tajyrkol Ovul, Uroq Bolga, Sarancha, Kirpich Zavod settlements, Nukus city of the Republic of Karakalpakstan, preservation and use of cultural heritage objects of the republic State Inspectorate Beruni District - Aqshakhan, the fortress of Tishirman; Ellikkala - Tuproq, Kirqqiz, Ayaz-1-2 castles; Tortkol - Jambas, Kumbaskan fortress; Karauzyak - Jampiq, Sultan Uvois mountain Gaur fortress; Khojaly - Mizdakhkan complex; Collection of research materials and experiments were carried out from the regions of Kegeili - Shibilii father's shrine, Ichan Castle.

Biological means (entomopathogenic microorganism *Beauveria tenella* fungus VD-85 strain) and chemical preparations are used to protect against 2 species of *Anacanthotermes* (Jacobs) termites under natural conditions: Turkestan and large Caspian termites (*A.turkestanicus* Jacobs., *A.ahngerianus* Jacobs.) ("Fipronil Ekstra (20%)", "Sermit (20%) sus.k.", "Piralaks - Lux") was applied. In field experiments, the biological effectiveness of diluting biological agents and chemical preparations in various amounts (0.001% -0.003% -0.005% conc.) was determined on termite nests [4; 5].

All the obtained data were processed in the Biostat, Origin 6.1 [Microsoft USA] program and Lakin statistical processing method [2].

RESEARCH RESULTS

Biological agent *Beauveria tenella* VD-85 strain against the Big Caspian termite (*A.ahngerianus* Jacobs.) belonging to the genus *Anacanthotermes* in natural conditions, "Sermit (20%) sus" from chemical preparations. k.", "Piralaks-Lux" and local raw materials "Oligomer superplasticizer" in the process of studying the biological effectiveness of 30 days after the experiment, one termite nest was dug for each preparation and the number of termite layers was counted. In this case, the number of termites in nests where the mixture of biological agent *B. tenella* VD-85 strain (1107) was used was on average 1676.4 ± 3.1 ; (100%) has been reached. 260.3 ± 1.1 on the 30th day when we studied the effectiveness of the biological agent during the experiment; 811.7 ± 1.8 on 60 days; On the 90th day, a total of 1253.5 ± 0.9 termite species were killed within days, and the biological efficiency was $422.9 \pm 0.5/74.7\%$ compared to the live pest.

During research, Cermit (20%) was used in chemical preparations. k., the total average number of termites in the tests of "Piralaks-Lux" mixture was $1805.9 \pm 4.2/1876.2 \pm 3.1$ in 100% indicators. During research, Cermit (20%) was used in chemical preparations. k., the total average number of termites in the "Piralaks-Lux" mixture tests was $1805.9 \pm 4/1876.2 \pm 3.1$ at 100%. Killing in days based on the effectiveness of chemical preparations against termites 30 days Cermit (20%) sus. k., 278.5 ± 1.3 in the feed in the mixture; 297.3 ± 1.4 in "Piralaks-Lux"; $976.8 \pm 1.9/998.9 \pm 2.2$ by 60 days; On the 90th day, this indicator was $1497.1 \pm 0.8/1686.5 \pm 0.9$, and the number of live termites was $308.8 \pm 0.1/189.7 \pm 0.1$, and the biological efficiency was 82.9 % was found to be 89.8% (Table 1).

1-Table

Biological agent *Beauveria tenella* VD-85 straini, chemical preparations against the termite Big Caspian termite (*A.ahngerianus* Jacobs.) of *Anacanthotermes* (Jacobs) "Cermit (20%) sus. k.", "Piralax-Lux" and local raw material "Oligomer superplasticizer" Biological efficiency

№	Biological means, chemical preparations and local raw materials	Number of termites in nests	Number of termites killed in days			Biological efficiency (number and % of living termites)	
			30 days	60 days	90 days		
1	<i>Beauveria tenella</i> ВД-85 штамми ($1 \cdot 10^7$)	$1676,4 \pm 3,1$ (100%)	$260,3 \pm 1,1$	$811,7 \pm 1,8$	$1253,5 \pm 0,9$	$422,9 \pm 0,5$	74,7%
2	"Sermit (20%) сус. к."	$1805,9 \pm 4,2$ (100%)	$278,5 \pm 1,3$	$976,8 \pm 1,9$	$1497,1 \pm 0,8$	$308,8 \pm 0,1$	82,9%
3	"Piralax-Lux"	$1876,2 \pm 3,1$ (100%)	$297,3 \pm 1,4$	$998,9 \pm 2,2$	$1686,5 \pm 0,9$	$189,7 \pm 0,1$	89,8%
4	"Oligomer superplasticizer"	$2005,2 \pm 3,5$ (100%)	$304,5 \pm 1,4$	$517,7 \pm 2,1$	$1602,7 \pm 0,8$	$402,5 \pm 0,2$	79,9%
5	Control	$2201,4 \pm 4,2$ (100%)	-	-	-	-	100%

Note: (n=3, M±m: significance vs. control P<0.01)



When studying the effectiveness of "Oligomer superplasticizer" taken as a local raw material against termites, the total average indicator of the number of pests in the initial nest was 2005.2 ± 3.5 (100%), the number of termites that died during the experiment was 304.5 ± 1.4 on the 30th day; 517.7 ± 2.1 on 60 days; It turned out to be 1602.7 ± 0.8 on the 90th day. Biological efficiency was $402.5 \pm 0.2 / 79.9\%$ compared to live termites.

In general, according to the results of scientific studies, during the process of digging termite nests, the toxic food based on the chemical drug "Piralax-Lux" and "Oligomer superplasticizer" obtained as a local raw material is almost completely transported from the infected area, but the toxic food is stored in the food collection places without being consumed. noted. In this case, the attractiveness of "Piralax-Lux" and "Oligomer superplasticizer" to termites in the nest was felt.

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UDC 633/635

RESEARCH AND ASSESSMENT OF THE NEED FOR NITROGEN FERTILIZERS OF THE EARLY MATURING RICE VARIETY "ALMAZ" DEPENDING ON THE PLANTING TIME

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ANNOTATION

The article discusses the study and assessment of the need for nitrogen fertilizers in the early ripening rice variety "Almaz" depending on the planting date. During the study, the agrophysical properties of the soil down to the groundwater level were studied, and the genetic layer of the soil was also studied. In an experiment conducted in a greenhouse, 3 different doses of mineral fertilizers were used for the Almaz rice variety.

KEY WORDS: sector, period, planting, nitrogen, phosphorus, experience, greenhouse, volume, products.

INTRODUCTION

The role and importance of the agricultural sector in ensuring food security of the population on a global scale is increasing every day. In particular, in our country there is an urgent issue of using available resources and opportunities to guarantee the supply of agricultural products to the population, further increasing productivity and interest, introducing scientific achievements and modern approaches to the field. To do this, in the Decree of the President of the Republic of Uzbekistan, dated 02.02.2021 No. PP-4973 "On measures for the further development of rice growing" in 2021, at least 20% of the total area of rice fields must be planted with seedlings, 50% of the land must be leveled with laser technology, 30% must be sowed with modern seeders, and in 2022 it is planned to further increase these figures.

Today, 100-110 thousand hectares of rice are sown in our country, the average yield is 35-38 centners per hectare, and the total yield is 395 thousand tons. This quantity can only minimally satisfy the demand for rice, which is one of the staple foods of the growing population of our country.

According to official data, about 55 thousand tons of rice products are imported annually to fully satisfy the population's demand. In order to obtain a high yield of rice in our republic, meet the population's demand for rice products, as well as save foreign currency by reducing the volume of rice imports, breeding high-yielding varieties that are resistant to soil and climatic conditions, having grain quality indicators, the development and implementation of highly efficient and resource-saving agricultural technologies in their cultivation is one of the most important tasks

MATERIAL AND METHODOLOGY

To solve the above problems, in 2022-2023, in the farm named after Omar Allamuratov Nukus district of the Republic of Karakalpakstan, experiments were conducted on fertilizing the Almaz variety as a standard rice variety. Since the winter of 2022, the experiment has been carried out in the greenhouse of the Institute of Agriculture and Agricultural Technologies of Karakalpakstan. To do this, soil from the farm was brought to the greenhouse and adapted for the experiment. Before the experiment, the agrochemical and agrophysical properties of the soils were tested in laboratory conditions.

RESEARCH RESULTS

During the study, in order to study the agrophysical properties of the soil, the soil was excavated to the groundwater level, its genetic layers were studied and samples were taken:

- 0-30 cm - the color changes from light gray to dark gray, traces of worms and insects are found, plant remains and roots are present, the top layer is dry, small particles of salt, light sand are found.
- a subsoil layer 30-48 cm thick, dark gray in color, containing small particles of salt, traces of roots and insects, which pass into the next layer of medium sandy composition.
- 48-80 cm - average sand moisture, small remains of roots, a reddish-brown



layer, rare plant remains and traces of insects.

Table 1
Mechanical composition of the soil of the experimental plot, %

Cross section of soil №	Soil layer, cm	Soil particles, mm								Name according to the mechanical composition of the soil
		>0,25-	0,25-0,10	0,10-0,05	0,05-0,01	0,01-0,005	0,005-0,001	<0,001	<0,01	
5	0-30	1,06	3,26	24,60	36,66	10,11	13,86	10,45	34,42	Medium sandy
	30-48	1,81	2,57	26,32	21,73	20,15	15,70	11,72	47,57	Heavy sandy
	48-80	1,07	1,72	19,91	40,49	10,81	14,31	11,69	36,81	Medium sandy
	78-120	1,76	1,30	11,00	52,10	7,90	18,40	9,30	45,60	Heavy sandy
	120-205	1,65	1,10	24,25	23,31	20,18	21,04	8,47	49,69	Heavy sandy
	205-245	1,93	1,00	9,70	47,00	9,80	12,70	19,80	42,30	Medium sandy

The mechanical composition of this soil is layered: the upper layer is medium loam; the lower layer is heavy loam and sandy loam (Table 1).

Table 1
Physical properties of soils in the experimental plot

Soil layer, cm	Volume mass, g/cm ³	Relative weight g/cm ³	Porosity, %
0-10	1,35	2,65	48,7
10-20	1,34	2,67	46,4
20-30	1,35	2,67	46,7
30-40	1,35	2,68	47,2
40-50	1,33	2,66	48,1
50-60	1,31	2,67	45,4
60-70	1,33	2,65	47,6
70-80	1,38	2,60	47,5
80-90	1,34	2,60	46,4
90-100	1,33	2,63	46,0
0-30	1,35	2,66	47,3
0-70	1,34	2,66	47,2
0-100	1,34	2,65	47,0

The specific gravity of meadow-alluvial soils is 2.66 g/cm³ in the arable soil layer in spring, on average 2.65 g/cm³ per 0-100 cm, volumetric mass per 0-30 cm 1.35, 1 per 0-100 cm. 70 cm. It was equal to 1.34 g/cm³ at 34 and 0-100 cm, and the porosity at 0-100 cm was 47.0% (Table 2).

In meadow-alluvial soils, the humus content (0-30 cm) was 0.5-0.6%, total nitrogen 0.040-0.050%, total phosphorus 0.160-0.170%, total potassium content 1.80-1.84% (Table .3).

Table 3
Agrochemical properties of meadow-alluvial soil

Soil layers, cm	Humus	Gross, %			Active, mg/kg	
		Nitrogen	Phosphorus	Potassium	P ₂ O ₅	K ₂ O
0-10	0,56	0,051	0,174	1,85	20,07	180,1
10-20	0,51	0,050	0,171	1,85	17,60	175,4
20-30	0,53	0,050	0,172	1,82	13,20	156,6
30-40	0,50	0,043	0,162	1,80	10,06	133,4
40-50	0,55	0,030	0,160	1,78	8,36	109,4
0-30	0,53	0,050	0,170	1,84	16,96	170,70
0-50	0,53	0,040	0,170	1,82	13,86	150,98

In an experiment conducted under Greenhouse conditions, 3 different doses of mineral fertilizers were used for the Almaz rice variety.



Among nitrogen fertilizers, carbamide (urea) fertilizer was used. When tilling the soil, 35% of the annual norm of nitrogen fertilizers was applied, at the beginning of tillering - 35%, at full tillering - 30%. Due to the salinity of our soils, the application of phosphorus fertilizers has been increased by 2-3.5 times. From phosphorus fertilizers, granular amphos was used, containing 46-60% phosphorus and 11-12% nitrogen. Before planting, 100% of the annual phosphorus norm was added to the soil. Due to the fact that the amount of potassium in the arable layers of our experimental plot did not reach 200 mg/kg, 50% of the annual amount of potassium fertilizers was applied before planting, and the rest during the period of full flowering.

Table 4
Application of mineral fertilizers for the Almaz rice variety in a greenhouse

Option	Variety	N	P	K	Ear length	Amount of Grain Per Ear	Weight of grain in an Ear	Weight 100 grains	Real productivity ts.
3	Almaz	90	90	120	23,2	202	3,0	32,8	65,4
5	Almaz	120	90	120	24,0	208	3,2	33,3	72,7
7	Almaz	150	90	120	23,8	208	3,0	33,0	72,4
9	Almaz	180	90	120	24,1	212	3,0	33,0	72,6

CONCLUSIONS

In our experiments, when using rice varieties in the ratio H120P90K120, the highest indicators of ear length, grain quantity per ear, grain weight per ear, 100-grain weight and yield were observed in the Almaz rice variety.

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UDC 633.88

TECHNOLOGY OF GROWING SWEET CLOVER (*MELILOTUS OFFICINALIS* (L.) LAM) IN THE CONDITIONS OF KARAKALPAKSTAN

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ANNOTATION

The article discusses the features of the technology for growing sweet clover (*Melilotus officinalis* (L.) Lam). *Melilotus officinalis* is grown as a medicinal plant, also as a green manure. Sweet clover does not have very high demands on the soil composition, has the greatest love for light, and is very resistant to drought.

KEY WORD: plantation, green manure, drought, soil, coumarin, nitrogen, phosphorus, pests, disease.

Today, 112 species of medicinal plants are allowed to be used in medicine in Uzbekistan. About 80% of them are naturally growing plants, but in recent years large areas of artificial plantations have increasingly appeared. According to the World Health Organization, 60% of medicines used in modern medicine are prepared and produced on the basis of medicinal plant materials.

In recent years, the republic has been implementing consistent reforms on the protection of medicinal plants, the rational use of natural resources, the construction of plantations for the cultivation of medicinal plants and their processing. In this regard, Resolution of the President of the Republic of Uzbekistan dated April 10, 2020 No. PP-4670 "On measures for the protection, cultural cultivation, processing of wild medicinal plants and rational use of available resources" was adopted.

Among the medicinal plants, sweet clover *Melilotus officinalis* is of great importance. Medicinal clover (lat. *Melilotus officinalis*) is a biennial herbaceous plant, a species of the genus Sweet clover of the legume family of the Moth family. The herbaceous young plant sweet clover (*Melilotus*) is a member of the Legume family. Sweet clover is a valuable green manure and fodder plant, and is also grown as a plant with medicinal properties.

Sweet clover (yellow clover) grows in Europe, the Caucasus, Asia Minor and Central Asia, and is common in Iran, Northwestern China, Tibet, and Russia. Medicinal sweet clover is undemanding to soil and grows in wastelands on embankments, along railways and highways, in gardens and vegetable gardens as a weed, in disturbed meadows; Sweet clover can withstand light salinity, is frost-resistant and drought-resistant.

The height of the branched stem of sweet clover can vary from 0.5 to 2 meters. Tap root. The leaf blades are trifoliate (similar to clover) and consist of serrated leaflets. The apical, loose, elongated racemes consist of small flowers of yellow or white color. The fruit is a naked bean, round in shape, and reaching 30–40 millimeters in length. The seeds remain viable for a relatively long time, more precisely, for 14 years.

The composition of the herbaceous plant *Melilotus officinalis* includes coumarin, tannins and fat-like substances, essential oil, flavonoids, ascorbic acid, carotene, tocopherol, sugars, mucus and glycosides; in the process of their breakdown, coumarin is obtained, which is a crystalline substance with a rather pleasant hay aroma.

Preparations based on sweet clover are used in the treatment of bronchitis, hypertension, constipation, hysteria, migraine, insomnia, rheumatoid and gouty arthritis, cough, dropsy, atherosclerosis, flatulence, neurasthenia, increased nervous excitability, diffuse toxic goiter, and They are also used for purulent wounds, inflammation of the genital organs in women, abscesses and boils.



Sweet clover is grown as a green manure because it helps improve the structure of the soil and saturate it with a substance such as nitrogen. It is also grown as a forage plant, because it forms a nutritious biomass, which contains a very large amount of vitamins. The plant is used in the perfume industry; it is used to fix the aroma. This plant is one of the best honey plants. From the nectar collected from the flowers of such a culture, white or amber honey is obtained, which has a very pleasant vanilla aroma.

In the conditions of Karakalpakstan, the territory of the meeting of citizens of the mahalla (MCM) "Kutly Makan" was chosen as the place of experiment. During the experiment on May 5, 2022, seeds were sown on well-plowed and leveled areas. At a temperature of 25°C, the seed sowing depth was 2-3 centimeters. 20-24 kg of seeds were planted per hectare. Seed germination was 55-60%. On May 20, 2022, the length of the leaves was 1.5-2 cm. In the first year, the plant produces only one pod 90-100 cm. On May 25, 2022, the plant already had 3 leaves, 2-2.5 cm long. On May 30, 2022 the plant had 4-5 leaves, the length of which was 3-3.5 cm.

In the first year they water 2-3 times, they grow well. In the second year, it begins to grow in early spring, and by the summer months its height is 200-250 cm and even higher, and it produces a lot of flowers. Flowering of sweet clover lasts 20-25 days, starting from the first five days of June, the seeds ripen in July-August.

Sweet clover is not very demanding on soil composition. This herbaceous plant grows well on chernozem, solonetz, slightly podzolic and carbonate soil.

Sweet clover has the ability to accumulate nitrogen, as well as extract nutrients from poorly soluble soil compounds, as a result of which it is able to grow and develop well even on poor or depleted soil. Plants have the greatest light-loving properties.

Before planting, the area should be carefully prepared. To do this, it must be dug up with the application of phosphorus and potassium fertilizers, so 50 grams of superphosphate and 20 grams of potassium salt are taken per square meter.

Sweet clover, like almost all agricultural crops, is susceptible to a wide variety of diseases, and various pests that damage the plant can also settle on it. Most often, this plant is affected by powdery mildew, ascochyta blight, downy mildew, root bacteriosis, septoria blight and yellow mosaic. As a rule, bushes are affected by fungal diseases only in cases where they are grown in conditions that are not entirely suitable for a given crop. It is recommended to treat diseased plants as soon as possible with a fungicide solution, for example, Fundazol, Maxim, Bordeaux mixture, Abiga-Peak, etc. Such pests can settle on this plant; in order to get rid of such harmful insects, experts advise using systemic insecticides, for example, such as: Aktellik, Aktaru, Karbofos or other products that have a similar effect.

Thus, according to the results of the study, it is recommended to plant sweet clover in the conditions of Karakalpakstan, since this plant, having healing properties, improves the health of saline areas and improves the soil. Sweet clover is not very demanding on the composition of the soil, has the greatest light tolerance, and is very resistant to drought.

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MULTI-LEAF DISEASE DETECTION AND RECOMMENDS PESTICIDE USING DEEP LEARNING

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ABSTRACT

This research describes a proposed system that uses deep learning and image processing methods to identify and categorize plant leaf diseases. The approach that is suggested comprises of two categorization methods and compares them. The first approach comprised of multiple steps leading up to the classification stage and was based on the support vector machine (SVM) algorithm. Because they are the most prevalent plant species worldwide and in Iraq specifically, tomatoes, peppers, and potatoes are the specific plant species that we use in our work. Convolution neural networks (CNNs) were employed in the second approach for classification. Fifteen classes were identified using these two methods: three classes for healthy leaves and twelve classes for illnesses of various plants that were found, such as fungi, bacteria, etc. The comparison's outcome demonstrates that the CNN algorithm is preferred over the SVM algorithm in terms of speed and accuracy, creating a system that is reliable and accurate for the identification and categorization of plant leaf diseases. The effectiveness of the system is evaluated using evaluation measures such as accuracy, precision, recall, and F1-score. Additionally discussed are the moral and environmental aspects of using pesticides.

This strategy's practical use is illustrated by case studies and real-world examples, which also highlight how it may be used to increase agricultural yields, lower resource consumption, and support sustainable farming methods.

Finally, this study highlights how CNNs can revolutionize both pesticide recommendation and the detection of multi-leaf diseases. The integration of advanced technology with agricultural methods in this study promotes sustainable farming practices and global food security.

KEYWORDS: *Deep Learning, Convolutional Neural Networks (CNNs), Multi-Leaf Disease Detection, Pesticide Recommendation, Agriculture, Plant Disease Diagnosis, Image Analysis, Data Augmentation, Transfer Learning.*

I. INTRODUCTION

With agriculture feeding the world's expanding population, food security is based on a solid foundation. But this important industry continues to encounter obstacles, the most significant of which being the rise and spread of plant diseases. When it comes to agriculture, multi-leaf diseases are a serious concern since they can harm a wide range of crops, including common crops like tomatoes, potatoes, and wheat. These illnesses lower crop output while also lowering the standard of agricultural products.

Conventional techniques for managing pests and detecting diseases in agriculture frequently depend on manual examination and specialized knowledge. Although beneficial, these techniques have several built-in drawbacks, such as subjectivity, labor-intensive procedures, and a human mistake risk.

In addition to offering practical pesticide recommendations, this research focuses on addressing the crucial need for quick and accurate multi-leaf disease detection in crops. This study aims to transform the agricultural environment by utilizing the potential of deep learning, namely Convolutional Neural Networks (CNNs). Because CNNs are so good at image interpretation, they are a great option for automating the diagnosis of plant diseases based on symptoms seen on the leaves.

The principal aim of this study is to design a CNN-based system for the automatic and precise detection of multi-leaf diseases in crops. With the use of plant image analysis, the system can be trained to differentiate between diseased and healthy leaves, providing farmers and other agricultural experts with an invaluable tool.

Furthermore, by using a pesticide recommendation system, this research goes beyond illness detection. Based on the identified disease, crop species, and other contextual parameters, the system recommends suitable pesticide treatments.

The concepts of CNNs, deep learning, and the research technique will all be covered in detail in the parts that follow. We'll look at the difficulties and possibilities in detecting multi-leaf diseases, enhancing data, and the moral implications of using pesticides. Through case studies and actual situations, the study also emphasizes the usefulness of the suggested strategy, demonstrating how



it can increase agricultural yields, use less resources, and support sustainable farming methods. Global food security is ultimately a goal that is furthered by this research's combination of cutting-edge technology with agricultural practices.

Artificial neural networks that are especially well-suited for image analysis are called convolutional neural networks. Computer vision and medical diagnostics are two areas in which their capacity to automatically learn and identify complex patterns in images has proven invaluable. When it comes to agriculture, CNNs can be extremely helpful in the early diagnosis of diseases, allowing farmers to take preventative action to avoid crop damage and output losses. The goal of this project is to provide timely, accurate, automated pesticide recommendations and multi-leaf disease detection. There are many possible advantages to this strategy. More sustainable farming methods, higher crop yields, and a decreased need for broad-spectrum insecticides can all result from it. By assisting farmers in protecting their crops from pests and illnesses, it can also improve global food security.

II. OBJECTIVES

- Develop a specialized CNN model for accurate Multi-leaf disease identification.
- Curate a diverse dataset with images of healthy and diseased plants.
- Apply data augmentation techniques to enhance model performance.
- Optimize model parameters for efficient disease classification.
- Validate the model's effectiveness through comparative analysis.

The following are the goals of a study that employed cutting-edge technology and deep learning techniques to detect multi-leaf diseases and propose pesticides in agriculture:

Automated Disease Detection: Provide a system that can identify and categorize multi-leaf diseases in crops automatically. This will decrease the need for manual inspection and enable quick and precise identification.

High Detection Accuracy: To guarantee dependable and timely diagnosis and enable timely disease intervention, achieve a high degree of accuracy in disease identification.

Pesticide Recommendation: Put into place a system that combines disease identification with pesticide recommendations, providing customized advice for efficient pest control.

Environmental and Health Considerations: To reduce the impact on ecosystems, non-target creatures, and human health, give priority to environmentally responsible and safe pesticide recommendations.

III. METHODOLOGY

3.1 Data collection

A large dataset of plant photographs, including pictures of both healthy and diseased leaves, is first gathered for the research. To ensure the robustness of the system, these photos are gathered from a variety of crop types and geographical locations. Each photograph contains carefully documented metadata, including disease kind, plant species, and geographic location. To get rid of redundant information and discrepancies, the dataset is organized and cleansed.

3.2 Dataset Preprocessing

To artificially expand the quantity and diversity of the obtained dataset, data augmentation techniques are performed. To replicate different climatic conditions and illness severities, techniques including rotation, flipping, and scaling are used. To guarantee consistency throughout the collection, preprocessing procedures including resizing, normalizing, and standardizing images.

3.3 Data Architecture Selection and Customization:

A critical first step is choosing a suitable CNN architecture. To meet the unique needs of multi-leaf disease detection, researchers can take a tried-and-true architecture such as VGG, ResNet, or Inception and modify it. In order to improve the performance of the network, customization involves changing the quantity of layers, filters, and activation functions.

3.4 Transfer Learning and Model Training

Utilizing CNN models that have already been trained, usually on extensive picture datasets such as ImageNet, transfer learning is facilitated. Using the plant disease dataset, researchers refine the pre-trained model, which acts as a base. Training entails providing labeled data to the network, applying suitable loss functions (such as cross-entropy loss), and maximizing model weights by gradient descent-based methods.

3.5 Pesticide Recommendation System

Pesticides and their attributes, like cost, toxicity, and efficacy, are entered into a database. Based on the type of crop, the illness that has been discovered, and other contextual information, researchers create a recommendation system that identifies



appropriate pesticides. In order to minimize environmental damage, the system's recommendations promote effective disease control.

3.6 Evaluation and Validation

Accuracy, precision, recall, F1-score, AUC-ROC, and other well-known evaluation measures are used in conjunction with a separate validation dataset to thoroughly assess the system's performance. In terms of sustainability and disease control, the efficacy of the pesticide recommendations is also evaluated.

3.7 User Interface and Usability Testing

Professionals in agriculture and farmers can engage with the system with ease because to its straightforward interface design. We perform usability testing to make sure the interface satisfies end users' needs and presents findings and suggestions in an understandable and practical way.

3.8 Real-World Testing and Integration

The effectiveness of the method is confirmed in actual farming environments with a range of crop types and weather circumstances. To make the system more functional and user-friendly, user feedback is actively sought for and refined.

3.8 Documentation and Reporting

The model architecture, results, hyperparameters, dataset specifics, and full technique are all well documented. The results, difficulties, and suggestions for implementing the created system in farming operations are compiled into an extensive research paper.

The research aims to improve crop management and food security by using this thorough technique to develop a workable and efficient solution for multi-leaf disease diagnosis and pesticide recommendation.

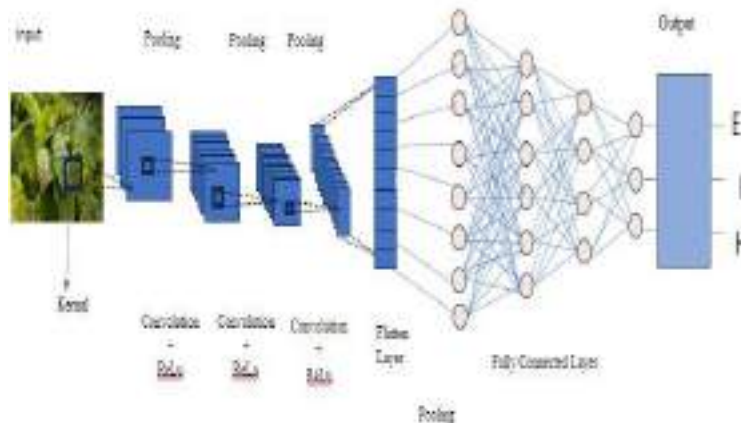


Fig 1: CNN Architecture

3.9 Model Training

Model training is a crucial phase in deep learning where the algorithm learns patterns and relationships within the data. A Convolutional Neural Network (CNN) is trained to classify leaf diseases. The model is fed batches of preprocessed images from the training set, and it adjusts its internal parameters through a process called back propagation. This process iterates over multiple epochs, refining the model's ability to accurately classify images. The choice of optimizer (Adam) and loss function (sparse categorical cross-entropy) guide this training process, aiming to minimize the error between predicted and actual labels. The model's performance is evaluated on a separate validation set to monitor its progress.

IV. RESULTS

Illnesses are the biggest threat to agriculture and agricultural output. This is the driving force behind our decision to use computer capabilities and technologies to quickly and robustly develop a system. This system compares two distinct algorithms for the classification and detection of plant leaf diseases. These two algorithms are Convolutional Neural Network (CNN) and Support Vector Machine (SVM). In terms of performance and accuracy, the comparison findings favored the deep learning CNN method; we obtained a screening accuracy of 98%, whereas SVM's accuracy was only 57.11%, with an explanation provided for the latter's inaccuracy.

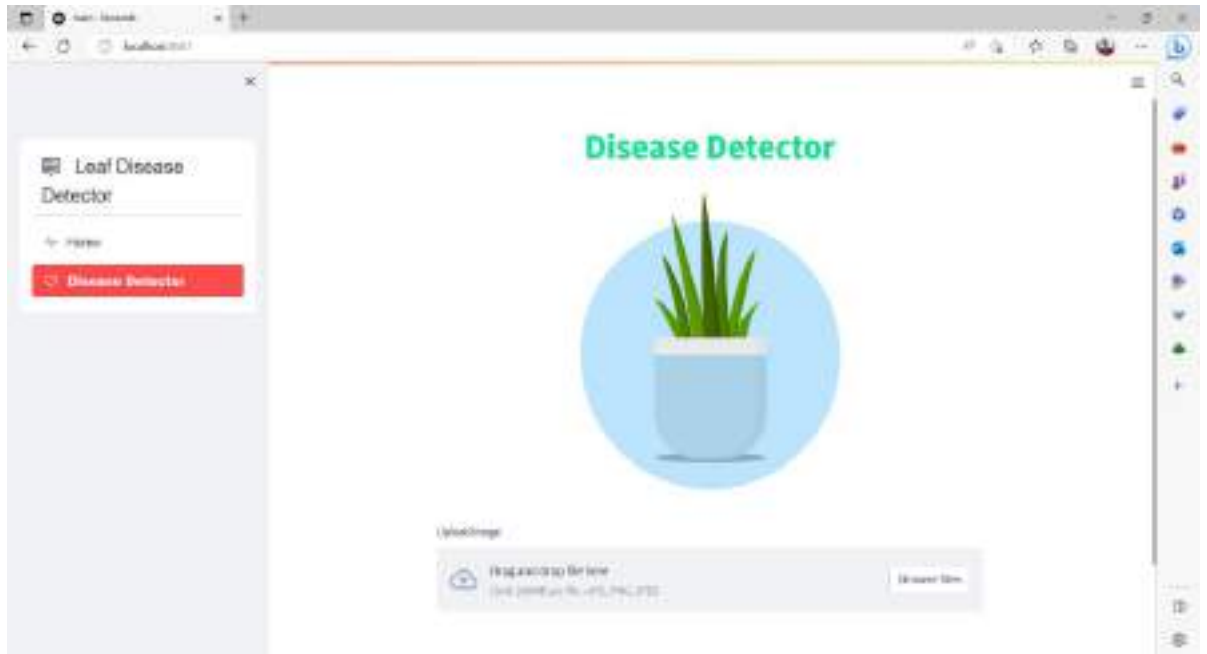


Fig.2: Interface to Upload a Leaf

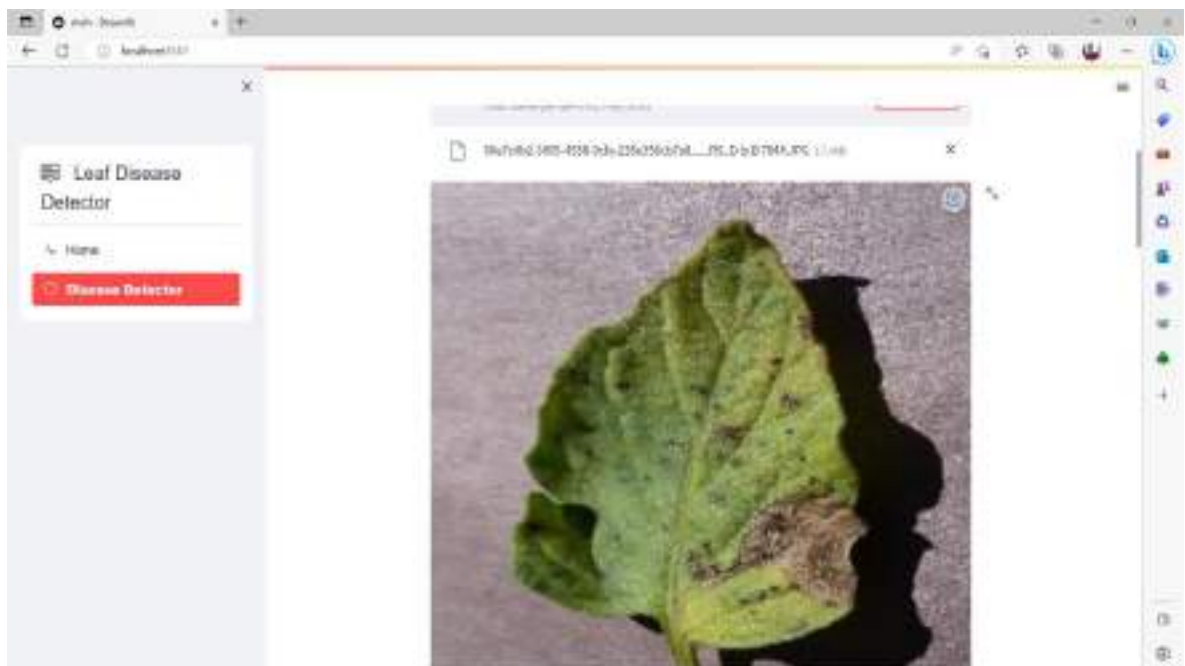




Fig 4: Tomato Leaf which is effected with disease

Figure 4 This image displays a tomato leaf afflicted by blight, evident in its distinct dark lesions, signaling a potential fungal infection by the CNN it preprocess the image and extract the relevant features from the leaf and predict the disease and recommends Pesticide.

Fig.5: Tomato leaf disease and its causes

Figure 5 A Tomato leaf is shown suffering from late blight, characterized by water-soaked lesions and sporulation on the undersides.



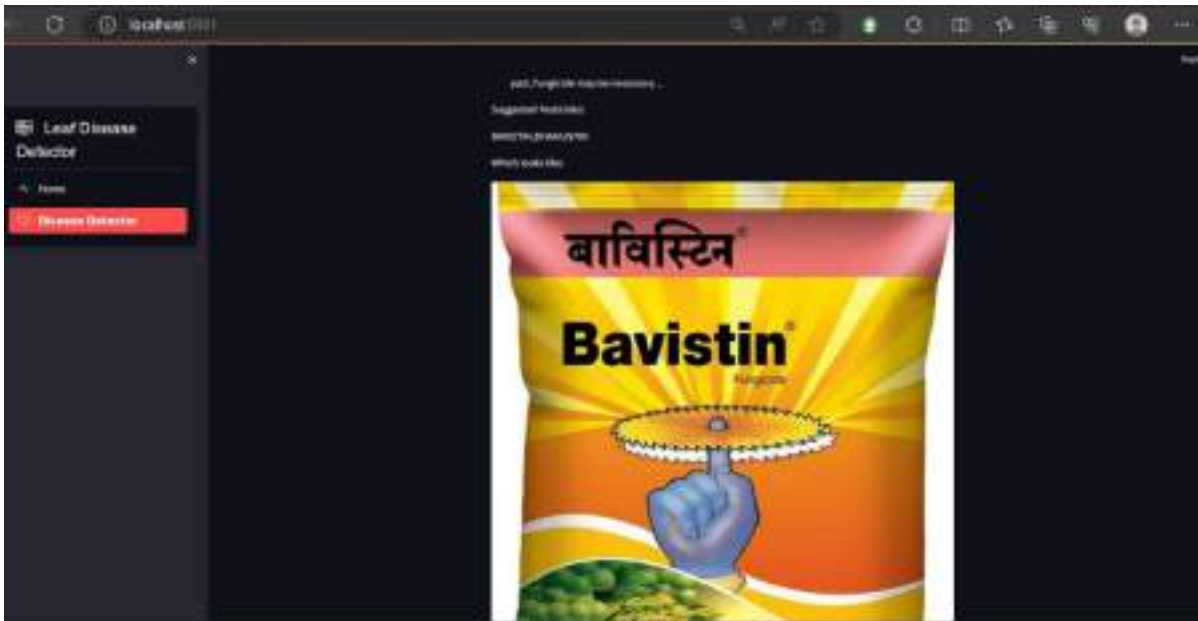


Fig.6: Recommends Pesticide

Figure 6 This picture shows pesticide that is recommended for the curing of leaf disease .

V. CONCLUSION

Consequential leaf disease detection and pesticide recommendation using Convolutional Neural Nets (CNNs) have demonstrated encouraging outcomes. The CNN can detect and precisely diagnose the type of disease on the leaves after being trained on a sizable dataset of photos of both healthy and damaged plants. Decreased crop losses and increased yields are possible as a result of the early disease detection and prompt pesticide treatment. In addition, depending on the kind of disease found, the CNN can be used to suggest particular insecticides. In addition to financial savings and environmental advantages, this customized strategy may result in less pesticide use and more efficient pest management.

Overall, the use of CNNs for multiple leaf disease detection and pesticide recommendation holds great potential for improving agricultural productivity and sustainability. However, further research and testing are needed to optimize the model's performance and ensure its practicality and scalability for real-world applications.

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FORMULATION DEVELOPMENT & EVALUATION OF SUSTAINED RELEASE GASTRO-RETENTIVE FLOATING TABLETS OF AMBROXOL HYDROCHLORIDE

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ABSTRACT

Controlled release (CR) dosage forms have been extensively used to improve therapy with several important drugs. However, the development processes are faced with several physiological difficulties such as the inability to restrain and localize the system within the desired region of the gastrointestinal tract and the highly variable nature of the gastric emptying process. Ambroxol HCl is a secretolytic agent used in the treatment of respiratory diseases associated with viscid or excessive mucus. It is the active ingredient of Mucosolvan, Mucobrox, Lasolvan, Mucoangin, Surbronc and Lysopain. The substance is a mucoactive drug with several properties including secretolytic and secretomotoric actions that restore the physiological clearance mechanisms of the respiratory tract, which play an important role in the body's natural defence mechanisms.

KEY WORDS- *Controlled release (CR) dosage forms, Physiological difficulties, Gastric emptying process, Ambroxol HCl, Mucoactive drug.*

1. INTRODUCTION

GASTRORETENTIVE DRUG DELIVERY SYSTEM

Controlled release (CR) dosage forms have been extensively used to improve therapy with several important drugs. However, the development processes are faced with several physiological difficulties such as the inability to restrain and localize the system within the desired region of the gastrointestinal tract and the highly variable nature of the gastric emptying process. This variability may lead to unpredictable bioavailability and time to achieve plasma level. On the other hand, incorporation of the drug in a controlled release gastroretentive forms (CR-GRDF) which can remain in the gastric region for several hours would significantly prolong the gastric residence time of drugs and improve bioavailability, reduce drug waste, and enhance the solubility of drugs that are less soluble in high pH environment.

Ambroxol HCl is a secretolytic agent used in the treatment of respiratory diseases associated with viscid or excessive mucus. It is the active ingredient of Mucosolvan, Mucobrox, Lasolvan, Mucoangin, Surbronc and Lysopain. The substance is a mucoactive drug with several properties including secretolytic and secretomotoric actions that restore the physiological clearance mechanisms of the respiratory tract, which play an important role in the body's natural defence mechanisms. It stimulates synthesis and release of surfactant by type II pneumocytes. Surfactant acts as an anti-glue factor by reducing the adhesion of mucus to the bronchial wall, in improving its transport and in providing protection against infection and irritating agents.

2. MATERIAL AND INGREDIENTS

Ambroxol Hydrochloride was obtained from Alembic Pharma Vadodra. As a Gift Sample, HPMC K 15, HPMC K 4, MCC and PVP K30 was obtained from Mapromax, Life sciences Pvt. Ltd., Dehradun, Talc, Magnesium state, Sodium bi carbonate, Citric acid was obtained from Renkem chemicals Ltd, Mumbai.

3. PREFORMULATION STUDIES

Preliminary stability studies involve chemical, physiochemical and, when necessary, microbiological tests.

Stability studies are sometimes thought of as concerning only chemical stability but the stability of physiochemical characteristics are also important. These are some examples of preformulation studies are- Organoleptic properties, particle shape, size, Melting point, solubility, partition coefficient etc.



4. METHOD OF PREPARATION

Dry granulation method

In dry granulation process the powder mixture is compressed without the use of heat and solvent. It is the least desirable of all methods of granulation. The two basic procedures are to form a compact of material by compression and then to mill the compact to obtain a granules. Two methods are used for dry granulation. The more widely used method is slugging, where the powder is precompressed and the resulting tablet or slug are milled to yield the granules. The other method is to precompress the powder with pressure rolls using a machine such as Chilsonator.

Table 1: Various formulation of sustained release Gastro-retentive Floating Tablets of Ambroxol Hydrochloride:

Excipients	F ₁	F ₂	F ₃	F ₄	F ₅	F ₆	F ₇
Ambroxol HCl	75	75	75	75	75	75	75
HPMCK 15	25	50	75	100	125	150	-
HPMC K 4	125	100	75	50	25	-	150
PVP K30	15	15	15	15	15	15	15
Citric Acid	25	25	25	25	25	25	25
Sodium Bicarbonate	50	50	50	50	50	50	50
Magnesium Stearate	10	10	10	10	10	10	10
Talc	5	5	5	5	5	5	5

Table 2: List of Sensory characters

S. No.	Sensory characters	Result
1.	Taste	Tasteless
2.	Appearance	White to Off-White
3.	Odor	Odorless
4.	Texture	Crystalline

Table 3: Solubility of Ambroxol HCl

S. No.	Solvent	Solubility
1.	Water	Soluble (+)
2.	Ethanol	Soluble (+)
3.	Methanol	Freely soluble (++)
4.	0.1N HCL	Soluble (+)
5.	0.1N NaOH	Insoluble (--)
6.	Chloroform	Poorly soluble (-)
7.	Acetone	Poorly soluble (-)

Table 4: Melting point of the Ambroxol HCl

S. No.	Melting Point of Ambroxol HCl	Average Melting Point of Ambroxol HCl
1.	220-225° C	220-225° C
2.	219-225° C	
3.	220-225° C	

Table 5: Partition coefficient of the Ambroxol HCl

S. No.	Amount of drug in octanol	Amount of drug in water	Partition coefficient (P _{o/w})	Average partition coefficient
1.	370.08	440.47	0.84	0.84
2.	375.50	447.02	0.84	
3.	365.25	440.06	0.83	

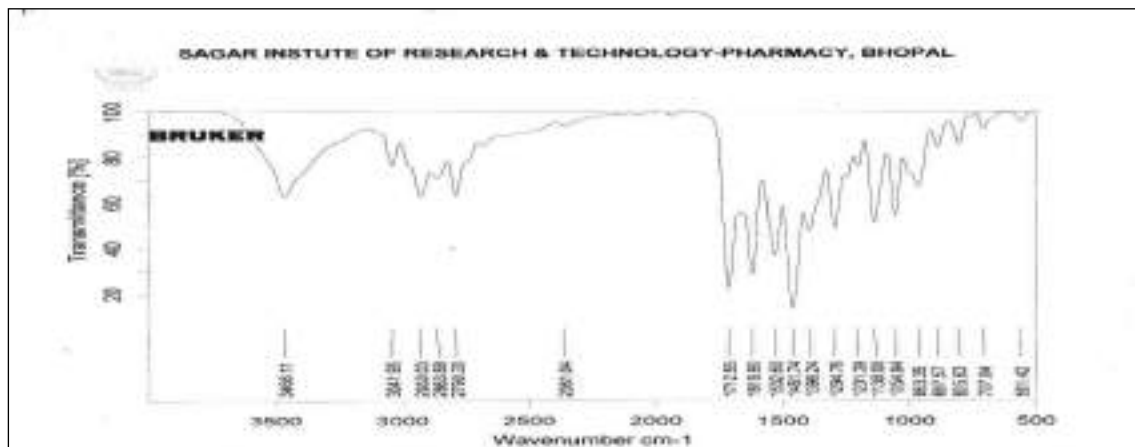


Fig. 1: FT-IR Spectrum of Pure Drug (Ambroxol HCl)

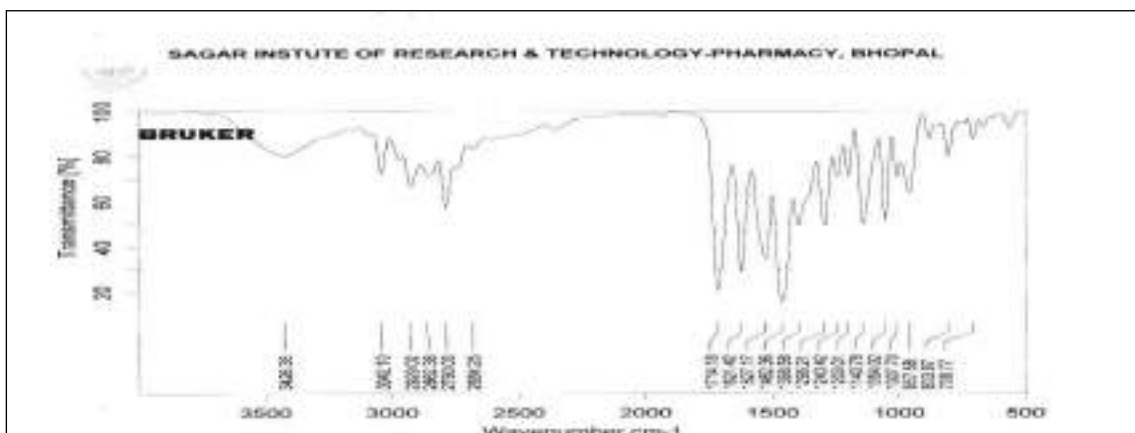


Fig. 2: FT-IR Spectrum of Pure Drug and Excipients

Table 6: Bulk density of Ambroxol HCl

S. No.	Bulk mass	Bulk volume	Bulk density	Avg. bulk density
1.	10 gm	15 ml	0.666 g/ml	0.625 g/ml
2.	10 gm	16 ml	0.625 g/ml	
3.	10 gm	16 ml	0.625 g/ml	

Table 7: Angle of repose of Ambroxol HCl

S. No.	Height of pile	Radius of pile	Angle of repose	Avg. angle of repose
1.	2.3 cm	5 cm	25 °	25 °
2.	2.4 cm	5.1 cm	25 °10'	
3.	2.5 cm	5.4 cm	25 °	

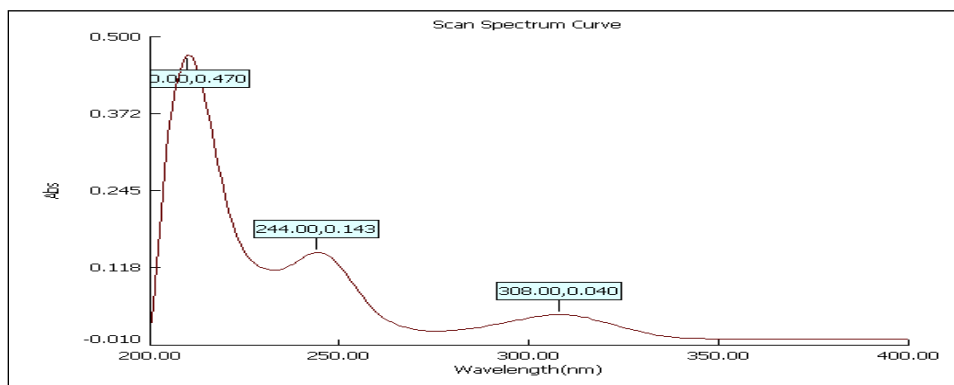


Fig. 3: Standard calibration curve of Ambroxol HCl

Table 8: Calibration curve of Ambroxol HCl

S. No.	Conc. ($\mu\text{g/ml}$)	Absorbance (λ max at 244nm)			
		I	II	III	Average
1	5	0.065	0.066	0.065	0.065
2	10	0.127	0.128	0.127	0.127
3	15	0.174	0.174	0.175	0.174
4	20	0.244	0.245	0.246	0.245
5	25	0.305	0.305	0.306	0.305

Table 9: Evaluation of Sustained Release Gastro-Retentive Floating Tablets of Ambroxol Hydrochloride

Formul.code	Thickness (mm)	Hardness (kg/cm^2)	Weight variation (mg)	Friability (%)	Drug content (%)	Total floating duration (h)
F ₁	3.53 \pm 0.05	4.8	328.19 \pm 2.94	0.58 \pm 0.10	98.33 \pm 0.92	8
F ₂	3.94 \pm 0.10	4.4	332.18 \pm 3.77	0.51 \pm 0.08	97.20 \pm 0.34	10
F ₃	3.96 \pm 0.05	4.5	335.33 \pm 1.50	0.38 \pm 0.12	99.60 \pm 1.39	>12
F ₄	3.95 \pm 0.05	4.7	336.30 \pm 3.30	0.16 \pm 0.04	98.14 \pm 1.69	>12
F ₅	3.93 \pm 0.10	5.2	327.13 \pm 2.83	0.31 \pm 0.07	97.21 \pm 1.07	>12
F ₆	4.03 \pm 0.06	5.3	332.16 \pm 2.33	0.27 \pm 0.05	97.50 \pm 1.81	>12
F ₇	4.05 \pm 0.05	4.8	338.18 \pm 3.11	0.29 \pm 0.08	98.34 \pm 0.37	>12
F ₈	3.98 \pm 0.05	4.5	327.04 \pm 2.56	0.34 \pm 0.12	98.31 \pm 0.91	>12

Table 10: In vitro buoyancy study of Ambroxol HCl FGR floating time

Formulation Code	Buoyancy lag times (sec)	Total Floating Time (hrs)
F ₁	25s	>8
F ₂	35s	>10
F ₃	56s	>12
F ₄	75s	>12
F ₅	60s	>12
F ₆	80s	>12
F ₇	110s	>10



Table 11: In-vitro drug release of floating tablets

Time (hr)	% of Drug Release							
	F ₁	F ₂	F ₃	F ₄	F ₅	F ₆	F ₇	F ₈
0.5	08.23	07.14	07.24	08.23	07.23	07.45	08.32	07.26
1	12.32	10.23	11.45	10.45	10.45	11.23	12.23	11.87
1.5	26.23	22.42	24.23	23.76	31.23	38.23	32.13	26.28
2	42.45	40.32	45.23	44.23	48.23	46.32	47.14	38.21
3	76.34	66.11	67.21	65.71	50.56	67.02	71.13	68.24
4	82.23	77.33	75.11	82.34	55.00	88.13	91.23	89.12
6	82.55	97.13	87.13	83.00	56.00	99.13	92.00	99.25
8	83.00	97.10	94.23	83.21	57.25	99.99	93.00	99.56
12	84.21	97.23	99.26	83.50	57.85	99.87	94.56	99.76

Table 12: Release Kinetics of Optimized Formulation F-5

S.n.	Zero order Time (hrs.)	cum%DRs	First order Time (Hrs.)	LOG CuM%CDt	Cum%CDt	Higuchi equation ROOT T	cum% DRs	Korsemayer - papas log time	log cum% DRs
1	0	0	0	0	0	0	0	0	0
2	0.5	7.24	0.5	1.967	92.76	0.707	7.24	-0.301	0.859
3	1	11.45	1	1.947	88.55	1	11.45	0	1.058
4	1.5	24.23	1.5	1.879	75.77	1.224	24.23	0.176	1.384
5	2	45.23	2	1.738	54.77	1.414	45.23	0.301	1.655
6	3	67.21	3	1.515	32.79	1.73	67.21	0.477	1.827
7	4	75.11	4	1.396	24.89	2	75.11	0.602	1.875
8	6	87.13	6	1.109	12.87	2.449	87.13	0.778	1.940
9	8	94.23	8	0.761	5.77	2.828	94.23	0.903	1.974
10	12	99.26	12	0.130	0.74	3.464	99.26	1.079	1.996

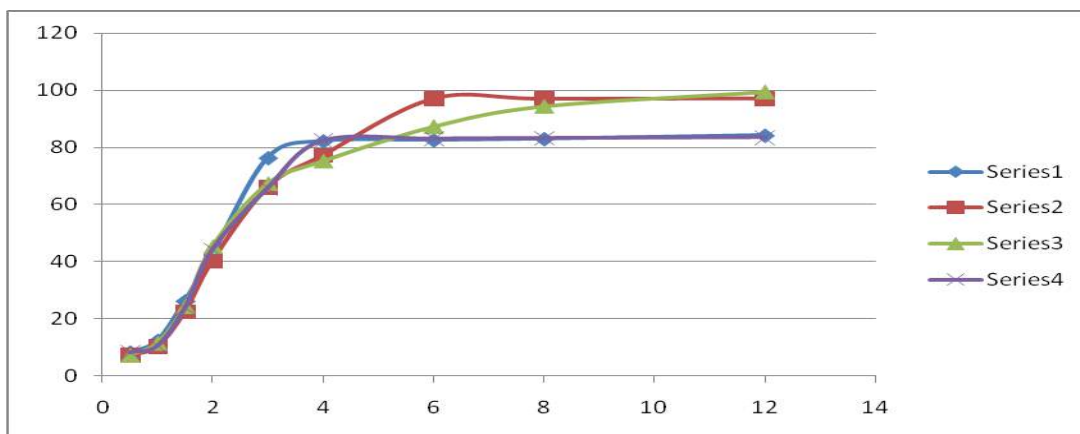
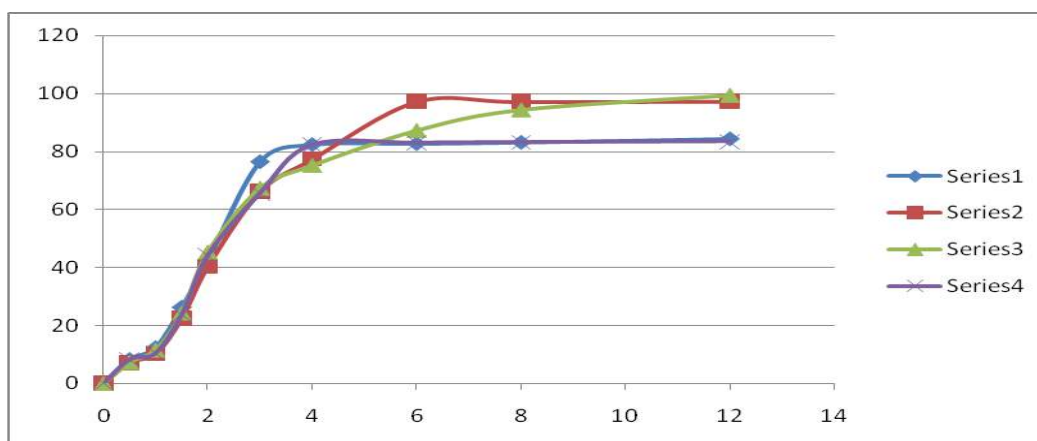


Fig. 4: In vitro Dissolution profiles of batches F1-F4

**Fig. 5: In vitro Dissolution profile of batches F5-F8****Table 13: Evaluation parameters of stability batch of Amroxol Hydrochloride**

Evaluation parameters	Before stability	After 1 month storage	After 2 months Storage	After 3 months storage
Hardness (kg/cm ²)	5.2±0	5.2±0	5.2±0	5.2±0
Friability (%)	0.31	0.33	0.34	0.34
Drug content (%)	98.3±0.49	97.84±0.3	97.45±0.37	97±0.03
Weight variation (mg)	327.13±2.8	327.37±0.39	328.09±0.75	328.03±0.45

5. SUMMARY AND CONCLUSION

Gastro retentive systems can remain in the stomach for long periods and hence can release the drug over a prolonged period of time. The problem of short gastric residence time encountered with an oral CR formulation hence can be overcome with these systems. These systems have a bulk density of less than 1 as a result of which they can float on the gastric contents.

The present study was an attempt to formulate a gastroretentive floating drug delivery system of Ambroxol Hydrochloride, in order to improve its gastric residence time and bioavailability. Floating lag time, and hardness of the tablets of Ambroxol Hydrochloride, by applying the optimization technique

The data from the release profile were fitted to various mathematical models, and fitting to the Korsmeyer and Peppas equation revealed that the release mechanism from the dosage form followed the non-fickian transport.

On the basis of preformulation study of Ambroxol Hydrochloride it was concluded that the drug Ambroxol Hydrochloride was suitable for the preparation of sustained release dosage form. The various dosage form of Ambroxol Hydrochloride are available in market such as tablets, syrups and injectables but its sustained release dosage form increase its gastric residence time and decrease its dosing frequency.

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DEVELOPMENT AND EVALUATION FLOATING MICROSPHERE OF OFLOXACIN

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ABSTRACT

Gastric emptying is a complex process, one that is highly variable and that makes in vivo performance of drug delivery systems uncertain. A controlled drug delivery system with prolonged residence time in the stomach can be of great practical importance for drugs with an absorption window in the upper small intestine. The main limitations are attributed to the inter- and intra-subject variability of gastro-intestinal (GI) transit time and to the non-uniformity of drug absorption throughout the alimentary canal. Floating or hydrodynamically controlled drug delivery systems are useful in such applications. Various gastroretentive dosage forms are available, including tablets, capsules, pills, laminated films, floating microspheres, granules and powders. Floating microspheres have been gaining attention due to the uniform distribution of these multiple-unit dosage forms in the stomach, which results in more reproducible drug absorption and reduced risk of local irritation. Such systems have more advantages over the single-unit dosage forms. Ofloxacin is a quinolone/fluoroquinolone antibiotic. Ofloxacin is bactericidal and its mode of action depends on blocking of bacterial DNA replication by binding itself to an enzyme called DNA gyrase, which allows the untwisting required to replicate one DNA double helix into two. Notably the drug has 100 times higher affinity for bacterial DNA gyrase than for mammalian. Ofloxacin is a broad-spectrum antibiotic that is active against both Gram-positive and Gram-negative bacteria.

INTRODUCTION

Oral controlled release dosage forms have been developed over past three decades. These drug delivery system have a great potential of solving problems associated with conventional multiple dosing system like strict adherence to timely dosing, flip flop plasma concentration, associated side effects due to systemic accumulation of drug. Thus, there are numerous advantages such as improved efficacy, reduced toxicity, improved patient compliance and convenience, reduction in health care cost, etc.

Floating drug delivery systems (FDDS) have a bulk density less than gastric fluids and so remain buoyant in the stomach without affecting gastric emptying rate for a prolonged period of time. While the system is floating on the gastric contents, the drug is released slowly at the desired rate from the system. After release of drug, the residual system is emptied from the stomach. This results in an increased GRT and a better control of the fluctuations in plasma drug concentration. FDDS can be divided into non-effervescent and effervescent systems.

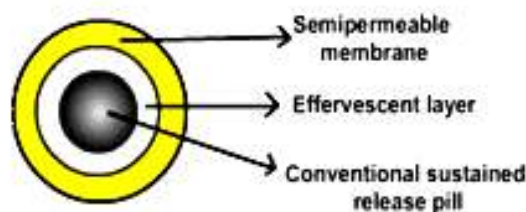


Figure 1: Multiple unit type floating pill with different layers

Ofloxacin is a quinolone/fluoroquinolone antibiotic. Ofloxacin is bactericidal and its mode of action depends on blocking of bacterial DNA replication by binding itself to an enzyme called DNA gyrase, which allows the untwisting required to replicate one DNA double helix into two. Notably the drug has 100 times higher affinity for bacterial DNA gyrase than for mammalian. Ofloxacin is a broad-spectrum antibiotic that is active against both Gram-positive and Gram-negative bacteria.

Ofloxacin acts on DNA gyrase and topoisomerase IV, enzymes which, like human topoisomerase, prevents the excessive supercoiling of DNA during replication or transcription. By inhibiting their function, the drug thereby inhibits normal cell division.



RESEARCH ENVISAGED

An attempt is being made to develop and characterize floating microspheres, which after oral administration could prolong gastric residence time and increase drug bioavailability.

Oral delivery of drug is most preferable route of drug delivery due to ease of administration, patient compliance and flexibility of formulation, etc. From immediate release to site specific delivery, oral dosage forms have really progressed. Several difficulties have been faced in designing controlled release systems for better absorption and enhanced bioavailability. The principle of buoyant preparation offers a simple and practical approach to achieve increased gastric residence time for dosage form and controlled drug release. Preparation remains buoyant in stomach content due to its lower density than that of gastric fluid. It is well accepted fact that it is difficult to predict the real *in-vivo* time of release with solid, oral controlled release dosage forms. Thus drug absorption in gastrointestinal tract may be very short and high variable in certain circumstances. Gastric emptying of multiparticulate floating system would occur in consistent manner with reduced intersubject variability in absorption. On each subsequent gastric emptying, sunken particles will spread out over large area of absorption site, increasing the opportunity for drug release and absorption.

MATERIAL AND METHOD

The API Ofloxacin was obtained from Ranbaxy, Devas, Ethyl Cellulose was obtained from Sulab, Varodara, Ethanol (95%) was obtained from Jiangsu Huaxi International Trade co.Ltd.China, Guar Gum Titan from Biotech Ltd.Bhiwadi, Heavy Liquid Paraffin from Himedia Laboratory, Mumbai, Tween 80 from J & K Scientifics. China, n-Hexane Rankem, from Mumbai, Sodium Aliginate and Calcium Chloride from Oxford Laboratory, Mumbai.

Pre formulation Study

Preformulation can be defined as investigation of physical and chemical properties of drug substance alone and when combined with excipients. Preformulation investigations was designed to identify those physicochemical properties and excipients that may influence the formulation design, method of manufacture, and Pharmacokinetic- biopharmaceutical properties of the resulting product. Which includes Organoleptic Properties, Determination of Solubility, Melting Point Determination, Analytical Estimation by UV Spectrophotometer, Partition coefficient, etc. Observation of all these methods are shown below:

Table no.1: Organoleptic Properties of drug Ofloxacin

Test	Specification	Observations
Color	Pale yellow	Complies
Taste	Bitter	Complies
Odor	Odorless	Complies

Table no.2: Solubility profile of Ofloxacin in different solvent

Sr. No.	Solvent	Solubility
1	Distilled water	Soluble
2	Ethanol	Freely Soluble
3	Methanol	Freely Soluble
4	0.1N HCl	Soluble
5	Phosphate buffer (pH 6.8)	Soluble

Table no.3: Melting point of drug Ofloxacin

Sr. No	Material	Melting point	Specification
1.	Ofloxacin	156°C	158°C

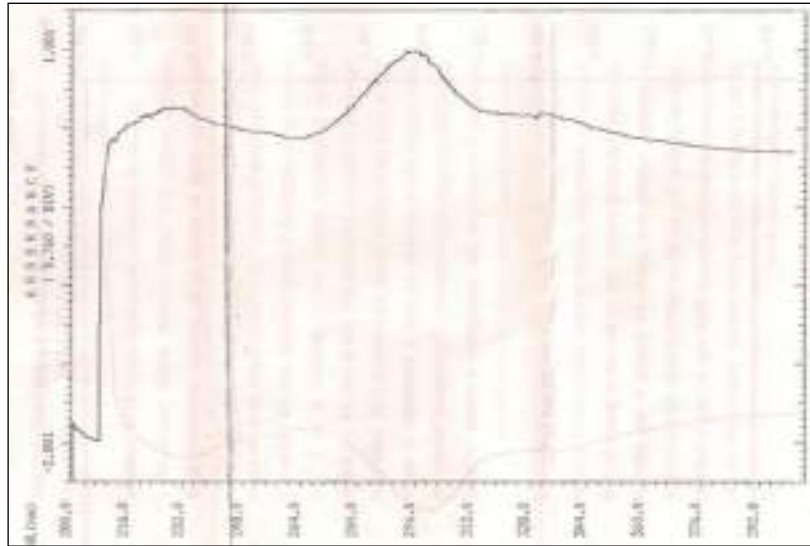


Figure 2: UV spectrogram of Ofloxacin for λ_{max} determination

Table no.4: Wavelength of Maximum Absorbance

Conc. ($\mu\text{g/mL}$)	Scanning range(nm)	λ_{max}
10	200-400	296.0

Table no.5: Linearity of Ofloxacin in 0.1N HCl

Conc. ($\mu\text{g/ml}$)	0	5	10	15	20	25
Absorbance	0	0.158	0.280	0.476	0.604	0.777

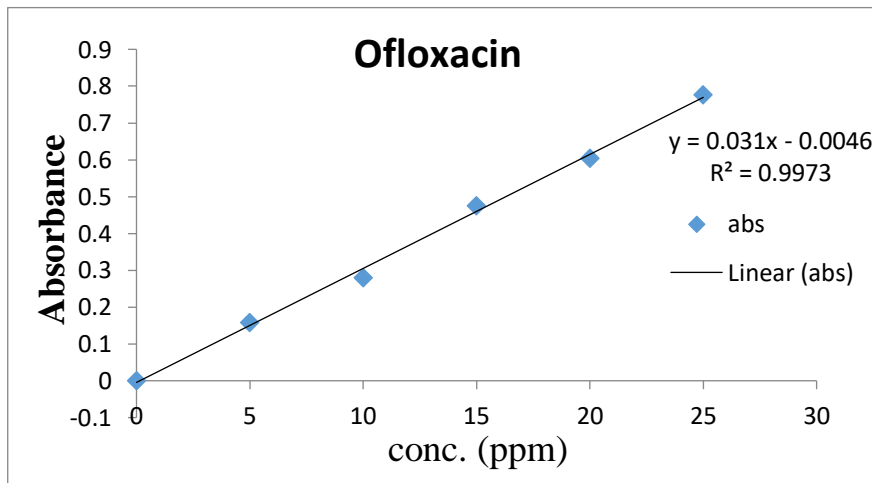


Figure 3: Standard Calibration Curve of Pure Ofloxacin

Table no.6: Partition Co-efficient

Sr. No.	Solvents	Absorbance
1.	Water	1.378
2.	n- Octanol	1.363



Table no.7: Physical Compatibility Study of Ofloxacin with polymer

Sr.no.	Material	Storage at room temperature	Storage at 45°C -50°C	Storage at 2°C -8°C
1	Pure Drug (10mg)	Stable, No change in color	Stable, No change in color	Stable, No change in color
2	Ofloxacin+ EC	Stable, No change in color	Stable, No change in color	Stable, No change in color

Method of Preparation of Microspheres (Preparation of Ofloxacin Microsphere with Ethyl Cellulose by Solvent evaporation method)

Ofloxacin microspheres were prepared by solvent evaporation technique. Polymer Ethyl Cellulose was dissolved in dichloromethane:ethanol (1:1). Ofloxacin was dispersed in polymer solution. This solution was added slowly to a beaker having 300 ml of water containing 0.1 %w/w tween-80 under constant stirring (1000 rpm) there after emulsifier added. When stable emulsion formed organic solvents were evaporated by stirring. After evaporation of solvents, formed microspheres were collected by decantation then filtration and dried at room temperature. Compositions of various formulations are shown in table:

Table no.8: Composition of various Formulations using EC

Formulation code	Ofloxacin	Ethyl Cellulose	Tween-80
EC1	100	100	0.1%
EC2	100	200	0.1%
EC3	100	300	0.1%
EC4	100	400	0.1%
EC5	100	500	0.1%

Table no.9: Evaluation of prepared floating Microsphere

Batch code	Yield(%)	Mean Particle size(µm)	Encapsulation Efficiency (%)
EC1	94.28±0.045	644±0.016	89.80±0.025
EC2	92.46±0.038	663±0.012	92.70±0.038
EC3	91.69±0.052	676±0.007	98.20±0.059
EC4	95.43±4.7	463±2.6	78.6±1.3
EC5	93.24±2.6	521±4.4	86.2±2.0

Table no.10: evaluation of micromeritic properties of floating microsphere

Batch Code	Bulk Density g/cm ³	Tapped Density g/cm ³	Carr's Index (%)	Hausner's Ratio	Angle of Repose (θ)
EC1	0.102	0.169	39.65 %	1.657	31
EC2	0.106	0.170	37.65 %	1.604	35
EC3	0.112	0.118	05.08 %	1.054	17
EC4	0.123	0.174	29.31 %	1.415	28
EC5	0.128	0.184	30.44 %	1.438	29

Table no.11: Percentage buoyancy studies

Formulation	% Buoyancy			
	6 Hrs.	12 Hrs.	18 Hrs	24 Hrs
EC1	90.4 ± 0.224	91.3 ± 0.520	80.3 ± 0.120	68.2 ± 0.111
EC2	89.3 ± 0.322	78.4 ± 0.621	69.3 ± 0.021	51.4 ± 0.733
EC3	93.9 ± 0.663	82.1 ± 0.123	71.7 ± 0.221	65.2 ± 0.191
EC4	73.6 ± 0.812	62.2 ± 0.413	51.5 ± 0.271	41.1 ± 0.505
EC5	78.5 ± 0.632	74.4 ± 0.102	61.9 ± 0.621	51.2 ± 0.353



Table no.12 : *in-vitro*% cumulative drug release of floating microspheres

Time (hrs)	EC-1	EC-2	EC-3	EC-4	EC-5
0	0	0	0	0	0
1	17.249	19.62	21.6	29.7	22.68
2	29.835	31.68	33.12	34.365	30.726
4	32.34	39.68	44.64	37.435	41.876
6	44.566	48.7	49.692	41.781	48.227
8	50.931	59.22	60.405	49.39	49.932
10	60.57	65.62	70.276	58.3	55.785
12	78.541	82.18	73.72	65.998	61.489
16	81.49	84.6	81.681	71.937	67.403
18	84.273	88.56	87.011	76.827	72.808
20	88.329	93.18	93.092	85.162	76.621
24	92.765	95.56	97.913	96.241	81.533

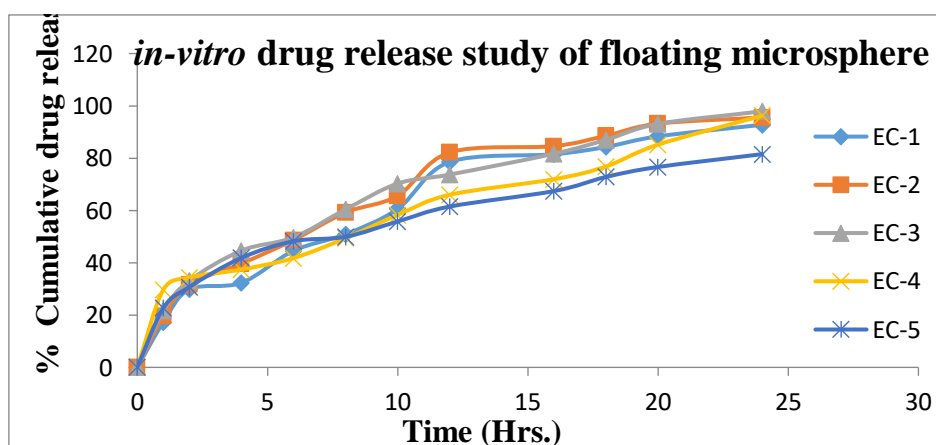


Fig. no.4: *in-vitro* drug release study of floating microspheres

Table no.13: *In-Vitro* Release Profile of optimized Ofloxacin floating Microsphere batch EC-3

Time (hr.)	S.R.T.	Log T.	Abs.	Conc. (µg)	Amt. in 5ml	Amt. in 900ml	Corre ction factor	C.R	Log % C.R	Drug remaining	Log% drug release
0	0	0	0	0	0	0	0	0	0	100	2
1	1	0	0.745	24.166	0.120	21.6	-	21.6	1.334	78.4	1.894
2	1.141	0.301	1.141	36.944	0.184	33.12	0.120	33.12	1.521	66.76	1.824
4	2	0.602	1.539	49.722	0.248	44.64	0.304	44.64	1.652	55.056	1.74
6	2.449	0.777	2.048	66.388	0.273	49.14	0.552	49.692	1.696	50.308	1.701
8	2.828	0.903	2.381	76.944	0.331	59.58	0.825	60.405	1.781	39.591	1.597
10	3.162	1.000	2.483	80.277	0.384	69.12	1.156	70.276	1.846	29.724	1.473
12	3.464	1.079	2.747	88.611	0.401	72.18	1.54	73.72	1.86	26.18	1.419
16	4	1.204	2.925	94.166	0.443	79.74	1.941	81.681	1.912	18.319	1.263
18	4.242	1.255	3.102	100.27	0.470	84.6	2.411	87.011	1.939	12.989	1.113
20	4.472	1.301	3.446	111.38	0.501	90.18	2.912	93.092	1.968	6.908	0.839
24	4.898	1.380	3.253	105.27	0.525	94.6	3.413	97.913	1.990	2.087	0.319

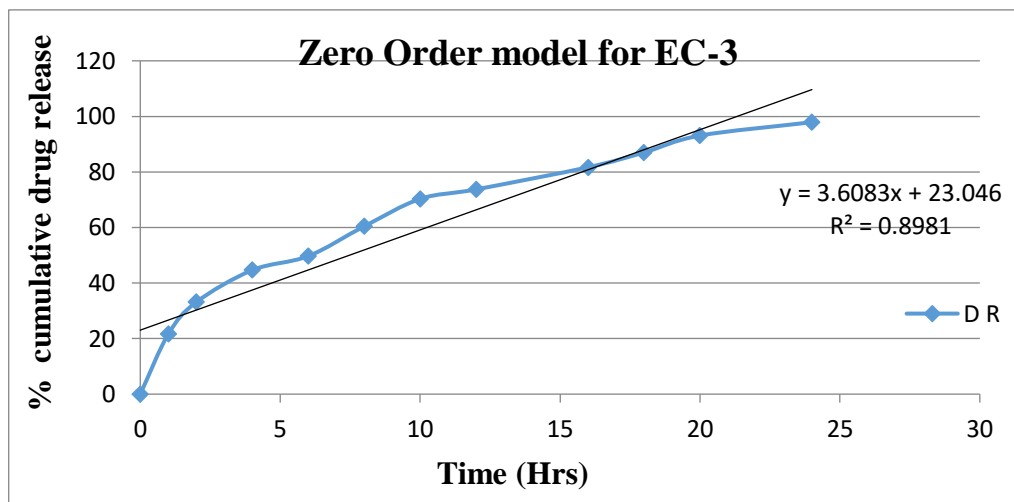


Figure 5: zero order model

Table no.14: *in-vitro* curve fits for various release systems for optimized

Model	Equation	R ²
Zero order	$y = 3.608x + 23.04$	0.898
First order	$y = -0.059x + 2.026$	0.935
Higuchi	$y = 19.71x + 4.133$	0.990
Korsmeyer –Peppas	$y = 0.884x + 0.902$	0.628

DISCUSSION AND RESULT

During the Preformulation studies it is found that the organoleptic properties of Ofloxacin comply as reported. Pale yellow, bitter, odorless, amorphous powder of ofloxacin was soluble in water, 0.1N HCl and Phosphate buffer (pH 6.8) and freely soluble in ethanol and methanol. Melting point was observed at 156°C and λ_{max} at 296nm. Standard calibration curve was prepared using concentration range 5- 25 ug/ml and linearity equation as $y = 0.031x - 0.004$ with $R^2 = 0.997$. Partition coefficient was found 0.989. Drug ofloxacin was also compatible with used excipients, physically stable, no color change reaction observed at 2°C -8°C, room temperature and 45°C -50°C, also chemically stable as observed in FT-IR spectra.

Floating microspheres of ofloxacin were prepared by novel o/w emulsion solvent evaporation technique using Ethyl cellulose polymers order to retain drug in body for longer period of time. Ofloxacin has short half life of 9 h. The drug requires a novel gastroretentive drug delivery system which can provide an extended period of time in stomach and improve oral bioavailability. Floating microspheres were characterized for floating ability, compatibility study, particle size and shape, entrapment efficiency, *in-vitro* drug release. Due to their low density, these multi particulate drug delivery systems showed good floating ability and remained in gastric environment for more than 24 hrs, required for sustained therapeutic activity.

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NURSING ADHERENCE TO NARCOTIC DRUG POLICIES: EXAMINING NURSES' COMPLIANCE WITH HOSPITAL PROTOCOLS FOR NARCOTIC DRUG ADMINISTRATION AND MANAGEMENT, AND ITS IMPACT ON PATIENT SAFETY AND ADHERENCE

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ABSTRACT

This comprehensive review article delves into the complex issue of nurse adherence to hospital policies concerning the administration and management of narcotic drugs and its potential impact on patient safety and compliance. Narcotic drugs, including opioids, play a vital role in managing pain and suffering, but their misuse or mismanagement can pose significant risks to both healthcare providers and patients. This study explores the reasons behind deviations from established policies, the consequences of non-adherence, and the measures that can be taken to ensure better compliance. By examining these critical aspects, this article aims to provide insights into improving patient safety and promoting more effective medication management within healthcare settings.

KEYWORDS: Nurse adherence, Narcotic drug policies, Patient safety, Medication management, Compliance, Opioid administration, Healthcare policies

1. INTRODUCTION

1.1 Background: Narcotic drugs are invaluable tools in healthcare for pain management, palliative care, and various medical procedures. However, the administration and management of these drugs require strict adherence to hospital policies and established guidelines. Non-adherence to narcotic drug policies can lead to a range of issues, including patient safety concerns, legal ramifications, and ethical dilemmas. This article investigates the adherence of nurses to these policies, aiming to shed light on the complexities of the situation.

1.2 Objectives: The primary objectives of this article are as follows:

- To provide an in-depth exploration of nurse adherence to narcotic drug policies, including the reasons behind deviations.
- To examine the potential impact of non-adherence on patient safety and compliance.
- To analyze the legal and ethical implications associated with non-adherence.
- To discuss strategies and interventions that can improve nurse adherence.
- To present case studies and success stories highlighting real-life scenarios and the outcomes of interventions.
- To address the legal obligations and ethical considerations that nurses face when dealing with narcotic drugs.

1.3 Significance of the Study: The significance of this study lies in its potential to improve patient safety and healthcare outcomes. Nurse adherence to narcotic drug policies is essential for preventing medication errors, patient harm, and legal repercussions. Understanding the factors influencing adherence and the challenges involved can inform the development of effective strategies and policies that promote safe and responsible medication management.

2. NURSE ADHERENCE TO NARCOTIC DRUG POLICIES: AN OVERVIEW

2.1 Definition of Narcotic Drugs: Narcotic drugs, often referred to as opioids, include a range of medications that are used to relieve pain and alleviate suffering. These drugs, while essential, are also highly regulated due to their potential for misuse and abuse. Hospital policies related to narcotic drugs are designed to ensure their responsible use, safeguard patient safety, and prevent diversion.



2.2 Importance of Adherence: Adherence to narcotic drug policies is crucial for several reasons. It helps maintain patient safety, ensures accurate medication administration, prevents the misuse or diversion of narcotics, and upholds the legal and ethical standards of healthcare practice.

2.3 Factors Influencing Adherence: Several factors influence nurse adherence to narcotic drug policies. These factors may include the complexity of the policies, inadequate training, staffing issues, and work-related stress. Understanding these factors is essential for developing targeted interventions.

2.4 Challenges in Adherence: Challenges to adherence can manifest in various ways. Nurses may face challenges related to documentation, calculations, or handling the emotional aspects of patient care, especially in cases of palliative care. These challenges can contribute to non-adherence and should be addressed to promote safer medication practices.

3. PATIENT SAFETY AND COMPLIANCE: THE NEXUS

3.1 Impact of Non-Adherence on Patient Safety: When nurses do not adhere to narcotic drug policies, patient safety is compromised. Errors in medication administration can result in overdoses or inadequate pain management, leading to adverse patient outcomes.

3.2 Medication Errors and Patient Harm: Medication errors related to narcotic drugs can have severe consequences, including patient harm, prolonged suffering, and, in some cases, fatalities. The occurrence of such errors underscores the need for strict adherence to policies.

3.3 Legal and Ethical Implications: Non-adherence to narcotic drug policies can have legal and ethical ramifications for healthcare providers. Nurses may face legal actions and ethical dilemmas when deviations from policy result in harm to patients.

4. REASONS FOR NON-ADHERENCE

4.1 Workflow and Time Constraints: The demanding nature of nursing work, especially in acute care settings, can create time constraints that hinder adherence to narcotic drug policies. Nurses often juggle multiple responsibilities, which can lead to errors in medication management.

4.2 Knowledge and Training Gaps: Inadequate training and knowledge gaps can contribute to non-adherence. Nurses may lack the necessary education and skills to manage narcotic drugs effectively. Addressing these gaps through continued education and training is essential.

4.3 Diversion and Substance Abuse Issues: In some cases, non-adherence to narcotic drug policies can be driven by diversion and substance abuse among healthcare professionals. Addressing these issues requires a multifaceted approach that includes prevention, intervention, and support for affected individuals.

5. CONSEQUENCES OF NON-ADHERENCE

5.1 Patient Outcomes: Non-adherence to narcotic drug policies can lead to poor patient outcomes, including inadequate pain management, delayed recovery, and potential harm. Ensuring adherence is essential for optimizing patient care.

5.2 Legal Consequences: Nurses who do not adhere to narcotic drug policies may face legal consequences, including lawsuits and professional disciplinary actions. Legal accountability is a significant concern, emphasizing the importance of policy adherence.

5.3 Repercussions on Healthcare Institutions: Healthcare institutions can also face repercussions when nurses do not adhere to narcotic drug policies. These may include damaged reputations, increased insurance costs, and regulatory scrutiny.

6. STRATEGIES TO IMPROVE ADHERENCE

6.1 Education and Training: One key strategy to enhance adherence is providing comprehensive education and training to nurses. This includes education on drug policies, medication management, pain assessment, and safe administration practices. Continued education ensures that nurses stay updated with best practices and guidelines.

6.2 Technological Solutions: Leveraging technology, such as electronic health records (EHRs) and automated medication dispensing systems, can help reduce errors and improve adherence. EHRs enable accurate documentation, while automated systems can help in drug dispensing and tracking.



6.3 Policy Development and Implementation: Effective policies, clear guidelines, and standardized protocols are essential for promoting adherence. These policies should be developed collaboratively with nursing staff and implemented consistently across healthcare institutions.

6.4 Interdisciplinary Collaboration: Collaboration among healthcare professionals, including nurses, pharmacists, and physicians, is crucial to ensure adherence to narcotic drug policies. Effective communication and coordination among healthcare team members prevent errors and promote patient safety.

7. CASE STUDIES AND SUCCESS STORIES

7.1 Real-life Scenarios: To highlight the real-world implications of adherence or non-adherence to narcotic drug policies, case studies present actual scenarios from healthcare settings. These cases illustrate the potential consequences of policy deviations.

7.2 Interventions and Outcomes: Success stories of interventions aimed at improving adherence provide insight into the effectiveness of different strategies. By showcasing positive outcomes, these success stories inspire other healthcare institutions to implement similar initiatives.

8. ETHICAL AND LEGAL CONSIDERATIONS

8.1 Legal Obligations: Nursing professionals have legal obligations to adhere to narcotic drug policies and administer medications safely. Legal accountability is a significant aspect of nursing practice and underscores the importance of adherence.

8.2 Ethical Dilemmas: Nurses may encounter ethical dilemmas when facing non-adherence to narcotic drug policies. These dilemmas can revolve around patient advocacy, professional integrity, and moral obligations.

8.3 Reporting and Whistleblowing: Nurses have an ethical duty to report instances of non-adherence and medication errors. Whistleblowing, while challenging, is essential for maintaining patient safety and the integrity of healthcare.

9. CONCLUSION

9.1 Summary of Key Points: In summary, nurse adherence to narcotic drug policies is of paramount importance for patient safety, legal accountability, and ethical practice. Non-adherence can result from various factors, including time constraints, knowledge gaps, and substance abuse issues. The consequences of non-adherence extend to poor patient outcomes, legal repercussions, and negative effects on healthcare institutions.

9.2 Implications for Nursing Practice: The implications for nursing practice are clear: strict adherence to narcotic drug policies is essential. Nurses must prioritize ongoing education, interprofessional collaboration, and the ethical reporting of non-adherence to safeguard patient safety.

9.3 Future Directions: Future directions for addressing nurse adherence to narcotic drug policies include continued research on effective interventions, the development of standardized guidelines, and the implementation of technological solutions. Collaboration among healthcare professionals and an emphasis on education will be instrumental in promoting adherence and patient safety.

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PECULIARITIES OF SEXUALIZATION OF MALE AND FEMALE RAINBOW FLOWERFISH IN THE CONDITIONS OF UZBEKISTAN

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ABSTRACT

Despite the fact that the water temperature in the fish nursery of Uzbekistan's cold water farm is very cold throughout the year, female fish reach sexual maturity for the first time in the 2nd or 3rd year of life. (GSI) is a clear indicator of the maturity of salmonids. The mean GSI was observed to vary from June to the time of impact (January).

KEYWORD. *Fertility, Gametogenesis, Reproduction of oogonia, Previtellogenesis, Cytoplasmic growth, Vitellogenin, Oocyte in trophoplasmic growth, Karyosphere formation, gonadogenesis, gametogenesis, Polycyclic, oogenesis, Gonads, Oocyte maturation ratio, Vitellogenesis.*

INTRODUCTION

Activities in the field of high production based on modern scientific achievements and innovative technologies are widely used in the intensive development of fisheries in cold water basins. Accordingly, it is important to identify adaptation mechanisms in the body of fish in cold water fisheries, to develop measures to increase reproductive performance, increase the life span of fish, and forecast productivity indicators.

Scientific research is being conducted on the embryological development of cold-loving fish species with high productivity in different geological conditions, the formation of molt, sexual maturity, biological variability of growth processes, indicators of resistance to stress factors, and the wide application of new technologies and innovations in the cultivation of these fish. In this regard, special attention is paid to the acclimatization of promising fish species that quickly adapt to water bodies in mountain areas, the formation of reproductive biology in water bodies, fertility, reproductive mother fish and fish fry, and the development of intensive methods of industrial scale breeding and reproduction of fish in hatcheries [1].

PART OF THE EXPERIMENT

The goal is to determine the reproductive characteristics and fertility indicators of the rainbow flowerfish in the cold water basins of Uzbekistan in conditions that are new to the species.

Compared to the countries where the scientific innovation was imported, the indicators of growth, sexual maturity and fertility of rainbow trout in the cold water reservoir of Uzbekistan increased by 40-72%.

The characteristics of moderate gonadogenesis and gametogenesis processes of rainbow flounder in the cold water reservoirs of our country were revealed, and the technology for industrial scale development of absolute fertility of sexually mature female fish under new conditions for the species was developed.

Practical results The mechanism of gonadogenesis and gametogenesis processes of both sexes of rainbow flounder in the water basin of the cold water reservoir of Uzbekistan was observed to develop earlier than in the natural distribution area in the northern regions of the world.

Both sexes of rainbow trout have one pair of gonads and are located along the dorsal wall of the abdomen. When we dissected the fish, it was observed that the length of the left and right gonads of female fish differed, and the left one was often longer [3].



Figure 1. Different stages of Sexualization of The Gonads of The Rainbow Flower Fish Adapted to The Conditions of Uzbekistan

Rainbow trout ovaries are of the open type, and the plates that produce caviar are covered with a single layer of epithelium and do not have their own shell. According to our calculations, the number of spawning plates in the ovary of female fish at the beginning of the III stage of sexualization can be 33-55 ($n = 6$ pieces). The cranial part of the gonads is enlarged and round. The caudal part of the ovary is sharpened. Rainbow trout do not have oviducts. In the wall of the coelom, there is a funnel-shaped genital opening, which opens behind the anus and in front of the urethra. Oocytes develop in spawning plates in egg follicles. The follicular epithelium is important for the supply of nutrients and other substances to the developing germ cells[2]. Mature gametes are released from spawning plates into the body cavity, and the ovulatory fluid flows out of the genital opening.

Gametogenesis of female rainbow fliers. Based on the analysis of the histological preparations prepared from the samples taken from the rainbow trout and the results of generally accepted ichthyological research on the oogenesis of fishes in inland water bodies, we determined the stage of development of the female reproductive cells of this species. The obtained data well describe the process of sexual maturation of rainbow flounder in the conditions of Uzbekistan. Reproduction of oogonia. Primary germ cells begin to divide by mitosis and then divide many times to develop oogonia. Morphologically, oogonia have cytoplasm with few organelles and are located between follicular cells. The nucleus has one or more nucleoli. (In our studies, we did not dissect representatives of rainbow trout, in which primary germ cells are best developed from germ cells). Primary meiotic remodeling. It is known that with the development of oogonia, their mitotic division stops, the early stages of meiosis are reorganized in the nucleus (leptotene, zygotene, pachytene, diplotene). At the end of this period, the oocyte enters the diplotene stage of prophase, which continues until sexual maturation is completed [4]. In the histological sections we prepared, we observed that the oocytes separated into less stratified groups. Previtellogenesis. The term "small growth period" is also used here. In many studies of fish biology, this term is considered sufficient even now. A number of authors use the term "cytoplasmic growth" and "protoplasmic growth". As the oocyte develops, they increase in size, but the oocyte material is used for growth (this is reflected in the names used). The onset of periods is determined when each oocyte is clearly surrounded by follicular epithelium on histological sections (ie, the follicle has formed). The researcher, armed with a powerful microscopic technique, sees that the follicular epithelial cells are dense, the surface of the cytoplasmic membrane is smooth at the beginning of the period, and after time it folds, then microvilli develop towards the membrane of the follicular epithelial cells. Despiralized active chromosomes appear in the nucleus. A large number of wall-side nuclei are formed. We found out that the oocytes of rainbow trout at the beginning of this period are 31-48 μm , rarely - 55 μm , and have 1-4 nuclei. Oocytes develop during the phase - reach 59 - 172 μm , and in them it is possible to see crescent-shaped areas of cytoplasm (circumnuclear zone) that differ in color. The number of nuclei increased and the volume of the cytoplasm increased (cytoplasmic growth of the oocyte occurs). At the end of the cytoplasmic growth phase, oocytes can be identified by their increased size. The size of rainbow trout oocytes reaches 210-320 μm (when measured with an ocular-micrometer). It is well seen that the circumnuclear zone is closed and located around the nucleus in small oocytes, and in the peripheral zone in relatively large oocytes. The size of the largest (that is, the best developed) oocytes in the small growth zone reaches 370-420 μm , and thus this phase ends. We could not detect a circumnuclear zone in such oocytes. After that, oocytes pass to the phase of development of cortical alveolus (in English-language literature) or cortical vacuole (in Russian-language literature). The size of oocytes continues to increase, we found that it reached 445-580 μm in the cross-section of the samples taken from the rainbow trout. Vacuoles are initially few and small and are located around the outer membrane [5]. As they develop, their number increases and their size increases. At the end of the period, the size of oocytes reaches 650-1100 μm (according to our data). Vacuoles called fat vacuoles appear in them. In cross-sections, fat vacuoles appear initially as a thin zone near the center of the oocyte compared to cortical vacuoles. In relatively large oocytes (that is, late), fat vacuoles begin to completely fill the nuclear periphery. Later, with the development of oocytes, they grow significantly (they become very large in cross-sections). This growth takes place due to the complex combination of protein, lipoprotein, carbohydrates accumulated in oocytes. Vitellogenin- yolk protein precursor is produced in the liver and transported to



the gonads with the help of blood, vitellogenin is reformed in oocytes and saturated with lipoproteins turns into vitelline, as well as polysaccharides, enzymes are formed and they are activated only after fertilization. It seems that the main source of growth is not the substances in the oocytes themselves, but perhaps the substances coming from the organism of the parent fish. It is for this reason that another widespread term "oocyte in trophoplasmic growth" is relevant. The beginning of vitellogenesis can be determined by the appearance of small granules of yolk in the sections. We found that the size of such oocytes is 980-1280 μm . Later, the number and size of granules increase significantly and reach - 1400-1480 μm . At the end of the period, the size of the oocytes of the rainbow trout becomes very large and practically reaches the definitive size. In our researches, in different years, this indicator was found to be -3800-4600 μm and -4600-5200 μm . It should be noted that the fishery may have used different breeds or groups of fish to breed rainbow trout in different years. Puberty (end of puberty). Oocytes have reached definitive sizes. Cytologically, meiosis is restored and completed during this period. Karyosphere formation ends. Yolk fragments become larger and eventually merge into a whole. The oocyte is sexualized and then ready for the ovulation process for fertilization.

Gonadogenesis in female rainbow trout. The development of the gonad of fish is an important sign of adaptation to external environmental conditions. Obviously, there are many similarities in the gonadogenesis of different fishes. The development of gonads occurs only in one direction, the changes taking place can be classified, divided into a number of periods and stages. At the same time, there is great diversity in the passage of these periods in fish of different systematic and ecological groups, including a very strong difference in the course of the gonadogenesis process in different populations of the same species, and variability is also observed within populations. Knowledge of the formation of reproductive biology (in this case - sexual maturation, gonad development) is important and is considered one of the foundations of aquaculture in a certain area for obtaining a new generation from cultivated fish. Because species with high adaptability are selected in aquaculture, it is necessary to study in detail the process of gonadogenesis in new conditions of new objects of aquaculture. The course of the gonadogenesis process of objects can change strongly in a new environment (first of all, the rate of sexual maturation). This requires a change in breeding technology. The above also applies to rainbow butterflies.

The level of development of gonads is inextricably linked with gametogenesis, more precisely with relatively advanced periods and phases in the development of germ cells. This applies to both monocyclic and polycyclic as well as to fish with simultaneous maturation and division and asynchronous oogenesis. In fisheries research, the development of gonads is characterized by scales of sexual maturity, and the stages of this scale are determined by visual analysis of both the development of gametes and the development of somatic elements of gonads. Researchers have already abandoned the idea of using a universal scale of sexual maturation stages for all fish. More precisely, there may be the most general approaches, but solving the scientific and practical tasks in fisheries research requires the use of a relatively flexible and more sensitive approach in determining the sex of fish. Therefore, separate scales have been developed to determine the sexuality of each species [6]. Different researchers divide the gonads of different species into different number of scales when determining sex. However, there is a difference in the views of researchers from different countries and different schools when determining the stage of sexual maturity of the same objects. Much research has been done on this issue for species as important to catch as salmonids. A 6-point scale of gonad maturation is usually used for salmonids, with stages III and IV of ovarian development and stages I, III and VI of sperm development being divided into sections. Based on the analysis of data from literature sources and the results of our own research, we offer the following scale of sexual maturation to determine the stages of sexual maturation of the gonads of rainbow marigolds grown in the conditions of Uzbekistan. We observed a high degree of diversity during previtellogenesis in rainbow trout oocyte growth. The results of the analysis of three female fish used in the breeding company showed that the gonads of the rainbow flounder had changed from stage VI to stage III 2.5 months after the spawning season. An overview of the visual identification of gonads at different stages of puberty, which we recommend for further research in the country.

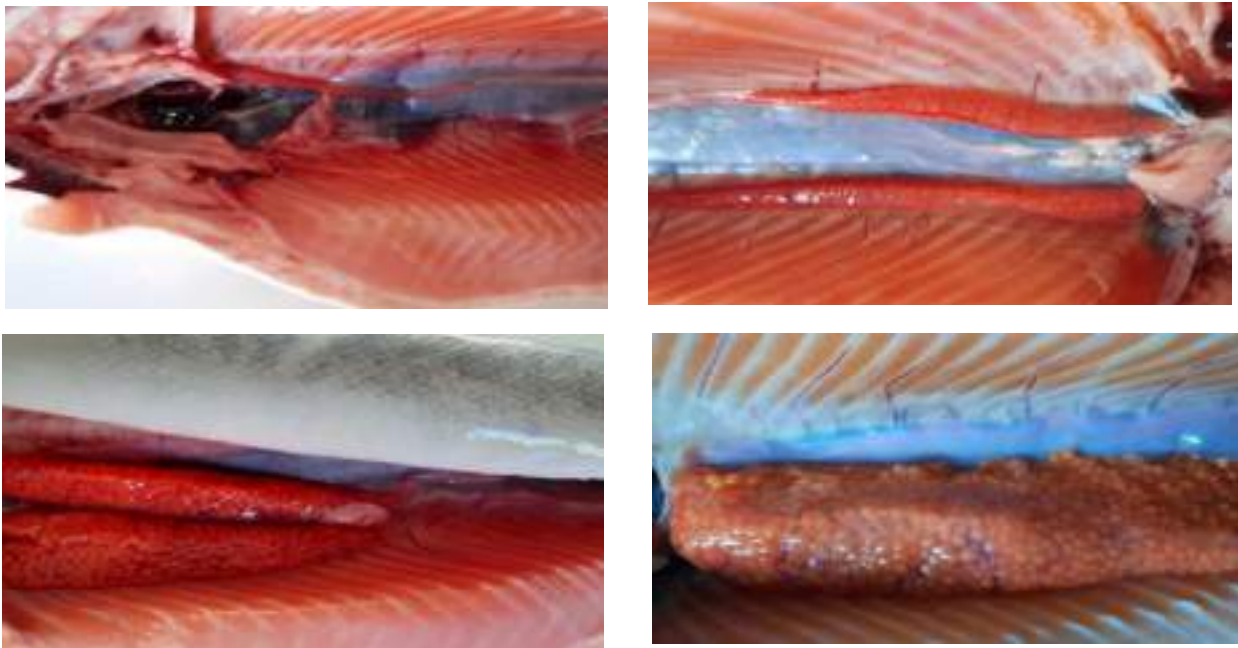
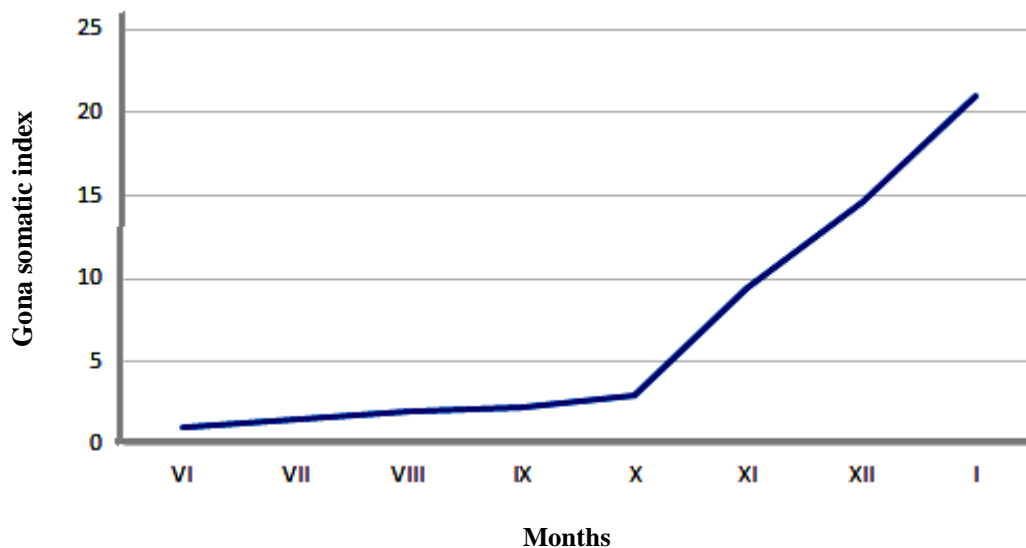


Figure 2. General view of gonads at different stages of puberty: top left – stage II, top right – beginning of stage III, bottom left – close to the end of stage III, bottom right – stage IV.



Thus, based on what has been shown, it can be said that despite the fact that the water temperature in Uzbekistan's cold water fish nursery is very cold throughout the year, female fish reach sexual maturity for the first time in the 2nd or 3rd year of their life. Maturation coefficient (also gonado-somatic index, GSI) is a clear indicator of the sexual maturity of salmonids. The mean GSI was observed to vary from June to the time of impact (January). GSI increased from 0.4% (in June) to 20% as vitellogenesis progressed.

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CONTRIBUTION OF SAVITRIBAI AND JYOTIRAO PHULE IN EDUCATION AND EMPOWERMENT OF WEAKER SECTIONS IN INDIA

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ABSTRACT

Savitribai Phule and Mahatma Jyotirao Phule were important social reformers and leading characters in India. Savitribai was the first lady teacher of India's first girl's school. She was not only a teacher but also a great social reformer. She was a significant advocate for women's empowerment and education in the nineteenth century. They were far ahead of nationalist discourse in weaker sections of 19th-century Colonial India. In this context, the researcher intends to focus on assessing the contributions of Savitribai and Jotirao Phule to education and empowering the weaker sections of India. The study is a documentary study. It is also considered a qualitative study. The study investigates Jotirao and Savitribai Phule's contributions to the education, empowerment, and self-reliance of subjugated India's weaker sections. This paper is special emphasizes Women and backward-class people.

KEYWORDS: Social reformer, Empowerment, Nationalist, Women's education, Weaker section.

INTRODUCTION

Mahatma Jotirao Phule and his wife Savitribai Phule stand out as an exceptional couple in India's social and educational history. They were vigorously fighting to create a movement for social justice and gender equality. They devoted their entire lives to promoting education because they understood that knowledge is power and that without it, women and Dalit-Bahujans could not develop. They hold the distinction of founding the nation's first girls' school and the "Native Library." In India, they started the "Literacy Mission" in 1854-55. They established a "shelter for the prevention of infanticide" at their home in 1863 for the protection of abused Brahman widows who were pregnant and to care for these children. Savitribai Phule was a pioneer of women's education in the country. Savitribai Phule was honored as the country's first female teacher. She works for the advancement of women and the lower castes. Savitribai and Jyotirao raised their voices against the oppressive social system prevalent in the society of Pune (Maharashtra) in the 19th century. Jotirao and Savitribai lived in a Dalit working-class neighborhood in Pune. The cultural environment surrounding them had an extremely important role to play in their socialization. The school's headmistress, Savitribai, has generously decided to dedicate her life to reforming backward classes and women's education; she does this work without any remuneration. Their contribution revolved around rationality and human reasons such as truth, equality, and humanity.

OBJECTIVES

The objectives of the study were:

- To assess the contribution of the Savitribai and Jyotirao Phule to women's education.
- To examine the contribution of the Savitribai and Jyotirao Phule in empowering women.
- To study the contribution of the Savitribai and Jyotirao Phule to the education and welfare of backward classes.

RESEARCH QUESTION

The research question of the study was:

- What contribution of Savitribai and Jyotirao Phule to women's education?
- What was the role played by Savitribai and Jyotirao Phule in women's empowerment?
- What is the significant effect of the Savitribai and Jyotirao Phule on the education and welfare of backward classes?

METHODOLOGY

For the selection of the study, the present author selects Savitribai and Jyotirao Phule's contributions to India. In contrast, education and empowerment of India's weaker sections. This research work is historical research. The scientific process used to look into the



specifics and sources of historical events is known as historical research. Data was gathered from two main sources, namely the biographies of Savitribai and Jyotirao as the only source of data gathering and the various books, journals, e-papers, and articles written about Savitribai and Jyotirao Phule that were used as secondary sources. The two types of data are both of a qualitative nature. Because of this, this research is a qualitative one.

LIFE SKETCH

Savitribai Phule

Savitribai Phule was a social reformer of the 19th century, born on January 3, 1831, in Naigaon, Satara district, Maharashtra. In 1840, at the age of 10, she was married to Jotirao Phule. Government documents show that after their marriage, Jotirao educated Savitribai at home. The Education Report from 1 May 1851 to 30 April 1852 states that Jotirao educated and prepared his wife to teach at home. According to a news story that was published in the "Bombay Guardian" on November 22, 1851, Jotirao's friends Sakharam Yeshwant Paranjpe and Keshav Shivram Bhavalkar (Joshi) took responsibility for Savitribai's continued education. Savitribai has also completed teacher training programs at Ms. Mitchell's Normal School in Pune and Ms. Farar's Institution in Ahmednagar. If these documents are taken into account, Savitribai Phule may have been the first woman headmistress and teacher in India. The headmistress of the school, Savitribai, has generously decided to dedicate her life to the reform of women's education; she does this work without any remuneration. He worked on various development projects for society's lower classes.

Published Books: Savitribai Phule was also an author and poet. She published various books. Some examples are below-

- Kavya Phule, 1854
- Bavan Kashi Subodh Ratnakar, 1892
- Go, Get Education (an entitled poem)

Jyotirao Phule

He was born in Katgun, Satara District, Maharashtra, on April 11, 1827. He was uneducated, and the majority of his family came from the Mali caste of gardeners. He married early, at the age of 13, to a girl from his community selected by his father. His initiatives included eradicating untouchability and the caste system and educating women and caste members who were being exploited. Later, the Phule created schools for kids from the Mahar and Mang untouchable communities. He founded a home for pregnant Brahmin widows in 1863 so they could give birth in a safe environment. He started an orphanage to stop infanticide. In this regard, he is regarded as the first Hindu to build an orphanage for destitute children. To show his inclusive attitude towards all people and his willingness to eat with everyone, regardless of caste, Jyotirao decided to construct a communal bathing tank outside his home in 1868. To secure equal rights for members of oppressed castes, he and his supporters established the Satyashodhak Samaj (Society of Truth Seekers). Joining this group focused on the betterment of the disadvantaged classes and was open to people of all religions and castes.

Published Books: More than 150 books have been written on Jotirao in Marathi. Along with books in Marathi, books have also been published in Hindi, English, Telugu, Kannada, Punjabi, Urdu, Sindhi, and Gujarati. Some examples are below-

- Tiritiya Ratna, 1855
- Brahmananche Kasab, 1869
- Powada: Chatrapati Shivajiraje Bhosle Yancha, [English: Life of Shivaji, In Poetical Metre], June 1869
- Powada: Vidyakhatyatil Brahman Pantoji, June 1869
- Gulamgiri, 1873
- Shetkarayacha Aasud (Cultivator's Whipcord), July 1881

Role of the Savitribai and Jyotirao Phule in promoting Women's Education

When Savitribai was still in her teen years, Jyotirao and Savitribai founded the first locally run school for girls in Pune (at the time, Poona). In this situation, a friend extended a helping hand. To start their education, they also gave up their accommodations. The school's first teacher was Savitribai Phule. This school includes a social studies, math, and science curriculum from the West. Savitribai Phule, the headmistress of the school, decided to dedicate her life to women's education; She did not receive any remuneration for doing this service. "Institutionalization" turned out to be modern India's fundamental premise. Jotirao-Savitribai founded a school for native females. They organized the "Dakshina Prize" to increase participation in girls' education. With Jyotirao Phule, she opened 18 schools for girls. Savitribai and Jyotirao strongly emphasized giving both boys and girls a trade and vocational-oriented education to develop their independence and ability to think critically. They discovered that poverty and a lack of interest in education were the main causes of the dropouts. She devised a curriculum tailored to the interests of girls from lower social classes and made plans to pay the students a "wage." Savitribai Phule gave importance to the education of women to promote social transformation.



Role of the Savitribai and Jyotirao Phule in Empowering Women

Savitribai and Jyotirao also started Mahila Seva Mandal in 1852 to raise awareness and, worked to educate women about their human rights, the value of life, and other social issues. Savitribai wanted women from all the castes to participate in this. They founded the Satyashodhak Samaj (Society for Truth Seeking), and they pioneered the Satyashodhak marriage, which is a marriage without dowry or a wedding at a low cost. The bridegroom was required to take an oath of education and equal rights for women as part of the Satyashodhak marriage. Both also raised awareness against child marriage and asserted the right of widow remarriage. In their own home, Jotirao and Savitribai ran a hostel where girl students from faraway locations would stay to further their education. Jotirao and Savitribai determined that education should empower people to make moral and ethical decisions and distinguish between truth and fiction. They were working extra hard to establish areas where female creativity might flourish. They were remarkably successful on this front as well. His views on religious and social issues are presented in the form of a dialogue in his book *Sarvajanic Satya Dharma Pustak*, which was published in 1891. He believed that both men and women had equal rights and that discriminating against people based on their gender was a sin. He emphasized human unity and envisioned a society based on liberty, equality, and fraternity. To keep infanticide in check, and to give care to lactating widows/rape survivors Jyotirao and Savitribai opened 'Balhatya Pratibandhak Griha' in 1863. Savitribai was deeply committed to women's empowerment and upliftment. Savitribai and Jyotirao recognized that self-realization through education is the key to achieving social and gender equality.

Role of the Savitribai and Jyotirao Phule for Education and Welfare of Backward Classes

Savitribai encouraged everyone to write and one of the essays written by her student Mukta Salve became the face of Dalit feminism and literature. She also tried to give a stipend to students to attend the school to decrease the dropout rate. Savitribai and Jyotirao were also associated with a social reform to Dalits, and other less privileged communities from getting oppressed and exploited. After the death of Jyotiba in 1890 Savitri carried forward the work of Satya Shodhak Samaj. This Organization was based on giving education to oppressed members of society. Savitribai went head-to-head with other social taboos that had long victimized women. Savitribai created an educational framework to revolutionize society. Jotirao-Savitribai started the Society for Promoting the Education of Mahars and Mang's castes, who were regarded as untouchables. Meanwhile, the Phule couple opened a night school in 1855 for agriculturalists and laborers so that they could work during the day and attend school at night. Savitribai opened 18 schools and taught children from various castes over the years. She urged the oppressed caste and communities to get an education and get freedom from chains of oppression. She also worked for imparting education to the Dalits. Jyotirao Phule supported Western education and advocated for free and compulsory primary education until the age of 12. Jyotirao Phule advocated for lower-class technical education. He also desired that children in rural areas receive an education.

DISCUSSION & CONCLUSION

The primary goal of Savitribai and Jyotirao was to educate all people. And they established a lot of schools to accomplish those goals. Even though government initiatives like the "Sarva Shiksha Abhiyan," the "Right to Education Act," and the "midday meal program" that rewards education may seem truly innovative today, Savitribai and Jyotirao established a precedent by providing stipends to keep kids in school 150 years ago. Before the early nationalists accepted social reform as a campaign strategy, both launched several projects for social change. Theirs is one of the primary areas of involvement, particularly in the context of caste and female illiteracy. Savitribai and Jyotirao Phule also devoted their entire lives to the cause of the upliftment of the weaker sections. It has been possible to reach this conclusion after analyzing various data and evidence and making a comparative judgment of the results of various previous studies. There was no end to their efforts to empower women through education. He made education a major part of the lives of backward-class students to give them back their fair share of rights in society. Savitribai was most likely one of modern India's first educated women. She and Jyotirao Phule were able to develop their voice and agency at a time when women of all classes and backward class peoples were ruthlessly suppressed and lived in subhuman conditions. Both are linked to the weaker section of education and equal rights. Savitribai had a strong commitment to the advancement of women. Along with providing education, they also enabled women and people from lower social classes to flourish in society. She aggressively sought to remove caste- and gender-based discrimination and advocated against untouchability. Jyotirao and Savitribai Phule strongly believed that society could not advance and develop without an appropriate distribution of knowledge, particularly for the weaker sections. both also fought for the rights of women and members of the lower classes. They started schools for girls and kids from lower castes because they thought that education was crucial to bringing about social change.

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VIDEO ASSISTED MATH LESSON: AN INTERVENTION TO ADDRESS THE LEARNING GAPS IN RADICAL EXPRESSIONS OF SELECT GRADE 9 STUDENTS

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ABSTRACT

The result of the Performance Report on Most Essential Learning Competencies During the second grading period showed that among the four (4) long tests administered comprising of Most Essential learning competencies for 2 weeks, long test for weeks 5 and 6 of 9-San-Antonio which is about Radical Expressions has the least MPS of 30.41. These circumstances prompted the researchers to use video assisted lesson as an intervention to address the learning gaps of these students under the Modular Distance learning Modality.

Social media might offer video lessons among our students, but we have to face the reality that not all of them could have an access to it nor could exactly meet the learning abilities and needs of our students. Students come with different abilities, skills and characteristics. Furthermore, students respond positively when learning is meaningful, personalised and relevant, (Minder 2017). The video-assisted math lesson was disseminated and utilized through different means and platforms available to the respondents. Three (3) of the respondents (those with an internet connection) it was sent via Facebook messenger, eight (8) who have gadgets only at home, it was sent via Bluetooth, and nine (9) of them who do not have any gadgets were allowed to lend unit of tablet from the researchers and pass on to their co-respondents near their house with proper safety measures and disinfection of the gadget.

The performance of the students in terms of a pre-test and a post-test shows that the pre-test mean score was 8.1, while the post-test mean score was 13.2. The mean gain of 5.1 was computed to check if there is a significant difference between the mean performance of the students before and after the intervention. The p value 0.000014 was smaller than the alpha value 0.05 hence, there is a significant effect of the intervention to the performance of the students. Based on the outcomes, it is recommended that Video-assisted Math lesson could be used as an intervention material not just to address the learning gaps of the students in a particular lesson but also to serve as supplementary material to those students under the Modular Distance Learning Modality hand in hand with their printed modules.

KEYWORDS: *Video-assisted lesson, learning gaps, Intervention*

I. CONTEXT AND RATIONALE

“No Filipino learners will be left behind amidst the crisis”, one of the most promising principles of the Department of Education Secretary Briones. DepEd provides Self-Learning Modules (SLMs) with the alternative learning delivery modalities to be offered for various types of learners across the Philippines to ensure that all learners have access to quality basic education with face-to-face classes still prohibited due to the public health situation.

The current setup for Modular Distance Learning is that there should be open communication between the teacher to students and/or teacher to parents/guardians. But we have to face the reality that not everyone has the capability to maintain communication with their teachers, not all parents are educated enough to teach their children. The students need their teachers to explain the concepts written in the module, otherwise, they will have learning gaps on a particular topic or skills that they should have mastered, but didn't. This is one of the problems met by the researchers with their students under the Modular Distance Learning Modality.

DepEd Order No.012,s.2021, an Amendment to DepEd Order No.030, s.2020, allowing the schools to conduct intervention and remediation activities based on the unique needs of the learners as determined through the results of the different forms of assessment administered for the past two quarters.

Chou(2017) attempted to establish a new model of remedial teaching that utilizes remote asynchronous video-based instruction to carry out centralized remedial teaching. Moreover, Allen and Smith (2012) have shown in their studies that educational video can

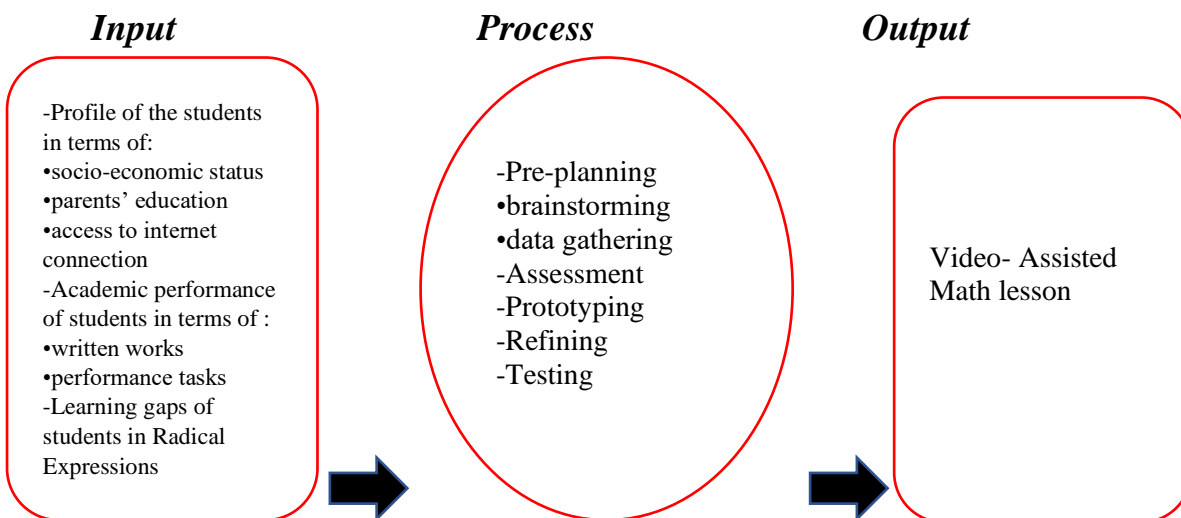


be a highly effective educational tool. In fact, according to them, many researchers indicate educational video as one of the most important of those technologies that can increase student engagement.

The result of the PERFORMANCE REPORT ON MOST ESSENTIAL LEARNING COMPETENCIES during the second grading period showed that among the four(4) long tests administered comprising of Most Essential learning competencies for 2 weeks, long test for weeks 5 and 6 of 9-San-Antonio which is about Radical Expressions has the least MPS of 30.41. These circumstances prompted the researchers to use video-assisted lessons as an intervention to address the learning gaps of these students under the Modular Distance learning Modality.

II. ACTION RESEARCH QUESTIONS

1. What are the profiles of the students in terms of:
 - 1.1 socio-economic status;
 - 1.2 parents' education;
 - 1.3 access to internet connection?
2. What is the level in the Mastery Achievement Level of the academic performance of students in terms of:
 - 2.1 written works;
 - 2.2 performance task?
3. What are the learning gaps of the students in Radical expressions?
4. Do the video-assisted Math lesson address the learning gaps of the students?



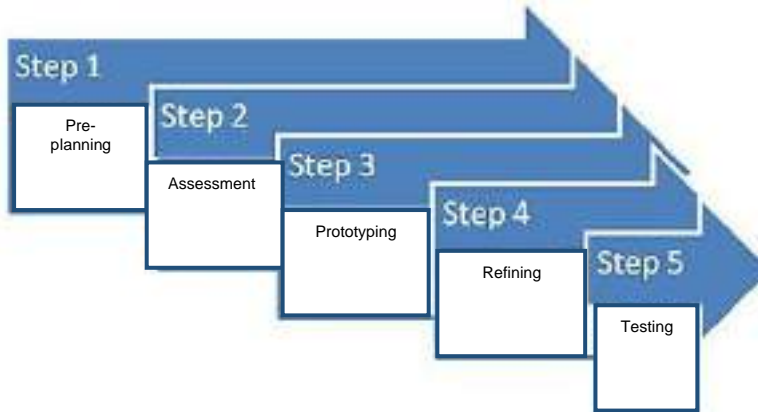
III. PROPOSED INNOVATIONS/INTERVENTION/STRATEGIES

Video-assisted Math lesson on Radical Expression

The first step is pre-planning which includes brainstorming and data gathering to determine the means and platforms on how the videos will be delivered to the students. The second is to assess the students' level of performance. Implementation of the intervention using video-assisted math lessons was done whereas prototyping and refining was the cycling process to determine the learning gaps of the students in Radical Expressions. Testing was done to determine if the intervention address the learning gaps of the students.



IV. ACTION RESEARCH METHODS



- a. Select Grade 9 students from MDL class of Don Manuel Rivera Memorial National High School are the participants for this study.
- b. Data Gathering method
 - Secure permission from the principal through a letter of request.
 - Distribute questionnaires for students' profile.
 - Gather feedback and assessments to evaluate the ongoing intervention.
 - Administer post-assessment.
 - Analysis and interpretation of data collected.
- c. Data Analysis Plan
 - To make a valid and scientifically acceptable analysis and interpretation of data gathered, appropriate statistical treatment was used for each set of data. The results will be the basis in the formulation of conclusion, summary, and findings of the research questions. Implementation of the intervention will be prioritized if proven effective.

V. ACTION RESEARCH WORK PLAN AND TIMELINES

ACTIVITY	JAN.	FEB.	MAR.	APRIL	MAY	JUNE
Needs assessment						
Preparation, accomplishment and submission of the action research proposal.						
Seeking approval on the implementation of the action research.						
Approval of the proposal						
Conduct of the study						
Data Gathering						
Evaluation, analysis and interpretation of the data collected.						
Preparation and submission of the terminal report.						

VI. COST ESTIMATES

Materials needed	Estimated Cost
Paper and printing	300.00
5 units of tablet	7500.00
Transportation allowance	200.00
TOTAL	8,000.00

VII. ETHICAL ISSUES

The researchers gave considerations on the following concerns in the conduct of this research:

1. Secure a letter of consent to the principal for the conduct of action research.
2. Performances of the respondents on the intervention were kept confidential.
3. Data collected were treated and analyzed appropriately.



VIII. PLANS FOR DISSEMINATION AND UTILIZATION

The video-assisted math lesson will be disseminated and utilized through different means and platforms available to the respondents. For those with an internet connection, it will be sent via Facebook messenger or e-mail address, and for those who have gadgets only at home but without internet connection, it will be sent by the researchers via Bluetooth, but for those who do not have any gadgets they will be allowed to lend unit of tablet from the researchers and pass on to their co-respondents near their house with proper safety measures and disinfection of the gadget.

IX. PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

This section showed the presentation, analysis and interpretation of data used in this action research.

TABLE 1. Profile of the Students

Profile		Frequency	Percentage	
Socio-Economic Status	Upper Class	1	5	
	Middle Class	7	35	
	Lower Class	12	60	
Parents' Education	Father	College Graduate	1	5
		High School Graduate	10	50
		High School level	4	20
		Elementary Graduate	5	25
	Mother	College Graduate	0	0
		High School Graduate	12	60
		High School level	5	25
		Elementary Graduate	3	15
Access to Internet Connection	Own Mobile Data	8	40	
	Own Broadband Internet (DSL, Wireless Fiber, Satellite)	3	15	
	None	9	45	

Table 1 shows the profile of the students in terms of socio-economic status, parents' education and access to internet connection.

In the socio-economic status, the table reveals that about 95% of the students belong to the middle class or the lower class and these were the students who cannot afford to hire the services of a tutor to supplement their quest for academic improvement. In the parents' education, it appeared that 95% have father and 100% have mother who were not able to reach college and their parents could not probably teach them academically. In the access to internet connection, only 40% only have their own mobile data and 45% do not have internet connection which means that 85% of the students do not have quick and easy access to internet where they can find other references for learning aside from the printed ones.

TABLE 2. Mastery Achievement Level of the Academic Performance of Students

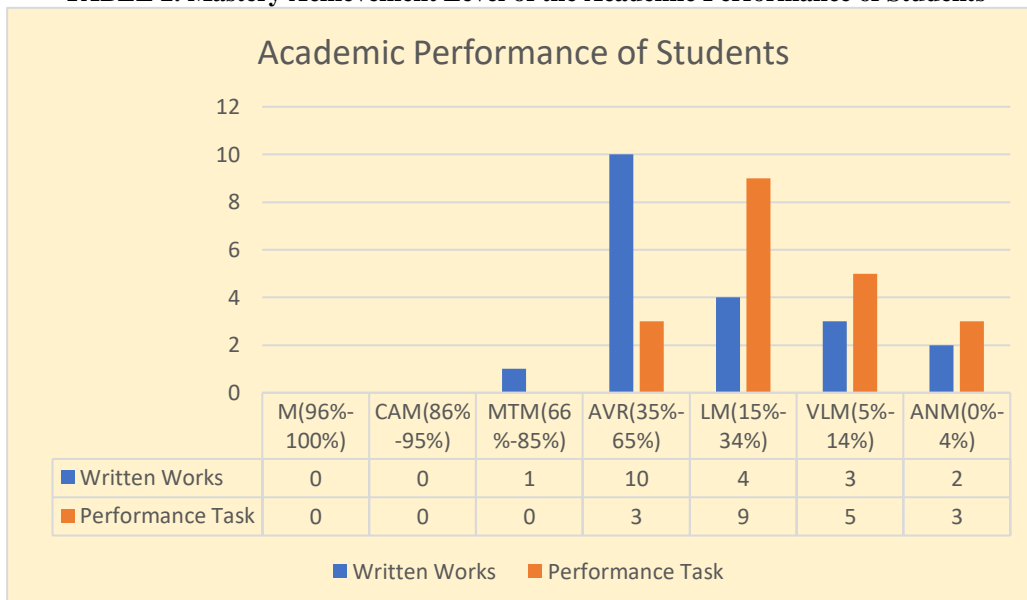




Table 2 shows the level of academic performance of students based on the Mastery Achievement Level.

Based on the table, in the written works, only 1 student were able to reach 66%-85% Mastery Level and 19 students belong to 65% and below Mastery Level. However, in the performance task, all of them belong to the 65% and below Mastery Level which means that the select students have low academic performance.

TABLE 3. Learning Gaps of Students in Radical Expressions

	Mean	SD	Mastery Level
Simplify radicals by reducing the radicand	2.95	0.5	Average
Simplify radicals by reducing the order of radicals	1.40	0.97	Low Mastery
Simplify radicals by rationalizing the denominator	0.75	1.13	Very Low Mastery
Conjugate of radicals	0.70	1.14	Very Low Mastery

Table 3 shows the mastery level of the students on the competencies in simplifying radicals.

In simplifying radicals by reducing the radicand the obtained mean was 2.95 with a standard deviation 0.5 and categorized as Average in the Mastery Level. Simplifying radicals by reducing the order of radicand, rationalizing the denominator and conjugate of radicals have obtained mean of 1.40,0.75,0.70 and a standard deviation 0.97,1.13 and 1.14 respectively. These 3 competencies were found to be classified under the Low and Very Low Mastery in the Mastery Achievement Level.

TABLE 4. Result of Intervention in the Performance of Students

Variable	Mean	Mean Difference	T - Ratio	P- Value	Interpretation
Pre-test	8.1	5.1	-4.97709	.000014	Significant
Post test	13.2				

Table 4 shows if the intervention address the learning gaps of the students.

The performance of the students in terms of a pre-test and a post-test shows that that the pre-test mean score was 8.1 ,while the post-test mean score was 13.2. The mean gain of 5.1 was computed to check if there is a significant difference between the mean performance of the students before and after the intervention. The p value 0.000014 was smaller than the alpha value 0.05 hence, there is a significant effect of the intervention to the performance of the students.

X. SUMMARY, CONCLUSION AND RECOMMENDATIONS

This part includes the summary, conclusion, and recommendation of the researcher based on the data gathered.

SUMMARY

The following are the summary of findings:

- In the socio-economic status, the table reveals that about 95% of the students belong to the middle class or the lower class and these were the students who cannot afford to hire the services of a tutor to supplement their quest for academic improvement. In the parents' education, it appeared that 95% have father and 100% have mother who were not able to reach college and their parents could not probably teach them academically. In the access to internet connection, only 40% only have their own mobile data and 45% do not have internet connection
- Based on the table, in the written works, only 1 student were able to reach 66%-85% Mastery Level and 19 students belong to 65% and below Mastery Level. However, in the performance task, all of them belong to the 65% and below Mastery Level
- Simplifying radicals by reducing the order of radicand, rationalizing the denominator and conjugate of radicals were found to be classified under the Low and Very Low Mastery in the Mastery Achievement Level.
- The performance of the students in terms of a pre-test and a post-test shows that that the pre-test mean score was 8.1 ,while the post-test mean score was 13.2. The mean gain of 5.1 was computed to check if there is a significant difference between the mean performance of the students before and after the intervention. The p value 0.000014 was smaller than the alpha value 0.05 hence, there is a significant effect of the intervention to the performance of the students.

FINDINGS

- Based on the data gathered by the researcher most of students belong to the middle-class or lower-class socio-economic status, most of them have parents who were not able to reach college level and do not have easy access to internet connection.



2. The select students have low academic performance in terms of written works and performance task based on the Mastery Achievement Level.
3. The findings revealed that simplifying radicals by reducing the order of radicand, rationalizing the denominator and conjugate of radicals are the learning gaps of the students in radical expressions.
4. Video-assisted Math lessons were able to address the learning gaps of students in radical expressions.

CONCLUSIONS

In the lights of the findings, the following conclusions were made:

1. Students cannot learn from the module alone most especially on complicated topics in Mathematics. They need supplementary materials and not just the printed ones. It is very vital to them that they can see a teacher explaining the concepts and giving examples.
2. Video-assisted Math Lessons were able to address the learning gaps of the students in radical expressions.

RECOMMENDATION

Based on the outcomes and implications of the study, the following are recommended:

1. Teachers must be aware of their student's progress and weaknesses, learning gaps should be identified, and eventually addressing it should be done so that students will not suffer from a continuous misunderstanding of a lesson.
2. Video-assisted Math lessons could be used as an intervention material not just to address the learning gaps of the students in a particular lesson but also to serve as supplementary material to those students under the Modular Distance Learning Modality hand in hand with their printed modules.
3. The video lessons most especially for complicated topics in Mathematics must be simple and concise so that they could really serve their purpose.
4. Similar studies be conducted to further determine the benefits gained in using video-assisted Math lessons as an intervention material in teaching especially in the current set-up of the education system.

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PRAGMATIC DIMENSIONS IN LANGUAGE LEARNING

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ABSTRACT

This scientific inquiry delves into the pivotal role of pragmatics in foreign language education, dissecting its intersectionality between linguistic competence and real-world communication. Examining sociocultural nuances and contextual factors, the study explores how pragmatics equips learners with the skills to navigate diverse communicative situations effectively. Emphasizing the importance of pragmatic competence, the research sheds light on its multifaceted dimensions, from discourse construction to sociocultural adaptability. Furthermore, it investigates the promising integration of pragmatics and corpus linguistics, unveiling the potential of innovative technologies in enhancing language education. This study advocates for the comprehensive inclusion of pragmatics in pedagogical practices, fostering culturally sensitive and proficient communicators poised for meaningful global interactions.

KEYWORDS: *pragmatics, language education, linguistic competence, sociocultural communication, effective discourse, corpus linguistics, cultural adaptability, language pedagogy.*

In the ever-changing landscape of language education, the study of pragmatics emerges as a critical nexus between linguistic competence and effective communication. Pragmatics in foreign language education explores the practical application of language in diverse communicative contexts, delving into the nuanced interplay of sociocultural and contextual factors. This interdisciplinary field is pivotal in nurturing learners not only into competent speakers but also into adept communicators capable of navigating the intricacies of real-life interactions. This article delves into the multifaceted realm of pragmatics, examining its fundamental role in shaping communicative competence. By exploring the intersections of linguistic theory, cultural awareness, and emerging technologies like corpus linguistics, we unravel the potential of pragmatics in revolutionizing language education, equipping learners with the skills needed for effective and culturally sensitive communication in an increasingly globalized world.

Pragmatics in foreign language education, an area rooted in applied linguistics, holds a critical position in the development of communicative competence and sociocultural awareness among learners. It is concerned with the practical application of language in real communicative contexts (Smith, 2005, p. 78). Pragmatics delves into the effective strategies required to achieve communicative objectives, considering the sociocultural and contextual aspects of language use.

The study of pragmatics equips learners with the competence to become effective and efficient communicators in a foreign language. Pragmatic skills extend beyond grammar and vocabulary, encompassing the ability to employ language effectively in diverse communication situations. Learners develop proficiency in selecting appropriate communication strategies, interpreting nonverbal cues, adapting to varying contexts, and comprehending cultural nuances in language use (Wardhaugh, 2006, p. 92). This also nurtures their capacity to consider cultural differences in communication, enhancing their effectiveness in intercultural interactions (Gudykunst & Kim, 2003, p. 165).

Furthermore, the study of pragmatics enlightens learners about the multifaceted nature of language use, transcending the mere application of lexical and grammatical rules. It empowers them to recognize and analyze pragmatic elements, such as implicatures, idioms, and hints, which hold distinct meanings in different contextual settings.

Pragmatics additionally offers insight into the sociocultural dimensions of language use. Learners become attuned to cultural norms and expectations governing foreign language communication. They gain the ability to adapt their communicative strategies and respect the cultural idiosyncrasies of their interlocutors (Scollon & Scollon, 2001, p. 80).

In conclusion, the significance of pragmatics in foreign language education cannot be overstated. It plays a pivotal role in molding learners into adept communicators and culturally sensitive individuals, thus preparing them for effective communication in diverse international settings.



For a considerable period, the primary focus of foreign language education revolved around the acquisition of grammar and vocabulary (Chomsky, 1962). However, the advent of the communicative approach to teaching foreign languages in the latter half of the twentieth century highlighted the need for developing not just linguistic competence, which encompasses grammar and vocabulary, but also a spectrum of other competencies (Chomsky, 1972). Noam Chomsky introduced the term “linguistic competence” in contrast to the concept of “language use” or “linguistic performance” (Shchukin, 2010). Initially, Chomsky defined competence as “the ability necessary for carrying out a specific, predominantly linguistic activity in one's native language” (Chomsky, 1962, p. 138). Linguistic competence was seen as the mental knowledge about a language, while linguistic performance referred to the actual, real application of the language in specific situations (Chomsky, 1972).

Pragmatic competence stands as the ability to convey a message with all its nuances in any sociocultural context and interpret the interlocutor's message as intended (Balconi & Amenta, 2010). This competence is indispensable for successful communication, yet it has not always received the attention it warrants in second language education. As a result, foreign language learners who possess linguistic competence but lack pragmatic competence may produce grammatically correct utterances that fall short of their intended communicative goals. Pragmatic competence encompasses knowledge of general models for constructing utterances and converting them into meaningful discourse (discourse competence), the ability to employ utterances for various communicative purposes (functional competence), and the capability to consistently generate utterances in accordance with interaction models (speech schematic construction competence). The teaching of pragmatic competence is unequivocally essential as successful communication in a foreign language hinge on these skills and knowledge. Speakers make choices informed by the distinct features of pragmatic competence, including variability, reversibility, adaptability, salience, uncertainty, and dynamism, which govern the range of communicative possibilities, flexibility in decision-making, and modulation of communicative options as per the context (Shchukin, 2010).

Pragmatics, as a relatively young field of study, intersects with another burgeoning discipline – corpus linguistics. This intersection paves the way for the exploration of teaching pragmatic competence using corpus technologies (Romero-Trillo, 2008). For a significant period, these two domains were considered to be parallel, if not mutually exclusive (Chomsky, 1962). However, recently, their integration and mutually beneficial collaboration have been underscored (Romero-Trillo, 2008). Corpus linguistics is a branch of linguistics concerned with the creation, development, and utilization of text – corpora. The amalgamation of these two linguistic branches has given rise to corpus pragmatics. The driving force behind this field's expansion is pragmatic annotation or markup, which is a labor-intensive process requiring manual intervention after automated analysis (Balconi & Amenta, 2010). Corpus pragmatics, at its core, represents the convergence of the fundamental methodological principles of both corpus linguistics and pragmatics, forming a smaller but distinct field. Although there may be numerous issues that corpus pragmatics may not address, such as the study of collocations, which remains within the purview of corpus linguistics, the potential for expansion remains substantial, especially with the availability of more complex, pragmatically annotated corpora. The advancement of this field largely hinges on practical considerations, particularly the extent to which labor-intensive manual annotation can be substituted with semi-automatic or fully automated annotation processes. Automated annotation not only economizes resources but also facilitates precise tracking of elusive pragmatic phenomena in increasingly expansive pragmatic corpora (Romero-Trillo, 2008).

In the contemporary landscape of language education, the significance of pragmatics cannot be overstated. It bridges the gap between linguistic theory and practical communication, ensuring that learners not only grasp the intricacies of grammar and vocabulary but also master the art of effective discourse in diverse cultural contexts. As our exploration reveals, the integration of pragmatic competence into language education, aided by cutting-edge technologies such as corpus linguistics, offers unprecedented opportunities. Through rigorous research and innovative methodologies, educators can guide learners toward becoming proficient communicators, capable of understanding and respecting the nuances of different cultures. By embracing pragmatics as a cornerstone of language pedagogy, we pave the way for a generation of global citizens, fostering meaningful connections and understanding in an interconnected world.

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THE LANGUAGE OF THE GODFATHER BOTH NOVEL AND FILM AND THEIR INFLUENCE ON COMMUNICATION

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ABSTRACT

Communication has become very important in the modern professional and social context. It has broken the conventions of just give and take of messages. For an effective leader or manager the importance of communication becomes manifold. It is very important tool that drives home the effectiveness of the leader or manager. How does he communicate? When does he communicate? Effective communication is indeed crucial in both professional and social contexts. It goes beyond simply exchanging messages and involves various aspects such as active listening, empathy, clarity, and timing. To whom does he communicate? How does he respond to communication? These are the important elements for a leader or manager in communication and communication management. Leaders or managers or would be leaders and managers have to comprehend and perceive this communication and look ahead of the road. One can grasp the untold word, the invisible symbol or sign or reading the unwritten word and the unexpressed body language. "The Godfather" a very famous fiction work by Mario Puzo is an excellent tool of learning for the students of management, management professionals and even leaders and managers from variety of perspective. Intent reading of the novel also gives one an idea that primarily it is not a novel of crime, justice, character and a thriller; it is an in-depth study on human mind and psyche. Analyzing the classic film "The Godfather" from the perspective of "family values" in the context of communication patterns is an interesting approach. "The Godfather" directed by Francis Ford Coppola, is known for its portrayal of the Italian-American mafia family, the Corleones. While the film primarily revolves around organized crime, power struggles, and morality, it also subtly highlights the significance of family and relationships in the communication dynamics. Here is how "The Godfather" can be used to emphasize the importance of serious communication and family values in professional life. In the process of analysis, this paper focuses on grasping the communication and contact between the main characters in the film, and analyzes the family warmth and love revealed in it.

KEYWORDS: *Communication, communication management, leadership communication, managerial communication*

АННОТАЦИЯ

Общение стало очень важным в современном профессиональном и социальном контексте. Это нарушило традиции простого обмена сообщениями. Для эффективного лидера или менеджера важность коммуникации становится многократной. Это очень важный инструмент, который позволяет оценить эффективность лидера или менеджера. Как он общается? Когда он общается? Эффективное общение действительно имеет решающее значение как в профессиональном, так и в социальном контексте. Это выходит за рамки простого обмена сообщениями и включает в себя различные аспекты, такие как активное слушание, сочувствие, ясность и выбор времени. С кем он общается? Как он реагирует на общение? Это важные элементы для лидера или менеджера в сфере коммуникаций и управления коммуникациями. Лидеры или менеджеры или будущие лидеры и менеджеры должны осмыслить и воспринять это общение и смотреть вперед. Можно уловить невыразимое слово, невидимый символ или знак или прочитать ненаписанное слово и невыраженный язык тела. «Крестный отец», очень известное художественное произведение Марио Пьюзо, является отличным инструментом обучения для студентов, изучающих менеджмент, специалистов по менеджменту и даже лидеров и менеджеров с разных точек зрения. Внимательное прочтение романа также дает представление о том, что это прежде всего не роман о преступлении, правосудии, характере и триллере; это углубленное исследование человеческого разума и психики. Анализ классического фильма «Крестный отец» с точки зрения «семейных ценностей» в контексте моделей общения представляет собой интересный подход. «Крестный отец» режиссера Фрэнсиса Форда Коппола известен тем, что в нем изображена итало-американская мафиозная семья Корлеоне. Хотя фильм в первую очередь вращается вокруг организованной преступности, борьбы за власть и морали, он также тонко подчеркивает значение семьи и отношений в динамике общения. Вот как «Крестный отец» можно использовать, чтобы подчеркнуть важность серьезного общения и семейных ценностей в профессиональной жизни. В процессе анализа в статье основное внимание уделяется пониманию общения и контакта между главными героями фильма, анализируются раскрывающиеся в нем семейные теплота и любовь.



Ключевые слова: Коммуникация, коммуникативный менеджмент, лидерская коммуникация, управленческая коммуникация.

INTRODUCTION

Don Vito Corleone as a person who was known for offering assistance to anyone who sought his help, and he consistently delivered on his promises. He did not make false commitments or use the excuse that external forces beyond his control prevented him from helping. In essence, he was a dependable and trustworthy individual who always came through for those who approached him for aid. [5; 14]

Experts have frequently cited the work as a remarkable study in management, psychology, and criminology. The Godfather is an excellent work of communication; rather, it represents several facets of communication in all of their complexities, ranging from simple conversations and listening to Neuro Linguistic Patterns. Of fact, such was not the author's intention when he wrote, but the breadth of human interactions gave him the opportunity to depict the numerous parts of communication. In fact, the novel's success demonstrates the power of the written word or the effect of written fictional communication.

The Godfather is a trilogy film. The first section is upon a switch between the first godfather, Vito Corleone, and the second godfather, Michael Corleone. The film begins with the wedding of Vito's daughter, which unveils the family structure and foreshadows the characters' fates. And, to some extent, this wedding also witnesses the family's final prosperity, as the Corleone family's fortunes begin to dwindle from that point forward. Although the Corleone family is one of the most powerful Mafia families in New York, it is well respected since the elderly godfather-Vito Corleone is a reasonable and wise man who does what he says and understands what is and is not acceptable. For example, at the beginning of the film, a helpless father-Bonasera comes to Vito to ask him to do justice for his poor daughter who was hurt by two gangsters, but without getting a fair trial. Vito promises that the two bastards would be suffering after Bonasera asks Vito to be his friend and kisses Vito's hand. However, when Sollozzo, the drug dealer comes for negotiating about selling drugs together, Vito decidedly refuses, because he knows that drugs will ruin one's whole life and the politicians he supports will not agree with it. It is the rationality and warmth reflected in the film that differs "The Godfather" from other gangster films. Vito endured numerous joys and losses in his life as the creator of the Corleone family, including the ecstasy of family union and the agony of losing his beloved son Sonny. Vito spends the majority of his time happier than his second godfather, Michael. Vito died at the end of The Godfather I while playing with his grandchild in the garden. Crime, as an act in real life or its portrayal in any form has always been a topic of prime discussion in social, political, economic and personal forums of society. Performing arts such as plays and films have strongly drawn inspiration from the current and contemporary issues prevailing in the society. Productions from diverse film industries across the globe have symbolized the versions of criminal acts and gangsters. Crime films depict a bigger and imaginary picture of criminals and gangsters who operate beyond the law, emphasising on their demeanours, lives, lifestyles, and specialised methods of operation; glorifying the rise and fall of crime kingdoms. They also emphasise the life of the crime victim and their struggle for justice. These films' cinematic plots depict real-life circumstances and characters from true events and past criminal records. Money, power, greed, vengeance, gambling, narcotics, murder, robbery, machismo, violence, and other themes are common in crime and gangster films. Characters portraying gangsters and bad characters are frequently described as materialistic, unethical, and dishonest. "The first gangster film in the history of cinema was The Musketeers of Pig Alley, a 1912 American short drama film directed by D. W. Griffith [2; 318]. Early gangster films were made from a non-criminal or, more exactly, a law-abiding point of view, i.e. the story is shown from the perspective of a character or a system that is attempting to halt the crime [1] [3].

One of the most successful gangster films of all times is the 1972 film The Godfather, directed by Francis Ford Coppola. It is an American crime film based on the famous and successful crime novel The Godfather by Mario Puzo, an Italian American writer. This is considered a landmark film in the history of Hollywood considering the box office collection which was \$268,500,000 worldwide. The Godfather had won its own share of prestigious awards including the Academy Awards, Golden Globes and BAFTA Awards having an overall 32 wins and 19 nominations [6] [7].

Many directors and writers were inspired by The Godfather to create high-quality work in terms of characters, story arc, and overall cinematic greatness. It had created the groundwork for several additional films that would follow across various geographies. Particularly Indian writers and directors in many languages have been affected at various levels, paving the path for award-winning films that have received both financial and critical recognition. In terms of narrative, characterization, and screenplay, certain films show a strong influence and similarity to the classic (The Godfather), while others show a mild influence. Revenge, Masculinity, and the Glorification of Violence are analysed in depth as themes and execution styles in The Godfather in this article.

METHODOLOGY

When we refer to communication as an art that's almost on the verge of becoming a science, "The Godfather" offers valuable insights and examples of communication. Both management students and professionals can gain a deep understanding of the intricacies of



communication, become more attuned to it, and advance their communication skills. The novel also delves into the psychological aspects that influence an individual's communication process. In this discussion, we will explore various facets of effective communication and how the novel serves as a case study in this aspect of communication. To truly grasp the depth and portrayal of communication in the novel among its various characters, one must first comprehend the characters themselves, the different situations they find themselves in, and the psychological state of each character, and how these factors are reflected in their speaking, listening, and body language. Throughout the entire novel and the unfolding of the plot, these three aspects are vividly and flawlessly portrayed. Characters such as Don Corleone, Michael Corleone, Tom Hagen, and Sollozzo offer valuable insights into the study of communication. Likewise, certain situations, like Don Corleone's daughter's wedding and his attentive listening to visitors' concerns, Tom Hagen's conversation with Jack Woltz, Michael's discussions at the hospital and with family, and the Don's interactions with various individuals, all provide ample material for psychological analysis and its impact on individual communication. The author underscores the direct link between one's mental state and communication, likening it to an umbilical cord. In this exploration, we will focus on specific scenes from the novel and discuss the particular aspects of communication they illuminate. These scenes offer ample opportunities for interpretation, psychoanalysis, and the assessment of the effects of delivered communication.

DISCUSSION

Listening holds significant importance in the communication process, with some even considering it more critical than speaking. It serves as the initial step in fostering a harmonious and meaningful conversation, facilitating effective dialogue, promoting win-win negotiations, and enabling fearless arguments. It is essential for anyone to listen attentively, as it provides a mental reservoir for generating thoughts, responses, and arguments. A remarkable illustration of attentive listening can be observed when guests approach Don Corleone with requests for favors. They share their experiences and desires, and the Don patiently and closely listens to every word they utter. He not only hears the explicit words but also discerns the unspoken messages conveyed through their body language. He interprets the conversation in his own way, underpinned by sound logic and reasoning.

“What is your justice?” “An eye for an eye.” Bonasera said. “You asked for more,” the Don said, “your daughter is alive” [2; 32]. A seasoned professional who has mastered the time-tested traits of good communication listens, listens intently and does not retort or respond immediately but lets the words move around among the faculties of his mind the response would come with the finishing of reasoning and evenness required.

Gangster films are usually loaded with rise and fall of criminals and their activities leading to their aftermath. Massive crimes (which might have strong legal repercussions) are carried out by gangsters working with a trusted group of individuals functioning to implement it. Loyalty towards each other in a gang and to the central power running it is always considered a religion with utmost priority. Betrayal in any form is not accepted and if performed, gives birth to vengeance. Films of gangster genre have revenge as an integral part to the plot which takes the story forward to climax.

Speaking or the act of delivering a message has traditionally been regarded as the paramount and most crucial element of communication, although experts would emphasize that it stands on equal footing with listening and body language. Speaking serves as the means to connect with others, make an impression, and persuade them. People tend to be easily swayed by a proficient orator, impressed by their style, voice, and intonation. However, being a proficient speaker doesn't necessarily equate to being a well-rounded communicator. Effective speaking necessitates a synergy of one's mental disposition, clear thinking, reflection of their personality, and body language. What one chooses to say, or not say, can reveal a great deal about their personality traits. Key elements of effective speaking, such as articulation, appropriate language usage, assertiveness, and tone and intonation, all work in concert to enhance its impact. Speaking is the facet of communication used to express emotions, thoughts, engage in persuasion, negotiate, discuss, and even deliver reprimands.

The approach to communication can indeed vary, and it may fluctuate depending on the situation or the individuals involved. What one says in a particular context can be indicative of their competence and adaptability. For example, during the Don's daughter's wedding, when the Corleone family discovered that the police were surveilling the street, jotting down the license plate numbers of the guests' cars, it caused a sense of unease among everyone, while Sonny, in particular, reacted with anger. The Don calmly put the matter saying, “I don't own the street. They can do as they please” [3; 18].

This demonstrates Sonny's mental disposition, his approach to handling situations without being easily rattled, and his confidence that 'nothing significant will occur.' A seasoned individual in negotiation and communication comprehends not only the circumstances but also the people involved, including how they are likely to respond in a given situation. For instance, when the Don imitated Johnny Fontane to convey his disapproval of Fontane's behavior, he had a keen understanding of how each of his sons would react to the mimicry. 'Santino would have sulked and exhibited ill temper for weeks. Fredo would have been intimidated. Michael would have responded with a cool, distant smile and then proceeded with his own course of action [4; 37]. A seasoned communicator also possesses the ability to foresee the impact of their words and actions and adapts their communication



accordingly. Negotiation is a constant and integral part of the daily routine for leaders and managers. It's not merely an occasional situation or a temporary phase but a continuous process where one has honed their negotiation skills and communication abilities. This process encompasses a wide range of elements, beginning with clear thinking, along with effective listening, speaking, and knowing when to assert oneself. An excellent demonstration of negotiation skills can be observed in the case of Tom Hagen when he encounters Jack Woltz, a prominent figure in Hollywood. Hagen maintains his composure, staying focused on the heart of the negotiation, even when faced with ill-treatment and verbal abuse, without allowing himself to be swayed. The noteworthy thing was he knew his role and limits in the negotiation process and was equipped for the negotiation with all its skills. 'Hagen had learnt the art of negotiation from the Don himself. "Never get angry," the Don had instructed. "Never make a threat. Reason with people". The art of this was to ignore all insults, all threats; to turn the other cheek' [5; 57].

Ultimately, the fundamental purpose of negotiation and communication is to accomplish goals and attain the intended results. When engaging in discussions about communication and self-expression, leaders and managers must equally understand what needs to be articulated and what should be left unspoken. A skilled professional with a comprehensive outlook breaks down the communication process and its content, similar to how a Work Breakdown Structure (WBS) organizes tasks, in order to avoid unnecessary difficulties and misinterpretations among others. This person may judiciously decide what to convey and take heed of, exercising discretion when determining what should be kept confidential or disregarded. Don Corleone had this insight and smartness of communication. The Don nodded. He did not think it necessary to mention that he himself had warned the senator not to come. "Did he send a nice present?" [5; 41] The Don smiled coldly, "No," he said.....It was then that Sonny made an unforgivable error in judgement and procedure. He said eagerly.....Hagen was horrified at this break. He saw the Don turning cold, malevolent eyes on his eldest son.....Sollozzo's eyes flickered again with satisfaction. He had discovered a chink in the Don's fortress. [5; 74] The Don turned to his son and said, "Santino, never let anyone outside the family know what you are thinking. Never let them know what you have under your fingernails." [5; 75] wanted to be' [5;123]. Michael displayed a skill for evaluating individuals and circumstances effectively and adjusting his communication accordingly. When he was attacked by the corrupt police officer in the hospital, who was aligned with Sollozzo, he managed to restrain his anger. Even when questioned by the lawyer, he provided false information regarding the severity of his injury to mask his genuine emotions and intentions. He was determined to conceal, no matter the cost, the satisfying, cold intensity that dominated his thoughts and the rush of icy hatred that coursed through his body [5; 127]. Michael, like his father, possessed the ability to employ the wisdom of "Listen to the message, not the words." This is a valuable skill that managers and leaders must grasp and apply when navigating diverse individuals and complex situations. During his negotiation with Sollozzo in the restaurant, Michael could discern the message of threat, fear, and desperation in Sollozzo's demeanor, especially as he realized that the Don had survived. Sollozzo's confidence was waning, and he approached the table out of fear rather than genuine interest. Michael comprehended the complete message and reacted accordingly. Understanding why something is being said, how it is being conveyed, and its relevance to past, current, and future circumstances is essential to grasp the true message behind the words.

ANALYSIS

"The Godfather" both the novel by Mario Puzo and the film directed by Francis Ford Coppola, explores the theme of family values in the context of the Corleone crime family. While the Corleones are deeply involved in organized crime, the story delves into the conflicting aspects of their family life. Here is an analysis of the family values portrayed in "The Godfather":

1. **Loyalty:** Loyalty to the family is a paramount value in the Corleone clan. Family members are expected to be unwaveringly loyal to the patriarch, Don Vito Corleone, and to each other. This loyalty is depicted as both a source of strength and a source of conflict, as characters struggle to balance their loyalty to the family with their own desires and moral compass.
2. **Honor and Respect:** The Corleones uphold a strong sense of honor and respect within the family. The Don's principles are centered on respect for others and conducting business with a certain degree of honor. This value can be seen in how the family deals with rivals and allies in the criminal world.
3. **Tradition:** Tradition is a crucial aspect of the family's values. The Corleones adhere to traditional Italian values, customs, and rituals. These traditions serve as a backdrop to their criminal activities and shape their moral code.
4. **Protection of the Family:** The Corleones are fiercely protective of their family members. This value is often at the core of their criminal activities, as they resort to violence to safeguard their loved ones. This theme is most evident when Michael takes extreme measures to protect his father and the family from their enemies.
5. **Sacrifice:** Family members are willing to make significant sacrifices for the well-being of the family. The story shows characters who make personal sacrifices for the greater good of the family, even if it involves violence or criminal acts.
6. **Ambition and Power:** While family values are held in high regard, there is a tension between these values and the pursuit of power and ambition. The desire for power often leads to moral compromises and conflicts within the family, particularly seen in Michael's transformation from a reluctant outsider to a ruthless leader.
7. **Family Dynamics:** The novel and film explore the complexities of family relationships. These include sibling rivalries, generational clashes, and the challenges of being part of a criminal empire while trying to maintain a semblance of a normal family life.



8. **Redemption and Transformation:** The story suggests that redemption and transformation are possible, even within a criminal family. Characters like Michael grapple with their values and seek redemption for their past actions. In summary, "The Godfather" portrays a complex interplay of family values within the context of a criminal empire. It examines the tensions between loyalty, tradition, and the pursuit of power, making it a thought-provoking exploration of family dynamics and morality.

Vito Corleone is the first godfather. In the film, "Vito Corleone has a positive and optimistic side to both family and social life. With his tough character, strong ability and unyielding spirit, he constantly pursues money, power and status. The most impressive characteristics of him are his behavior of strongly protecting his family and his spirit of bravely fighting against his enemies who attempts to hurt his family" [9; 32].

Vito Corleone's character and values in "The Godfather" are deeply shaped by his early life experiences, particularly the loss of his parents and brother. These experiences instill a profound appreciation for family and love. As he comes to America, he builds a new family with his wife and three children. He leads a simple yet content life, working hard and abiding by the law, prioritizing the happiness and well-being of his family. Vito's early life hardships make him acutely aware of the importance of family bonds, and he is emotionally connected to his wife and children. His profound love for his family is evident in the way he is moved to tears when his son Fredo falls ill with pneumonia. This emotional response underscores the deep affection he has for his loved ones. As Vito ages and gains more experience in the Mafia world, his values and character undergo some changes. His exposure to the suffering and brutality in the criminal underworld in the first half of his life makes his love for his family even more profound. He becomes acutely aware of the fragility of life and the importance of cherishing the time spent with family. These changes in Vito's character reflect his family values in multiple ways. He places an even higher premium on loyalty, protection, and providing for his family. The criminal actions he takes are often motivated by his desire to safeguard his family's well-being, even if it means making moral compromises. His ultimate commitment to his family is a driving force in the story, and it highlights the enduring theme of family values in "The Godfather." "Michael represents the second generation of Italian immigrants: they have become American citizens since birth, and indirectly inherited the characters of Italians from their previous generation. Therefore, they have American and Italian dual cultural characteristics" [4; 25]. In "The Godfather," Michael Corleone's character undergoes significant development, illustrating the interplay between his personal values, family loyalty, and the impact of circumstances. Initially, he is depicted as an ambitious, idealistic, and patriotic young man who firmly believes in the American dream. He serves in the American navy during World War II, falls in love with an American girl, and aspires to distance himself from the family's criminal activities. His early conversation with his girlfriend Kay underscores his reluctance to be part of the family's business, with his statement, "This is my family, Kay, not me." However, as the story unfolds and his family faces a crisis, Michael undergoes a transformation. His commitment to family values and loyalty to his loved ones are deeply ingrained, much like his father Vito's values. When his family is in danger, Michael steps up without hesitation to protect them. This shift in his character highlights the powerful influence of family in shaping his actions and decisions. As the youngest son of the Don, Michael enjoys a special bond with his father. Vito Corleone is supportive of Michael's choices, even when they differ from his own. For instance, Vito doesn't object to Michael's decision to join the navy. Despite Michael's initial reluctance to inherit the family's criminal empire, his deep love and respect for his father are apparent throughout the story. In essence, Michael's character in "The Godfather" is a study in the tension between personal aspirations and family loyalty. His transformation from an idealistic outsider to a committed protector of his family underscores the central theme of family values in the narrative. The influence of his father's legacy and his dedication to family ultimately shape the course of his life.

RESULT

In "The Godfather," there is a pivotal plot point where Michael's character undergoes a significant transformation. In order to safeguard his father's safety and protect his family, he makes the difficult decision to eliminate Sollozzo and the corrupt police officer. This decision represents a profound contradiction and a departure from his earlier innocence and hopes of leading a respectable, law-abiding life. The audience can infer from Michael's choice that he is willing to forsake his innocence and aspirations for decency in order to prioritize his family's safety and well-being. It marks a critical turning point in his character development. While Michael's mother, Carmela Corleone, doesn't have a prominent role in the film, her absence highlights the traditional Sicilian gender roles and the limited interaction between Michael and his mother. In the film, she represents the archetype of a traditional Sicilian woman who provides understanding and unwavering support to her family. Her primary role is to offer prayers for her husband and children, expressing her wishes for their safety and prosperity. Michael's love for his mother is portrayed through his actions, especially in the form of companionship and support he provides to her. It is through these actions and the family's adherence to traditional roles that the depth of their familial bonds is conveyed. This dynamic underscores the theme of family values in the story and the sacrifices made to protect and support the family, even when it requires a departure from one's earlier aspirations and innocence. Michael has three brothers altogether: Sonny, Fredo and Tom. Sonny, as the oldest son in the Corleone family, is expected to be the second godfather after Vito. Although Sonny is characterized by rudeness and recklessness, Michael always respects and loves him doubtlessly. Sonny is very angry and tries to fight with Michael when he hears Michael's



decision for enlisting the American Navy, because their father has a high expectation for Michael. The series of actions show Mike Corleone's disappointment, helplessness and sadness" [8; 32]

Michael's actions not only reveal his profound disappointment but also underscore his deep affection for his second eldest brother, emphasizing the enduring strength of familial bonds. In the Corleone family, Connie is cherished and enjoys the love and happiness that comes with her status as the family's princess. She remains largely removed from the family's criminal enterprises and should have led a content life if her husband had not betrayed the family. In the film, upon discovering Carlo's treacherous actions and his indirect involvement in Sonny's death, Michael takes it upon himself to eliminate Carlo without informing Connie. Carlo's actions, which included betrayal and violence against his wife Connie, make it difficult to garner sympathy for him. Nevertheless, Connie's love for her husband remains strong, despite his wrongdoing. To some extent, it could be argued that Michael's decision to murder Carlo appears immoral and calculated, rather than an act of revenge solely driven by the family's interests and Sonny's death. Connie harbors resentment towards Michael for a considerable period due to his actions, even going to the extent of hurting herself to convey her disappointment. However, considering her enduring love and concern for the family, Connie eventually reconciles with the family and returns to assist Michael in managing family affairs. This illustrates the enduring power of family ties, even in the face of conflict and betrayal.

CONCLUSION

Effective managers and leaders view communication as a tool to achieve their goals, rather than a means to express personal emotions or frustrations. They use this tool judiciously, understanding when and how to employ it. The entire communication process begins with an individual's overall demeanor and personality, including their mental state and readiness. It then progresses to evaluating the situation and the people involved, selecting the appropriate methods of communication, encompassing speaking, listening, and body language. This culminates in effectively conveying a message or comprehending one. "The Godfather" provides numerous examples of communication, negotiation, non-verbal communication (kinesis), and personality traits. It offers a valuable resource for learning about human psychology and the complexities of various situations, often more quickly than real-life experiences, and allows for the practical application of these lessons in real-world situations. Family is a universally timeless and significant theme, and men are often seen as the foundation of a family, a truth that holds for the Corleone family as well. In the context of family, there comes a great deal of responsibility. Having power doesn't diminish one's responsibility but actually increases it, as greater capacity implies a more significant duty. Vito Corleone's journey, starting from humble beginnings and building an extensive criminal empire through relentless effort, is a testament to his commitment to taking care of his family. Vito displays a blend of tenderness and rationality, earning respect from his family, friends, and even his adversaries by reciprocating the respect he receives. As for Michael Corleone, though assuming the role of the family's new Godfather was not his initial intention, he decides to continue his father's business when the family faces adversity. This decision is driven by Michael's dual nature and the characteristics that define him. "In Italian culture, the absence of the father means the collapse of the family" [4].

Therefore, when his father was murdered and his family in the edge of falling apart, Michael's Italian characteristics and personalities are evoked, which also means the death of his American dream. On assuming the role of the Godfather, Michael repeatedly attempts to alter the trajectory of his life, striving to legitimize the family's business. However, these efforts invariably meet with failure. Director Francis Ford Coppola provides a poignant interpretation of the tragedy of Michael Corleone. He likens Michael's journey to the evolving world. Initially, Michael represents a young man with purity and intelligence. As a child of the old world, he once naively aspired to rectify the mistakes of his predecessors. Yet, over time, he becomes progressively entangled in a world of violence and deception, using excuses to justify his crimes. As a result, he transforms into a more ruthless and vicious individual. This transformation serves as a reflection of the corrupting influence of power and criminality on an individual's character. Although this trilogy tells a Mafia family story that is glutted with blood and violence, there is love and warmth in it. And it is the family values reflected in the film that make it classic as well as unique in the film history [10;10].

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LIFE AND SCIENTIFIC ACTIVITIES OF HUSOMUDDIN SADR SHAHID IN BUKHARA

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ABSTRACT

This article discusses the life and scientific activity of Husamuddin Sadr Shahid, who was born in 473/1090. The article analyzes the role of Islamic jurists, including Husomiddin Sadri Shahid, in the political and social management of Movarounnahr society in the 10th-13th centuries. Also, the works written by Husomiddin Sadri Shahid, their themes and influence on other scientists are revealed.

KEYWORDS: *10th -13th centuries, Bukhara, Husamuddin Sadr Shahid, Scientific Activities, the works of jurisprudence, Hanafi school.*

Central Asia was famous as one of the independent regional civilizations in the Islamic world. In the process of many centuries of development, this civilization, regardless of anthropological, social, political, linguistic, religious and other changes, has always had its own laws, aspects, and characteristics. Islamic civilization served as the basis for the development of science in the region. In this regard, it is important to study the lives of scientists who lived and worked in this country and draw deep scientific conclusions from their scientific heritage.

In X-XIII centuries, Bukhara and Samarkand, which are considered to be large cities of Central Asia, were active in the intervention of scholars of the Hanafi sect in the social and political life. Many researchers in the west have carried out effective scientific activities on the entry and development of the Hanafi sect in this country [1: 370].

It is known that in the 10th-13th centuries, Islamic jurists (jurists) played the main executive role in the political and social management of Movarounnahr society. The Persian and Turkish sultans of Somani, Qarakhani, Ghaznavid and Seljuk who were the ruling dynasties in Movarounnahr used Islamic jurisprudence effectively to subjugate the people to their policies.

By the reign of one of the famous Seljuk sultans, Sultan Sanjar Ahmad ibn Malikshah (490-552/1097-1157), the political management of the lands of Central Asia under the control of the Karakhanids passed completely into the hands of the Seljuks [2: 14].

One of the unique features of the Seljuks' style of government was that they appointed both a rais (representative in charge of religious affairs) and an amir (representative in charge of government affairs) in one city. The chairpersons are local or religious figures loyal to the sultan by order of the ruler (similar to the representatives of the Oli Moza family), in turn, the emirs are also appointed by the sultan himself.

One of the dynasties that presided over Bukhara for many years was the Oli Moza family, and Sultan Sanjar's military and political activity in Mowarounnahr and the respect he showed to the Oli Moza family played an important role in the recognition of the family as a leading ruling circle in the social and political life of Mowarounnahr. They worked in Bukhara mainly as tax collectors and trusted representatives of Sultan Sanjar [3: 99]. Because during this period, the military administration in Movarounnahr was in the hands of the Seljuks. According to the researcher A.Q. Mominov, they served as chairman, khatib or main tribute collector in Bukhara.

Studying the scientific and spiritual heritage left by the jurists of the Oli Moza family is one of the important tasks facing researchers today. In this article, we aimed to clarify the works and scientific heritage of Husamuddin Sadr Shahid, the great representative of the Ali Moza family and one of the famous Hanafi jurists.



Husamuddin Sadr Shahid was born in the city of Marw in 473/1090 [4: 640]. His full name is Husamuddin Umar bin Abdulaziz bin Umar bin Moza Bukhari. According to Kafawi, he taught mature jurists and judges of his time. According to Quraysh, until his death, Husamuddin was known in Bukhara under the name of Moza or Banu Moza (Children of Moza) [5: 74]. He was given the nisab of Sadr Shaheed posthumously. Sadr Shahid was the chairman of Bukhara for twenty years, from 512/1118-19 to his death in 536/1141. The rank of Sadr was given to him by Sultan Sanjar. His fame as a martyr is due to his death in 536/1141 in the battle between the troops of Sultan Sanjar and the Karakhitas.

Arab researcher Muhyi Hilal Sarkhan, relying on the opinion of Qurashi, concludes that the jurist had two sons, one is Tajiddin Ahmed Sadr Sa'id and he is the father of Burhanuddin Mahmud Bukhari [6: 29]. This point requires clarification. In Tabaqat centuries, which provide information about Hanafi jurists other than Qurashi, it became known that Tajiddin Ahmad Sadr Sa'id was not the son of Sadr Shahid, but his brother. Burhanuddin Mahmud Bukhari also explains that Sadr Shahid is not his grandfather but his uncle as follows:

و لم يزل العلم موروثا من الأول للآخر و منقولاً من الأكابر حتى انتهى الى صدورى و اسلاف السعداء الشهداء تغمدهم الله بالرحمة و الرضوان فكلهم رضوان الله عليهم اجمعين شرحوا ما بقى من الفقه مجهولا و فتحوا ما ترك مقفلا فمصنفاتهم متداولة بين الورى يستعان بها عند اتقان الفتوى و قد وقع فى رأى ان اشتباه بهم بتأليف أصل جليل يجمع فيه اجل الحوادث الحكمية و النوازل الشرعية ليكون عوناً الى حال حياتى و أثرا حسنا لي بعد وفاتى.

"Knowledge was always inherited from the previous generations and continued to be transmitted from the elders, and finally it reached my Shahid and Sa'id Sadr and ancestors (may Allah surround them with His mercy and pleasure). Each of them (may Allah be pleased with them) commented on the unclear areas in fiqh and revealed the closed areas. The books written by them are widely distributed among the people and are referred to in issuing the perfect fatwa. An idea arose in my mind to write a great resource, which contains the main issues of Shariah, judicial events, and make myself like them. So that this thing may help me in my present life and be a beautiful inheritance after my death" [7: 11b].

Here, when Burhanuddin Mahmud said "my Shahid and Sa'id Sadr", he must have meant his father Tajiddin Ahmad Sadr Sa'id and his uncle Sadr Shahid. Therefore, it is appropriate to give Sadr Shahid as Burhanuddin Mahmud's uncle in further studies.

Sadr Shahid received his first knowledge from his father Abdulaziz bin Moza. Tabaqat works reporting on Hanafi jurists mention the battle of Qatawan, which led to the death of Sadr Shaheed [8: 98b - 155a].

Azerbaijani historian S.G. Agadjanov and a number of Turkish historians have studied the Qatawan incident between Sultan Sanjar and the Karakhitay ruler El Yuy Dashi (ie Gorkhan). The Battle of Qatawan began on September 3, 536/1141 and ended with the defeat of the Eastern Seljuk Sultanate.

The number of Muslim fighters who died in the Qatavon steppe is indicated in sources as 30,000, 70,000 and even 100,000 in some places. All of them were declared martyrs and buried in the eastern steppe of Samarkand [9: 371].

After the victory in Katavon, Karakhin Gorkhan takes over Bukhara. The chairman of the city, Sadr Shahid, will also be martyred in Qatawan.

According to the conclusions of a consistent study of the information in the works of "Tabaqat al-Hanafiyya", it was found that Sadr Shahid has the following works: "Al-Usul al-Husamiyya" or "Usul al-Sadr al-Shahid" is a work related to usul al-fiqh. Karl Brockelman gives information about this work [10: 374].

"Sharh al-Jami' as-saghir" is considered a commentary on the work "al-Jami' as-saghir" by Muhammad al-Shaybani, one of Abu Hanifa's students, and the author of "Miftah as-sa'ada" is "al-Jami' said the opinion that it is one of the seven major commentaries written on the work of al-saghir. Carl Brockelman reports on two copies of this commentary held in the American Barston University Arabic Manuscripts Collection. There are also copies of it in the Mosul Public Library and the National Library of Alexandria in Iraq. A copy of the Commentary, now preserved in the Devband madrasa in Saharanpur, India, was researched in 1310/1892-93 by Muhammad ibn 'Abdullah al-Laknavi al-Hindi. As a result of the search, it became known that the work is also known by the names "al-Jami' as-saghir fi-l-furu'" or "Jami' Sadr Shahid". At present, its Tashkent copy is stored in the main fund of the National Academy of Sciences of the Republic of Uzbekistan under number 5815.

Many commentaries were written on this work of Husamuddin Sadr Shahid by the leading jurists of his time. For example, "Sharh Badruddin al-Varsaki", "Sharh Abi Nasr Ahmed al-Isbijabi", "Sharh 'Alauddin al-Samarqandi" are among them. In addition, there are seven in the public library of "Sharh al-Jami' as-saghir" in Baghdad, four in the Istanbul State Museum, one in the treasury of "Hasan Poshho al-Jalili books" in Iraq, two in the library of the "al-Fatih" mosque in Istanbul, three in the Iraqi State Museum in Baghdad. , al-Azhar, Alexandria and Dar al-kutub al-misriyya libraries in Cairo keep eleven manuscript copies [11: 52-57].



"Sharh al-Jami' al-Kabir". This work is a commentary on "al-Jami' al-kabir" by Muhammad Shaybani. No manuscript copy of this commentary is known to exist. But the fact that many quotes from it in "al-Fatovo al-hindiyya" is proof that it was such a work.

"Umdat al-Mufti wa-l-Mustafi" (Guide to Fatwa Giver and Requester). Karl Brockelmann provides information about copies of this work in the libraries of the National Library of Berlin, Dar al-Qutub al-Misriyya in Cairo, and al-Azhar University [12: 591].

"Al-Fatawa al-Sughra" or "Fatawa al-Sadr al-Shahid". This guide contains Hanafi and Shafi'i fatwas in Movarounnahr and Khorasan until the 12th century. Currently, it has been found that there are two copies of it in the Mawsul National Library in Iraq and in the Dor al-kutub al-misriyya library in Cairo. The Tashkent copy of the work is kept under the number 5934 in the FA SHI of the UzR.

"Al-Fatawa al-Kubra" is included in the collection of rare manuscripts, the only foreign copy of the work is in The Chester Beatty Library in Dublin (Ireland). The second copy of the work is in Tashkent and is kept in the Federal Republic of Uzbekistan under the number 7857.

"Al-Waqe'ot al-Husamiyya fi mazhab al-Hanafiyya". Haji Khalifa calls the second name of this work "al-Ajnas". There are four copies of his manuscripts in the Al-Fatih Library in Istanbul, one in the Berlin National Library, and two in the Istanbul State Museum. Haji Khalifa says that the works "al-Hidaya" and "al-Fatawa al-Zahiriyya" were created based on "al-Waqe'ot al-Husamiyya". The Tashkent copy of the work is kept under the number 7756 in the Oriental institute after name Abu Rayhan Beruni.

Turkish Islamic scholar Murtaza Bedir describes Sadr Shahid in his book "Bukhara Law School" as a jurist who founded and developed the genre of "Events" in jurisprudence [13: 196]. This work by Sadr Shahid is a collection of four famous works written before him in the fatawa genre in Mowarounnahr. These are given in the order of the Arabic alphabet, the first is the fatwas in Abu Lais Samarkandi's "Nawazil" under the letter "nun", the fatwas in Natifi's "al-Waqe'at" under the letter "waw", and the fatwas under the letter "be" in Abu Bakr Muhammad ibn Fazl's "al "Fatavo" and finally fatwas of Alauddin Samarkandi under the letter "sin".

Murtaza Bedir and Uzbek orientalist Adil Qariev in their research "Qinyat al-munya li-tatmim al-gunya" written by Khorezm jurist Najmiddin Abu-r-Rajo Mukhtar ibn Mahmud az-Zahidi al-Gazmini (d. 658/1260) during the Mongol invasion. " will give information about the instructions in the work. According to them, one of the important aspects of this work is that Najmiddin al-Ghazmini was the first to use the index of names and literature in manuscript sources and cite them in his work.

But sources confirm that Sadr Shahid first introduced this method in Movarounnahr about a hundred years ago. Since the time of Sadr Shahid, this method has made it possible for students and scholars to easily determine the owner of a fatwa. This view seems simple, but it gives a new scientific conclusion, that is, ten centuries ago, our ancestors laid the foundation for the rule of reference in modern language. So, it proves that the rules of footnote (snoska) spoken in the western language were not originally founded in the west or in other Muslim countries of the east, but in our country.

According to Hamidulla Aminov, instead of understanding these symbols as "indicators", it is appropriate to understand them as "conditional abbreviations". According to the conclusions of the study of fiqh sources written in Movarounnahr, each of them has its own special symbols and istilahs. Some of them have more special abbreviations and conditional abbreviations. Commentators and researchers studied them and understood the purpose of the author.

Burhanuddin al-Marginani's work "al-Tajnis wa-l-mazid" (Similation and Addition), "Kitab al-Mukhtar" by Abu Fazl Abdullah ibn Mahmud ibn Mawdud ibn Majdiddin al-Mawsili (d. 683/1284) (selected book), Abu-l-Barakat al-Nasafi's (d. 710/1310) "Kitab al-Wafi fi-l-furu" (The faithful in Furu' al-fiqh), Tahir ibn Salam ibn Qasim Ibn Ahmad al-Ansari al-Khwarazmi (d. 771/1370) "Jawahir al-Fiqh" (Jewels of Jurisprudence), Badriddin Mahmud ibn Isra'il ibn Abdulaziz al-Hanafi (d. 823/1420) " In Jami' al-Fusulayn (Two "Fusul" Collections), the jurists used and quoted the names of the works and some expressions, and compiled an abbreviated index-index. They gave these abbreviations at the beginning or at the end of their works.

So, if Sadr Shahid first introduced abbreviations in the order of the Arabic alphabet, it can be said that Najmiddin al-Gazmini, the chief jurists whose names and works were mentioned above, put indicators and abbreviations into a separate system.

Mahi Hilal Sarkhan, an Iraqi researcher who studied the scientific heritage of Sadr Shahid, wrote "Kitab al-nafaqat", "Kitab al-taklima", "Kitab al-muntaq", "Kitab maso'il da'wa al-hiytan wa-t-turuq" va maso'il al-mo', "Kitab al-mabsut fi-l-khilafiyot", "Kitab hirat al-fuqaho", "Kitab al-waqf" also provides information.



We assume that these works reported by Mahi Hilal Sarkhan were not written as independent works. Because there is no specific information about the copies of these works in other sources.

Some researchers have confused the works written by Sadr Shahid and Burhanuddin Mahmud Bukhari. It can be found in the works of more Arab researchers. For example, the Lebanese Abdullah Mustafa al-Marogha claims that Sadr Shahid wrote "az-Zahiratu-l-burhaniyya".

It is known that many Hanafi scholars commented on the work "Adab al-Qazi" by Allama Hassof (d. 261/874-75). The Egyptian researcher Taha Ahmad Maghazi expressed the opinion that Burhanuddin Mahmud Bukhari has a work called "Sharh adab al-qazi li-l-Hassaf" and considered "az-Zahiratu-l-Burhaniyya" to be an abbreviated form of the work "al-Muhit". This idea is highly controversial and causes confusion in the research on this topic. Because the commentary on Khassaf's work was not written by Burhanuddin Mahmud Bukhari, but by Sadr Shahid. The work was fully scientifically researched in 1977 by Mahi Hilal Sarkhan from Baghdad.

Sadr Shahid played an important role in the popularity of the Oli Moza family in Bukhara. This can be seen from the attitude of many jurists towards his fatwas. For example, Najmuddin Yusuf Khasi collected allama's fatwas and wrote his work "Al-Fatawa al-Kubra". This work is also known as "Tajnis al-waqe'ot". al-Khosi 16 Rabi' al-Sani 607/ October 6, 1210 made Sadr Shahid's work "Fatawa al-Sughra" into a book form. Burhanuddin Marginani (d. 593/1197) collected fatwas of Sadr Shahid in his book "Kitab at-tajnis wa-l-mazid". See Zahir al-Din 'Abd al-Makarim Abu-l-Fath Ishaq ibn Abi Bakr al-Walwaliji (d. 540/1145-46) in his Fatawa al-Walwaliji for more use of the book Fatawa ahli Samarkand and Sadr Shahid's fatwas can.

In conclusion, Husamuddin Sadr Shahid graduated from the two major fiqh schools of Bukhara and Samarkand fiqh schools of Mowarounnahr and consolidated his many years of tradition. In the future, conducting new researches within the scientific works of this scientist will reveal new aspects of the traditions of jurisprudence specific to Mowarounnahr.

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SOME VIEWS AND OPINIONS ON THE HYDROCHEMICAL REGIME AND FILTRATION PROCESSES OF THE TUDAKOL RESERVOIR

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ANNOTATION

We all know that the world's water resources have been declining in recent years, including in Central Asia. Uzbekistan, our sunny country, is no exception. To substantiate the relevance of this topic, we can only cite the example of the Tudakul reservoir. As a result of our scientific research, we need to properly organize the operation of this reservoir, which is one of the largest reservoirs, and change the ecological balance of the environment in a positive direction).

KEYWORDS: *Global, filtration, ameliorative, resource, mineral, landscape, geophysical, geochemical, morphological, secondary salinization, wetting, waterlogging, wind erosion, hydrological and hydrochemical regime, dam, piezometer, hydrobiological, hydroecological, ponur, polymer, monitor.*

Introduction. It is no secret that at the moment, in addition to the rest of the world, the role of reservoirs in Central Asia, which are being built and built in order to prevent the limitation of water resources, as well as their waste in vain, is immeasurable. For this reason, it is relevant to study the hydrochemical regime of reservoirs and monitor the filtration processes to study them scientifically and practically.

In the strategy of action for the further development of the Republic of Uzbekistan in 2017-2021, tasks such as "Further improvement of the reclamation of irrigated lands, introduction of modern water and resource-saving technologies into the field of agricultural production", global climate changes and mitigation of the negative impact of the Aral Sea disaster on agricultural development and life

The imposition of the issue. From the point of view of the given tasks, we conducted our scientific research work at the Tudakol reservoir.

Todakul reservoir is located on the territory of Kiziltepa District of Navoi region, 26 km from the district center, 35 km from the city of Bukhara. The collected water is used to irrigate crop fields during the summer irrigation season in Gijduvan, Shofirkon, Vobkent, Peshku, Romitan, Kagan, Bukhara, Jondor of Bukhara region and Qiziltepa, Karmana districts of Navoi region.

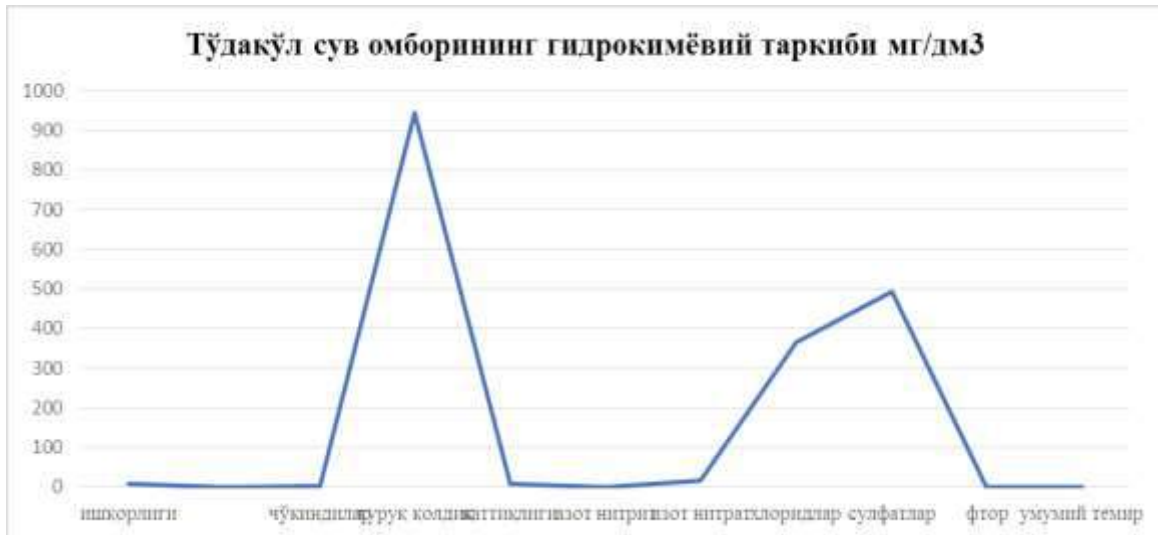
Technical parameters of Tudakol Reservoir

1-Table

1	reservoir capacity	W=1200 mln.m ³
2	useful size	W=650 mln.m ³ .
3	dead volume	550 mln.m ³ .
4	the length along the coast	55 km
5	average depth	7 m.
6	dam length	4,2 km.
7	dam elevation	12 m.
8	Upper sign of the dam (otmetka)	228 m.

Data from the Department of use of the Amu-Bukhara machine channel 2021.

As can be seen from the table, the volume of the Tudakol reservoir during 2021 is W=1200 million.m³, useful volume W=650 million.m³, dead volume 550 million.m³, the length along the coast is 55 km, the average depth is 7 m, the length of the dam is 4.2 km, the height of the dam is 12 m, the top mark of the dam (otmetka) is 228 m. founded.



Based on laboratory analysis, the following were found.

Results analysis and examples; reservoir turbidity in 1 liter of water 1.6 mg/dm³, water alkalinity 6.8 mg/dm³, dry residue 943.0 mg/dm³, total hardness 8.5 mg/dm³, nitrogen nitrite 0.01 mg/dm³, nitrogen nitrate 16.6 mg/dm³, chlorides 365.0 mg/dm³, sulfates 491.0 mg/dm³, fluorine in water 0.06 mg/dm³, nitrogen ammonium and total iron quantities were not observed.



1-Picture. Tudakol Reservoir

The results of the analysis on the composition of the puddle water formed during filtration from the Tudakol reservoir at a temperature of +8 and +13 on 4.12.2020.

The top of the Tudakol reservoir is 18-25 m wide (built from a local grunt without a project) reinforced with upper beif kharsang stone, while work is underway to build drainage in lower beif. 33 pezometers were installed. As a result of water filtration from the dam, puddles formed in some areas of the reservoir. We witnessed the following results through the analysis of water from this puddle in the conditions of the laboratory.



Results analysis and examples; hence, the turbidity of 1 liter of water in the pond is 4.2 mg/dm³, water alkalinity is 6.8 mg/dm³, dry residue is 4126.0 mg/dm³, total hardness is 45.5 mg/dm³, nitrogen ammonium is 0.23 mg/dm³, nitrogen nitrite is 0.018 mg/dm³, nitrogen nitrate is 22.6 mg/dm³, chlorides are 980.0 mg/dm³, sulfates are 2113.0 mg/dm³, water the content of fluorine and total iron was not observed. As can be seen from figure 2-3 below, a number of large and small lakes were formed in the filtration process from the gurunty dam of the Tudakol reservoir. For this reason, it has negatively affected the reclamation of land and has caused an erratic process in the dam of the reservoir, which is fraught with damage to the stability of the ecological environment. The reservoir leads to faster degradation of the dam.





Ғылыми Работалар
Саясилик Сислам кабарланган
Кыргыз Республикасынын
СЭММ

Университеттин Ғылым Бөлүмү
Силердин Ғылым Бөлүмүндө
3017 йил 15 октябрда №77-нотус
Булордон алынган маалыматтар
15-кылымда айып кылган болот

ОПЕК СУВ ХАВЗАЛАРЫ ОКАВА СУВЛАРЫНИ ТУНДУРУШ КТУБИРА 279 - СОСТАВ
БАБИНОМА тартылган

2023 йил 4 - **январь**

Машинаны номо **Тура кел (Султан ул)**
Нияти аманатчы **Тура кел (Султан ул) / Султан ул / Султан ул / Султан ул**
Нияти аманатчы **154 кылым**
Хан катары С аманатчы **154 - 154**
Сул катары С аманатчы _____
Хотундары (нотус) **154 - 154**
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Сул катары аманатчы _____
Хотундары _____
Сул катары аманатчы _____
Хотундары _____

ХИЖ		м³/с
Низамилан		м³/с
Хурдани	815,0	м³/с
Урматли аманатчы	465	м³/с
Аман аманатчы	623	м³/с
Аман аманатчы	6816	м³/с
Аман аманатчы	28,5	м³/с
Урматли аманатчы	47	м³/с
Хотундары	410,0	м³/с
Сул катары	2116,0	м³/с
Фоту	МТ	м³/с
Машинаны аманатчы катары аманатчы		м³/с
Вафти аманатчы		м³/с
Фоту		м³/с
Низамилан		м³/с
Мас		м³/с
Хотундары		м³/с
Сул катары		м³/с
Хотундары		м³/с
Сул катары аманатчы (нотус)		м³/с
Вафти аманатчы:		
Вафти аманатчы:		
Вафти аманатчы:		
Вафти аманатчы:		



2-3 picture. The process of sampling puddle water formed in the process of filtration from Tudakol reservoir



In the conclusion, it is worth saying that the effective use of Water Resources from reservoirs, including Tudakol reservoir, in order to avoid waste, to avoid the negative ecomeliorative state of irrigated land, we will provide the following suggestions and considerations:

- Organization of the design of reservoirs on a scientific basis.
- Development of measures for the practical use of reservoirs in the long term.
- Constant control of the protection zone of reservoirs.
- Sharply reduce the negative impact of reservoirs on the environment from an ecological point of view.
- To take the necessary measures to shorten the process of rapid blurring that may occur.
- Regular monitoring of the dynamics of water levels in reservoirs.
- Organization of the use of reservoirs in various branches of the national economy, including in rural agriculture, on the basis of a strict limit.
- A positive solution to the issue of specialist personnel in the effective management of the hydrological regime of reservoirs.
- Regular maintenance of reservoir monitoring.
- Scientific study of hydrobiological and hydroecological properties of water bodies.
- In order to prevent the filtration process taking place from the Tudakol reservoir, it is necessary to make polymer or concrete coatings in front, re-open and compact the dams, install a ponur on the front part.
- Monitor the operation of the pezometers placed on the dumbbells in the prescribed order.

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NON-CARIOUS TOOTH DAMAGE - SYMPTOMS AND TREATMENT

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ABSTRACT

Non-carious lesions of the teeth are a group of diseases, the occurrence of which is not associated with the influence of a microbial factor. The main complaints are reduced to the appearance of an aesthetic defect. Occasionally hyperesthesia occurs.

KEY WORDS: *teeth, modern medicine, non-carious lesions, diagnosis, causes and classification, symptoms, treatment.*

Non-infectious destruction of enamel and dentin - non-carious-related damage to the hard tissues of teeth. They develop immediately after birth or at a more mature age. According to statistics, non-carious tooth damage is the second most common disease of the oral cavity after caries. It entails many unpleasant consequences – painful sensations, high sensitivity, dysfunction of the dental system, an unaesthetic smile.

Non-carious lesions of the teeth are accompanied by the destruction of hard tissues. Diagnosis is based on complaints, anamnesis of the disease, clinical examination data and the results of additional research methods. Treatment of non-carious lesions of the teeth is aimed at restoring the mineral composition of hard tissues, eliminating aesthetic defects, normalizing the function of chewing.

Non-carious dental lesions develop in 5-20% of the population. Most often they occur before teething - in the prenatal and infantile period. The reason in such cases is the mineralization of hard dental tissues or a violation of their differentiation and normal development. Differentiation of tissues is the transformation of initially identical tissues into specialized ones that perform certain functions.

The development of non-carious lesions of the teeth contribute to:

- Genetic Disorders;
- Direct and/or indirect effects on a child who has the beginnings of teeth, chemical and physical factors (for example, injuries, blows, the influence of harmful substances and factors exceeding permissible concentrations and doses);
- Taking medications containing heavy metals, antibiotics and hormones by the mother during pregnancy or by the child during the first year of life;
- Bruxism, violation of the closure of the dentition and mechanical damage during cleaning.

Non-carious dental lesions are diseases accompanied by progressive destruction of enamel and dentin, impaired

chewing function, aesthetic defect. There is an obvious steady increase in this pathology with age. In people aged 18-25, the intensity of acquired non-carious lesions of the teeth is 5%, whereas at the age of 45-65, pathological erasability, hyperesthesia and wedge-shaped defects are detected in every second patient. Enamel erosion is more common in older men. Fluorosis is diagnosed in regions where the level of fluoride in 1 liter of drinking water exceeds 1.5 mg. The population frequency of imperfect amelogenesis is 1:7 000-1:14 000, type 1 imperfect dentinogenesis is 1:50 000, type 2 imperfect dentinogenesis is 1:8 000. The prognosis for non-carious lesions is determined both by the nature of the pathology and the time of occurrence, and by the timeliness of patients' treatment in a medical institution.

Causes and Classification

Failure at the stage of formation, mineralization can occur both during the period of follicular development of teeth, and after their eruption. The main causes of systemic hypoplasia are considered to be metabolic disorders, acute infectious diseases, diseases of the digestive system. Local hypoplasia develops as a result of trauma or as a complication of chronic periodontitis of baby teeth. Fluorotic non-carious dental lesions occur in people who live for a long time in an area with an increased level of fluoride in drinking water. Fluorosis in childhood can be caused by the use of fluoride-containing paste for brushing teeth that does not correspond to the age of the child.

Hereditary non-carious lesions of the teeth (imperfect dentinogenesis, imperfect amelogenesis) develop due to mutation of genes responsible for the formation of hard tissues. With hemolytic disease of infants, porphyria, as well as as a result of taking antibiotics from the tetracycline group by a pregnant woman or child, discoloritis (endogenous pigmentation of teeth) may occur. The enamel color change is also possible during teething after injury, when using silver amalgam as a filling material, in the case of canal obturation with a resorcinol-formalin-based siller.

The reasons for the wedge-shaped defect are considered to be improper brushing of teeth, the use of a brush with stiff bristles,



a paste of high abrasiveness. Multiple wedge-shaped defects are one of the symptoms of periodontal disease. Pathological tooth erosion occurs with endocrine disorders (dysfunction of the parathyroid glands) as a result of articulatory overload of the incisors with terminal defects of the dentition. Such a form of non-carious tooth damage as enamel erosion is often detected in patients with thyrotoxicosis. The development of enamel necrosis can provoke diseases of the central nervous system, intoxication of the body, increased production of thyroid hormones.

Non - carious lesions are conditionally divided into two groups: Congenital non-carious lesions of the teeth. This category includes systemic and local hypoplasia, enamel hyperplasia, fluorosis, genetically determined abnormalities of the development of hard tissues (imperfect amelogenesis, imperfect dentinogenesis, dentin dysplasia), endogenous tooth pigmentation.

Acquired non-carious lesions of the teeth. This group includes fluorosis, wedge-shaped defects, pathological erasability, necrosis and erosion of enamel, exogenous pigmentation of teeth.

Symptoms of non-carious dental lesions

With systemic hypoplasia, symmetrically located spots of yellow or chalky color are detected on the vestibular surfaces of the anterior teeth, the tubercles of the molars and premolars. With hypoplasia, there may be areas completely devoid of enamel. Hyperplasia, on the contrary, is characterized by the additional formation of enamel in the form of droplets up to 4 mm in diameter, located in the cervical zone. Pathology is detected in both temporary and replaceable bite. With fluorosis non-carious lesions of the teeth, painless pigmented areas appear, the color of which, depending on the concentration of fluoride in drinking water, can vary from chalky, light brown to black. When probing, the enamel is hard, there is no loss of gloss. With chalky-speckled, dashed, spotted forms, enamel loss does not occur, whereas erosive and destructive forms of fluorosis occur with pronounced signs of pathological erasability.

In patients with hereditary non-carious lesions of the teeth, namely with imperfect amelogenesis, the enamel becomes thinner. There are cases of complete or partial enamel aplasia. Multiple depressions are detected on the vestibular surfaces. With imperfect dentinogenesis of type 1, only the color of the teeth changes (the enamel becomes watery gray), the size and shape remain within the normal range. Root fractures are often diagnosed. With imperfect dentinogenesis of type 2, teeth acquire an amber hue. Calcification of the pulp chamber and root canals begins even before the eruption. The loss of hard tissues leads to a decrease in the lower third of the face. Patients experience pain in the temporomandibular joint.

Hemolytic disease of the newborn, erythropoietic uroporphyrin, tetracycline intake can lead to non-carious lesions of the teeth.

Due to rhesus conflict, the color of the enamel changes from gray-blue to brown. At the same time, the enamel structure is imperfect, there are signs of systemic hypoplasia. Staining of teeth in red is observed in porphyria. Yellow-gray pigmentation is detected after taking tetracyclines. Wedge-shaped defects occur in the cervical zone on the vestibular surface of the teeth, have the shape of a triangle with a vertex directed to the occlusal surface. When probing, the enamel is dense. When erosion occurs on the enamel from the vestibular side of the front teeth, symmetrical defects of a rounded shape appear. In patients with enamel necrosis, spots form on the teeth with a softening area in the center, the color of the spots varies from chalky to dark brown. There is an increased sensitivity to various stimuli.

The most common non-carious lesions of the teeth are pathological abrasion, erosion of the hard tissues of the tooth, enamel hypoplasia, wedge-shaped defect and fluorosis. Their main symptom is a lesion of hard tissues, which is visually noticeable: the enamel loses its luster, whiteness and transparency, becomes dull, spots and other defects appear on it. The loss of hard tissues causes the second characteristic symptom - hypersensitivity of the teeth.

Various forms of non-carious lesions of the teeth are often combined with each other, for example, one patient has erosion, pathological erasability and a wedge-shaped defect.

Each non-carious tooth lesion is manifested by its own symptoms:

Erosion is an oval, round or irregularly shaped defect, the bottom of which has a shiny, smooth and dense surface. It most often develops on premolars, canines and incisors (except for the incisors of the lower jaw).

Wedge-shaped defects first have the shape of a slit, then a wedge or V-shaped. They mainly develop in the cervical region. They can affect all teeth, but are more common on the incisors of the lower jaw, canines, molars and premolars, appear symmetrically on both sides.

Erosion and wedge-shaped defect. Pathological erasability develops simultaneously on all teeth, it can be vertical, horizontal and mixed. With the horizontal type, the cutting edges of the teeth, bumps and chewing surfaces are erased, with the vertical type, tissue loss occurs on the outer or inner surface of the teeth, with mixed these manifestations are combined. The patient feels that the tooth tissues are thinning and losing volume. There is pain when eating cold, hot, sour and sweet.

Hyperesthesia of teeth is an increased sensitivity of enamel to chemical, mechanical and temperature influences. An unpleasant reaction can occur to acidic foods - fruits, berries, as well as hot, cold foods and drinks. Soreness can also appear when touching the enamel with a toothbrush. The main cause of pathology is a violation of the integrity of dental tissues, not associated with caries.



Enamel hypoplasia develops due to a violation of the metabolism of proteins and minerals in the body of a child or fetus, which leads to changes in the density and structure of tooth tissues. Hypoplasia can also be caused by the effect of local factors on the dental rudiment.

Fluorosis, presumably, develops due to the toxic effect of fluoride through the blood on the enameloblasts (cells of the inner layer of the dental embryo), which leads to improper development of enamel. The causes, predisposing factors and the mechanism of such an impact are not fully understood.

In the pathogenesis of a wedge-shaped defect, chemical and mechanical theories are distinguished. In the first case, the main active factor is acids, in the second - a toothbrush. However, these theories have many contradictions, and they have not been widely recognized by the scientific community.

In the pathogenesis of tooth tissue erosion, the leading role is given to the chemical effect of acids coming from food and as a result of esophageal reflux.

Diagnosis of Non-Carious Dental Lesions

Diagnosis of non-carious dental lesions is reduced to collecting complaints, compiling a medical history, conducting a physical examination and additional research methods. During the examination of a patient with hypoplasia, the dentist identifies single symmetrical matte or yellow spots on the surface of the teeth. In some areas, enamel aplasia may be observed. The vestibular, oral surfaces, as well as the mounds of molars and premolars are affected. With fluorosis, multiple stripes, spots or dots of yellow color are detected. With erosive and destructive forms, enamel chipping occurs, signs of pathological erasability are expressed, there is a decrease in the hard tissues of the teeth. Hyperplasia occurs with the formation of enamel droplets in the cervical zone with a diameter of up to 4 mm.

With hereditary non-carious lesions of the teeth (imperfect amelogenesis), the enamel quickly thins, cup-shaped depressions appear on the cheek surfaces. As a result of pathological erasability, the height of the bite decreases. In patients with imperfect dentinogenesis, the teeth have an amber color. The shape and size are usually within the normal range. The radiograph reveals progressive obliteration of the root canals, a decrease in the volume of the pulp chamber. The wedge-shaped defect is localized in the cervical zone from the vestibular surface of the teeth, has the shape of a triangle with the base facing the gingival edge. The enamel in the affected area is dense and smooth.

According to the degree of lesion, non-carious defects are:

- Systemic - all teeth or a group of teeth that were formed in one period are damaged;
- Focal - several teeth located nearby and developing in one period are affected;
- Local - only one tooth is affected.

Non-carious lesions of the teeth occur in two phases:

- Exacerbation (acute phase);
- Remission (stabilization of the pathological process).

Exacerbation and remission replace each other, the duration of each period varies. During erosion, symmetrical saucer-shaped defects are detected, which are localized on the buccal surface of the front teeth. Unlike erosion, with acid necrosis of enamel, a softening zone is determined in the central part of the defect. When applying methylene blue staining, non-carious lesions of the teeth are not observed. During probing, the enamel is dense. A decrease in indicators is observed with imperfect dentinogenesis, tooth pigmentation due to trauma. Differentiate non-carious lesions of teeth with a carious process. The examination is carried out by a dentist-therapist.

Treatment of Non-Carious Dental Lesions

The primary task in identifying non-carious lesions of the teeth is to restore the mineral composition of hard tissues. Topically, applications of calcium- and fluorine-containing drugs are prescribed. Electrophoresis procedures are also shown for this purpose. To eliminate the aesthetic defect formed as a result of non-carious tooth damage, glass ionomer cements are used in childhood, characterized by high biocompatibility, good adhesion to enamel and dentin, no need for acid etching, and a caries-protective effect. Later, lamination with composite or ceramic veneers is used to restore teeth in dentistry.

In case of non-carious lesions of hereditary teeth, prosthetics is indicated to preserve hard tissues. Patients with fluorosis are advised to limit the use of foods rich in fluoride. Calcium-containing drugs are prescribed inside. Fluorotic spots are to be sanded with subsequent restoration of teeth with composites, ceramic crowns and veneers. To eliminate pigmentation, combined (external and intra-channel) bleaching is carried out. The prognosis for non-carious dental lesions is determined by both the nature of the pathology and the time of occurrence, and the timeliness of patients' treatment to a medical institution, as well as the level of treatment.

With timely and high-quality dental treatment, it is possible to preserve the tooth, while its functionality will remain at the same level.

Prevention of Non-Carious Tooth Damage

To prevent fluorosis, excessive consumption of fluoride should be excluded: drink water with a low concentration of this substance and do not swallow fluoride-containing toothpastes and mouthwash. Children under 6 years of age cannot use such pastes.

To prevent hypoplasia, it is necessary to avoid infectious diseases during pregnancy. It is important to carefully take care of the health of pregnant women, young children and treat somatic diseases in a timely manner.



To slow down the development of the wedge-shaped effect, it is recommended to use soft toothbrushes and fluoride-containing toothpastes.

In case of erosion, it is necessary to improve hygienic dental care, eat less acidic foods, use soft toothbrushes and pastes with a high content of fluoride.

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ADVANTAGES OF INTRAMEDULLARY OSTEOSYNTHESIS IN LONG TUBULAR BONE FRACTURES

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ABSTRACT

Intramedullary osteosynthesis is used to treat complex fractures of tubular bones. This is a type of surgical intervention, which involves the introduction of a metal rod into the bone marrow. The operation is quite difficult to perform, but the effectiveness of its use is much higher than the application of plaster dressings or the use of other methods of treatment. Osteosynthesis is prescribed in specific cases, and not for any type of fractures, so it is important to know when intervention is appropriate.

KEY WORDS: *osteosynthesis, long tubular, bone fractures, operation, diagnosis and treatment, surgical intervention.*

Osteosynthesis is the reposition of fragments of damaged bone by surgical method. The operation is performed using nails, plates, rods, special external fixation devices. The choice of technique depends on the type, localization and features of the fracture. All of them are aimed at one goal — to match the fragments in such a way as to ensure their rapid fusion and restoration of impaired functions. The concept of "intramedullary" implies the introduction into the bone marrow, to align the axis of the bone.

Intramedullary osteosynthesis technique is used in such conditions:

- Transverse and oblique closed fracture of the femur, tibia or humerus;
- Improper fusion after applying a plaster cast;
- The development of a "false joint";
- The danger of developing an open fracture from a closed one;
- Damage by splinters of muscle bones, large blood vessels and nerves;
- Pseudoarthrosis.

The first thing to distinguish is the open and closed types of intramedullary osteosynthesis. The first is an intervention on the operating table, when a wide incision is made, a hematoma is removed and the normal position of the debris is restored. The closed method is more complex, but minimizes the possibility of complications. In this case, a dissection of no more than 3 cm and the use of a special orthopedic device is performed.

Intraosseous osteosynthesis is prohibited in the following cases:

- Extensive open fracture;
- The presence of bacterial agents in the area of damage;
- Hemodynamic instability;
- Osteomyelitis;
- Sepsis;
- Chronic venous insufficiency;
- Blood pathologies;
- Arthrosis of stage 3-4.

You can consider how a closed operation is performed using the example of osteosynthesis of the femur. The course of intervention includes the following steps:

In most cases, the intervention is performed under epidural anesthesia.

Perform an X-ray of the hip, necessarily including two compositions. This is necessary to monitor the performance of intramedullary osteosynthesis and the dynamics of further recovery. Epidural anesthesia is used more often, as it has fewer negative reactions. If there are contraindications — general anesthesia.



The patient is placed on the healthy side and the limb is bent at an angle of 100 degrees.

A 2-3 cm skin incision is made over the spit and the subcutaneous fat and muscles are pushed apart in a blunt way so as to get to the bone.

An awl is inserted 1 cm from the top of the large spit and, scrolling, injected into the bone marrow.

The awl is removed by inserting a conductor in parallel, the diameter of which is individually determined for each patient. The bone marrow canal is drilled through it to insert the rod.

The rods are fixed with nails.

A metal plate is used to reposition and fix external fragments.

The blocked area is subject to the following X-ray to determine the localization of elements and determine the quality of the introduction of metal structures.

Osteosynthesis of the tibia, humerus or femur is dangerous for the development of fat embolism. These are massive areas of the musculoskeletal system, rich in fatty matter. When tissue structures are damaged, parts of the yellow bone marrow can come off and migrate to other organs with the blood flow, and close the lumen of the main vessels. More often they are transported to the lungs with the development of acute respiratory failure. It is more dangerous to damage the arteries of the brain with the occurrence of a stroke.

If the rules of asepsis, antiseptics and low resistance of the patient's body to infectious agents are violated, an inflammatory reaction is possible in the area of intramedullary osteosynthesis. This is fraught with prolonged purulent processes, necrosis in the area of the postoperative scar. Further, chronic osteomyelitis develops with gradual damage to the bone structure, muscles, and the bone marrow canal. Less often there is a breakdown of metal structures with incorrect selection of their sizes.

After intramedullary osteosynthesis, the patient should stay in the hospital for 10-14 days to monitor, prevent negative reactions and infection.

Recovery should begin the very next day after the intervention. It is very important that the patient himself is interested in getting out of bed early, walking on crutches or using other devices. This contributes to the early inclusion of muscles in work, the prevention of bedsores, stagnant processes. The movements should be healthy, smooth and gradual.

Full restoration of functioning occurs in 3-6 months. with the use of all necessary methods of treatment.

Carpal, ulnar fracture can be achieved with conservative treatment. However, even minimal angular and rotational displacements lead to significant impairment of limb function. The results of treatment of 100 patients with fractures of both forearm bones were analyzed. Of these, about half (group 1) received conservative treatment, and in the 2nd - surgical treatment was used. In group 1, unsatisfactory treatment results were obtained in 71% of cases (non-fusion, limitation of the amplitude of movements) [8]. In view of this, with diaphyseal fractures in adults, if there are indications, surgeons prefer surgical treatment.

During our research, 71 patients with fractures of the forearm bones were treated, who underwent 107 operations of intramedullary osteosynthesis of the forearm bones, 56 of them — ulnar and 51 — radial. Osteosynthesis of both bones was performed in 34 patients (table).

The age of the patients ranged from 21 to 77 years, the average age was 46 years. There were 39 women (54.93%), 32 men (45.07%). Osteosynthesis with blocking (BIOS) was performed in 82 cases, without blocking — in 25. In 51 cases, intraoperative reposition was performed in a closed way and in 56 — in an open way. Implants of the company "S1t", "Osteosynthesis" were used. The terms of surgical intervention ranged from 5 days to 6 months after the injury.

The pinning process began with a closed reposition of fragments. The physiological curvature of the bones was restored by modeling the rods from radiographs of a healthy forearm. In 11 cases of fractures of the ulna, straight unmodified rods inserted through the lateralized entry point from the side of the ulnar process were used for osteosynthesis, in 45 the rods were modeled using radiographs of a healthy forearm. In all patients, the angle of curvature of the ulna was measured using radiographs of a healthy forearm, it ranged from 6 to 13. Bone curvature was more pronounced in people with hypersthenic body type. The more physically developed the patient was, the greater the angle of curvature of the radius and ulna. The displacements were eliminated under the control of an



electron-optical converter by traction and control of fragments using bone forceps applied percutaneously to both fragments in the immediate vicinity of the fracture site within 2-4 cm. If a 3-5-fold attempt at a closed reposition was unsuccessful, they switched to an open reposition through small accesses 3-5 cm long. Primary open reposition was also used for stale fractures (2-3 weeks) and the absence of an end stop in the fracture zone.

Upon admission, a closed reposition of fragments and plaster immobilization were performed. A history of bone osteosynthesis of the radius and ulna was performed 8 months ago in one of the hospitals. In the postoperative period, there was a violation of the supination of the forearm. On the 8th day after admission, the bone clamps were removed, the bone marrow channels of the radial and ulnar bones were drilled and their blocking osteosynthesis was performed. Rehabilitation has begun in the immediate postoperative period. The patient noted an increase in the volume of supination movements, pronation was fully restored within 10 days after surgery.

RESULTS AND DISCUSSION

There were no complications in the postoperative period. Delayed treatment results (for more than 3 months) were observed in 63 (88.73%) patients. Consolidation of fractures was found in all observations. Restoration of limb function without any significant movement restrictions was obtained in all patients with blocking osteosynthesis, with the exception of 1 case of severe forearm injury as a result of a dog bite, and 10 patients started working immediately after discharge from the hospital. Of the 25 patients who underwent intramedullary osteosynthesis without blocking, 8 had movement restriction due to the development of moderate rotational contractures. The reason for this was the "telescoping" of the fragments of the radius on the rod with its shortening. In the absence of an end stop with oblique and comminuted fractures, a telescopic effect is observed with the displacement of fragments along the length, leading to shortening. In 7 observations, when using straight rods on the ulna, when the fracture was localized in the curvature zone, a wedge-shaped defect was formed on the medial side, which led to delayed consolidation. The fracture line was traced in the period from 6 to 14 months. In these patients, a moderate restriction of pronation was also noted, on the basis of which it can be concluded that not only the bending of the radius is important in ensuring rotational movements of the forearm, but also the bending of the ulna. The straightening of the elbow curvature with a straight rod in these patients led to its elongation and, in cases of isolated fractures, to a violation of the ratio in the distal radioulnar joint when comparing radiographs of the damaged and healthy forearm. In the future, these patients had a moderate restriction of the elbow deviation of the hand when compared with the healthy side. With fractures of both bones, with the "elongation" of the ulna, diastasis occurred between the fragments of the radius.

There are two ways to solve this problem:

- 1st — the implementation of compression between fragments after blocking one of the ends of the rod;
- 2nd — the formation of the bending of the rod during osteosynthesis of the ulna.

When forming preferences for a particular type of osteosynthesis, we analyzed the advantages and disadvantages of the main types of osteosynthesis of fractures of the forearm bones: bone, transosseous and intramedullary.

When considering bone osteosynthesis, the following advantages were revealed: anatomical reposition under visual control, stable fixation, allowing early functional treatment. The negative aspects of the method: traumatism, resulting in a violation of the blood supply of fragments, the complexity of the technology, a high risk of non-fusion, refractures, infectious complications. So, according to the data, the risk of refractures after removal of plates reaches 20%.

The appearance of a periosteal callus is a sign of bone viability. It is also correct that in all cases the early periosteal corn is a fixation, i.e. it enhances the stability of fixation.

Evaluating transosseous osteosynthesis, it should be noted that the method is low-traumatic and practically does not disrupt the blood supply of fragments. It makes it possible to control fragments in the postoperative period, however, early development of rotational movements is practically impossible due to the "fixation" of muscles to the skeleton, as a result of which contractures are formed. The method requires regular dressings and constant medical supervision. The entire period of fixation in the device is dangerous due to the occurrence of infectious complications of soft tissues in the spokes. The above certainly reduces the quality of life. We prefer to use this method as a temporary one for severe open fractures for the period of healing of soft tissues.

Blocking intramedullary osteosynthesis (BIOS) has the following properties:

- 1) minimally invasive, preservation of periosteal blood supply;
- 2) accurate restoration of the physiological curvature of bones;
- 3) stable fixation;
- 4) No need for external immobilization;
- 5) the possibility of early rehabilitation;



- 6) good quality of life of the patient;
- 7) no refractures after removal;
- 8) minimal risk of structural failure;
- 9) the possibility of segment reconstruction in complicated fractures.

The disadvantages of the method are: the need to use X-ray television systems during surgery, the difficulties of closed reposition, the risk of damage to tendons.

Comparing the stability of fixation of BIOS and bone osteosynthesis, it should be noted that the load distribution during BIOS occurs along the length of the rod, which minimizes the risk of destruction of the mechanical structure.

In case of bone osteosynthesis, the load is concentrated not along the segment axis on the part of the plate between the screws adjacent to the fracture zone, which increases the risk of fracture of the structure. Cortical osteosynthesis disrupts the biology of fusion due to the rigidity of fixation, which excludes dynamic compression due to muscle traction, unlike BIOS.

During the surgical treatment of patients with the BIOS method, we also faced difficulties of a very different nature. The BIOS of the forearm bones consists of many nuances, each of which is important. We came to the conclusion that it is necessary to develop technical means and a clear algorithm for the technology of performing BIOS of these localizations, taking into account all possible features.

CONCLUSION

1. The BIOS of the forearm bones has a number of advantages in comparison with the bone and transosseous methods. It allows you to restore the anatomy and biomechanics of the forearm, shorten the period of disability, restore the function of the limb in the near future.
2. If it is impossible to compare fragments in a closed way, it is advisable to switch to an open reposition. Open reposition should be performed for fractures more than 2-3 weeks old, as well as for oblique and comminuted fractures.
3. The criterion for restoring the anatomy of the ulna in its isolated fractures, as well as in fractures of both bones, is the restoration of the physiological bending of both the radius and the ulna. This ensures adequate reposition of the radius, preservation of rotational movements, restoration of relationships in radioulnar joints.
4. It is necessary to develop technical means and a clear algorithm for the technology of performing BIOS of the forearm bones, taking into account all possible features of anatomy.

Treatment of diaphyseal fractures of the forearm bones is one of the problematic sections of traumatology and orthopedics due to the subtle biomechanical interaction of the radius and ulna bones and the extremely important functional purpose of the segment. Forearm fractures are characterized by a significant number of complications, primarily non-contractures and contractures. The exact restoration of the anatomy and biomechanics of the forearm is paramount, since failure to comply with this requirement leads to a violation of supination-pronation, restriction of the function of the hand, non-fusion. Violation of the relationship in the brachial, brachial, proximal and distal radioulnar and wrist joints is an unfavorable prognostic sign of the restoration of the function of the upper limb. Fractures of the forearm bones with inadequate treatment can lead to significant impairment of limb function. Unlike other diaphyseal fractures of long tubular bones, fractures of the radius and ulna, in addition to restoring the length and axis, require pedantic elimination of rotational deformation, without which full-fledged pronation and supination movements are impossible.

The features of consolidation place high demands on the exact reposition and preservation of blood supply. Muscles (pronators and supinators) are the cause of displacements, especially rotational ones. In fractures of the radius in the proximal third, the thrust of the biceps and the supinator provides supination of the proximal fragment, and the pronator teres and pronator quadratus attached distally cause pronation of the distal fragment and angular displacement. With fractures of the ulna diaphysis in the upper third, the proximal fragment shifts towards the radius. The muscle mass in the upper third of the forearm often leads attempts at closed reposition to failure. Fractures of the radius diaphysis in the distal third tend to shift at an angle open to the outside (i.e., the ends of the fragments shift to the ulna) due to traction of the m. pronator quadratus and the long muscles of the forearm. In addition to the noted features of the anatomy and biomechanics of the forearm bones, it is necessary to note the important role of the interosseous membrane, as well as the physiological bends of the radius and ulna bones that determine the rotation of the forearm.

The treatment of such severe injuries is a serious problem: even with an ideal reposition of both fractures, non-fusion of the femoral neck or avascular necrosis of the head account for 10 and 30%, respectively. A hip fracture in such cases should have priority in treatment before a diaphyseal fracture. The current level of development of intramedullary osteosynthesis allows simultaneous osteosynthesis of both fractures with one implant (PFN, long gamma nail), however, this is a technically complex intervention and requires significant surgical experience in the application of intramedullary osteosynthesis. Intramedullary osteosynthesis in open



fractures Open fractures are usually accompanied by significant damage to the soft tissues around the bone and a decrease in its periosteal circulation. On the lower leg, where the thickness of the soft tissues above the bone is small, such injuries are most frequent (about 15% of all tibial fractures). Intramedullary osteosynthesis allows the final stabilization of the fracture without additional damage to soft tissues. Due to the danger of violations of intramedullary blood flow in open fractures, the use of bone marrow channel drilling leads to an increase in the number of purulent-necrotic complications, and therefore is not recommended. Currently, in the treatment of open fractures of the I-II degree, the use of intramedullary osteosynthesis without drilling is considered an almost established method of treatment. There are more and more reports of the successful use of intramedullary stabilization and with grade III injuries, however, such injuries require a comprehensive approach to treatment using complex plastic interventions, therefore, external fixation remains the method of choice for severe open fractures.

For a relatively short period of time, intramedullary osteosynthesis has become one of the main methods of treatment for fractures of long tubular bones. Modern trends in the development of implants and surgical intervention techniques allow the method to be used not only for simple fractures of the middle of the diaphysis, but also for severe multi-fragmented, segmental and some intra-articular injuries.

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CYBERSPACE LITERACY OF THE COLLEGE OF BUSINESS MANAGEMENT AND ACCOUNTANCY STUDENTS LAGUNA STATE POLYTECHNIC UNIVERSITY, STA. CRUZ, LAGUNA

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ABSTRACT

Since 2015 studies reported that workplaces are dominated by millennials. However, tech savvy individuals occupy 75% of the workforce, they are lagging in the exercise of digital responsibility, passive towards environmental sustainability and fail to grasp the importance of social responsibility (Burgess-Wilkerson et al, 2018; Fry, 2018). It was stated that in the next two decades, this new generation will be confronted with issues of global urgency amid demands for public action.

The descriptive research method was considered to determine the Cyberspace Literacy of the College of Business Management and Accountancy Students Laguna State Polytechnic University, Sta. Cruz, Laguna. This method describes the characteristics of the population or phenomenon of the study. It primarily focuses on describing the nature of a demographic segment, without focusing on why the particular phenomenon occurs. (www.questionpro.com)

The findings show a small positive correlation ($r = 0.330$) between the fathers' educational attainment and cyberspace literacy as to digital communication. The result is direct showing that as the father's educational attainment increases/high there is also an increase in terms of digital communication. On the other hand, the mothers' educational attainment also shows a small correlation ($r = 0.289$) with cyberspace literacy as to digital skills. A positive correlation manifests a slanting upward direction which means that as one increases the other also increases that holds true both for father and mother educational qualifications. Other variables under consideration which are part of the study were all insignificant.

Based on the findings of the study, the null hypothesis indicating that demographic profile, frequency and purpose of internet use has no significant relationship with cyberspace literacy is partially accepted/sustained.

KEYWORD: cyberspace literacy, digital communication, internet use, digital citizenship, critical thinking

INTRODUCTION

Addressing the 21st century skill of digital citizenship is important. Digital citizenship is broadly viewed as the ability to participate effectively in on line communities. Since information and communication technology is pivotal to societal participation and development.

In an era of datafication, social networking, and globalization, "digital citizenship" has become an increasingly relevant and popular concept employed by diverse societal actors to promote digital capacity, literacy, and participation. (Nicola,2021)

From the study of Logan, A (2017) found that majority of students are active online without proper knowledge of what digital citizen means, which may be putting them to risk. A digital citizen program addresses access, commerce, communication, etiquette, law, health, wellness, rights and responsibilities is recommended to support children online.

The study aims to determine the relationship between respondents' demographic profile and Cyberspace literacy of the next batch of millennial employees of the College of Business Management and Accountancy Students, Laguna State Polytechnic University, Sta. Cruz, Laguna. Specifically, it sought to answers the following questions: What is the demographic Profile of the students in terms of: Fathers Educational Attainment, Mother's Educational Attainment, Frequency of internet use, Purpose of internet use, What is the level of cyberspace literacy of the next batch of millennial employees in terms of: Digital Communication, Digital Rights and responsibilities, Critical Thinking, Digital participation, Digital Security, Digital skill, Ethics and Digital trade. Which among the indicators of respondents' profile significantly related to the Cyberspace literacy of the next batch of millennial employees?



Widodo (2021) recommend that strengthening digital citizenship through Civics Education courses based on science, technology and society in the 4.0 era is forming civic competence, Strengthening digital citizenship through Citizenship Education courses requires digital habituation in students' daily lives and Approach to Science, Technology and Society (STM) to answer the problems that exist in the community so that learning becomes more meaningful. Strengthening digital citizenship through science, technology and community-based civics learning in the 4.0 era in the end is towards smart and good citizens.

Digital citizenship encompasses a wide range of behavior with varying degrees of risk and possible negative consequences. Lack of Digital citizenship awareness and education can, and has, led to problematic, even dangerous student conduct (Hollandworth et al.). Being a digitalcitizens in the community includes having email etiquette, reporting and preventing cyber bullying, learning how to protect private information.

According to Moradi (2017) In growing digital society, digital citizen recognized and value the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they engage in safe, legal and ethical behavior. To often we see technology users misuse and abuse technology because they are unaware of what is appropriate.

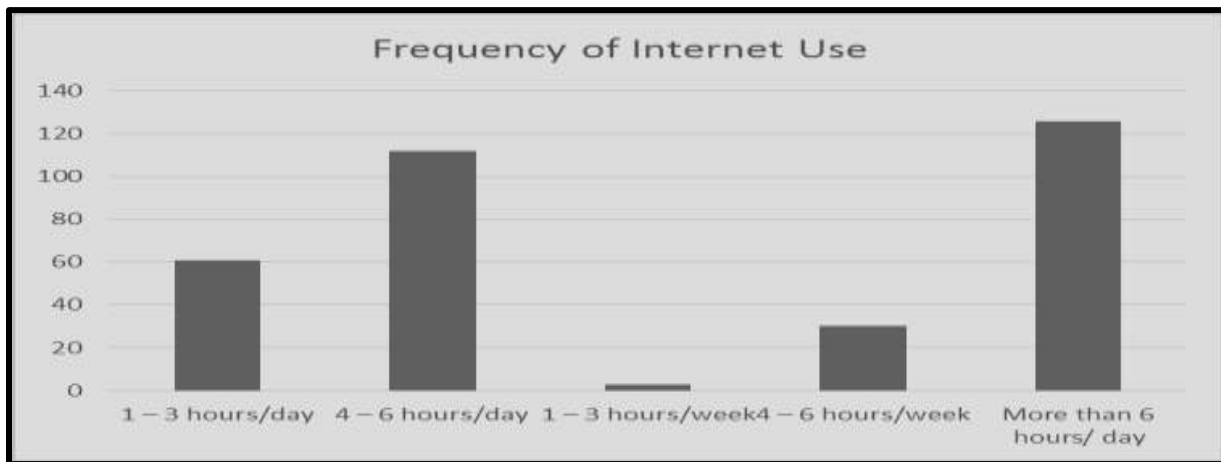
The emergence of the new world seems to influence many trends and attitudes and appears to have the capacity to influence the future employees. The researcher will ask challenging questions and insightful answer to the respondent to grasp the importance of social responsibility.

METHODOLOGY

The descriptive research method is use to determine The Cyberspace Literacy of the College of Business Management and Accountancy Students Laguna State Polytechnic University, Sta. Cruz, Laguna. The descriptive research method is a research method that describe the characteristics of the population or phenomenon studied. It primarily focuses on describing the nature of a demographic segment, without focusing on why the particular phenomenon occurs. (www.questionpro.com).

The researcher was able to gather applicable information to the students of Laguna State Polytechnic University Particularly College of Business Management and Accountancy who are the next batch of millennial employee, as the respondents of the study.

RESULTS AND DISCUSSION



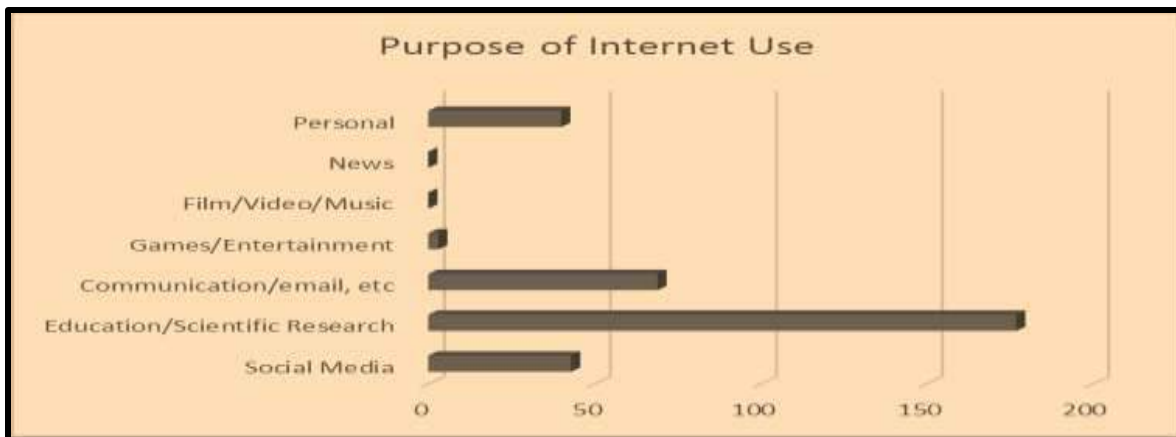
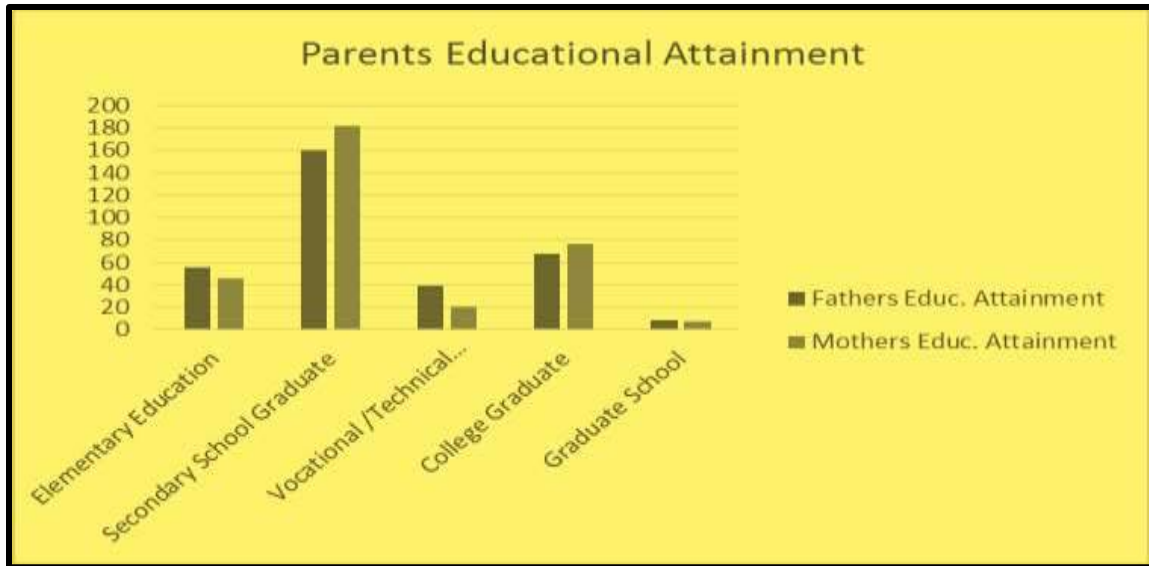


Table 1. Level of Cyberspace Literacy of the Next Batch of Millennial Employees in terms of Digital Communication

Item No.	Indicative Statement	Mean	SD	Remark
1	I don't mind everyone seeing what I share on social media.	2.880	1.172	Often
2	I send images, videos or information to someone I don't know.	1.180	0.800	Not at All
3	If my comments were responded with bullying and rude comments, I respond in the same way.	1.380	0.667	Not at All
4	I like sharing everything I do on social media (Facebook, twitter, etc.).	2.520	1.119	Sometimes
5	I communicate with people I don't know in digital platforms.	1.600	0.881	Seldom
6	I use abbreviations (wb, omg, ok, etc.) in my text in digital platforms	2.840	1.113	Sometimes
Overall Mean		2.067	0.575	SELDOM



Legend:

Scale	Range	Remark
5	4.20 – 5.00	Most Often
4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Seldom
1	1.00 – 1.79	Not at All

Not minding if shared on social media are seen (n= 2.880) remark as often, and uses text abbreviations (n = 2.840), likes sharing everything done on social media using different platforms (n = 2.520) were all remarked as sometimes. Communicating with unknown people (n = 1.600) got a seldom remark while sending images to someone they don't know (n =1.180), and responding the same on bullied comments (n = 1.380) got a not at all remark. These are indications that respondents are partially responsible enough and aware of the consequences of using social media. The computed mean supports the findings of the study.

The overall mean of 2.067 manifest a seldom, cyberspace literacy of the next batch of millennial employees as far as digital communication is concern.

The findings of the study conform with the research result of Fronzetti,et al,(2021) suggest carefully that choosing the language according to the target audience and have practical implications for both company managers and online community administrators. Understanding how to better use language could for example, support the development of knowledge sharing practices.

Table 2. Level of Cyberspace Literacy of the Next Batch of Millennial Employees in terms of Digital Rights and Responsibilities

Item No.	Indicative Statement	Mean	SD	Remark
1	I report the situations that bother me in digital platforms to the respective department	2.800	1.294	Sometimes
2	I am aware that my freedom is over where someone else's freedom begins when communicating on the Internet.	3.080	1.047	Sometimes
3	I use the e-complaint system (Presidential communication center, etc.) on matters I think I've been wronged.	2.060	0.998	Seldom
4	I don't know exactly the rights I have in digital platforms.	2.500	0.974	Seldom
5	I use abbreviations (wb, omg, ok, etc.) in my text in digital media.	2.900	1.129	Sometimes
6	I display behaviors that I do not embrace in real life by hiding my identity on the Internet.	1.900	1.111	Seldom
7	I don't access websites with inappropriate content (leading to racism, bigotry and vulgarity).	3.000	1.702	Sometimes
8	I access blocked websites in different ways.	1.640	1.025	Not at All
Overall Mean		2.485	0.664	SELDOM

Legend:

Scale	Range	Remark
5	4.20 – 5.00	Most Often
4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Seldom
1	1.00 – 1.79	Not at All

I am aware that my freedom is over where someone else's freedom begins when communicating on the Internet seen (n=3.080), I don't know exactly the rights I have in digital platforms (n = 2.500), I use abbreviations (wb, omg, ok, etc.)(n= 2.900) I report the situations that bother me in digital platforms to the respective department (n = 2.800) , I don't access websites with inappropriate content (leading



to racism, bigotry and vulgarity(n=3.000) were all remarked as sometimes. I display behaviors that I do not embrace in real life by hiding my identity on the Internet (n = 1.900) I use the e-complaint system (Presidential communication center, etc.) on matters I think I've been wronged(n=2.060) are all got seldom remarks I access blocked websites in different ways. (n = 1.640) got a not at all remarks. These are indications that respondents are seldom responsible enough and aware of the digital communication of using social media. The computed mean (2.485) supports the findings of the study.

The results revealed that students in institutions were aware of the digital citizenship concepts, but lacked the in-depth knowledge and understanding of concepts such as digital rights, digital security, and digital ethics.

Table 3. Level of Cyberspace Literacy of the Next Batch of Millennial Employees in terms of Critical Thinking

Item No.	Statement	Mean	SD	Remark
1	Internet is a reliable source for economic, political and social issues.	4.100	0.839	Often
2	I criticize the issues I consider unfair on the Internet.	3.020	1.020	Sometimes
3	I participate in campaigns in digital platforms after searching in detail.	2.680	1.133	Sometimes
4	I accept the accuracy of the information I read digitally without question.	2.600	0.990	Sometimes
5	Shares of my friends are reliable for me	3.200	0.990	Sometimes
6	The information I read in digital platforms influence my thoughts and decisions in daily life	3.120	0.824	Sometimes
7	I use the shared information without investigating the accuracy of this information.	2.040	0.989	Seldom
Overall Mean		2.966	0.563	SOMETIMES

Legend:

Scale	Range	Remark
5	4.20 – 5.00	Most Often
4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Seldom
1	1.00 – 1.79	Not at All

Internet is a reliable source for economic, political and social issues (n=4.100) got a remark often. The information read in digital platforms influence thoughts and decisions in daily life (3.120) and (n=3.200) Shares of my friends are reliable for me, I participate in campaigns in digital platforms after searching in detail(n2.680), criticize issues consider unfair on the internet (n=3.030) were all remarked as sometimes. I use the shared information without investigating the accuracy of this information (2.040) got a seldom remark. These are indications that respondents are not responsible enough and aware of the use of critical thinking. The computed mean supports the findings of the study. The overall mean of n=2.966 manifest an interpretation of Sometimes cyberspace literacy of the next batch of millennial employees as far as Critical Thinking.

Indeed Editorial Team (2022) employers value critical thinking—especially in roles where preparing strategy is an essential part of the job. Critical thinking is considered a soft skill, which means it's a skill inherent in a person's personality.



Table 4. Level of Cyberspace Literacy of the Next Batch of Millennial Employees in terms of Digital Participation

Item No.	Statement	Mean	SD	Remark
1	I support a social, economic, cultural campaign initiated through digital platforms	3.460	1.034	Often
2	I contact the official institutions through the Internet about the issues I consider important.	2.460	1.216	Seldom
3	I collaborate with other people in digital platforms for problems concerning my community, my country and the world.	2.740	1.139	Sometimes
4	I use my right to obtain information from official agencies in digital platforms.	2.940	1.185	Sometimes
5	I express my thoughts related to issues I consider important in social media.	3.200	0.926	Sometimes
Overall Mean		2.960	0.858	SOMETIMES

Legend:

Scale	Range	Remark
5	4.20 – 5.00	Most Often
4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Seldom
1	1.00 – 1.79	Not at All

Support a social, economic, cultural campaign initiated through digital platforms (n= 3.460) got often remark, I express my thoughts related to issues I consider important in social media(n=3.200), Use my rights to obtain information from official agencies in digital platforms(n=2.940) I collaborate with other people in digital platforms for problems concerning my community, my country and the world (n=2.740) got sometimes remarks. And contact the official institutions through the Internet about the issues I consider important (n=2.460) got seldom remark. These are indications that respondents are sometimes responsible and aware of their Digital Participation of using social media. The computed mean of supports the findings of the study. Cyberspace literacy of the next batch of millennial employees in terms of digital participation (2.960) is interpreted as sometimes.

Table 5. Level of Cyberspace Literacy of the Next Batch of Millennial Employees in terms of Digital Security

Item No.	Statement	Mean	SD	Remark
1	I share my personal information with people I don't know in online platforms	1.440	0.993	Not at All
2	I click on all kinds of links that I receive in digital platforms.	1.820	1.101	Seldom
3	I use an anti-virus program for my security in digital platforms.	3.580	1.326	Often
4	I download all kinds of programs I need from digital platforms.	3.000	1.195	Sometimes
5	I usually use the same passwords in digital platforms.	2.460	1.199	Seldom
6	I come together with people I meet in digital platforms in real life.	2.180	1.082	Seldom
Overall Mean		2.413	0.697	SELDOM

Legend:

Scale	Range	Remark
5	4.20 – 5.00	Most Often
4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Seldom
1	1.00 – 1.79	Not at All



Use of an anti-virus program for security in digital platforms (n= 3.580) got often remark, download all kinds of programs I need from digital platforms (n=3.000) got sometimes remark, and I usually use the same passwords in digital platforms (n=2.460) and I come together with people I meet in digital platforms in real life (n=2180) and I I click on all kinds of links that I receive in digital platforms (n=2.460) got a seldom remark while I share my personal information with people I don't know in online platforms (n=1.440), got a not at all remark. These are indications that respondents are seldom responsible and aware of the Digital security of using social media. The computed mean of 2.413 supports the findings of the study.

Table 6. Level of Cyberspace Literacy of the Next Batch of Millennial Employees in terms of Digital Skills

Item No.	Statement	Mean	SD	Remark
1	I can edit my personal settings in my social accounts.	4.220	0.996	Most Often
2	I can use easily digital tools for my needs.	3.680	0.819	Often
3	I can easily access the information I need over the Internet.	3.816	0.808	Often
4	I can download and use the applications / programs I need from digital platforms.	3.740	0.922	Often
5	If I have a problem with digital tools, I can solve it myself.	2.980	0.820	Sometimes
Overall Mean		3.688	0.602	OFTEN

Legend:

Scale	Range	Remark
5	4.20 – 5.00	Most Often
4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Seldom
1	1.00 – 1.79	Not at All

According Ayaz S. (2022) the results of the research, students have a positive attitude towards the concept of a digital citizen. Digital commerce and digital communication are the dimensions they are most associated with in their daily life. The most problematic dimensions are digital security, digital ethics, digital commerce, and digital law. Increasing digital citizenship qualities will facilitate participatory democracy.

I can edit my personal settings in my social accounts (n=4.220) got a Most often remarks and Can easily access the information I need over the Internet (n=3.816), and I can use easily digital tools for my needs(n=3.680) Can download and use the applications / programs I need from digital platforms (n=3.740) were all remarks as often . If I have a problem with digital tools, I can solve it myself (3.14) and I can edit my personal settings in my social accounts (n=2980) got a sometimes remark These are indications that respondents are responsible enough and aware of the consequences of using social media. The computed mean supports the findings of the study.

The overall mean of 3.688 manifest a often cyberspace literacy of the next batch of millennial employees as far as digital skills is concern Burton stated that in the modern workplace, it is increasingly impossible to point out which digital skills you may or may not need. There is no hard and fast rule about which jobs you will need to Excel for and which jobs you will not. Digital literacy is a language; the more digital skills you have, the better you can speak it.



Table 7. Level of Cyberspace Literacy of the Next Batch of Millennial Employees in terms of Ethics

Item No.	Statement	Mean	SD	Remark
1	I use someone else’s ideas and thoughts without citing them.	1.940	1.219	Seldom
2	I am aware of copyright infringement situations.	4.260	1.157	Most Often
3	I use the content and information of others (images, articles, graphics, etc.) without obtaining permission.	1.900	1.182	Seldom
4	I do not install or download copyrighted works such as games, music, and films without paying the copyright.	2.840	1.490	Sometimes
Overall Mean		2.735	0.715	SOMETIMES

Legend

Scale	Range	Remark
5	4.20 – 5.00	Most Often
4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Seldom
1	1.00 – 1.79	Not at All

I am aware of copyright infringement situations (n=4.260) got most often remark I do not install or download copyrighted works such as games, music, and films without paying the copyright(n=2.840) got a remark of Sometimes and I use the content and information of others (images, articles, graphics, etc.) without obtaining permission(n=1.900)) . I use someone else’s ideas and thoughts without citing them (n=1.940) interpreted as seldom remarked. These are indications that respondents are partially responsible and aware of the Ethics of using social media. The computed mean supports the findings of the study.

The overall mean of 2.735 manifest a sometimes cyberspace literacy of the next batch of millennial employees as far as Ethics is concern.

Danks (2022) stated that there are growing calls for more digital ethics, largely in response to the many problems that have occurred with digital technologies. However, there has been less clarity about exactly what this might mean.

Table 8. Level of Cyberspace Literacy of the Next Batch of Millennial Employees in terms of Digital Trade

Item No.	Statement	Mean	SD	Remark
1	I prefer the website with the cheapest product.	3.040	1.087	Sometimes
2	I doshopping in digital platforms	3.500	1.199	Often
3	I take into account reviews when I choose or not choose a product.	4.020	1.116	Often
4	I make sure that the websites I shop for are institutional and reliable.	4.440	0.884	Most Often
5	I note details of the websites I shop for (name, phone, address, and price).	3.960	0.968	Often
6	I prefer to do a price search on the Internet before purchasing a product from digital platforms.	4.100	0.953	Often
7	I am aware of my rights about shopping I do/ will do in digital platforms.	4.160	0.792	Often
Overall Mean		3.889	0.590	OFTEN

Legend:

Scale	Range	Remark
5	4.20 – 5.00	Most Often
4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Seldom
1	1.00 – 1.79	Not at All



I make sure that the websites I shop for are institutional and reliable (n=4.440), got a most often remarked, I am aware of my rights about shopping I do/ will do in digital platforms(n=4,160, I prefer to do a price search on the Internet before purchasing a product from digital platforms (n=4.100) I take into account reviews when I choose or not choose a product(n= 4.020), I note details of the websites I shop for (name, phone, address, and price (n=3.960) and I do shopping in digital platforms(n=3.500) were all remarked as Often and I prefer the website with the cheapest product(n=3,040) got a remark of sometimes.

These are indications that respondents are responsible enough and aware of the consequences of using digital trade. The computed mean supports the findings of the study.

The overall mean of 3.889 manifest an often cyberspace literacy of the next batch of millennial employees as far as digital Trade is concern.

Peters M.A (2022) concluded that Digital trade (digitally enabled transaction of goods and services, whether digitally or physically delivered) has grown rapidly, racing ahead of existing global trade rules and norms. In the context of covid-19 pandemic, this takes on even greater significance as these rules will be more important than ever in assisting with the global economic recovery.

Table 9. Relationship between respondents’ demographic profile and Cyberspace literacy of the next batch of millennial employees

The findings show a small positive correlation (r = 0.330) between the fathers’ educational attainment and cyberspace literacy as to digital communication. The result is direct showing that as the father’s educational attainment increases/high there is also an increase in terms of digital communication. On the other hand, the mothers’ educational attainment also shows very weak correlation (r = 0.274) with cyberspace literacy as to digital trade and ethics A positive correlation manifest a slanting upward direction which means that as one increases the other also increases that holds true both for father and mother educational qualifications. Other variables like digital digital right, critical thinking, digital participation and digital skills got moderate or medium strength of correlation under consideration which are part of the study were all partially significant.

Indicator	Cyberspace Literacy							
	Digital Com	Digital Rights.	Critical Thinking	Digital Participation	Digital Security	Digital Skills	Ethics	Digital Trade
Parents Educational Attainment								
• <i>Father</i>	0.330 0.016* Very Weak	-0.163 0.257ns Very Weak	-0.249 0.081ns Very Weak	-0.355 0.011* Weak	-0.371 0.008** Weak	-0.135 0.351ns Very Weak	-0.350 0.013* Weak	0.521 0.000ns Medium
• <i>Mother</i>	0.003 0.981ns Neg.	-0.094 0.515ns Neg.	-0.060 0.679ns Neg.	-0.112 0.441ns Neg.	-0.065 0.655ns Neg.	-0.016 0.911ns Neg.	0.393 0.025* Very Weak	0.274 0.054ns Very Weak
Frequency of Internet Use	0.457 0.006* Weak	-0.070 0.629ns Neg.	0.539 0.004** Medium.	-0.334 0.018* Small	-0.066 0.647ns Neg.	-0.004 0.981ns Neg.	-0.139 0.336ns Neg.	0.555 0.003** Medium.
Purpose of Internet Use	0.437 0.006** Small	0.583 0.003** Medium	0.603 0.000** Medium	0.651 0.000** Medium	0.184 0.560ns Neg.	-0.613 0.000** Medium	0.162 0.670ns Neg.	-0.358 0.013** Weak

CONCLUSIONS

Based on the findings of the study, the null hypothesis indicating that demographic profile, frequency and purpose of internet use has no significant relationship with cyberspace literacy is partially rejected.



RECOMMENDATIONS

1. Encouraging and supporting students is a great way toward making them feel confident in their use of the internet.
2. Students have to be mindful about how to put forward with these new tools in a right way.
3. Institutions must recognize the significance of incorporating digital citizenship practices such as digital rights, digital security, and digital ethics into e-learning curricula.
4. The College should conduct a related workshop, trainings, and seminar or webinar for all CBMA students discussing about cyber literacy program
5. Follow -up evaluation is needed to know if the students are practicing cyberspace literacy.

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EFFICACY OF PLANT GROWTH REGULATING PREPARATIONS IN THE CULTIVATION OF VEGETABLE CROPS

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ABSTRACT

The article presents the results of the study on the efficacy of the application of plant growth regulating preparations Rostmoment and Epin plus in the cultivation of vegetable crops. As a result of the application of Rostmoment from the growth regulating preparations to white cabbage, the yield increased to 81 t/ha. The yield of carrot was 73-75 t/ha, the quality indicators of roots improved. The total yield of garlic reached 45.5-45.9 t/ha.

KEY WORDS: *growth regulating preparations, productivity, white cabbage, carrot, garlic.*

The use of growth regulating compounds is one of the main issues of vegetable growing, and it is carried out with the implementation of ways of improving technologies [1]. Before applying growth-regulating preparations into practice, it is necessary to consider the types of vegetables they are used for, the measured proportion for application, rate of application and methods of application [2,3,4,5].

The purpose of the research is to determine the effectiveness of using growth regulating preparations Rostmoment and Sodium Gummat during the development phases of vegetable crops and their application rates.

The research was conducted in the educational experimental farm of TashSAU during 2021-2022. The object of the research is Navruz cultivar of white cabbage, Baraka cultivar of carrot and Mayskiy VIR cultivar of winter garlic. The soil of experimental site is a typical gray soil, watery environment, pH=6.7, humus content is 1.2-1.5%. The soil is enriched with macro- and micronutrients at a high level. The calculation area is 20 m². The experiment is triplicated [10,11,12].

The Rostmoment preparation normalizes biochemical processes in the cell and improves metabolism, due to the fact that it contains a wide spectrum of amino acids. These amino acids have biostimulant properties, affect the growth and development of plants, and create a high absorption capacity in the soil [6].

We compared the effectiveness of the growth regulator Rostmoment with Sodium gummate. The concentration of these preparations in the treatment was 1%. Working liquid was used in the amount of 300 l/ha.

The first irrigation was conducted in the form of 200 ml per plant when the seedlings were fully planted, and the second irrigation was done in the form of 500 ml per plant at the beginning of cabbage cupping stage.

3-4 weeks after transplanting the seedlings into the soil, the plants were sprayed with the growth regulating preparations, the 2nd spraying was carried out when the cabbages were fully cupped. Root carrots are treated with preparations for the first time in the phase when 5-6 real leaves have formed; the second treatment was carried out at the beginning of the formation of roots, after 15 days the third treatment was done. The effect of Rostmoment was determined in doses of 3.0 and 5.0 kg/ha, while Sodium gummate was used in the amount of 3 kg/ha for efficacy.

The options for experimenting with garlic were as follows:

1. Control (water)
2. Spraying Sodium gummate (seeds treated with 2% solution, plants with 3 kg/ha rate before planting); the first spraying was done when 3-5 true leaves appeared; the second time in the root development phase.



3. Spraying Rostmoment (garlic seeds treated with 0.1% solution, plants with 2 kg/ha rate before planting).
 4. Rostmoment (garlic seeds treated with 0.1% solution, spraying plants at the rate of 4 kg/ha before planting).
- Working liquid rate was 300 l/ha.

Agricultural technics of growing crops was carried out on the basis of regulations.

Phytosanitary monitoring was carried out in the agrocenosis of vegetable crops during the growing season. The methods of observations on the growth and development of plants were carried out on the basis of tests of phyto regulators [7,8,9, 13, 14, 15, 16]. For mathematical and statistical processing of the obtained results Microsoft Excel 2010 and statisticade programs were used and determined by the method of B.A.Dospekhov (1985).

It was observed that the weight and yield of the head of white cabbage were increased during the double watering (1% concentration) and one time spraying (1% concentration) of Rostmoment preparation (Table 1).

Table-1

The Efficacy of The Application of Growth Regulating Preparations in The Cultivation of White Cabbage

№	Experiment options	Average weight of cabbage head (kg)	Head Height (cm)	Head Diameter (cm)	Yield (c/ha)
1	Control (water)	1,6	15,1	16,3	572
2	Rostmoment (3 kg/ha)	2,2	17,5	18,7	789
3	Sodium gummat	1,9	16,2	16,8	685
Spraying to plants (1%)					
1	Control (water)	1,3	15,5	14,8	496
2	Rostmoment (5 kg/ha)	2,0	16,6	18,1	762
3	Sodium gummat	1,6	14,9	16,6	605

The Rostmoment preparation increased the weight of the cabbage head by 0.6 kg compared to the control when the plants were watered for the second time. As a result of spraying the preparation to plants, the mass of the cabbage head increased by 0.7 kg, the yield was 789 and 762 c/ha.

Table-2

Efficacy of Preparations in the Cultivation of Carrot

№	Experiment options	Root length (cm)	Root diameter (cm)	Stem density (cm)	Average weight of root (gr)	Yield (c/ha)
1	Control (water)	15,0	3,6	1,6	115	472
2	Rostmoment (3 kg/ha)	16,6	4,2	2,2	198,6	759,5
3	Rostmoment (5 kg/ha)	16,7	4,3	2,0	193,2	735,8
4	Sodium gummat	16,2	3,8	1,6	155,6	595,2

When growth regulators were used in carrot cultivation (3.0-5.0 kg/ha), it can be seen from Table 2 that the diameter of the root fruit increased with statistical accuracy (4.3-4.2 cm), the yield was 735.8-759.5 (c/ha) due to the increase in stem density (2.2-2.0 cm) and in the mass of the root (198.6-193.2g).

The amount of dry matter (13.5%), carotene (13.1%), sugar content (7.8%) and nitrate content was observed when Rostmoment preparation was applied at a rate 3kg/ha (Table 3).

Table-3

Changes in the content of carrot fruit in the application of growth regulators

№	Experiment options	Dry matter %	Monosaccharides %	Total content of sugar %	Carotene, mg %	Nitrates, mg/kg
1	Control (water)	11,8	3,48	6,45	13,2	1255
2	Rostmoment (2,0 kg/ha)	12,4	5,24	7,68	13,1	858
3	Rostmoment (4 kg/ha)	13,5	4,49	6,58	11,5	1096
4	Sodium gummat	10,9	3,75	5,45	9,4	1324



When Rostmoment preparation was applied to winter garlic at a rate of 2.4 kg/ha, active plant growth and leaf formation were observed, the weight of garlic increased (82.5-85.6 g) and the average weight was 74.6-78.5 g, and the unit area was determined to increase too (Table 4).

Table-4
Productivity Structure of Winter Garlic

№	Experiment options	Garlic mass (g)		Yield (t/ha)		Yield (t/ha)	Added to control, t/ha
		Share of Large Garlic	Share of Medium Garlic	Share of Large Garlic	Share of Medium Garlic		
1	Control (water)	76,0	69,5	21,6	19,5	41,3	-
2	Rostmoment (2,0 kg/ha)	84,6	74,6	24,3	22,4	45,5	+2,9
3	Rostmoment (4 kg/ha)	82,5	78,5	23,6	21,2	45,9	4,4
4	Sodium gummat	80,6	73,8	23,0	21,0	44,2	+2,9

The total yield of garlic in experimental options was 45.5-45.9% and it was observed that it increased by 4.2-4.6 t/ha compared to the control.

When sodium gummat was used, the yield of large garlic was 23.0 t/ha, and the medium garlic yield was 21.1 t/ha.

In the control variant, the average number of garlic cloves was 10.6 pieces (the maximum was 11 pieces).

When Rostmoment preparation was applied in the rate of 4 kg/ha, the garlic cloves was observed to be 10.4 pieces and their sizes were larger. The diameter of the garlic in the experiment was 3.9-5.0 cm. The lowest indicator was observed in the control variant (3.9 cm). When Rostmoment preparation was applied at the rate of 4.0 kg/ha, the diameter of the garlic was 5 cm. The height of the garlic ranged from 3.7 cm to 4.2 cm.

So, when studying the effectiveness of the Rostmoment preparation, it was found that it affects the quality and yield of vegetables when used in the recommended amount. When it used in white cabbage, the average weight of the vegetable was 2.0 kg, the yield reached 761.0-790 t/ha. An increase in product quality indicators and in yield was observed when the preparation was used in carrot cultivation.

It was found that when the preparation was used in the cultivation of garlic, the yield was 45.5-45.9 t/ha, and the share of large garlic increased.

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APPLICATION OF KNOWLEDGE MANAGEMENT IN R&D INSTITUTIONS: A SYSTEMATIC REVIEW

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ABSTRACT

In an effort to understand the application of Knowledge Management in Research and Development (R&D) Institutions, we conducted a systematic review of relevant literature. This method involves searching and analyzing various literature sources, such as articles, books and reports, with a focus on the application of Knowledge Management in the R&D context. The results of the literature review identified four key components that support the implementation of Knowledge Management in R&D: technoware (equipment and technology), humanware (human resources), infoware (information resources), and orgaware (organizational structure). Five stages of Knowledge Management implementation were also identified, including creating a knowledge map, planning, strategizing, implementing, and measuring activities. Success indicators are explained as Knowledge Inventory and Knowledge Activity. This review presents a conceptual framework that can be used as a guide for R&D in implementing Knowledge Management. The application of Knowledge Management in R&D can support economic growth, innovation and advancement of knowledge in Indonesia. With the knowledge gained from this review, R&D can more effectively manage and utilize knowledge in order to achieve their goals.

KEYWORDS: *Systematic Review, Knowledge Management, R&D, Economic Growth, Innovation.*

INTRODUCTION

Research and Development Institutes (R&D) have an important role in developing knowledge, innovation and economic growth in Indonesia. Along with dynamic global changes, increasing competitiveness is the key to achieving better results in terms of research and development. In an effort to achieve better competitiveness, the business paradigm has changed from resource-based competitiveness to knowledge-based competitiveness (Akbar, SA, 2018). This includes improving production techniques, marketing methods, human resource management, as well as optimizing the use of equipment and machines in the research and development process.

Knowledge Management has emerged as one of the key approaches in encouraging knowledge-based competition. However, the implementation of Knowledge Management in R&D has unique and complex characteristics. In this context, this research aims to identify an appropriate conceptual framework for the implementation of Knowledge Management in R&D. The application of Knowledge Management in R&D will not only support economic growth through more innovative research, but will also advance the knowledge and innovation sector in Indonesia.

In order to achieve this aim, we used the Systematic Review method to analyze and summarize the relevant literature. We identify key components, implementation stages, and indicators of success of Knowledge Management in R&D. The results of this research can provide useful guidance for R&D in managing and utilizing knowledge effectively in an effort to realize sustainable economic growth and improvements in research and development. Muslihudin (Oktafianto et al, 2016).

LITERATURE REVIEW

The literature review that we have presented provides a deep understanding of the concept of Knowledge Management in the context of Research and Development Institutions (R&D). This understanding can be applied to various R&D in Indonesia.

Nonaka and Takeuchi (1995) highlight the distinction between tacit and explicit knowledge, which is relevant in the R&D context. It is concerned with knowledge management which involves aspects of researchers' individual knowledge, their skills, and experience which may not always be easily expressed in written form.



Knowledge Management (Knowledge Management) Knowledge Management was developed by Karl-Erick Svelby who emphasized an attitude of openness and readiness for new information. Every knowledge starts from the individual, when that individual knowledge can be transferred into organizational knowledge, then that knowledge will be very valuable for increasing the productivity of the company or organization. To be able to transform individual knowledge into organizational knowledge, continuous efforts must be made at all levels in the organization. Some definitions of KM by experts are as follows:

1. According to Beijerise (1999): KM is an effort to achieve organizational goals, through strategies to motivate and facilitate knowledge workers to develop, as well as improve their ability to interpret data and information using available information sources, experience, expertise, culture, character, personality, feelings and so on so that they can provide meaning to others.
2. Wiig (1998): KM is a systematic, firm and deliberate effort to build, update and apply knowledge in order to maximize the effectiveness of knowledge linkages in the company and store it as knowledge assets to be renewed continuously to create creation and innovation.
3. Bassi (1997): KM is the process of creating, capturing, and using knowledge to improve organizational performance. KM is often associated with two types of activities. The first activity is to document and determine appropriate individual knowledge, and then disseminate it through the company database. KM also includes activities to facilitate the exchange of human knowledge via groupware, e-mail and the internet. From the various opinions above, it can be concluded that knowledge management is:
 - Strategies to facilitate knowledge workers to transfer knowledge.
 - Systematic efforts to build, update, and apply knowledge to achieve organizational effectiveness.
 - With current technological developments, to achieve effective knowledge transfer, it is necessary to build a company database.
 - KM must be carried out continuously and sustainably. Nonaka introduced four forms of knowledge creation processes in organizations, namely: as shown in the following picture:

The Knowledge Management framework proposed by Hansen et al. (1999) brought the understanding that technology, organizational culture, and knowledge strategy must work together. This can be a very useful guide for R&D in Indonesia to integrate appropriate technologies, create a collaborative work culture, and design knowledge strategies that support their research goals.

The challenges of implementing Knowledge Management, as explained by Zack (1999), are another important aspect for R&D in Indonesia to consider. Resistance to change, especially when it comes to sharing knowledge, can be a barrier. Researchers may need encouragement and incentives to overcome these challenges.

Leonard et al. (2001) identified four pillars of Knowledge Management, namely technology, organization, culture and methods. In the context of R&D in Indonesia, this highlights the importance of selecting appropriate technologies, creating a collaborative culture within the organization, and implementing effective methods to measure progress in knowledge management.

Knowledge Management measurement, as highlighted by Ruggles (1997), can be a very effective tool for R&D in Indonesia. The use of metrics such as Knowledge Inventory and knowledge activity can help R&D to monitor their progress in terms of knowledge management and knowledge utilization in their research.

Lastly, Santos et al. (2020) discusses the application of Knowledge Management in R&D, which is also relevant for R&D in Indonesia. A focus on innovation in research through collaboration platforms and the exchange of ideas can provide an important impetus for R&D to be more creative and productive.

As an assessment of R&D in Indonesia, the Knowledge Management concept obtained from this literature review can be a valuable guide. In an increasingly competitive context, R&D needs to consider effective knowledge management to advance research, innovation and knowledge growth in Indonesia. By applying these concepts, R&D can become more efficient in achieving their goals.

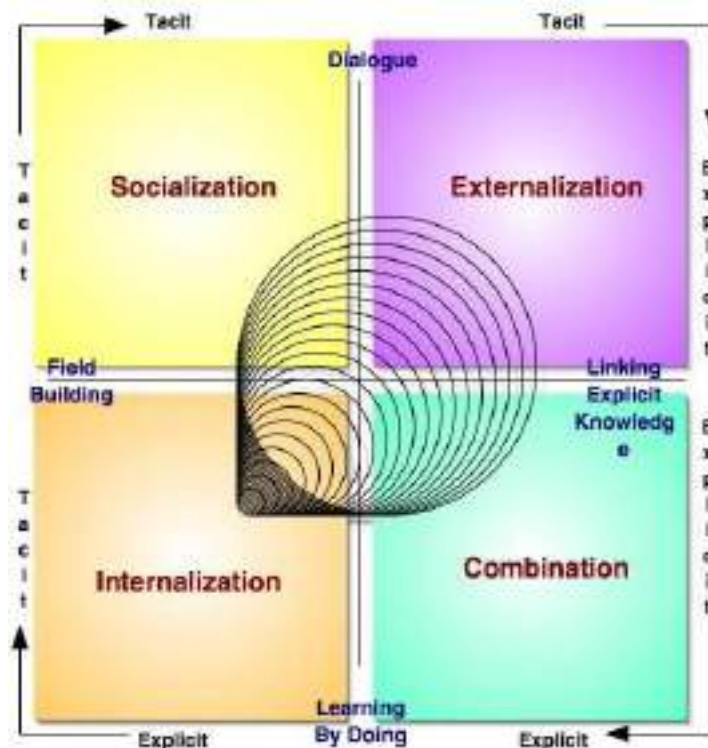


Fig.1 Spiral Evolution Of Knowledge Conversion

From this picture it can be explained as follows:

1. Socialization (tacit to tacit), which is a process of transferring individual tacit knowledge to other individuals through direct observation, repetition and practice. The knowledge that is socialized is in the form of skills obtained from experience, and this knowledge will never become explicit so it is not easy for someone to transfer this knowledge widely within the organization.
2. Externalization (from tacit to explicit), which is the process of articulating tacit knowledge into explicit knowledge, so that this knowledge can be shared and transferred to other individuals in an organization.
3. Combination (explicit to explicit), which is a process that combines various explicit knowledge in an organization and then processes it into a new, explicit experience so that it is easy to understand and transfer to other individuals in the organization.
4. Internalization (from explicit to tacit), which is the absorption of new explicit knowledge which is then transferred widely within the organization through a learning process so that it becomes tacit for individuals in the organization, provided that each individual is willing to learn new knowledge and is willing to internalize it. in itself will expand and enrich the tacit knowledge concerned.

DISCUSSION

Implementation of Knowledge Management is a process for creating, documenting, sharing and updating knowledge in an organization. This is supported by the company's main pillars, including leadership and technology, with the aim of creating a culture of knowledge sharing within the company. Nonaka (1991), Alavi & Leidner (2001), and Newman & Conrad (2000) have discussed the importance of implementing Knowledge Management in this context.

1. In the context of R&D, the first stage of implementing Knowledge Management is to create a "knowledge" map in the organization. This is done to ensure that the knowledge potential of each employee can be identified and utilized effectively. To achieve this goal, companies need comprehensive information about the knowledge assets they own. Various research and developments by world experts have been carried out to understand the potential of this knowledge and learn lessons from other organizations and companies that have successfully implemented Knowledge Management. This stage is an important first step in building the foundation for effective knowledge management in R&D. One of the concepts developed by American universities, namely the University of George Washington, published the title University Research the Architecture of Enterprise Engineering which is depicted in the following picture:

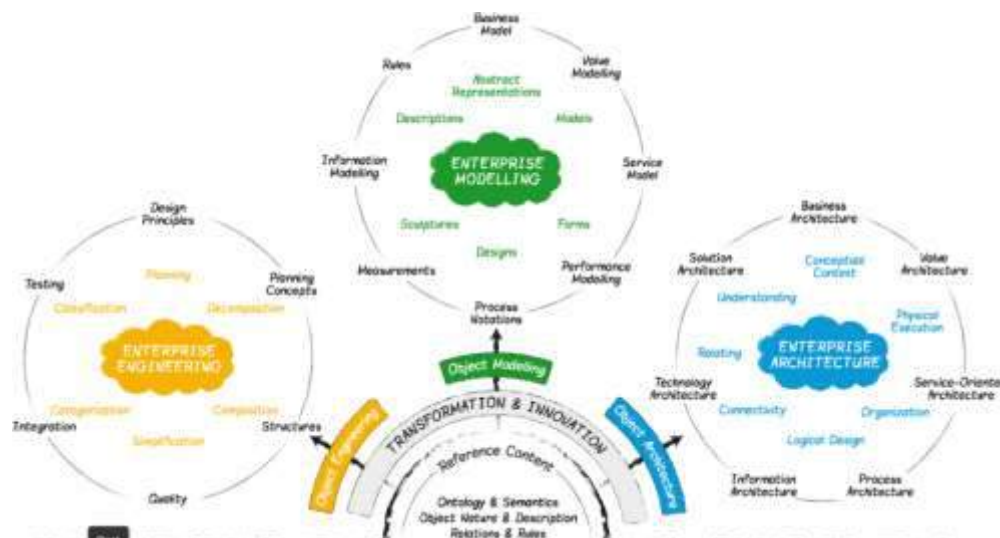


Figure 2. the Architecture of Enterprise Engineering

The Multi Disciplinary Concept is an important foundation in an organization or company. Modern organizations often consist of many different disciplines, and this gives rise to the need to collaborate and share knowledge across these disciplines. The four main pillars that support the implementation of Knowledge Management concepts and systems are leadership, organization, technology and learning.

- **Leadership (Leadership/Management)** : The first pillar is leadership which involves strategy, values, decision-making processes, resource allocation, and the promotion of systemic thinking. Effective leadership can establish a culture of knowledge sharing and promote an integrative management role in the organization.
- **Organization (Organization)** : The second pillar is organization, which includes operational aspects such as functions, processes, structures, controls and measurements that support system technology, and their use. A good organization must support efficient knowledge management.
- **Technology (Technology)** : The third pillar is technology, which includes various information technology products that support collaboration and codification of knowledge. Technology is a tool that can facilitate knowledge management and information exchange.
- **Learning** : The fourth pillar is learning, which includes various learning forums, principles and behaviors that support a collaborative learning environment. Learning is key to knowledge development and organizational growth.

Overall, these four pillars are interrelated and contribute to the successful implementation of Knowledge Management in an organization. Strong leadership, an efficient organization, appropriate technology, and a supported learning culture can form a solid foundation for effective knowledge management.

2. Planning for implementing knowledge management which includes three components in value creation, namely quality, efficiency and growth, with the aim of an internal strategy has been created.
3. The Knowledge Management Map strategy for Research and Development (R&D) Institutions is that knowledge management is a key aspect in utilizing intangible assets, including human capital (knowledge, skills and training) as well as organizational capital (culture, leadership, teamwork). The importance of integrating human and organizational capital into R&D operations, such as operational management, marketing, HR, efficiency, and resource management, shows its essentiality in achieving the research and development mission. Alignment in all aspects of the organization is the main foundation for achieving the R&D vision and mission. To evaluate the success of Knowledge Management implementation, measuring organizational performance using the Balance Scorecard approach is very important, which includes financial aspects, customer satisfaction, internal processes, as well as learning and growth perspectives. With this approach, R&D can efficiently manage knowledge to achieve more established and effective research goals.
4. The five levels of Knowledge Management (KM) implementation in R&D institutions are as follows:

Level 1 - Initiate: KM implementation must start from actors in R&D supported by related parties, and must then be expanded to reach all communities within the organization. This initiation is an important first step to introduce the KM concept in the R&D environment.



Level 2 - Develop: At this stage, KM development is initiated by R&D member groups. They can lead initiatives using groupware or collaboration tools to facilitate knowledge sharing. This step underscores the importance of collaboration and knowledge exchange between R&D members.

Level 3 - Standardize: This stage involves developing the processes and approaches necessary for consistent knowledge development. Standardization will help R&D to manage knowledge in a more structured and efficient manner.

Level 4 - Optimize: At this stage, the success of KM implementation is measured in terms of effectiveness. Evaluation and measurement of organizational performance is carried out to ensure that knowledge management has provided appropriate benefits.

Level 5 - Innovate: The final stage shows that the organization has reached a level where the implementation of KM has become the culture and way of acting for every member. This is marked by the emergence of many products and innovations. Organizations are able to utilize knowledge effectively to create added value.

This underlines that to achieve the level of innovation and successful implementation of KM, R&D needs to go through a series of stages starting from initiation to innovation. This is a step that can help R&D optimize their knowledge management and become productive innovation centers.

5. Measuring KM Activities The parameters used as indicators of the success of KM implementation are:
 - a. Knowledge inventory & acquisition, which includes: knowledge capturing, library, E-Library, Knowledge center.
 - b. Knowledge activities, which include: creative industry forums, innovation forums, sharing-problem solving-collaboration discussion forums.

CONCLUSION

1. The successful implementation of knowledge management in the creative industry needs to be supported by four components which include: technoware, humanware, infoware, and orgaware.
2. There are five stages of Knowledge Management implementation, namely:
 - (1) create a knowledge map in the organization;
 - (2) make a plan for implementing knowledge management;
 - (3) develop a knowledge management strategy map;
 - (4) implementation of knowledge management; And
 - (5) Measuring knowledge management activities.
3. Indicators of successful KM implementation are:
 - a. Knowledge inventory and acquisition, which includes: knowledge capturing, library, E-Library, Knowledge center.
 - b. Knowledge activity, which includes: creative R&D forum, innovation forum, sharing-problem solving-collaboration discussion forum.

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THE IMPACT OF DIGITAL ECONOMY ON EMPLOYMENT INDUSTRY STRUCTURE

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ABSTRACT

Based on the provincial panel data of China in the last ten years, this paper uses panel entropy method and dual fixed model to explore the impact of digital economy on employment and industrial structure, and does heterogeneity research according to the economic development of low, medium and high economic development regions. The results show that the digital economy has a good promoting effect on the primary and tertiary industries, but has an inhibiting effect on the secondary industries. According to the results, the paper puts forward some policy suggestions on the use of digital economy development, industrial upgrading and employment promotion. In order to provide an important theoretical basis for the formulation and improvement of employment policies in the world economic system and the development of digital economy.

KEY WORDS: *digital economy; industrial employment structure, double fixed effect model*

I. INTRODUCTION

In recent years, with the rapid development of the digital economy, it plays an increasingly important role in stabilizing employment and promoting development, and is gradually becoming a new driving force to promote economic development. The development of the digital economy has accelerated the replacement of humans by machines, weakening the demographic dividend in some countries. At the same time, with the application of digital technology to bring new forms of business, new industries and new employment, such as network broadcast, network sales, big data industry, etc., also provides new opportunities and challenges for the change of the world economy. Therefore, what is the impact of the digital economy on employment, it has become a question worth discussing. In this paper, the impact of digital economy on employment structure is discussed from the perspective of the three industrial structure of employment.

II. LITERATURE REVIEW

2.1 Digital Economy

IBM proposed the concept of "smart Earth" as early as 2006, and after the 2008 global financial crisis, the digital economy has been explosive growth. Real explosive growth happens. Because digital activity permeates almost every industry, it is difficult to accurately define and measure.

Some scholars used a single index to measure digital economy, such as e-commerce and electronic transaction volume, Internet penetration rate and other single indexes to measure digital economy (Mesenbourg, 2001; Zhang and Shi, 2019). With the deepening of research, scholars and institutions have begun to use comprehensive and multi-dimensional indicators to measure the digital economy. Most scholars often measure the digital economy from the dimensions of hardware and software infrastructure, e-commerce, enterprise and industry structure, demographic and labor force characteristics, and price behavior of the information economy (De Pablos, P. O., 2023; Ma, Q,2002). At the same time, some organizations, such as the US Department of Commerce (US-DOC), the Organisation for Economic Co-operation and Development (OECD), EUROSTAT, and the China Academy of Information and Communication Technology (CAICT), also measure the digital economy from different dimensions. However, there is no consensus on the definition and measurement of the digital economy.

2.2 Digital economy affects industrial employment structure

At present, scholars study the impact of digital economy on industrial structure mainly from the perspective of subdivision industry and industrial upgrading. For example, based on China's industry panel data, Yang Xianming & Hou Wei & Wang Yifan (2022) found that the impact of digital economy on the employment structure of high -, medium - and low-tech manufacturing and consumer service industries all showed an "orderly progressive upgrading" mode. The impact of digital economy on the employment structure of producer service industry and public service industry shows the "central upgrading" mode with only the proportion of medium-skilled labor increasing. For another example, Su Ce (2022) used the data of 29 provinces in China from 2011 to 2020 to verify the impact of digital economy development on the coordination and promotion of employment structure and industrial structure.



Through the above research review and summary, it can be seen that previous scholars have made certain achievements in the definition and measurement of digital economy and its impact on the employment structure, but there are still some shortcomings: Firstly, the measurement and evaluation of digital economy lacks systematicness and comprehensiveness. Second, scholars mostly analyze the impact of employment structure from the aspects of segmented industry, mechanism and result, but the research from the perspective of digital economy is still not systematic and in-depth. To sum up, this paper will learn from previous research results, establish a systematic evaluation system of digital economy with entropy method, and deeply discuss the impact of digital economy on employment structure from the perspective of three industrial structures.

III. CONCEPT DEFINITION AND THEORETICAL ANALYSIS

3.1 Definition and Measurement of Digital Economy

Based on previous research results and personal research experience, this paper defines digital economy as an emerging economic activity supported by a new generation of information technology, with networks and platforms as the carrier, data as the production factor, intelligence as the direction, digital industrialization as the basis, and industrial digitalization as the main body.

With reference to the definition of digital economy and the existing research results, this paper, based on the index system evaluation method and starting from the connotation of digital economy, constructs a measurement of the development level of digital economy including digital industrialization, industrial digitalization, digital infrastructure and digital economic environment. Specifically, the selection of tertiary indicators follows the principles of systematical, scientific, hierarchical, feasibility, completeness and applicability. This paper establishes a comprehensive evaluation index system as shown in Table 1, with a total of 4 secondary indicators and 12 variables. At the same time, entropy method is used to construct a digital comprehensive evaluation economic index, recorded as Dig.

Table 1. Composition of Digital Economic Indicators

Secondary Indicators	Tertiary Indicators	Units	Indicator Direction	Representative Symbol
Industry digitization	E-commerce sales	100 million yuan	Forward	X1
	Number of computers per 100 people	number	Forward	X2
	Number of enterprises with e-commerce transactions	number	Forward	X3
Digital Industrialization	Total amount of telecommunications services	100 million yuan	Forward	X4
	Revenue from software business	100 million yuan	Forward	X5
	Mobile communication handset production	ten thousand units	Forward	X6
Digital infrastructure construction	Internet broadband access port	ten thousand units	Forward	X7
	Mobile phone switch capacity	ten thousand households	Forward	X8
	Number of domain names	ten thousand units	Forward	X9
Digital Economy Environment	Technology market turnover	ten thousand yuan	Forward	X10
	Number of students in school	people	Forward	X11
	Number of patent applications granted	pieces	Forward	X12

3.2 Industrial Structure of Digital Economy and Employment

Digital economy will affect the structural upgrading of regional industries, which will lead to changes in the employment absorption capacity of different industries, and then lead to changes in the employment structure.



First of all, according to the "Paddy-Clark Theorem", with the improvement of economic development level, the high proportion of industrial structure and employment structure will change from the primary industry to the secondary industry, and then to the tertiary industry. That is, with the deep integration of digital economy and real economy, the development of digital economy will promote the development of industrial structure to the advanced level. The optimization and upgrading of industrial structure will also lead to the evolution of employment structure to the optimization.

Secondly, due to the different difficulty of digital economy transformation in the three industries, its ability to absorb employment will also change. The proportion of fixed assets in the tertiary industry is small, the income is fast, and it is closely related to consumption, so the cost of transformation is small and the speed is fast. The dividend brought by the development of digital economy will drive the proportion of the output value of the tertiary industry to rise, and the ability to absorb employment will also be enhanced. Due to the characteristics of high proportion of fixed assets and high technology intensity, the digital transformation of the primary and secondary industries is difficult, and the relevant workers need to receive skills training to be qualified for new production positions, so the employment absorption capacity is relatively insufficient. In addition, the secondary industry is more labor-intensive, and the development of digital economy is more likely to produce substitution effect.

Finally, with the use of digital technologies such as big data, cloud computing and the Internet of Things in production, industries deeply integrated with the digital economy will have higher production efficiency and market profits, which will lead to the increase in the demand for labor and the increase in labor remuneration, and lead to the change of employment structure among industries.

IV. MODEL ESTABLISHMENT AND EMPIRICAL ANALYSIS

4.1 Model Establishment

In order to empirically investigate the impact of digital economy on the industrial structure of employment, this paper starts from the Cobb-Douglas production function, and at the same time considers the impact of individual effect, time effect and independent variables, and sets the fixed effect model as follows:

$$\ln IA_{it} = \alpha_1 + \alpha_2 D_{it} + \alpha_3 \ln Control_{it} + \mu_i + \gamma_i + \sigma_{it} \tag{Equation 1}$$

$$\ln IB_{it} = \alpha_1 + \alpha_2 D_{it} + \alpha_3 \ln Control_{it} + \mu_i + \gamma_i + \sigma_{it} \tag{Equation 2}$$

$$\ln IC_{it} = \alpha_1 + \alpha_2 D_{it} + \alpha_3 \ln Control_{it} + \mu_i + \gamma_i + \sigma_{it} \tag{Equation 3}$$

In the equation, i and t represent region and time respectively, and represent regression coefficients. $\alpha_1 \alpha_2 \alpha_3 \mu_i$ And represent the fixed effect of province and time respectively, and represent the random disturbance term. $\gamma_i \sigma_{it}$ D_{it} stands for digital economy and stands for control variable. $Control_{it}$

4.1.1 Explanatory Variables

In Equations 1, 2 and 3, the explained variable, and represent the number of employees in the primary, secondary and tertiary industries in region i , which is the number of employees in region I in year t . $LA_{it} LA_{it} LC_{it}$ It is used to describe the impact of digital economy on the employment scale of the primary, secondary and tertiary industries.

4.1.2 Control Variables

In order to alleviate the endogeneity problem caused by missing variables, this paper refers to the practice of existing literature and selects the following indicators as control variables:

- (1) The level of economic development is measured by the GDP added value of the primary industry, the secondary industry and the tertiary industry, denoted as GA, GB and GC, and LGA, LGB and LGC in logarithmic form;
- (2) The level of financial development is measured by the added value of financial industry in each region, which is denoted as FIT, and LF in logarithmic form;
- (3) Residents' living standard, measured by per capita disposable income, is denoted as P, and is denoted as LP in logarithmic form;
- (4) The level of aging, the number of people receiving pension insurance in each province, is denoted as O, and the logarithm is denoted as LO;
- (5) Urbanization level, measured by the urban population of each province, is denoted as C, and is denoted as LC in logarithmic form;
- (6) Industrial level, measured by the added value of the tertiary industry, is denoted as I, and is denoted as LI in logarithmic form;
- (7) Wage level: the average wage of employed people in the region is denoted as W, and the logarithm is denoted as LW;
- (8) The housing price level, the sales volume of commercial housing, is denoted as H, and LH is denoted as LH in logarithmic form;
- (9) The level of social and employment security, measured by fiscal expenditure on social and employment security, is denoted as B, and LB in logarithmic form.



4.2 Data Sources

China has a vast territory and a huge economic aggregate, and there is a phenomenon of unbalanced economic development among different regions. Meanwhile, China has made great efforts to develop the digital economy in the past decade. Therefore, China's provincial data can be used to vividly depict the impact of digital economy on the employment scale in economies of different sizes. For the accuracy of the research, the data of Hong Kong, Macao and Taiwan are excluded because of the inconsistent statistical caliber. Therefore, the data of 30 provinces in China during the ten years from 2013 to 2022 are used. All the data are from the official China Statistical Yearbook for Regional Economy, China Local Statistical Yearbook, China Labor Statistical Yearbook and China Population and Employment Statistical Yearbook, and the missing data are made up by interpolation method. The statistical description of the data is shown in Table 2.

Table 2. Statistical Description 1

Variable		Mean	Std.dev.	Min	Max	Observations
m	overall	0.1110363	0.1204768	0.0046399	0.7868452	N=300
ga	overall	2283.051	1506.405	97	6298.6	N=300
gb	overall	12354.17	10460.68	871.29	55888.7	N=300
gc	overall	15041.07	12945.99	689.15	70934.7	N=300
fit	overall	2227.602	2080.807	94.37	11058.06	N=300
p	overall	36482.9	12048.76	19873.4	84034	N=300
o	overall	418.9316	1386.069	27.55	23797	N=300
c	overall	2763.666	1748.987	280	9466	N=300
i	overall	15041.07	12945.99	689.15	70934.7	N=300
w	overall	77240.2	27426.64	38301	202435.6	N=300
b	overall	814.5955	448.7706	102.7729	2321.304	N=300

4.3 Empirical Test of Employment Industry Structure

4.3.1 Agriculture

The empirical results of Equation 1 are shown in Table 3.

Table 3. Empirical Result 1

	Agriculture	
	Alpha.	t
Dig	0.0858*	1.68
LGA	0.0696	0.58
LF	0.0735	0.99
LC	0.04196	0.15
LO	0.0192*	1.76
LP	0.0663	0.14
LI	0.0646	0.45
LW	0.6117	1.56
LH	0.0229	0.47
LB	0.0420	0.28
Cons	13.7122***	8.97
Time Effect	YES	
Area Effect	YES	
R-squared	0.7773	
Prob > F	0.0000	

Annotation: *** p<0.01, ** p<0.05, * p<0.1

The results of the model are shown in Table 3. The fitting index R² of the model is 0.7773, P value is 0.0000, which proves that the model fits well, and the results are significant within 1% confidence interval. It can be seen from the results in Table 3 that the coefficient of digital economy is positive, which proves that the digital economy has a positive effect on agriculture in general.

According to the GDP per capita, this paper ranks ten areas as a group and forcibly divides them into three groups: low economic development areas, medium economic development areas and high economic development areas. The results of heterogeneity test are shown in Table 4.



Table 4. Empirical Results 2

	High PGDP		Medium PGDP		Low PGDP	
	Alpha.	t	Alpha.	t	Alpha.	t
Dig	0.0593	0.77	0.0805	0.62	0.0531	1.05
LGA	0.3350***	3.2	0.3685***	2.56	0.0402	0.72
LF	0.3170***	2.4	0.0435	0.38	0.1922***	3.38
LC	0.2555	0.69	0.4300	0.91	-0.4681**	2.26
LO	0.4664***	3.21	0.0243	1.09	0.0030	0.14
LP	1.6525***	3.48	0.6391	1.03	0.5753**	2.04
LI	0.2341*	1.54	0.0314	0.17	0.0244	0.35
LW	2.0151***	5.53	0.3501	0.81	0.1691	0.99
LH	0.0007	0.01	0.0187	0.29	0.0096	0.30
LB	0.1370	1.07	0.3608*	1.78	0.3995***	6.10
Cons	12.5871***	4.62	15.2688***	5.14	14.8179***	11.91
Time Effect	YES		YES		YES	
Area Effect	YES		YES		YES	
R-squared	0.8731		0.7513		0.9292	
Prob > F	0.0000		0.0000		0.0000	

Annotation: *** p<0.01, ** p<0.05, * p<0.1

The fit of the above three sets of models is good, and all of them are significant within 1% confidence interval. It can be seen that the impact of digital economy on agricultural employment is positive in low economic areas and high economic areas, but negative in medium economic areas. The basic trend of the impact of digital economy on the employment of the primary industry shows a "U" shape.

4.3.2 Industry

The empirical results of Equation 2 are shown in Table 5.

Table 5. Empirical Results 3

	Industry 1		Industry 2	
	Alpha.	t	Alpha.	t
Dig	0.0658**	1.96	0.2743*	1.61
Dig^2			0.9744*	1.85
Dig^3			1.0189	1.32
LGB	0.1370*	1.89	0.1359*	1.66
LF	0.0440	0.62	0.0497	0.68
LC	0.7485**	2.43	0.7139	2.3
LO	0.0028	0.25	0.0031	0.29
LP	0.7813*	1.53	0.8015	1.56
LI	0.1177	0.84	0.1217	0.86
LW	0.0322	0.11	0.0302	0.11
LH	0.0908**	2.46	0.0916**	2.45
LB	0.0677	0.62	0.0553	0.48
Cons	4.4891	1.30	4.8340*	1.95
Time Effect	YES		YES	
Area Effect	YES		YES	
R-squared	0.9333		0.9338	
Prob > F	0.0000		0.0000	

Annotation: *** p<0.01, ** p<0.05, * p<0.1

It can be seen from the results in Table 5 that the coefficient of digital economy is negative, which proves that the impact of digital economy on industry is generally inhibiting. The main reason is that there is more large-scale machine production in industry. However, with the development of digital economy, industrial robots have a stronger substitution effect on labor in this large-scale production.

Next, in order to further consider that the growth of the digital economy itself is affected by its own development, and the impact of the digital economy on industrial employment marginal growth rate is also affected by the digital economy itself, quadratic and



cubic options are added to the model. The results are shown in Industry 2 in Table 5. It can be seen that the impact of digital economy on the employment of the secondary industry shows a downward curve, that is to say, with the development of economy, the impact of digital economy on the employment of the secondary industry should be mainly negative, and its tangent rate of change is inverted "U" shape, that is, the change of marginal impact rate increases first and then decreases. The main reason is that the digital economy leads to the large-scale application of industrial robots to replace labor, and at the same time makes the industrial upgrading, forcing the unemployed in the industry to transfer to other industries, so that in the initial stage of development, this substitution effect changes rapidly, with the development of the economy, the gradual stability of personnel flow, this substitution effect is also gradually weakened.

Further, the heterogeneity test is carried out on the three groups of low economic development areas, medium economic development areas and high economic development areas, and the results are shown in Table 6.

Table 6. Empirical Results 4

	High PGDP		Medium PGDP		Low PGDP	
	Alpha.	t	Alpha.	t	Alpha.	t
Dig	0.1219*	1.90	0.0530	0.65	0.0377	0.49
LGB	0.0256	0.27	0.0364	0.55	0.3541***	4.37
LF	0.0571	0.53	0.0760	1.07	0.0498	0.62
LC	0.0311	0.12	1.3226***	4.49	0.6628**	1.97
LO	0.4249***	3.58	0.0022	0.16	0.0180	0.56
LP	1.5484***	3.85	0.4098	1.04	0.2124	0.50
LI	0.1440	0.90	0.2164*	1.84	0.0304	0.27
LW	0.8784***	2.94	0.5410**	2.01	0.4471*	1.72
LH	0.1188**	2.16	0.1077***	2.53	0.1645***	3.40
LB	0.0844	0.82	0.2841**	2.22	0.0969	0.92
Cons	11.0000***	5.29	1.0477	0.57	1.6222	0.93
Time Effect	YES		YES		YES	
Area Effect	YES		YES		YES	
R-squared	0.5729		0.9594		0.9479	
Prob > F	0.0000		0.0000		0.0000	

Annotation: *** p<0.01, ** p<0.05, * p<0.1

The fitting degree of the above three groups of models is good, and all of them are significant within the 1% confidence interval. It can be seen that the impact of digital economy on agricultural employment is negative in both low and high economic areas, and at the current stage of China's development, with the economic growth, digital economy has a relatively large inhibitory effect on industrial employment. The reason for this is that China's general industrial structure still needs to be upgraded. In most regions, industrial economy still accounts for a large proportion, and digital economy has a strong substitution effect on industrial employment.

4.3.3 Service

The empirical results of Equation 3 are shown in Table 7.

Table 7. Empirical Results 5

	Service	
	Alpha.	t
Dig	0.0386*	1.58
LGC	0.0577	0.38
LF	0.0320	0.57
LC	1.0260***	5.28
LO	0.0014	0.19
LP	0.6083*	1.69
LI	0.0000	(omitted)
LW	0.3770*	1.81
LH	0.0433	0.84
LB	0.0263	0.24
Cons	3.0814	1.44



Time Effect	YES
Area Effect	YES
R-squared	0.9629
Prob > F	0.0000

Annotation: *** p<0.01, ** p<0.05, * p<0.1

As shown in Table 7, the fitting index R² of the model is 0.9629, P value is 0.0000, which proves that the model fits well, and the results are significant within 1% confidence interval. It can be seen from the results in Table 7 that the coefficient of digital economy is positive, which proves that the digital economy has a positive effect on agricultural service industry in general.

Furthermore, the heterogeneity test is conducted on the three groups of low economic development areas, medium economic development areas and high economic development areas, and the results are shown in Table 8.

Table 8. Empirical Results 6

	High PGDP		Medium PGDP		Low PGDP	
	Alpha.	t	Alpha.	t	Alpha.	t
Dig	0.1206***	2.43	0.1398*	1.57	0.0343	0.70
LGC	0.0003	0.00	0.4822***	2.95	0.1248*	1.76
LF	0.0038	0.04	0.0417	0.42	0.0486	0.92
LC	0.4019**	2.04	2.1938***	5.70	0.9910***	5.04
LO	0.3185***	3.46	0.0088	0.45	0.0147	0.69
LP	0.4694*	1.55	1.1149**	2.04	0.2212	0.78
LI	0.0000	(omitted)	0.0000	(omitted)	0.0000	(omitted)
LW	0.3598*	1.54	0.6999*	1.86	0.4344***	2.55
LH	0.0111	0.26	0.0516	0.90	0.0755**	2.36
LB	0.0102	0.13	0.1782	1.05	0.0282	0.43
Cons	1.1092	0.70	9.4943***	3.86	1.1009	0.96
Time Effect	YES		YES		YES	
Area Effect	YES		YES		YES	
R-squared	0.8213		0.9533		0.9833	
Prob > F	0.0000		0.0000		0.0000	

Annotation: *** p<0.01, ** p<0.05, * p<0.1

The fit of the above three sets of models is good, and all of them are significant within 1% confidence interval. It can be seen that the impact of digital economy on the employment of service industry is positive in both low economic areas and high economic areas, but negative in medium economic areas. The basic trend of the impact of digital economy on the employment of tertiary industry shows a "U" shape.

V. CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 Comprehensive Analysis

According to the above empirical results, the coefficient α of the digital economy affecting the employment of the three industries can be summarized in Table 9.

Table 9. Coefficients of Digital Economy Affecting Employment in the Three Industries

	Agriculture	Industry	Service
Overall	0.0858	0.0658	0.0386
High PGDP	0.0593	0.1219*	0.1206
Medium PGDP	0.0805	0.0530	0.1398
Low PGDP	0.0531	0.0377	0.0343

Annotation: *** p<0.01, ** p<0.05, * p<0.1

The following conclusions can be inferred:

1. The digital economy has a positive impact on the employment of the primary industry and the tertiary industry, but a negative impact on the employment of the secondary industry;
2. The basic trend of the impact of the digital economy on employment in the primary and tertiary industries exhibits a "U"



shape, initially experiencing inhibition before subsequently increasing.

3. The impact of digital economy on the employment of the secondary industry is basically a downward curve;

4. Although on the whole, the increasing effect of digital economy on the employment of the primary industry is more than that of the tertiary industry, it may be limited by the development stage of China's overall economy, which is not accurate enough. It can be seen from the heterogeneity test by region that with the development of economy, the promoting effect of digital economy on the tertiary industry is greater than that on the primary industry.

5.2 Policy Suggestions

Based on the above conclusions, this paper puts forward the following policy recommendations for the world economy:

First, take advantage of the digital economy to increase the employment capacity of high-end industries, especially high-end manufacturing. On the one hand, actively promote the digital transformation of enterprises, especially the manufacturing industry, and further liberate productivity with the help of factor resources of the digital economy; On the other hand, speed up the construction of new infrastructure, especially the construction of new infrastructure represented by big data and 5G, and fully release the effect of the digital economy on creating new jobs.

Second, better play the role of the digital economy in optimizing the industrial employment structure, and give full play to the employment absorption capacity of the tertiary industry. On the one hand, the advantages of the Internet can be leveraged to expand the one-way connection of traditional industries into a network topology, accelerate the development of the tertiary industry, and increase employment. On the other hand, it guides traditional industry personnel to turn to some tertiary industries that are difficult to be replaced by the digital economy and can also be developed with the help of the Internet, such as pension, housekeeping, childcare and other service industries.

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A STUDY ON LEARNING DISABILITIES AMONG HIGH SCHOOL STUDENTS IN SALEM DISTRICT OF TAMIL NADU

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ABSTRACT

Learning disability refers to a range of conditions that cause considerable difficulties in learning and using abilities such as listening, speaking, reading, writing, thinking, or mathematics. A learning disability, on the other hand, is frequently attached with other incapacitating conditions (social and emotional disturbance, sensory impairment). The study's population comprises of all students in the eighth and ninth grades from government and private schools in the Salem district. A standardized self-administered open and closed ended questionnaire from Bhargava and Bhardwaj's learning disability battery was employed. After data analysis, results revealed a significant difference between girls and boys students in their learning disabilities. Students' categories also play a significant role in their Dyscalculia and Dyslexia learning disabilities. The mean difference is favor of boys. Hence, it can be inferred that boys possess lower dyscalculia when compared to girls. Gender did not make any significant difference in Dysgraphia, a learning disability. The types of high school students differed significantly in their categories of learning disabilities (Dyscalculia, Dysgraphia, and Dyslexia). At the same time, severe learning disabilities are found in CBSE school students.

KEYWORDS: Learning impairment, high schools, listening, speaking, reading, writing, thinking, or mathematics, Dyscalculia, Dysgraphia, Dyslexia.

INTRODUCTION

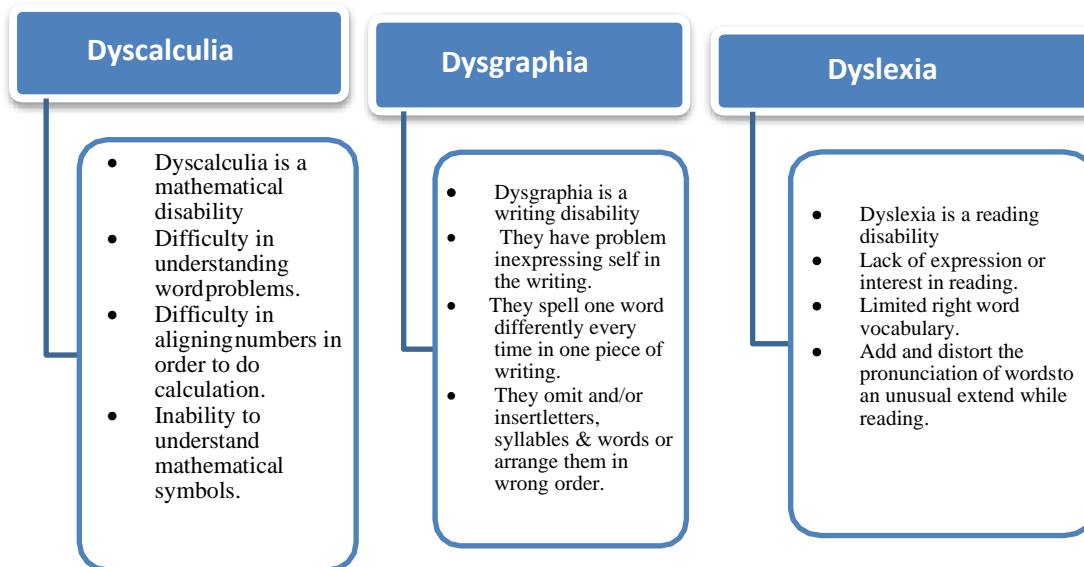
Learning disability is a broad term that refers to several forms of learning difficulties. A learning handicap makes it harder for a person to learn and apply specific abilities. Reading, writing, listening, speaking, reasoning, and mathematics are the most affected. Learning difficulties (LD) differ from one person to the next. A person with a learning handicap may not have the same challenges as another. According to studies, learning difficulties are caused by changes in how the brain acts and processes information.

There is no indication that someone has a learning disability. According to experts, there is a significant difference between how well children perform in school and how well a child can perform based on their intelligence or ability. In addition, some data suggest that the child has a learning problem. Some are listed below. As far as learning problems are recognized in primary school, most are related to primary school tasks. A youngster is unlikely to have all or even most of these symptoms. However, if a child exhibits these symptoms, parents and teachers should investigate if the youngster has a learning disability. The following tasks may pose difficulties for children with learning disabilities: Teachers and parents can assess more if children exhibit unexpected difficulties with reading, writing, listening, speaking, or math. The same is true if a child has difficulty with these skills. A youngster may require evaluation to establish whether or not he or she has a learning problem. When children reach school age, they are evaluated for learning difficulties.

Learning difficulties, in general, refer to a neurobiological problem caused by abnormalities in how the brain functions and is constructed. Furthermore, "learning disability" is a broad term for various learning difficulties. A learning handicap makes it harder for a person to learn and apply specific abilities (Lerner, 2002). Reading, writing, listening, speaking, reasoning, and math are the most affected (Pierangelo & Giuliani, 2006; Heward, 2005; National Outreach Center for Children with Disabilities, 2004;). Learning disabilities (LD) differ from person to person and involve many disorders. Someone with LD may not have the same learning challenges as someone without it.



SOME SYMPTOMS OF LEARNING DISABILITY



LEARNING DISABILITY AND RIGHT TO EDUCATION

Overall, the Right to Education Act is a significant step forward because it ensures that all children in our country between the ages of 6 and 14 can now attend school, regardless of their economic status. However, there is fear that it may accidentally cause significant harm to the educational needs of children with learning difficulties. Because no child may be held until the eighth grade, children with learning problems are more likely to be diagnosed too late. School administrators are likely to submit these children to learning disability clinics late or not at all to analyze their poor academic performance. This means that a crucial period for "remedial education" is lost, and these children lose the opportunity to overcome their disability.

In its current form, the RTE Act is unlikely to provide a reason for children with learning difficulties unless accompanied by an amendment making it mandatory to refer children with low marks or grades for learning regardless of their class position. This modification is required to ensure that children with learning disabilities are diagnosed on time. It also guarantees that other causes of poor academic performance, such as ADHD, slow learners, and autism, are detected and handled as soon as possible. Developed countries, such as the United States, which previously introduced compulsory schooling, demand that every child with poor grades be assessed so that a personalized education plan can be established to identify the root problem as soon as feasible. These plans motivate a child to reach his or her full academic potential. Our country can follow suit and change the current RTE Act to assess every child who receives poor grades or has academic issues, determine the causes of poor school performance, and solve them promptly. Because the RTE Act mandates free and compulsory education for all children in India aged 6-14 years, children with learning difficulties' unique learning requirements may no longer be overlooked. In addition, children with learning difficulties should receive a high-quality education and complete it in ordinary mainstream schools.

A learning disability is a heterogeneous collection of severe difficulties in acquiring and employing human abilities such as listening, speaking, reading, writing, thinking, or mathematics. Learning disability is frequently associated with sensory impairment, mental retardation, and social and emotional disturbance; psychological factors such as emotions, maturity, and development; cultural differences; inadequate or inappropriate instruction are also some causes of learning disability in children. It is a combination of those conditions or influences (NJCLD, 1990). According to Samuel Kirk (1963), a disorder or developmental delay affects a specific area, such as reading, spelling, mathematics, and writing, as well as delayed language development.

Learning disabilities are a relatively new and understudied issue in India, with only a few organizations and departments interested in conducting research in this area. The country's education system focuses on "theory" rather than "learning" and is thus unsuitable for pupils with learning difficulties. Examining assessment and preventive concerns in the Indian context is critical due to a lack of indigenous research and the preponderance and domination of Western adaptations in the absence of proper need-based evaluation.



OBJECTIVE OF THE STUDY

To find the learning disabilities among the high school students in Salem district of Tamil Nadu in the following variables.

- ✓ Gender: Male/Female
- ✓ Types of School: Government / Aided / Metric / CBSE

HYPOTHESES

- ❖ There is no significance difference between boys and girls in their learning disabilities (Dyscalculia, Dysgraphia, and Dyslexia).
- ❖ There is no significance difference between Government, Aided, Metric, and CBSE students in their learning disabilities (Dyscalculia, Dysgraphia, and Dyslexia).

METHOD OF RESEARCH

- ❖ The descriptive survey research approach was employed for this study.
- ❖ The study population consists of all students in the 8th & 9th class from government and private high schools in Salem district of Tamil Nadu.

SAMPLING METHOD

Two hundred students of eighth and ninth classes from government and private high schools located in rural and urban areas in Salem district were chosen for the study using the random sampling method.

RESEARCH TOOL

A structured self-administered open and closed-ended questionnaire of the learning disability battery of Bhargava & Bhardwaj was used to compare learning disabilities among early adolescents in government and private schools. Demographic variables like gender and caste were used. The questionnaire consisted of three parts, i.e., part 1, part 2 and part 3. Part 1 consisted of questions related to dyscalculia, part 2 consisted of questions related to dysgraphia, and part 3 consisted of questions related to dyslexia. The scoring procedure of these questions was done according to the manual of the learning disability battery of Bhargava, Bhardwaj.

Procedure

The investigator obtained permission from the headmasters of high schools and fixed the programme. Before conducting the test, students were told in detail about the study. All the students voluntarily participated in this program. The question papers were distributed to the students, who were asked to submit the filled-in answer sheets. A maximum of 50 minutes is given to the students to provide answers to the questions on the question paper itself. The collected data were entered into an SPSS database and analyzed. The mean, cross-tabulation, standard deviation, t-tests, and ANOVA were used for the data analysis.

DATA ANALYSIS

The hypotheses formulated for the present investigation have been verified using different statistical techniques. Mean scores and Standard Deviations were calculated for different groups of students. t-test and F test were calculated to know whether there is any significant difference in the learning disabilities of different student groups for the present study.

Hypotheses-1

There is no significance difference between boys and girls in their learning disabilities (Dyscalculia, Dysgraphia, and Dyslexia).

Table 1 showing the significant differences in the Learning Disabilities (Dyscalculia, Dysgraphia, Dyslexia) of different groups of high school students

	LD	Group	N	Mean	SD	“t”
Gender	Dyscalculia	Boys	97	24.27	8.23	2.054*
		Girls	103	21.92	7.97	
	Dysgraphia	Boys	97	50.78	12.56	0.343 ^{NS}
		Girls	103	50.19	11.72	
	Dyslexia	Boys	97	12.85	7.94	2.219*
		Girls	103	15.36	8.05	

* Significant at 0.05, NS- Not significant



Interpretation

Table 1 indicates that the calculated 't'-value (2.054) is greater than the table value of 1.96. Therefore, it is significant at the 0.05 level. Hence, the null hypothesis is rejected. So, it can be stated that the gender of students differed significantly in their learning disability (dyscalculia). The mean difference (2.35) is in favour of boys. Hence, it can be inferred that boys possess lower dyscalculia when compared to girls. Table 1 shows that the calculated 't'-value (0.343) is less than the table value of 1.96. Therefore, it is not significant at the 0.05 level. Hence, the null hypothesis is retained. It can be inferred that the gender of high school students does not significantly affect their learning disability (Dysgraphia). Table 1 indicates that the calculated 't'-value (2.219) is greater than the table value of 1.96. Therefore, it is significant at the 0.05 level. Hence, the null hypothesis is rejected. So it can be stated that the gender of students differed significantly in their learning disability (dyslexia). The mean difference (2.51) is in favour of girls. Hence, it can be inferred that boys possess lower dyslexia when compared to girls.

Hypotheses-2

There is no significance difference between Government, Aided, Metric and CBSE students in their learning disabilities (Dyscalculia, Dysgraphia, and Dyslexia).

Table -2 Learning Disability-Category-Mean-SD

Learning Disability	Type of School	N	Mean	SD
Dyscalculia	Government	66	31.8	3.74
	Aided	42	22.52	5.36
	Metric	51	18.9	5.61
	CBSE	41	14.73	4.57
Dysgraphia	Government	66	60.53	10.96
	Aided	42	48.33	8.52
	Metric	51	45.05	10.31
	CBSE	41	43.024	8.03
Dyslexia	Government	66	5.87	3.15
	Aided	42	17.02	4.81
	Metric	51	13.25	3.98
	CBSE	41	25.63	2.73

Interpretation

The table 2 shows that government school students has no dyscalculia when compared to other type of school students with mean score of 31.8, students who are belongs to Aided students had the second place with mean score of 22.52, students who are belongs to metric students had the third place with mean score of 18.9 and obtained the students who are belongs to CBSE students had high dyscalculia when compared to other category students with mean score 14.73. Mean score of 48.33, students who are belongs to Metric had the third place with mean score of 45.05 and obtained the students who are belongs to CBSE students had high dysgraphia when compared to other type of school students with mean score 43.024.

The table 2 shows that Government school students has no dyslexia when compared to other school students with mean score of 5.87, students who are belongs to metric students had the second place with mean score of 13.25, students who are belongs to aided students had the third place with mean score of 17.02 and obtained the students who are belongs to CBSE students had high dyslexia when compared to other category students with mean score 25.63.

Table -3 Learning Disability-Category- ANOVA

Learning Disability		Sum of Squares	df	Mean Square	F	Sig.
Dyscalculia	Between Groups	8782.681	3	2927.560	127.300	.000*
	Within Groups	4507.474	196	22.997		
	Total	13290.155	199			
Dysgraphia	Between Groups	10505.763	3	3501.921	36.704	.000*
	Within Groups	18700.157	196	95.409		
	Total	29205.920	199			
Dyslexia	Between Groups	10310.295	3	3436.765	250.113	.000*
	Within Groups	2693.205	196	13.741		
	Total	13003.500	199			

* Significant at 0.05, NS- Not significant



Interpretation

It is observed from table 0.00 that the obtained F-value(127.300) for df = 3 and 196 is greater than the table value of 2.70. It is significant at the 0.05 level. Therefore, the null hypothesis is rejected. Hence, it can be inferred that the type of school students significantly affects their learning disability. Since the F-value is significant, a further probe is attempted to know which type of school students differ significantly in their learning disability from other subgroups.

Table No.4 Learning Disability-Type of School-Mean-SD-t-Value

L D	Type of School	N	Mean	SD	“t”
Dyscalculia	Government	66	31.80	3.75	10.570*
	Aided	42	22.52	5.36	
	Government	66	31.80	3.75	
	Metric	51	18.90	5.61	14.868*
	Government	66	31.80	3.75	
	CBSE	41	14.73	4.57	21.014*
	Aided	42	22.52	5.36	
	Metric	51	18.90	5.61	
	Aided	42	22.52	5.36	3.159*
	CBSE	41	14.73	4.57	
	Metric	51	18.90	5.61	7.113*
	CBSE	41	14.73	4.57	
Metric	51	18.90	5.61		
CBSE	41	14.73	4.57	3.842*	

* Significant at 0.05, NS- Not significant

Interpretation

It is observed from table 4 that the obtained t-values 10.570, 14.868, and 21.014 are more significant than the table value of 1.96. Therefore, they are significant at a 0.05 level, so it can be stated that government students differed significantly from their neighbor groups, i.e., Aided, Metric, and CBSE in Dyscalculia Learning Disability. The mean differences (9.28, 12.9, and 17.07) favor government school students. It can be stated that government school students possess low dyscalculia learning disabilities compared to their counterparts. The other obtained t-values 3.159 and 7.113 are more significant than the table value of 1.96; therefore, they are significant at the 0.05 level, So it can be stated that aided school students differed significantly from their neighbor groups, i.e., metric, CBSE students in Dyscalculia Learning Disability. The mean differences (3.62 and 7.79) favor aided school students. It can be stated that aided school students possess low dyscalculia learning disabilities compared to their counterparts The other obtained t-value 3.842 is greater than the table value of 1.96. Therefore, they are significant at a 0.05 level, so it can be stated that metric students differed significantly from their neighbor group, i.e., CBSE students in Dyscalculia, Learning Disability. The mean differences (4.17) are in favor of metric school students. It can be stated that metric school students possess low dyscalculia learning disabilities compared to their counterparts.

Table No.5 Learning Disability-Type of School-Mean-SD-t-value

LD	Type of School	N	Mean	SD	“t”
Dysgraphia	Government	66	60.53	10.96	6.123
	Aided	42	48.33	8.52	
	Government	66	60.53	10.96	7.763
	Metric	51	45.05	10.31	
	Government	66	60.53	10.96	8.753
	CBSE	41	43.24	8.03	
	Aided	42	48.33	8.52	
	Metric	51	45.05	10.31	1.645
	Aided	42	48.33	8.52	
	CBSE	41	43.24	8.03	2.800
	Metric	51	45.05	10.31	
	CBSE	41	43.24	8.03	
Metric	51	45.05	10.31	0.923	
CBSE	41	43.24	8.03		

Interpretation

It is observed from table 5 that the obtained t-values 6.123, 7.763, and 8.753 are greater than the table value of 1.96. Therefore, they are significant at a 0.05 level, so it can be stated that government school students differed significantly from their neighbor groups, i.e.,



aided, metric, and CBSE school students in Dysgraphia Learning Disability. The mean differences 9.28, 12.9, and 17.07 favour government school students. It can be stated that government school students possess low Dysgraphia learning disability compared to their counterparts. It is observed from table 0.000 that the obtained t-value 1.645 is less than the table value of 1.98. It is not significant at the 0.05 level. It can be inferred that the aided school students does not significantly affect their dysgraphia learning disability compared to the metric students. The other obtained t- value 2.800 is greater than the table value of 1.96. Therefore, they are significant at a 0.05 level, so it can be stated that aided students differed significantly from their neighbor groups, i.e., CBSE school students in Dysgraphia Learning Disability. The mean differences (5.09) are in favour of aided students. It can be stated that aided school students possess a low dyscalculia learning disability compared to their counterparts (S.T. Category). The other obtained t-value 0.923 is less than the table value of 1.96. It is not significant at the 0.05 level. It can be inferred that the metric school students does not make a significant difference in their dysgraphia learning disability when compared to the CBSE school students.

Table No.6 Learning Disability-Type of School-Mean-SD-t-value

LD	Type of School	N	Mean	SD	“t”
Dyslexia	Government	66	5.87	3.15	14.542
	Aided	42	17.02	4.81	
	Government	66	5.87	3.15	11.170
	Metric	51	13.25	3.98	
	Government	66	5.87	3.15	33.089
	CBSE	41	25.63	2.73	
	Aided	42	17.02	4.81	4.129
	Metric	51	13.25	3.98	
	Aided	42	17.02	4.81	9.982
	CBSE	41	25.63	2.73	
	Metric	51	13.25	3.98	16.918
	CBSE	41	25.63	2.73	

Interpretation

It is observed from table 0.000 that the obtained t-values 14.542, 11.170, and 33.089 are greater than the table value of 1.96. Therefore, they are significant at a 0.05 level, so it can be stated that government school students differed significantly from their neighbor groups, i.e., aided, metric, and CBSE school students in Dyslexia Learning Disability. The mean differences (11.15, 7.38 and 19.76) favour aided, metric, and CBSE school students. It can be stated that government school students possess a low dyslexia learning disability compared to their counterparts.

The other obtained t-values 4.129 and 9.982 are greater than the table value of 1.96. Therefore, they are significant at a 0.05 level, So it can be stated that government students differed significantly from their neighbor groups, i.e., metric, CBSE school students in Dyslexia Learning Disability. The mean difference (3.77) is in favor of aided school students. It can be stated that aided school students have a high dyslexia learning disability compared to metric students. Another mean difference (8.61) is in favor of CBSE students. It can be stated that aided students possess a low dyslexia learning disability compared to CBSE school students.

The other obtained t-value 16.918 is greater than the table value of 1.96. Therefore, they are significant at a 0.05 level, so it can be stated that metric school students differed significantly from their neighbor group, i.e., CBSE school students in Dyslexia Learning Disability. The mean differences (12.38) are in favour of CBSE school students. It can be stated that metric school students possess low dyscalculia learning disabilities compared to their counterparts.

FINDINGS AND CONCLUSIONS

- ✓ Boys and Girls in High Schools differed significantly in their Learning Disabilities (Dyscalculia, Dysgraphia, and Dyslexia).
- ✓ Boys (Mean = 24.27) in high schools performed better in Dyscalculia than girls (Mean = 21.92) students of high schools. The results contradict the findings of the studies conducted by Ms Mrigakshi Sarma and Dr R.D. Padmavathy (2022), Narendra Singh Thagunna Sapana Change (2019), and Deeksha and Navleen Kaur (2016).
- ✓ High school students differed significantly in their learning Disabilities (Dyscalculia, Dysgraphia, and Dyslexia).
- ✓ Government school students differed significantly from their neighbor groups, i.e., aided, metric, and CBSE school students in learning disabilities.
- ✓ Learning Disabilities (Dyscalculia, Dysgraphia, and Dyslexia) found in CBSE school students.



RECOMMENDATIONS

- ❖ After learning about their issues, teachers might adopt appropriate styles of instruction to fulfil the individual needs of dyscalculic kids.
- ❖ Teaching can be conducted using a variety of visual, audio, and audio-visual aids to assist students in learning the fundamental principles.
- ❖ By raising awareness of various learning challenges, Dyscalculia can assist teachers and parents in providing a welcoming learning environment for children.
- ❖ Identifying Dyscalculia allows teachers and parents to collaborate to organize the content in a way that allows those children to learn well.
- ❖ Teachers must be aware of various teaching tactics to assist these youngsters in understanding, learning, and completing their math activities.

CONCLUSION

The main findings of the there is no significance difference in learning disabilities (Dyscalculia, Dysgraphia, and Dyslexia) among high school students with respect to their gender and type of school. Students with learning difficulties are fairly common in schools. However, it is sensible that incidence of learning difficulties varies across schools and countries. The rate of incidence of difficulties related to learning can lie between 12 per cent and 30 per cent of the school population. As the attribution of 'learning difficulty' (LD) is quite high, literature describe such identification of difficulty as 'garden variety' learning difficulty. Confusing the situation, students labeled as learning difficult or disabled is of below average intellectual level, and often are from lower socio-economic and deprived backgrounds. This makes identifications of Learning Disabilities even more complex in Indian context. Most of regular teachers feel that they are not equipped to address individual differences in learning abilities in classrooms. In such a situation, continuing with the term "Learning Disabilities" makes little sense for school programmes. Instead, schools, educators and researchers need to clearly address each type of Learning Disabilities individually to arrive at flawless definitional statements and a articulate understanding of etiology, developmental course, identification, prevention, and management. Other aspects that require attention of researchers, educators and statesmen are development of screening for Learning Disabilities in local languages, equipping all teachers with further training to care for Learning Disabilities and for their inclusion through peer teaching, group activities and teacher interaction. Such movements are to be supported by reducing class size further, funding extra and special remedial classes, and use of appropriate learning aids and development of suitable infrastructure.

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A HOLISTIC ASSESSMENT OF CHINA'S FOOD SECURITY AND THE FACTORS HINDERING ITS PROGRESS

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ABSTRACT

Food security in the People's Republic of China has been a paramount concern, shaped by its historical experiences and contemporary challenges. This article presents a comprehensive examination of China's food security status, exploring both the facilitating and hindering factors in its pursuit of a stable and sustainable food supply. The historical context underscores China's commitment to addressing food security, with agricultural modernization, policy initiatives, and diversification of food sources playing crucial roles in progress. However, environmental challenges, changing dietary patterns, and income disparities present formidable obstacles. Balancing the achievements and ongoing challenges highlights the intricate nature of China's journey toward food security.

KEYWORDS: *Food Security, China, Agricultural Modernization, Policy Initiatives, Diversification, Historical Context, Sustainability, Utilization, Regulation*

INTRODUCTION

China's food security is gaining global focus due to increasing instability and unpredictability. This research devised a fresh approach to evaluate China's food security, focusing on its accessibility, allocation, usage, susceptibility, sustainability, and governance. The analysis utilized a combination of the entropy weight method (EWM) and the matter-element extension model (MEEM) to study the state of China's food security from 2001 to 2020. Moreover, an obstacle degree model (ODM) was applied to identify the primary elements obstructing food security. The study revealed that while China's overall food security saw substantial enhancement, it experienced a minor decline in 2003. The primary challenges initially revolved around grain distribution, later expanding to issues related to vulnerability and sustainability. The most significant factors constraining China's food security were identified as the quantity of fertilizer used per unit of sown area (AFA) and the self-sufficiency rate of grain (GSR). The forthcoming 40 years could be crucial in guaranteeing China's food security, which involves factors like demographics, climate change, and resource scarcity. It appears that China is enacting its national strategies via sustainable farmland usage and innovative agricultural technology to promote the high-quality growth of its grain industries and bolster its food security.

LITERATURE REVIEW

Food security is a fundamental concern for the People's Republic of China, given its vast population and evolving socio-economic landscape. As China experiences rapid urbanization, environmental challenges, and shifts in dietary patterns, ensuring a stable and sustainable food supply has become an intricate policy objective. This literature review delves into a comprehensive examination of China's food security status and explores the multifaceted factors that both facilitate and hinder its progress in this critical domain.

China has a complex history of food security challenges. Memories of severe famines, such as the Great Famine of 1959-1961, have driven the nation's commitment to addressing food security. The post-reform era, marked by economic liberalization, brought significant changes to agricultural production and rural livelihoods. State-led initiatives, including the Household Responsibility System, shifted control over land and crops to individual households, stimulating agricultural productivity (Rozelle et al., 1997).

China's pursuit of food security hinges on agricultural modernization. Substantial investments in research and technology, such as high-yield crop varieties and precision agriculture, have led to increased yields and productivity. Mechanization and irrigation improvements further enhance agricultural efficiency (Huang et al., 2020).

The Chinese government has implemented a range of policies to bolster food security, such as subsidies for farmers, the Minimum Purchase Price (MPP) system, and a strategic grain reserve. These policies aim to stabilize food production and ensure adequate grain stocks (Fan et al., 2013). International trade agreements and investments in foreign agriculture have diversified China's food sources. Importing agricultural products, including soybeans and grains, has become a vital strategy to meet domestic demand (Zhang et al., 2018).



China grapples with the environmental impact of intensive agriculture. Soil degradation, water scarcity, and pollution pose significant threats to the long-term sustainability of food production. Addressing these challenges while ensuring food security remains a complex task (Zhang et al., 2021).

Changing dietary patterns have led to increased demand for meat and dairy, straining resources. This shift poses both environmental and health challenges. Balancing dietary preferences with sustainability is a pressing concern (Wang et al., 2019).

Rural-urban income disparities persist, affecting access to food. While urban areas enjoy greater food choices and access to nutrition, rural regions face challenges related to affordability and food quality (Glauben et al., 2019).

ANALYSIS AND DISCUSSION

Food security is a fundamental element for national stability and human welfare, hence it is a critical precondition for national security¹. In recent times, food security has become a pressing issue in both developing and advanced parts of the globe², with the situation being particularly dire in Asia and Africa, where the count of individuals facing hunger peaked at 418 million and 282 million respectively in 2020³. China, with one-fifth of the global population, is dealing with varied levels of food production stress. Maintaining food security and catering to the needs of its vast populace requires increased grain production, despite only having 9% of the world's arable land and 6% of global water resources at its disposal⁴. This indicates a growing environmental and resource challenge. Factors like climate change, urbanization, and a shift in dietary habits from grains to more meat-centric diets further exacerbate this situation⁵. As such, a multifaceted examination of China's food security situation will facilitate a more thorough and unbiased evaluation; both quantitative and qualitative assessments of the impediments impacting China's food security status are crucial for setting the main objectives of China's food security strategy and agricultural policy.

Food security has been a growing concern for governments and scholars for several decades. The concept was first defined at the 1974 World Food Conference in Rome, Italy, as 'ensuring that all people at all times have access to enough food for survival and health'⁶. The 1996 World Food Summit Plan of Action further refined the concept, with the most widely accepted definition stating 'when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life'. Since its introduction, food security has been widely studied internationally⁷. Some research suggests that food security is about availability, utilization, and sustainability, while others perceive it as the eradication of poverty, malnutrition, and hunger. Most current studies, however, neglect the potential friction between food sustainability and other dimensions of food security, and policy applications have received limited attention. Hence, in this research, food security is defined as a 'condition where a region or nation can satisfy sustainable and ecological standards, supply people with ample nutritious and healthy food that aligns with certain cultural habits and preferences under the government's macro-control and market regulation mechanism'.

Understanding that the creation of an evaluation index system is pivotal to the evaluation procedure, this research focuses on developing an unbiased and rational food security evaluation index system. Drawing from past studies, this paper considers the comprehensive strategy for grain availability and distribution. It emphasizes the crucial role of the vulnerability and sustainability of grain production, and the effective and efficient use of resources in ensuring food security. It also integrates governmental regulation with the enhancement of food security. As a result of the above analysis, an evaluation index system made up of 22 evaluation factors for China's food security is proposed (Table 1). This system is categorized into six main components: availability, distribution, utilization, vulnerability, sustainability, and regulation. The chosen indicators align with established principles of completeness, comparability, dynamism, and practicality.

¹ Prosekov A.Y., Ivanova S.A. *Food Security: The Challenge of the Present*. *Geoforum*. 2018;91:73–77. doi: 10.1016/j.geoforum.2018.02.030.

² Sternberg T., McCarthy C., Hoshino B. *Does China's Belt and Road Initiative Threaten Food Security in Central Asia?* *Water*. 2020;12:2690. doi: 10.3390/w12102690

³ Usman M.A., Callo-Concha D. *Does Market Access Improve Dietary Diversity and Food Security? Evidence from Southwestern Ethiopian Smallholder Coffee Producers*. *Agric. Food Econ*. 2021;9:1–21. doi: 10.1186/s40100-021-00190-8.

⁴ Huang J., Yang G. *Understanding Recent Challenges and New Food Policy in China*. *Glob. Food Secur*. 2017;12:119–126. doi: 10.1016/j.gfs.2016.10.002.

⁵ Chen L., Chang J.X., Wang Y.M., Guo A.J., Liu Y.Y., Wang Q.Q., Zhu Y.L., Zhang Y., Xie Z.Y. *Disclosing the Future Food Security Risk of China Based on Crop Production and Water Scarcity under Diverse Socioeconomic and Climate Scenarios*. *Sci. Total Environ*. 2021;790:148110. doi: 10.1016/j.scitotenv.2021.148110.

⁶ *Report of the World Food Conference, Rome, 5–16 November 1974*. UN; New York, NY, USA: 1975

⁷ *Rome Declaration on Food Security and World Food Summit Plan of Action*. FAO; Rome, Italy: 1996.



Table 1. Evaluation index system of China's food security.

	Index/Unit	Index Definition/Explanation
Availability (A)	Total grain production (TGP)/10 ⁴ ton	Total output of grain produced within a calendar year
	Grain yield per unit area (GY)/(kg/hm ²)	Productive capacity of cultivated land within a region
	Grain self-sufficiency rate (GSR)/%	Grain production/(grain production + imports – exports)
	Planting structure of grain crops (PSG)/%	Proportion of the total sown area of grain crops to farm crops
Distribution (D)	Per capita grain availability (pGA)/(kg/person)	Total grain production/total population
	Per capital daily total intake (pDTI)/(kcal/day/person)	(Total grain production + net grain import) × grain comprehensive calories/(total population × 365)
	Per capita disposable income of residents (pDIR)/RMB	Purchasing power of residents
	Grain price volatility index (GPVI)/preceding year = 100	Grain retail price fluctuant trend and degree
	Density of highways and railways (DHR)/10 ⁴ km	Effectiveness of transportation in grain distribution and access
Utilization (U)	Prevalence of undernourishment (PU)/%	Proportion of the population failing to meet dietary needs for a healthy life to the total population
	Loss rate (LR)/%	Utilization efficiency of five main crops in each stage (rice, wheat, corn, beans, and tubers)
	Poverty incidence (PI)/%	Impoverished population/total population
Vulnerability (V)	Grain reserve level (GRL)/%	Stock variation of state-owned grain enterprise
	Per capita sown area of grain crops (pSA)/(hm ² /person)	Sown area of grain crops/total population
	Grain production fluctuation coefficient (GFC)/%	Fluctuation range of grain production
	Occurrence of natural disasters (OND)/case	Number of natural disasters in a year
Sustainability (S)	Amount of fertilizer application per unit sown area (AFA)/(kg/hm ²)	Consumption of chemical fertilizer/sown area of grain crops
	Effective irrigation area (EIA)/10 ³ hm ²	Area of cultivated land under normal irrigation for agricultural production
	Area affected of grain crops (AAG)/10 ³ hm ²	Extent of grain production affected by disasters
	Level of agricultural machinery (LAM)/10 ⁴ kW	Effect of science and technology support on agricultural sustainable development
Regulation (R)	Per capita level of government expenditure for supporting rural production (pSRP)/(RMB/person)	Government expenditure for supporting agricultural development
	Proportion of government expenditure for supporting agriculture to agricultural output value (PAGE)/%	Government expenditure for supporting agriculture/gross output value of agriculture

In the context of China's statistical data, grain output includes cereals, beans, and tubers categorized by crop type. The data for total grain production (TGP), output of major farm products, grain imports and exports, planting structure of grain crops (PSG), per capita disposable income of residents (pDIR), affected area of grain crops (AAG), per capita level of government expenditure for supporting local production (pSRP), and proportion of government expenditure for supporting agriculture to agricultural output value (PAGE) were gathered from the Statistical Yearbook released by China's National Bureau of Statistics and the China Rural Statistical Yearbook. These span various years from 1991 to 2020. Historical annual data, which include the length of highways and railways, the quantity of agricultural fertilizer application, the sown area of grain crops, and the effective irrigation area, were sourced from the Achievements of New China's Economic and Social Development in 70 Brilliant Years (1949–2019).

Poverty incidence data was taken from the Poverty Monitoring Report of Rural China. The grain price volatility index was extracted from the annual data in the China Urban Life and Price Yearbook. The data on the prevalence of undernourishment (3-year average) and cereal stock variation were obtained from FAOSTAT Data of the FAO (United Nations). Natural disaster statistics were downloaded from the Emergency Events Database (EM-DAT) of the Center for Research on the Epidemiology of Disasters (CRED) (<http://www.emdat.be/> accessed on 9 March 2021). Any gaps in the data were filled using the interpolation method.

The obstacle degree model (ODM) is a useful tool for identifying and analyzing influence factors, pinpointing the key variables that significantly impact evaluation outcomes, clarifying the impact level of key constraints, and assisting in the sustainable development of grain output and better assurance of China's food security. Hence, this paper introduces three elements - index contribution (w_j), indicator deviation (T_{ij}), and obstacle degree (O_j) - to ascertain the obstacle degree of the factors affecting food security. The calculation method for these is detailed as follows:

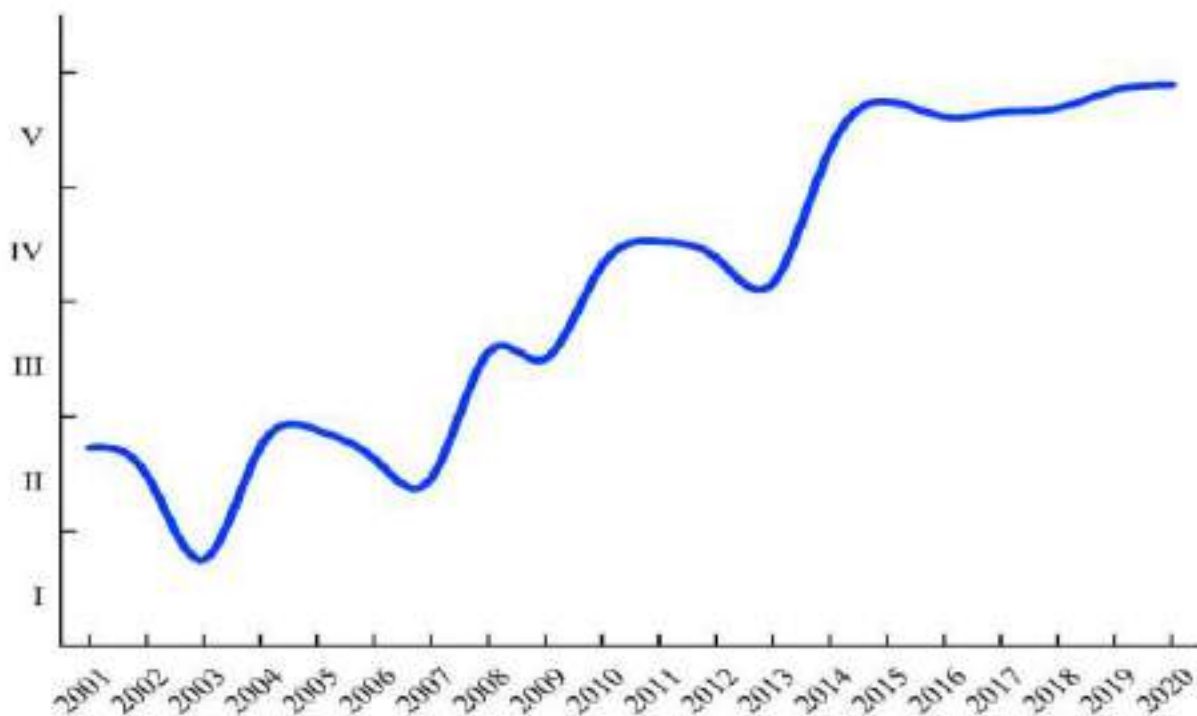


$$T_{ij}=1-z_{ij}$$

$$O_j=w_j \times T_{ij} \sum_{i=1}^n (w_i \times T_{ij}) \times 100\%$$

where O_j represents the obstacle degree of the j th indicator on the safety state, which means the influence degree of each indicator or unit on the overall food security status. z_{ij} is the normalized value of the single index, and T_{ij} refers to the deviation degree of the indicator, which represents the difference between the actual indicator value and the optimal target value.

A trend map depicting the status of food security in China from 2001 to 2020 can be created based on the comprehensive correlation degree and evaluation grade. The figure reveals that, with the exception of a period of relative insecurity in 2003, China's overall food security demonstrated a marked upward trend with intermittent fluctuations throughout this timeframe. In 2003, the planted area for grain crops in China fell below 100 million hectares, representing 65.2% of the total crop sown area - a record low⁸. Another possible reason for this could be that China's food security is influenced by international grain prices and the affordability of food for its citizens. The food production saw a considerable decline in 2003, which resulted in the first increase in China's food market prices in six years, and international food prices also saw a rise.



Pic.1. China's food market prices

Post 2003, China experienced 17 consecutive years of abundant harvests. These years saw sufficient grain supplies and reserves and a stable grain market, which are indicators of improving food security. However, the variations in the comprehensive correlation degree curve of food security indicate that an increase in total grain output alone cannot ensure China's food security, as it is the result of the combined effect of multiple factors. Therefore, it relies on maintaining the sustainability and stability of agricultural production, predicated on the steady enhancement of food production. It also depends on giving precedence to the conservation of resources and the environment, bolstering agricultural infrastructure development, augmenting agricultural production capacity and risk response ability, and ensuring long-term stability.

⁸ China Statistical Yearbook 2003. National Bureau of Statistics; Beijing, China: 2003



Table 1.
Top five obstacle indicators of China's food security during 2011–2020.

Year	Option	Indicator Order				
		1	2	3	4	5
2011	Indicator	AFA	pDIR	LR	pSRP	GRL
	Value	20.0	11.1	8.6	8.4	7.1
2012	Indicator	AFA	pDIR	LR	pSRP	GSR
	Value	23.1	11.1	7.6	7.0	6.5
2013	Indicator	AFA	pDIR	LR	GSR	OND
	Value	24.8	10.6	7.6	7.3	6.5
2014	Indicator	AFA	pDIR	GSR	OND	pSA
	Value	27.6	10.2	9.0	6.8	6.3
2015	Indicator	AFA	GSR	pDIR	pSA	OND
	Value	32.3	12.4	10.3	7.1	6.7
2016	Indicator	AFA	GSR	pDIR	GRL	pSA
	Value	30.1	11.0	8.0	7.4	6.9
2017	Indicator	AFA	GSR	GRL	pSA	pDIR
	Value	31.1	12.8	9.2	8.2	6.3
2018	Indicator	AFA	GRL	GSR	pSA	pSRP
	Value	28.5	12.5	11.2	8.6	5.7
2019	Indicator	AFA	GRL	GSR	pSA	LR
	Value	29.5	14.2	12.1	10.3	6.8
2020	Indicator	AFA	GSR	GRL	pSA	PAGE
	Value	34.5	18.5	18.2	12.6	6.3

Table 1. illustrates the primary obstacles among the 22 indicators of China's food security during the period of 2011–2020. The table identifies that the top five obstacle factors are primarily embodied in the sustainability and vulnerability aspects of food security. Specifically, from 2011 to 2020, the largest constraining factor affecting food security was the Amount of Fertilizer Application per unit sown area (AFA). This implies that there are substantial disparities in land quality grades across the nation. In the absence of sufficient fertile farmland, soil fertility is enhanced by increasing the application of chemical fertilizers, which severely hampers sustainable agricultural production.

Meanwhile, from 2011 to 2014, the condition of grain distribution also influenced China's food security, and Per Capita Disposable Income of Residents (pDIR) emerged as the second largest risk factor. However, post-2014, the Grain Self-Sufficiency Rate (GSR) has gradually become the second largest risk factor limiting the development of China's food security. As has been discussed, this is due to the swift increase in imports of corn and soybeans; China's actual grain self-sufficiency rate has been on an overall downward trajectory, the structural contradiction of grain varieties in China has escalated, and the development of the agricultural structure has become unbalanced. Furthermore, the Grain Reserve Level (GRL) and the Proportion of Sown Area (pSA) have been decreasing slowly, indicating that China's grain production lacks sufficient stability and is an obstacle to food security development. In recent years, due to constraints posed by natural conditions, climate change, market conditions, and other factors, the stability of food production has also had a critical influence on China's food security.

This study employs a scientific methodology to comprehensively and effectively evaluate China's food security, a crucial element in shaping the primary objectives of China's food security strategy and agricultural policy. The results indicate a general upward trend in China's food security status from 2001 to 2020, with a slight dip in 2003. This supports the consistent improvement of



China's overall food security status. These findings are corroborated by Wu et al.⁹ and Yao et al.¹⁰, who observed a reduction in grain sowing area and an increase in cash crop planting area amidst changes in China's agricultural structure in 2003, leading to a substantial decrease in China's total grain output.

Grain availability is the primary factor influencing food security. The rapid advancement of agricultural science and technology indeed contributes to a steady enhancement of China's comprehensive grain production capacity. However, as the world's largest grain importer, China imports a large quantity of grain annually¹¹. Despite achieving almost full self-sufficiency in cereal production, akin to several populous developing countries and slightly lower than developed countries, soybean self-sufficiency has notably declined¹². In 2020, China sourced 73.0% of its imported rice from Vietnam, Pakistan, Thailand, and Cambodia. Alongside rice, wheat, and corn are primarily imported from resource-rich countries or regions such as the United States, Brazil, Argentina, and the European Union¹³. China's dependence on foreign countries for soybean has reached an extremely high level, with imports skyrocketing from 13.9 to 100.3 million tons between 2001 and 2020. Major soybean importers include Brazil, the United States, and Argentina, with Brazil accounting for 64% of the total¹⁴. Therefore, there is a need for further promotion of agricultural layouts and grain planting structures, stabilization of grain planting areas, and cultivation of potatoes, beans, miscellaneous grains, and other crops based on local conditions.

On the other hand, agricultural costs continue to escalate, and the capacity of resources and the environment is nearing its limits¹⁵. We infer that due to China's low agricultural production capacity and extensive agricultural management, the ecological environment remains very fragile, significantly hindering improvement in grain production capacity. In 2019, agricultural chemical fertilizer consumption exceeded 55 million tons, and the Amount of Fertilizer Application per unit sown area (AFA) for farm crops remained at 325 kg/ha, considerably higher than the global average (120 kg/ha). Other data indicate that in 2019, the amount of pesticide application was 8.7 kg/ha, 3.3 times the global average¹⁶. These statistics highlight that China's agriculture remains extensive, with low technical knowledge, economic efficiency, and economies of scale. Agricultural producers often employ excessive and predatory production modes, applying large quantities of chemicals such as pesticides, chemical fertilizers, and herbicides, and indiscriminately discharging livestock and poultry waste and domestic pollutants, leading to the degradation and desertification of cultivated land resources. Agricultural infrastructure is relatively weak, and the capacity for disaster prevention and relief must be improved. Moreover, unpredictable weather events have caused sharp declines in grain production and residents' incomes in vulnerable areas, significantly increasing the risk of food insecurity. China faces substantial pressure to maintain steady grain production while ensuring green development and sustainable resource utilization. Consequently, agricultural producers should control the application of chemical fertilizers and pesticides based on soil fertility, continue to reinforce the treatment of agricultural nonpoint source pollution, and strive for high-quality agricultural development.

CONCLUSION

China's pursuit of food security is a dynamic process marked by significant achievements and enduring challenges. The nation's commitment to agricultural modernization, policy initiatives, and diversification of food sources has enhanced food security. However, environmental challenges, dietary shifts, and income disparities remain substantial hurdles. Navigating these challenges while ensuring sustainable and secure access to food is a multifaceted endeavor, highlighting the complexity of China's journey to food security.

In view of severe food security challenges, China has a long way to go to facilitate the high-quality development of its grain industries and strengthen the food security guarantee. China will implement its national strategies for food security through sustainable farmland use and agricultural technology innovation to increase farmland productivity. At present, China has carried

⁹ Wu W., Yang P., Tang H., You L., Zhou Q., Chen Z., Shibasaki R. *Global-scale Assessment of Potential Future Risks of Food Insecurity*. *J. Risk Res.* 2011;14:1143–1160. doi: 10.1080/13669877.2011.571794.

¹⁰ Yao C.S., Huang L., Lyu X. *Evaluation on Central China's Food Security Situation and Its Guarantee Ability to China*. *Areal Res. Dev.* 2015;34:149–154.

¹¹ Zhao F., Sun P., Zhang J. *Modeling the Grain Import Trade: A Cointegration Analysis of China's Panel Data*. *Discret. Dyn. Nat. Soc.* 2021;2021:3673282. doi: 10.1155/2021/3673282

¹² Lyu D., Sun J. *China's Grain Trade Research Based on DEA Model of National Food Security Perspective: Soybean as an Example*. *Teh. Vjesn.* 2021;28:609–615.

¹³ Duan J., Xu Y., Jiang H. *Trade Vulnerability Assessment in the Grain-importing Countries: A Case Study of China*. *PLoS ONE.* 2021;16:e0257987. doi: 10.1371/journal.pone.0257987.

¹⁴ Lv M.K., Zhang L.J., Qin Y.C., Zhang M.M., Yang J.X., Yu Y. *Spatiotemporal Pattern of Chinese Food Trade and Structural Security Assessment, 1987–2016*. *Resour. Sci.* 2021;43:838–848.

¹⁵ Bénédicte C. *Resilience of Local Food Systems and Links to Food Security – A Review of Some Important Concepts in the Context of COVID-19 and Other Shocks*. *Food Secur.* 2020;12:805–822. doi: 10.1007/s12571-020-01076-1.

¹⁶ Wang X.J., He Y.P., Jiang H.P. *Food Security during the 14th Five-Year Plan Period: Situation, Problems and Countermeasures*. *Reform.* 2020;9:27–39



out soil testing and formula fertilization; popularized the practice of returning straw to the field, green manure planting, the application of organic fertilizer, soil improvement, and other supporting technologies; and steadily improved the quality of cultivated land. China will continue to innovate in the seed industry, making breakthroughs in core technologies such as germplasm improvement and the creation, efficient cultivation, processing, and circulation of new crop varieties. China will enhance integrated technological innovation, breaking logjams in improving per unit area yield, crop quality, economic benefits, and the environment. At the same time, China intends to strengthen macroeconomic regulation and its support of agriculture, promote mechanization in agriculture, transform and upgrade the agricultural machinery industry, increase the grain supply, and improve grain quality through the application of agronomy and agro techniques.

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MIRZO ULUGBEK'S SCIENTIFIC SCHOOL

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ANNOTATION

In this article, the author talks about Mirzo Ulug'bek, the leading scientist of the Timurid period, and his scientific school, and explains the activities of mature representatives of this school on the basis of sources.

KEY WORDS: *Samarkand observatory, famous astronomer, Ulugbeka madrasa, Gijduvan madrasa, Zayniddin Vasifi, Sultaniya, Samarkand Academy, local schools.*

Timurid ruler Mirzo Ulugbek was among the thinkers and scholars who created in the 14th - 15th centuries, who entered world science as the second renaissance of the East. Ulugbek, a famous astronomer, mathematician, historian, founder of the Samarkand observatory and head of the scientific school, is one of the world's greatest astronomers. Mirza Ulugbek was the king of the country on the throne and a scientist, but he was also a high-spirited and just person. In this article, based on available sources and literature, we will briefly talk about Mirzo Ulugbek's scientific school.

So, the full name of Mirza Ulugbek is written in the introduction to his work "Zij": "Ulugbek ibni Shahrukh ibn Temur Koragon says this", [1] - if we rely on the sentence that begins Mirza Ulughbek ibn Shahrukh ibn Temur is Koragon. Ulugbek was born on March 22, 1394 in the city of Sultania, located in the western part of Iran, during the siege of the Mordin fortress during the "five-year war" (1392-1396) of his grandfather Amir Temur. According to Sharafiddin Ali Yazdi's work "Zafarnama"[2], Amir came to Temur and told him the good news about the birth of Ulugbek. Astrologers predict that the child will become a scientist and a ruler in the future. After this news, Amir Temur paid great attention to Ulugbek and stopped the siege of Mordin fortress and canceled all the demands placed on the inhabitants of the fortress.

Amir Temur's attention to science and art can be seen in his children and grandchildren. At the beginning of the 15th century, the king and scholar Mirza Ulugbek (1409-1449) ruled the throne of Movarounnahr in Samarkand. During this period, Samarkand became a major political, scientific and cultural center. As a scientist and enlightener, Ulugbek paid great attention to science and tried to gather great scientists in Samarkand. He built many madrasahs in Samarkand, Bukhara, Gijduvan. Mirza Ulugbek became a patron of science along with state affairs. He wrote works such as "Zizhi jadidi koragony" on astronomy, "Tarihi arba ulus" on the science of history. Ulugbek, in turn, can be called the "creator of Madrasahs" who opened his heart to the people of science in several cities.

Among these creative works, the most famous ones are located in Samarkand. The construction of the Ulugbek madrasa began in 1417 and was completed within three years. Famous scholars such as Qazizada Rumi and Taftazani were among the teachers who taught at this school. On the advice of Qazizada Rumi, Ulugbek Ghiyosiddin Jamshid invites Koshoni to Samarkand.

When the madrasa was opened in 1420, the number of scholars gathered here exceeded 100. In its time, this spiritual center in Samarkand was glorified with the name "Madrasay Oliya"[3]. Zainiddin Vasifi writes in the book "Badoi ul-Waqai" that "...Shamsiddin Muhammad Havofi was appointed as the head teacher", [4] and Qazizada Rumi, Ghiyazidin Koshi, Mirzo Ulug'bek, Ali Kushchilar were the main teachers of the madrasa. who read the lectures. Even today, this madrasa attracts the attention of the world community with its antiquity and grandeur in the "Registon Ensemble". In the list of such madrasahs there were madrasahs established in Bukhara in 1417 and in Gijdivan in 1433. They worked as a place of learning for the leaders of science.

In the madrasa in Samarkand, together with his teacher Qazizada Rumi, Ghiyaziddin Jamshid ibn Masud Ulugbek himself taught the words: "Education is a duty for every Muslim man and woman" in the building of the madrasa was a deep-meaning call to the people to learn. Ulugbek remained in the history not only of his time, but also as a scientist of humanity. Ulugbek's scientific activity and his efforts in the field of science in general became famous in Europe as "Samarkand Academy". This



academy fully met the requirements of that time, it had a well-equipped observatory, a rich library and a madrasa, the highest educational institution of its time.

In addition to local scientists, visiting astronomers and mathematicians from a number of different countries and peoples also worked at the observatory. The mutual cooperation of astronomers and mathematicians was seen in the fact that astronomers observed the positions of planets and stars in the sky, and the determined data were mathematically processed by mathematicians at the scientific institute. In this way, astronomical and trigonometric tables were created.

Mirzo Ulugbek also built a peaceful garden near the observatory, i.e. in the far part of Kuhak hill. In its time, this garden was known as Bogi Maidan. It is said in "Boburnoma" about the Maidan garden: "(Ulugbek Mirzo) again planted a garden in the foothills of Kuhak near Farb. Season to Boge Maidan is in the middle of this garden, he built a high building, called Chilsutun, with two floors and all the pillars are stone. At the four corners of this building there are towers like four manors, the roads leading up are these four towers. In all other places, there are stone pillars, some of them are carved by morpech. The four sides of the upper floor are porches, the columns are made of stone. They have completely destroyed the building's chair. He built another garden on the side of Kuhak, built a large porch, and inside the porch he placed a large stone throne. - eight years old, one year old in height. They bring a huge stone from a long way. There is a gap in the middle. I think that it happened after you were mentioned here. In this garden, there is another attic, the structure is completely ceramic. They say china shop, Chinese people send and bring back" [5].

The scientists of this "academy" led by Ulugbek achieved remarkable success in astronomical observations, by the standards of that time. In particular, a table containing the inclination of the ecliptic, the annual movement of the five planets - Zuhra (Venus), Zuhal (Saturn), Mirrih (Mars), Mushtari (Jupiter) and Utorud (Mercury), the length of the sidereal year, 1018 stars and finally, they compiled the geographical coordinates of 683 populated points. Ulugbek Ali Kushchi, Chalabiy and other students scientifically studied the secrets of the universe and wrote the scientific work "Zizhi Koragony". He determined that a year consists of 365 days, six hours, 8 minutes, and 12 seconds, and according to today's scientific progress, he was wrong by 58 seconds. After the death of Ulugbek in 1449, the employees of this observatory dispersed to different regions as the rain of knowledge.

One of them was Ali Kushchi. If we talk about the favorite student of Mirza Ulugbek, Alaviddin Ali ibn Muhammad al-Kushchi, it is appropriate to say that he, like his nickname, carried out serious work in the activity of the observatory with his cheerfulness. After the death of Qazizada Rumi and Jamshid al-Koshi, the scientific work at the observatory was entirely entrusted to Ali Kushchi, and he successfully completed these tasks. In 1438, Mirza Ulugbek Ali sent Kushchi as his representative to the Chinese emperor as an ambassador. After returning from China, Ali Kushchi wrote his work "Mathematical and Astronomical Geography". All the information and news presented in it are the result of several years of scientific research.

In 1908 and 1914, as a result of V. L. Vyatkin's research, the remains of the Ulugbek observatory were found and excavations were carried out. Research M. Ye. It was continued by Masson in 1941, by A.A. Pulyavin in 1943, and by V.A. Shishkin in 1948. European astronomers became aware of Ulugbek's star catalog after it was published in Oxford in 1648. The work was published at the initiative of Oxford University professor John Greaves (1602-1652), who also wrote a commentary on it. 17 years later, Thomas Hyde (1636-1703), a scholar-keeper at the Bodleian Library in Oxford, prepared and published the work in Persian and Latin.

Jamshid al-Koshi has a special place in Ulugbek's scientific academy. His knowledge of mathematics was very high. Although Koshi's biography has not reached us, two of his works – "Miftakh al-hisab" ("Key of Arithmetic") and "Risola fil-muhitiya" ("Treatise on the Circle") have reached us [6]. Al-Koshi wrote the work "The Key of Arithmetic" as an answer to the questions asked by experienced accountants to test it or because they really did not know, and donated it to Ulugbek's library. The purpose of writing the "Treatise on the Circle" was to calculate the number π [7], that is, the ratio of the length of the circle to its diameter, with greater accuracy than was known before Cauchy. Through these works, al-Koshi made a great contribution to the development of mathematics.

As mentioned above, we know Mirzo Ulugbek as a scientist who has worked in the field of historical sciences. His work "Tarihi arba' ulus" on the science of history holds a special place among his works. It should be said that "Tarikh-i arba' ulus" was created under the scientific guidance and personal participation of Mirzo Ulugbek. The work was completed in 1425. This work is also known as "Ulus-a arba'-yi Chingiziy" ("Four Nations of Genghis") and "Tarikh-i arba' ulus" ("History of Four Nations"). However, Colonel Miles, who was one of the first among European orientalists to study this work and published an abridged English translation of it, calls this book "Shajarat ul-atrok" ("Genealogy of the Turks") without



sufficient justification. [8]. The results of a deep and detailed study show that only Yofas oğlan and his son Turk Khan and their children Tatar-Mongol and Turkic classes, as well as their kings, were written in “Shajarat ul-atrok” written on the basis of only. The work is called “Ulus-i arba-yi Chingiziy” or “Tarikh-i arba-ulus”, which includes the history of the great-grandfather of Chingiz Khan, Buzunor Kuturan, and Chigatai Khan's generation, who ruled Movarounnahr in the first half of the 13th - 14th centuries. . This part was written by Mirzo Ulugbek and his assistants.

“Tarikh-i Arba' ulus” is to some extent based on “Shajarat ul-Atrok”. In another place, it is said: “The history of the four tribes of Genghis Khan” mentions the names of kings from the descendants of Turk Khan ibn Yofas ibn Nuh alayhissalam. The names of Turkestan zamin khans mentioned in this pamphlet were taken from the collection about the khans of the four nations written by the martyr Sultan al-Sa'id Ulugbek Mirzai. These notes, especially the last one, firstly show that the exact name of the work is “Ulus-i Arba'yi Chingiziy” and secondly that it belongs entirely to the pen of Mirzo Ulugbek.

Based on the information given above, it can be said that Tarikh-i Arba' ulus, like Rashiduddin's famous work “Jami' ut-tavarikh”, was written by a team of historians under the direct participation and guidance of Mirza Ulugbek.

There are very few copies of Tarikh-i Arba' ulus. As research scientist B. Akhmedov mentioned, a complete copy of the work has not yet been found. Today, four abridged (collective) copies of it are preserved, two of which are kept in England, one copy is kept in the library of Bankipur, India, and the fourth copy is kept in Harvard University in the USA.

Along with science, Mirzo Ulugbek greatly appreciated poetry, music, and the art of painting. On the walls of the observatory, he painted images of nine heavens, sky domes, planets, and stars.

In the Samarkand library, under the leadership of Abdulhai from Baghdad, the artist Jahangir of Bukhara origin (a student of Ustad Gung, who was called “Umdat-ul musavvirin” – “Captain of artists”, he mentored K. Behzad's teacher Pir Ahmed Tabrizi), Maulana from Herat Many calligraphers and painters, such as Shahabeddin Abdullah, Mawlano Zahiriddin Azhar, Haji Abduqadir Gulyandi, Pir Ahmad Bogishamaly, Muhammad al Hayyami, and Junayid Sultan, who were of local origin, created works. The manuscripts of Al-Sufi's “Treatise on Astronomy” (1437), A. Firdavsi's “Shahnama”, and Nizami's “Khamsa” were copied and illustrated here.

In the time of Mirzo Ulugbek, in addition to secular sciences, history, literature and art, especially visual arts, developed in Muvarounnahr. It is known that Ulugbek discussed the topics of scientific literature in his correspondence with his brother Boysunkur. Ulugbek wanted to prove that the style and school of the great Azerbaijani poet Nizami Ganjavi is superior in poetry, while Mirzo Boysunkur argued that it is a true product of the genius poet and thinker Amir Khusrav Dehlavi. In addition to his mother tongue (at that time, Chigatai-Turkish language), Ulugbek knew Arabic and Persian perfectly. Muhammad Haidar writes in his famous work “Tarihi Rashidi” that Mirza Ulugbek “was a wise historian and also wrote down the history of “turu ulus”. This work is Ulugbek's book “Tarihi arba' ulus”, in which the political life of the countries once conquered by Genghis Khan in the 13th century - the first half of the 14th century was reflected [9].

In the development of Samarkand visual art, artists from Herat play a major role. In 1447, Ulugbek brought a group of artists from Herat to Samarkand. As a result of merging the works of local and Herat painters, Samarkand, under his influence, the Bukhara school of elegant art was formed at the beginning of the 16th century.

At the same time as Mirza Ulughbek, Herat, the capital of Khorasan (Afghanistan, the lands from Western Iran to Delhi), the second part of Amir Temur's state, became a major center of literature, fine arts and culture. Khorasan was ruled by Ulugbek's father Shahrukh Mirza (1409-1447). In addition to being a very religious person, he was the head of the development of science and culture in Herat.

According to the description of Great Alisher Navoi, Ulugbek was also a great poet. The book "Tukhfatu Surur" is proof that he is a great connoisseur of music. The book “Muhit Attafviq” shows that Ulugbek created great musical works such as “Shodiyona” (this work has reached us), “Akhloqi”, “Tabrizi”, “Usuli Ravon”, “Usuli Bahri”. It is written in the work “Muhit ut-tavarikh” that Ulugbek Mirzo was also an excellent shnavan musicologist. He created musical works such as balujji, shodiyana, moral, ulusi and usula ravan performed on large and small drums. Also, the author of “Tarihi Rashidi” Muhammad Haidar described Mirza Ulug'bek Mirza as an accomplished scholar and said, “Mirza Ulug'bek was a wise historian and wrote down the history of “Tarihi arba' ulus”, - he says. The historian Fyosiddin Khondamir (1475-1534) also informed about this[8].

Under Ulughbek's patronage, Darvesh Ahmad Samarkandi, Sultan Ahmad Noi, Hasimi Abuwafa, Muhammad Ali Garibi, Yusuf Burkhan Naqqorachi (Navoi's uncle), Mawlana Sahib Balkhi, Abul Baraka and other artists were busy with their work



in Samarkand. Also, prominent teachers of the Ulugbek madrasa - encyclopedic scholars Maulana Muhammad Havofi, Said Imoeddin, famous medical scientist Hoja Burhoniddin Nafis, great literary critic and linguist Hoja Fazlullah, and Abulqasim Samarkandi were renowned as leading scientists of the era [1].

Apart from being a great scientist, Ulugbek Mirza led the development of science in his time and patronized the people of science. During his time, the city of Samarkand became a center of science and culture, and many talented scientists, dozens of sensitive poets and eloquent writers got their deserved position in the palace. For example, the great mathematician and astronomer Qazizada Rumi, Fiyosiddin Jamshid, Maulana Mu'iniddin Koshani and Ali Kushchi, accomplished mudarris Said Imodiddin and Maulana Muhammad Khawafi, famous commentator and medical scientist Burkhaniddin Nafis ibn Awaz Kirmani, great poets Sakkoki, Maulana Hiyali, Ismatullah Bukhari, Kamal Badakhshi, a great literary critic, and Khoja Fazlullah Abullaysi, a linguist, are among them. Ulugbek Mirza also made a great contribution to the study of ancient monuments written in Turkish and their dissemination among the people. In particular, in 1444, the famous "Hibat ul-haqaiq" (Gift of Truths) by Ahmad Yugnaki (XI-XII centuries) was copied anew. Also, at that time, translation works were well developed in the palace of Ulugbek Mirza, and several valuable works were translated from Arabic and Persian into Turkish [10].

Mirzo Ulugbek studied not only contemporary writers, but also the works of many poets who lived several centuries before his time, and gained a reputation as a great admirer and connoisseur of poetry. One of the noteworthy aspects is that the works of some poets who read Ulugbek's books with great pleasure contain a lot of explanations of astronomical concepts, names of stars and planets, and descriptive descriptions.

In conclusion, it can be said that the academy created by Mirzo Ulugbek is proud today due to its scientific activity and the work of a number of scientists who worked in it. The fact that a number of works created in that period have not lost their importance from today's point of view is a clear proof of our opinion. Therefore, the great people who lived at the historical turning point are always worthy of pride for their achievements.

Mirzo Ulugbek can rightfully be called the leader of the science of stars. His great contribution to the science of his time, both as a ruler and a scientist will live in the memory of generations forever, and they will still refer to Ulugbek's rich scientific heritage many times in their scientific work.

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PECULIARITIES OF PEDAGOGICAL VIEWS IN THE WORKS OF ISHAQ KHAN IBRAT

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ANNOTATION

Is'haqkhan Ibrat left a rich legacy as a poet, historian, linguist and Islamic scholar. A skilled calligrapher who penned seventeen types of letters, he was one of the first Uzbek publishers who founded "Matbaai Ishaqiya" under his own name. He learned four languages perfectly, namely Arabic, Persian, Indo-Urdu and English. Abroad, he had the opportunity to compare and contrast the life, culture and art of Eastern and Western peoples. He closely studied the advanced science of Europe and collected valuable materials for his scientific works. He considered it necessary to know the languages of the peoples of the East as well as the languages of the West, and studied French in Arabia, English in India, and the oldest Phoenician, Jewish, Syrian, and Greek writings. His contemporary, Ibrahim Davron, writes about this: "Mr. Ishaq Khan, a wise man, knows Turkish, Persian, Hindi, and Russian, and is also adept at writing Russian, French, Armenian, and other letters."

KEYWORDS: *Printer, polyglot, poet, pedagogue, publicist, linguist, self-sacrificing person, fuzalo (virtuous people), artistic humanist, calligrapher*

INTRODUCTION

In our country, modern pedagogy begins directly with the work of great representatives of the national renaissance-modernism movement such as Mahmudhoja Behbudi, Ishaqkhan Tora Ibrat, Munavvarqori Abdurashidkhanov, Abdulla Avloni, Abdurauf Fitrat.

Indeed, "against various ideological and spiritual threats - we have a great enviable history, great enviable ancestors." Therefore, it is very important to spread the life and creativity of our great thinkers, who are the roots of our spirituality, to the general public. Studying the activities of Ishaqkhan Tora Ibrat as a polyglot, poet, pedagogue, publicist, linguist who traveled around the world, studied science and mastered several languages at the end of the 19th century, and the feeling of infinite pride towards him in the younger generation. It is necessary to form and thereby educate them as patriotic, selfless individuals. In particular, by teaching the rich literary and scientific heritage of Ishaq Khan Ibrat to young people, we should educate them in the spirit of high spirituality and enlightenment, by studying Ibrat's works, we should raise the literary and aesthetic thinking of students and young people, and the spiritual world of our children contributes will be perfect.

The in-depth study of the priceless heritage of our ancestors on a scientific basis is a constant focus. On November 2, 2016, in a meeting with the voters of Namangan region, Sh. Mirziyoyev decided to perpetuate the name of the great progressive and enlightener Is'haqkhan Ibrat as a symbol of respect for his incomparable services to the spiritual and educational development of our nation, and to build a modern garden by name Is'haqkhan Ibrat and put forward the initiative to create a memorial complex and "Ibrat School". Therefore, the decision No. 208 of the Cabinet of Ministers of the Republic of Uzbekistan dated April 13, 2017 "On the establishment of a memorial complex to the famous enlightener Is'haqkhan Ibrat in the Torakurgan district of the Namangan region" and Resolution No. 275 of the President of the Republic of Uzbekistan on June 9, 2022 "On the establishment of the Namangan State Institute of Foreign Languages named after Ishaq Khan Ibrat" was adopted.

In the era of globalization, the threat of mass culture to national and spiritual values is increasing. First of all, they threaten the young generation with the need to contribute to the education, prosperity and development of the country and the country poisoning. This means that our national spiritual values have been preserved by the exemplary life and actions of our ancestors, and we have the task of preserving them and enriching them with spiritual wealth to the next generation.



DISCUSSION AND RESULTS

Ishaq Khan Tora Ibrat devoted his life to the interests of the country and the nation as a poet and scientist, publisher and pedagogue, religious figure, translator and reformer. Therefore, its rich cultural heritage is widely studied in our country and even abroad.

Ishaqkhan Ibrat is an enlightened poet, a great linguist, a historian, and one of the first Uzbek printers. He was born in 1862 in the village of Toraqorgan near Namangan. He received his initial education in the old school, then at the hands of his mother. Later, he went to Kokan to study at a madrasa. In 1886, Ishaqkhan Ibrat graduated from the madrasa and returned to Torakurgan. He started his career as a pedagogue by spreading enlightenment in the village. In the same year, he opens a new school, which is very different from the old local schools.

Ishaqkhan Tora Ibrat graduated from the Kokand madrasa in 1886 and returned to his village Torakorgan. He began his career as an advanced educator spreading enlightenment, and opened a school in his village that same year. His school was somewhat different from the schools based on the "old method", i.e. hijo methodology. While studying in Kokan, Ibrat noticed that the teaching methods of the Russian schools opened in the country were superior to the rote memorization method prevailing in the local schools. Ishaq Khan Tora Ibrat applied the sound (sawtiya) method, which was more advanced than his school, and defended the "sawtiya method" from the supporters of the old method. However, he could not work in this school for long. Some ignorant fanatics declared his school as a "school of infidels" and tried to turn away the children of the people from this school. They even managed to close the school with the help of the officials of the Governor General's Office.

In 1887-1906, Ishaq Khan Ibrat traveled to Eastern and European countries, especially in central European cities such as Istanbul, Sofia, Athens, and Rome, Eastern cities such as Kabul, Baghdad, Jeddah, Mumbai, and Calcutta, as well as China, India, and Arabia. Ishaq Khan perfectly learned the Arabic, Persian, Hindi and English languages used there. Ibrat Barakali is engaged in creativity, there are more than twenty works written by him, twelve of which have reached us. In particular, in 1900, his poetry book "Ilmi Ibrat", in 1901 "Lug'ati Sitta al-Sina" six-language dictionary, in 1908 "Fiqhi Kaidani" translation book were published in Arabic text. At the same time, Ishaq Khan established the first publishing house in the Fergana Valley under the name "Matbaai Ishaqiya" in Ibrat Torakurgan. It publishes books on science, enlightenment and development, as well as books written by him.

Ishaqkhan Ibrat's work "Lug'ati sitta-alsina" was used as a single guide for learning Eastern and Russian languages in modern schools. At this point, it should be noted that Ishaq Khan Ibrat created a scientific work called "Jome ul-Khutut" ("Collection of Writings"), which is quite perfect in the complex field of linguistics. In this work, the author tries to explain the history of development from the most primitive writings - pictographic writings to the most perfect writings of recent times. Ishaq Khan writes the following about the history of the creation of this work, his intended purpose, and the title of the work: "These letters are eternal and permanent, and I intend to leave a unique history for our nation and to leave a work for the world. , this is a verse." In fact, Ishaqkhan Ibrat's profound knowledge in the field of linguistics was also demonstrated in this work. Because in the work, the oldest sound-letter writings that appeared after the pictographic writings: Phoenician, Jewish, Syriac, Arabic, Greek, Persian, Slavic, Sanskrit, Indian, Latin, Armenian, Georgian, Uighur and more than 40 other writings, of which information about its origin and development is provided. Also, Ibrat did not limit himself to the study of writing samples in his homeland, but also studied the ancient writing culture of Arab countries. He used writing monuments created by the Phoenicians before our era, writing remains found in caves on the island of Cyprus in his work.

Also, Ibrat was appointed as a poet. It is a pity that his "Devoni Ibrati" has not reached us. In his time, he gained high attention among the people and achieved the rank of a judge. The "Kutubkhanai Ishaqiya" foundation, which he founded, was very rich in this respect and the giving and receiving of books was established on the basis of a certain procedure.

The leading idea in Ishaq Khan Ibrat's work is the idea of promoting the innovations of science, culture and technology. The essence of Ibrat's enlightenment is that in his poems calling for knowledge and enlightenment, human destiny was in the first place.

He promoted science and technology that serve the economic and cultural life of the people, ease their problems, and bring the distance closer. From this point of view, his "Tarihi Chopkhana", "Masnavi about culture", "Gazeta khususi-da", "Turkistan akhdiga khitob", "Tabrik Namangondin", "Kalam", "Tarihi manzumi vagon Ibratdin yodgor", "Muhammasi" His poems such as "Ibrat" are noteworthy. In these poems, the poet sharply exposed the bigots and old-timers who drag the country and people into age-old backwardness. Ibrat tried to find out the reasons for the hard life of the hardworking people, the poverty, the backwardness of the country, and the ignorance of the people, and to find ways to save them. Ibrat, who has been in several developed countries, understood that the only way to save the people from darkness and the country from backwardness is the acquisition of knowledge.



The essence of the enlightenment of Ishaq Khan Tora Ibrat is that he reacted and evaluated every event from the point of view of the interests of his people and the Motherland. He dreamed that the future generation would live a free, independent and prosperous life among developed nations, and he had high hopes for it.

“Jome' ul-khutut” Writing is important in the development of society, culture and science, and in conveying cultural heritage to future generations. The creation and development of writing has a history of several thousand years. It emerged and developed much later than language as a means of communication between people. Writing is inextricably linked with the history of language and culture, its development stages. For this reason, a scholar dealing with the history of writings has a great responsibility. It is necessary for him to get acquainted with the history and culture of the human society, with the languages and writings that were once considered a means of communication, and later became dead, and with the relationship between living language and writing. However, this most interesting, relevant, and at the same time very complex field of linguistics has not been studied enough. In this complex field of linguistics, Ishaq Khan Ibrat created a very excellent scientific work called “Jome'ul-khutut”. In this work, the author tries to shed light on the history of development from the most primitive writings - pictographic writings to the most perfect writings of the last period. This work of the scientist consists of 132 pages and was published in 1912 in his printing house – “Matbaai Ishaqiya”. Ishaq Khan writes the following about the history of the creation of this work, his intended purpose, and the name of the work: “These letters are eternal and permanent, with the intention of leaving a unique history for our nation, and with the intention of leaving a work for the world. Mujib's verse: “Asardurki alamg olgai olgai, Kishi beasardur ketar benishan” - in essence, by slandering botadvin, raving, making his character noble and noble, and leaving a mark on the nation, the language of our nation is Turkish, and the common Turkic ilan is the people of Sartia.) the prefix of naf' is limited, and I did not nationalize the literature, but made it clearly Turkic. The Persians of our nation will be translated into Persian for the second time, and the goal is to create a “Jame' ul-Khutut” for all the letters, and to make them in our own letters and in our own language and in our own printing press. I peshkash to noble people, people of integrity and good-hearted, people of wisdom. Ishaq Khan Ibrat's profound knowledge in the field of linguistics was also demonstrated in this work. In the work, the oldest sound-letter writings that appeared after the pictographic writings: Phoenician, Jewish, Syriac, Arabic, Greek, Persian, Slavic, Sanskrit, Indian, Latin, Armenian, Georgian, Uighur and more than forty other writings, their origin, progress will be reported. Ibrat did not limit himself to studying the writing samples of his homeland, but also studied the ancient writing culture of Arab countries. He used the written monuments created by the Phoenicians before our era, the written remains found in the caves on the island of Cyprus in his work.

“Jame' ul-Khutut” provides information about 41 different writing systems known in the world, including the forms of Arabic letters such as suls, tawqe', rayhan, zulf, Humayun, turra, and at the same time, it contains husnikhat san Opinions about the horse are expressed. In this work, Ibrat emphasizes that the study of foreign languages such as English, French, German, and Latin, along with the Russian language, plays a major role in the acquisition of science and culture.

CONCLUSION

To sum up, the great writer Ishaq Khan Ibrat, who was at the forefront of the Jadidism movement, was not only a historian, poet, linguist, publisher and teacher, but also a mature religious scholar of his time, a judge and, first of all, a patriot. He is a historical person who fought selflessly for his development and strived for his whole life.

Ishaq Khan sincerely wanted his people to be knowledgeable and enlightened, and he did not spare his knowledge and energy in realizing this desire. He reported in the work “History of Culture” written in 1916, that in 20 years he created 14 scientific-historical, linguistic works and a collection of poems “Devoni Ibrat”, which is a collection of 30 years of poetic creativity. In addition to his works on linguistics, “Logati sittati alsina”, “Jome' ul-hutut”, his works on linguistics, “Tarihi Fargana”, “Tarihi kultur”, “Mezon uz-zaman” have reached us.

The poet correctly understood the socio-political changes that began in the country at the end of the 19th century, people's aspiration to a high ideal, national awakening and recognition of their identity, for this he used the innovations in the field of science and technology, science, education. Therefore, its rich cultural heritage is carefully studied not only in our country, but also abroad. Therefore, his spiritual and moral views are one of the most important educational processes for today's youth. In fact, Ishaq Khan Imbrat left a “mark” for the development of the Motherland and the nation with the example of his life, creativity and work, which is a “mark” for “one in a thousand” people he became a real example worthy of his name.

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GNOSEOLOGICAL ASPECTS OF CIVIL SERVICE EFFICIENCY AND EMPLOYEES' PROFESSIONAL CULTURE DEVELOPMENT

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ANNOTATION

In this article, in order to increase the effectiveness of the civil service and the epistemological aspects of the development of the professional culture of employees, the nature of the reforms implemented in the field of civil service development, the principles of civil service implementation, the powers of civil servants and the ability to take initiative the need for a civil servant to be able to take responsibility, to have the opportunity to find a solution to an existing problem based on the principles of legality, responsibility, justice and honesty, analysis of civil servants' qualifications, professional competence, high professional culture, and the ability to work with people was made, and based on the results of the research, conclusions on the topic were advanced.

KEY WORDS: *democratic legal state, state apparatus, public service, principles of public service, civil servants, professional competence of civil servants, professional culture, qualification requirements, criterion of justice, responsibility, ethics, honesty.*

At the new stage of society's development, the country's development, security, protection of citizens' interests cannot be imagined without the activities of state organizations. Therefore, institutions, concepts, elements that perform the function of state organizations are of great importance. Creating an opportunity for their development, establishing effective communication between different structures is important in the system of democratic reforms.

The creation of a unique national democratic legal state in Uzbekistan has given rise to the task of organizing a state service that meets the requirements accordingly. The essence of this task is complicated in accordance with development trends, it is being implemented on the basis of solving social and economic problems, and it is an important part of state policy. This is how the President of the Republic of Uzbekistan explains the connection with the process of creation and formation of a new body of the public service personnel corps that meets the demand. "Unless an effective system for selection and training of new and independent thinking, responsible, initiative, advanced management methods, patriotic, honest personnel is created, there will be no quality change in public administration" [1,55].

State-universal, national, social in a democratic society and is the main means of realizing professional values for the benefit of citizens. This complex system solves such an honorable task through the state, public service. Because civil service is a legal and social institution. This institute shows the competences of state bodies and public positions in the process of people performing their professional activities. In this case, "Our task is to strictly implement our model of development and renewal, relying on accumulated experience and advanced international practice. In this regard, we need to work hard to achieve the goals set for the near and medium term" [1, 154].

The civil service is an important institution both in the process of formation of market relations and in the stage of development. Because regardless of the size of the public sector in any social, economic conditions and sectors, the state has a certain position and plays an important role in the economy and development of human resources. Even in the conditions of the deepening of market economy relations, the humanistic (humanitarian) task of the public service is comprehensive. It is manifested through health care, culture, social security and social protection, science and education system.

The theoretical and practical significance of the humanitarian (humanitarian) mission of the public service is that its impact is not limited to the employees of the public sector, but also to the employees of the private sector. That is, employees in the private sector also use the humanitarian function of the public service (health, social protection, education and science). Therefore, in the current conditions, the mechanism of effective organization of public service in our country will help solve political, economic, social and national problems, ensure democratic development and establish political and social stability in society, and will prevent the manifestation of political extremism and other unconscious situations in any form. In such a process, an important task



is assigned to the state management bodies in the country, and the effective performance of this task will ensure that the state will function in the future in accordance with human interests. Therefore, by performing the relevant tasks in the state apparatus, civil servants ensure the effective functioning of the state apparatus and the constitutional guarantee of the interests of the country's citizens. The people should not serve the state agencies, but the state agencies should serve to people, and this fact needs to be well understood by the leaders at all levels, which confirms that the interests of the citizens are the main criteria for the state [1, 116].

If we observe the stages of development of the developed democratic states, in any democratic society there is a conflict of interests in the activities of social groups and political parties. This process is an objective reality. That is why there is a need for an independent state service in the society. Because only the public service, free from any social group, democratic movement and political parties, can realize the interest of the society, the state, in the way of the common good, only a highly qualified state apparatus will be able to take into account the interest of various social groups, democratic movement and political parties in the criterion of justice.

Citizens can believe that the state apparatus does not serve the interests of any social group or political party, and that it does not prioritize any interest, only if there is a public service free from existing political opinions and various social groups and movements in the society. In such conditions, civil servants are required to approach their duties seriously, to work selflessly and to be loyal to the interests of their country. For the realization of promising tasks of such social importance, it is necessary to pay attention to two situations. First, it is necessary to fully ensure the effective functioning of the state public service, and secondly, it is necessary to trust qualified civil servants to implement public administration.

Therefore, during the democratic reforms, social attention to the qualifications, professional potential, and professional culture of civil servants is constantly increasing. The higher their qualifications, the more effectively the state apparatus performs its task, relying on innovations. If we look at the situation of human resources in developed countries, we see that in most cases, the qualifications of civil servants are much higher than the qualifications of employees working in the private sector. State institutions have achieved this state by paying special attention to improving the qualifications of civil servants and adopting legal documents that ensure their social protection. In our country, innovative measures are being implemented to train and improve the skills of civil servants. This opinion is also confirmed by the adoption of a special law defining the main direction of the state's personnel policy and establishing the rights and obligations of civil servants at the new stage of development. After all, "The main task is to form a new structure of leaders and officials who have high professional skills and modern thinking, who are well-thought-out, who can make the right decisions in all aspects, who can achieve the set goals" [1, 162].

In fact, the absence of a special law on public service causes many problems and prevents public service from becoming a special institution. State service consists of services in the apparatus of representative, executive, judicial authorities and other state bodies that perform its functions on behalf of the state.

Article 4 of the Law of the Republic of Uzbekistan "On State Civil Service" adopted on August 7, 2022 states that state civil service is a type of public service, and represents the paid professional activity of citizens of the Republic of Uzbekistan to ensure the implementation of the powers of state bodies in the positions of state civil service; state civil service position is a position included in the state register of State civil service positions for the implementation of the powers of a state body, and it also defines the duties and obligations of civil servants within the scope of the state duties and functions [2]. Another important aspect of this Law is that: a state body is a state authority that is included in the list of state bodies and organizations where public civil service is implemented, a state civil servant is a citizen of the Republic of Uzbekistan performing his activities in the position of state civil service, qualification requirements - that the requirements regarding work experience and professional competence are determined by the state body in relation to the candidates who are applying for a certain qualification level of the state civil service and to occupy a specific position of the state civil service, the professional competence of the state civil servant - for the proper implementation of the powers of the state body it is stated that it consists of a set of necessary knowledge, skills and abilities. [2]

The main goal of the civil service is to implement social, economic development and political stability in accordance with the requirements of the country's laws, and to ensure it in accordance with human interests. For this purpose, they perform the following tasks:

- formation of socio-political and state-legal foundations that ensure the state's relationship with the population, the prestige of the state service;
- ensuring the efficient operation and development of the apparatus of central and local state bodies;
- scientific organization of work, effective use of scientific innovations, technical achievements, continuous improvement of state apparatus activity by applying the world's leading, innovative experience;



- democratization of the work of the state apparatus, creation of conditions for transparency and openness in its activities, ensuring legality, eliminating forms of bureaucracy and corruption;
- to ensure a healthy environment, working conditions, initiative, creativity in the team of state bodies;
- creation and operation of the system of training and professional development of state apparatus employees, creating an opportunity for employees to move up the service ladder fairly;
- recruitment to the state apparatus, change of service, promotion in the career system, objective assessment of employee activity, motivation, determination of accountability procedures.

In addition to the above general tasks of the civil service, there are specific tasks of the civil service, specific to the form and direction. These can include:

- effective organization of the structure of the state apparatus and development, distribution of competencies between positions;
- management of state bodies, determination of their qualification level, advancement in career level, provision of social protection;
- keeping a statistical account of the employees of the state apparatus by position level and category;
- development of qualification requirements for positions, requirements for recognition of their service;
- conducting attestation of employees of the state apparatus, holding competitions, professional development and career planning of employees;
- justifying the financial and other material costs for the organization and efficiency of the state apparatus, determining the amount of staff, material and labor costs for public service bodies and organizations;
- to determine and justify the forms of benefit and responsibility for the performance of office functions and the democratic methods of their application;
- organization and coordination of scientific research in the field of public administration and public service. For this, forming a modern information-analytical network, organizing the service of expert-advisory groups;
- training of employees of the state apparatus, organization of an innovative system of professional development, analysis of training programs of educational institutions, evaluation of the quality of graduates, control of their use, ensuring communication of state bodies and educational institutions;
- preparation of draft laws and reform programs in the field of public administration and civil service.

During the democratic reforms, the Republic of Uzbekistan set the tasks of bringing the society to a new stage of development, expanded and strengthened the responsibilities of the public service. As a result of this process, the public service is becoming an integral part of the economic and social infrastructure. Currently, the state relies on personnel services to perform the following most important tasks:

- in ensuring the internal and external security of the state;
- employment in the social sphere; stabilization of the economy, finance, budget, improving the standard of living of the population;
- in the field of social protection - the state, public service and state apparatus rely on information protection, nature and environment protection, protection from technical, chemical, bacteriological hazards that threaten human life.

It should be noted that the personal responsibility of civil servants increases to fulfill such strategically important tasks. In order for such a process not to be unreasonable, it is necessary to conduct public service on a legal, scientific and high-level organizational basis. In this case, the qualification of civil servants, high professional culture, and the ability to work with people are in the main place. National and humanitarian values, tolerance, tolerance also play an important role in the development of management skills and in determining its level. In the process of democratization, the liberalization of the activities of state bodies, the promotion of individual rights, and the provision of state service at a competent level are among the factors.

In order to effectively organize the public service and expect the appropriate result from it, there should be scientifically based proposals for optimizing the public administration, structure and mechanism of the public service. This creates the need to develop the concept of organization and development of public service. Also, it is desirable to scientifically justify the nature of the problem, to clarify the subject and scope of public service, to reveal the main principles, purpose, general functions of public service, and the essence of the concept of public service.

The nature and content of the public service organized on the basis of scientific ideas, national and humanitarian values, based on legal norms is to serve the people and the state, strengthen statehood, and develop society. There is a need to further improve the fact that the public service plays an important and decisive role in the effective performance of the tasks assigned to state organizations through scientific research. At the same time, in order for the public service, which is made up of complex elements and exists as a state-legal institution, to exist and function, it is necessary to organize it and follow certain social principles in this process.



For example, Abu Nasr Farabi called the leaders “Legislators” and “Executive” divides into categories, classifies activities. In his opinion, the characteristics of these two classifications of management belong to all types of management system, the moral culture of the leader. According to Alloma, “man is not a weak slave, a creature incapable of anything”, but he is a supreme being, “a being with intelligence, capable of creating what is necessary for him”. Farabi emphasizes the need to develop work and professional skills and moral qualities and says: “If professional virtues are innate, then the kings will not do it by their own will and effort, but the kingship is a natural gift to them, demanded by nature. would remain a liability. Since the quality of profession is not innate, in peoples and towns, morals, art, profession, custom and it takes great strength and power in man to create the will. This is achieved in two ways: through education and training.”

The thinker's comments about the worthiness of the executive leaders for their position are also noteworthy: “Only people who have dedicated themselves to this work, and not those who express a desire or strive for personal gain, should work in management offices. Even during his career, a captain should be called a captain by his name, even if he gives up his job after teaching others to this art (profession), he should still be called a leader”[3,20]. If we judge from the requirements for today's leader, this opinion of Farabi is important for its modernity.

The thinker Alisher Navoi expresses his love for Farhad not only for Shirin, but also for the whole country and people through artistic images. He respectfully mentions professions such as hairdressing, stonemasonry, painting, and architecture, and includes these professions in the category of fine arts: the heart of the owners of this profession is elegant and there is no dishonesty in such a heart [4,91-97].

Since the civil service is an institution based on the legal aspects of its implementation principles, it relies on certain norms for its quality, efficiency, and functioning in accordance with human interests. That is, the rules for the organization of the public service and its operation are defined in the constitution, law and other documents and are strengthened as the rules of the management system. It should be noted that the principles of public service, the modern mechanisms of its implementation are defined in the documents adopted during the period of democratic reforms.

In our country, the relevant rules of the civil service are applied in the civil service, the main principles of the civil service are being implemented. When a civil servant works on behalf of the state, serving the people in a democratic society is one of the main tasks of the civil service. As Article 7 of the Constitution of the Republic of Uzbekistan states that state power is exercised by competent agencies in the interests of the people, this is a principle of priority that ensures the functioning of the public service [5].

It is a necessary condition that public interest should be the priority when performing public service. Based on this, it can be noted that serving the people is one of the principles of public service. This principle creates another important task. This is one of the conditions for the development of civil society, and it is a means of public control over state activities. State bodies and public officials and as they are responsible to the citizens, those who serve in state bodies and officials are responsible for being public servants. The principle of responsibility (responsibility) again creates the need for civil servants to approach their duty responsibly, to serve the state and the people faithfully. “Today, the need to effectively solve existing problems in society, to consistently continue large-scale reforms requires the creation of a completely new system in the field of public administration [6, 88]”.

Another principle of public service is the principle of legality. Uzbekistan has set itself the goal of building not only a democratic society, but also a just society. Therefore, legality and justice remain one of the main principles in social life and state activity. The interests of every citizen will be realized only when he finds his place in the public service. Adherence to the principle of justice maintains a balance between power and freedom. A democratic society does not allow the violation of other interests for the sake of human interest.

Another of the principles of public service is that public service is open to all members of society. There are no restrictions on being a civil servant. Every citizen can participate in public service regardless of nationality, gender, religious belief, social origin, and property status. Any citizen who has reached a certain age, has relevant knowledge and education, and the ability to perform this task can occupy any position. A certain level (higher, secondary special) type of education should be specified in the legislation to serve in a certain position, for example, for a lawyer, doctor, educators. According to the legislation, close relatives are not allowed to serve in the same organization, enterprise, institution, if they are directly subordinate to each other. Such restriction is lawful and it is stated in Article 79 of the Labor Code of the Republic of Uzbekistan: “It is prohibited for persons who are relatives or godparents to work together in one state enterprise if one of them is directly subordinate to the other or serves under his control” [7].



The next principle is the rotation of civil servants in certain positions. Any civil servant may be dismissed or appointed to a new position. It is not possible to hold it permanently in any position, to pass the position from generation to generation. Even if the term of appointment and election of a civil servant is specified in the legislation, if he does not perform his duties, if he does not have the knowledge and ability to do so, if he makes mistakes, if he does not pass the tests, he can be dismissed from his position under any circumstances. Age limits for serving in some state bodies are also established, for example, military service, internal affairs bodies, etc. The principle of changing the position of civil servants, qualitatively improving the composition of the civil service, attracting capable personnel who meet the requirements of the time to the service, on the contrary, creates an opportunity to get rid of incompetent, unsuited civil servants, and causes civil servants to work on improving their qualifications and work conscientiously. Such a process ultimately leads to the improvement of the public service and effective performance of its duties. One of the principles that manifests itself in public service is the combination of appointment and election. Appointment and election procedures are used to appoint civil servants. Most civil servants are appointed by appointment. Appointment is made by the head of this organization, enterprise, institution or on the basis of an agreement between them. In particular, the higher educational institution is under the Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan, rectors are appointed by the Cabinet of Ministers. Vice-rectors are appointed by the relevant minister on the recommendation of the rector, and faculty deans are appointed by the rector. Some positions are changed by election. Also, professors and teachers of the higher educational institution are appointed and released from state positions based on the established procedure. The decision of a high-ranking official in the civil service follows the principle of the obligation of a lower-level official to fulfill it. This ensures the efficiency of the activities of state bodies and the discipline of the state organization.

As a logical continuation of such a factor, there is another task in public service, which is the principle of responsibility of civil servants for failure to perform or insufficient performance of their official duties. Duties to be performed by civil servants based on the law and other legal documents are clearly defined. In addition, within the framework of the law, high-ranking officials can assign tasks and give assignments. A civil servant must perform them on time and with quality.

A civil servant must have the appropriate authority to perform the duties assigned to him. From this comes the principle of agency. In order to be able to exercise his authority, he must have the appropriate professional knowledge, level, and the ability to take initiative. It is necessary for the civil servant to be able to take responsibility, to have the opportunity to find a solution to the existing problem on an innovative basis.

The principle of harmony plays an important role in the effective organization of public service. This is the creation of sufficient opportunities and conditions by the state and its bodies for the fulfillment of the duties of the public servant, the moral and intellectual development, the improvement of the qualifications, and the provision of financial interests of the employees, in turn, every employee should improve his skills and knowledge, work conscientiously, and acquire scientific and technical achievements. It is necessary to strive. As a result of such a process, the interests of the state and the employee are aligned.

The principle of social and legal protection of civil servants plays a special role in the organization of public service and protection of the interests of civil servants. At the new stage of development, the issues of social protection of civil servants, creation of conditions for their normal work, and financial support when they temporarily lose their ability to work and retire have been resolved. It should be noted that the result of the application of the adopted law "On State Civil Service of the Republic of Uzbekistan" and the norms established therein will further strengthen the social and legal protection of civil servants, and this issue will be resolved within the framework of world standards.

There is no doubt that the strict introduction of the above-mentioned principles to the public service and their application, the effective organization of the public service, which will lead to the improvement of the activities of public bodies in general. If the public service is organized on the basis of these principles, the state will be able to fully fulfill its duties, and the citizens will also benefit from it. Studying the experience of foreign countries in the efficient organization of public service in the country can bring expected results.

Article 5 of the Law "On State Civil Service", which was adopted to raise the solution of human interests to a new level in a society that has entered a new era of development, explains the principles of civil service as follows: "The main principles of the civil service of the state are as follows: unity and stability of the state civil service system; legality; fairness; serving the people; responsibility of state bodies and officials to society and citizens; priority of human rights, freedoms and legal interests; openness and transparency; impartiality, professionalism and competence; equal rights of citizens of the Republic of Uzbekistan in entering the state civil service; legal and social protection of state civil servants". [2]

World experience shows that in countries on the path of democratic development, it is desirable to have a single state body that organizes public service. The following responsible tasks are assigned to him:



- Engage in the development of strategies for the organization of organizational structures in the state apparatus;
- Formation of personnel policy and the basis of personnel management;
- Preparation of legal and regulatory documents, and creation of a system of civil servants' activities;
- Implementation of the reform of the state system;
- Coordination of scientific researches investigating social, economic, legal problems related to the functioning of the public service.

It should be noted that public service is such an activity in the social system that its results cannot be measured by the amount or volume of documents prepared and accepted by the employees, by the time spent on their work. Public service is a unique social relationship in which the state authority performs its function of organizing and managing social processes, social activities and behavior of individuals.

As a conclusion, it should be noted that different strata and social groups operate in the society depending on their status, profession, education, income and other characteristics. Their interests are often different, and in some cases they may even conflict. Therefore, in order to coordinate and manage the activities of various social groups and strata, it is appropriate to place justice and honesty among the main principles in the work of civil servants.

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UDC 504

ECOLOGICAL PROBLEMS OF THE URBAN ENVIRONMENT

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ANNOTATION

The article discusses the main environmental problems of the urban environment. All environmental problems of the city are a consequence of economic and other human activities.

KEY WORDS: *component, environment, factor, atmosphere, system, object, noise, vibration.*

A city is one of the types of social and spatial organization of the population, emerging and developing on the basis of the concentration of industrial, scientific, cultural, administrative and other functions.

A city is a populated area with a population of over 10 thousand people, the vast majority of whom are employed in industries not related to agriculture. The process of growth and development of cities is called urbanization (Latin urbanus - urban) [2,6].

The urban environment is a combination of two systems - anthropogenic and natural. As the city develops, anthropogenic factors become dominant, which leads to disruption of the ecological balance.

The components of the city's natural environment are atmospheric air, surface and underground waters, soils, grounds, and sunlight. These are components of the environment, without which life for humans and other organisms is impossible. Natural-anthropogenic objects include urban forests, parks, gardens, green areas of residential and industrial areas, boulevards, squares, protective zones, canals, reservoirs, etc. Natural objects of the city are natural monuments [3].

The urban environment differs sharply from the environment of natural ecological systems. The urban ecosystem is characterized by pollution by chemicals and microorganisms, increased levels of physical impacts, such as noise, vibration, electromagnetic fields and information pollution. And also, the urban environment is an area of increased danger due to road traffic accidents and industrial accidents.

All environmental problems of the city are a consequence of economic and other human activities. The most pressing environmental problems of the urban environment include: air pollution, the problem of clean "drinking water", protection of vegetation and soil, as well as waste management [2, 6].

Ambient air quality plays a vital role in the urban environment. Because a microclimate is formed in the city, which differs from the atmosphere of natural ecosystems. The quality of the air environment in which a person lives depends on his health, well-being and performance. Deterioration of atmospheric air in the city leads to the death of green spaces, as well as pollution of soils, reservoirs and watercourses, damage to cultural monuments, structures of buildings and structures [1].

The main sources of urban air pollution are industrial production, motor transport and other types of human activity, which are accompanied by the release of various pollutants into the atmospheric air, for example;

- ✓ urban dust of anthropogenic origin - particles of ash, soot, heavy metals;
- ✓ biological impurities – viruses, bacteria, fungi;
- ✓ microscopic mites and microorganisms.

The soil of the urban environment is subject to degradation, alienation and pollution as a result of urban planning and economic activities.



Urban soil degradation is the destruction of the fertile soil layer, partial or complete destruction of the soil cover, accompanied by a deterioration in its physical and biological condition and a decrease in fertility [4].

Degradation processes include

- Soil Erosion – destruction of soil and removal of loose components of soil material by water and wind;
- Over Compaction - compaction of soils leads to a decrease in their porosity, which means a decrease in soil moisture capacity and air permeability;
- Alienation of land for residential buildings, industrial facilities and roads.

As a result of soil pollution due to anthropogenic activities, their chemical composition changes, which causes a number of negative consequences, including loss of the ability for bioproductivity and self-purification.

Surface water bodies of the city are polluted mainly by discharged industrial and municipal wastewater, storm water discharged from the territory of settlements, as well as runoff from agricultural land, livestock complexes, and poultry farms. As a result, heavy metals, petroleum products, surfactants, and nitrogen and phosphorus compounds enter water sources [5].

In recent years, the problem of garbage has come to the forefront among other environmental problems of the urban environment. Therefore, with the increase in anthropogenic impact on the natural environment, the need arose to find effective methods for assessing the ecological state of the urban environment.

Thus, the city provides a person with work and maximum amenities, that is, comfort, ease of life, density of communications and accessibility to meeting important needs. But nevertheless, the most important human needs are not met in the city - clean air, clean water, silence and primary food.

If environmental measures are not taken in a timely manner, then the city's environmental problems develop into global ones, posing a threat to the lives of present and future generations of people and all life on Earth.

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UDC 371.14

ON THE ISSUE OF COMPLIANCE OF EDUCATIONAL ADVANCED PROGRAMS WITH ANDRAGOGICAL PRINCIPLES

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ABSTRACT

The article discusses the problems of compliance of the educational program for advanced training with andragogical principles. The study proved the necessity and possibility of compliance of educational programs for advanced training with the basic andragogical principles: independence or subjectivity, reflexivity, development of the educational needs of teachers, mandatory updating of learning outcomes.

KEYWORDS: *andragogical approach, advanced training, andragogical principles, independence, subjectivity, reflectivity, educational needs, actualization.*

In Uzbekistan, the number of teachers who regularly improve their qualifications is growing. Thus, in 2023, more than one hundred thousand teachers acquired new skills and competencies. Digital technologies play a major role in improving the quality of teaching, the department notes. About 87 thousand teachers were able to take courses thanks to the online platform “Continuing Professional Education”. In order to improve the system of retraining and advanced training of managers, specialists and teaching staff operating in the field of public education (hereinafter referred to as public education workers), creating the scientific foundations of general secondary education, as well as ensuring the implementation of Decree of the President of the Republic of Uzbekistan dated November 6, 2020 No. UP-6108 “On measures to develop the spheres of education and upbringing, and science in the new period of development of Uzbekistan” [1].

Digital technologies play a major role in improving the quality of teaching. The rapid development of science and technology requires human constant development and the ability to adapt. Therefore, continuous learning becomes not just an option, but a necessity for existence in new realities. Today, conditions are being created for self-education, new views on educational processes are emerging. The reality of recent years in the field of professional postgraduate education persistently stimulates the development of special methods and forms of constructing the educational process, didactic goals, models and technologies that ensure the improvement of training and retraining of teachers.

The basic concept of human capital is that a person realizes his or her maximum potential through means such as education, employment, skills and personal development [2]. Consequently, investing in a person and increasing his professional skills directly affects the formation of human capital [3] Andragogy (from the Greek aner, andros - “adult, man”) studies the features and principles of adult learning. In andragogy, the opportunity to choose and rely on students’ previous professional and life experiences are important. Malcolm Knowles, one of the key international theorists of andragogy, popularized the concept of andragogy in 1980 and described it as “the art and science of helping adults learn.” Knowles and andragogy theory argue that adult learners are different from children in many ways. In particular, Knowles put forward several assumptions through the prism of which adult learning should be viewed [4].

Self-image or self-understanding (self-concept). Adults tend to be more mature people who have a better understanding of who they are, what they are like, what their goals and opportunities are, and a self-awareness that allows them to actively choose and participate in the organization of their learning.

Past training experience. Adults have experience that they can use in the learning process, unlike children who are only at the beginning of their educational journey.

Readiness to learn. Many adults recognize the value of education and are willing to focus on it.



Practical reasons to study. Adults are looking for practical, problem-based approaches to learning. Many support the concept of continuing education and pursue the goal of obtaining a new specific job or even changing their career path.

Intrinsic motivation. Children's sources of motivation are usually external, such as punishment or rewards for grades. And adults, as a rule, are more internally motivated. This was the basis of modern andragogical principles of teaching.

Solving the problem of compliance of educational programs for advanced training with andragogical ideas and their attractiveness for teachers as adult students, let us turn to the issue of compliance of educational programs for advanced training with andragogical principles [7].

Four principles can be identified - four pillars, the consideration of which must be taken into account when creating adult education programs in accordance with andragogical ideas.

The principle of independence or subjectivity presupposes the implementation of the initiative, authorial position of the participants at all main stages of study - from goal setting, planning, implementation of their educational activities to its control and correction. An adult himself takes into account his own resources, sees options, makes his choice taking into account the discovered opportunities and is responsible for it. We talk about an adult as a formed individual, possessing the features of uniqueness and originality. The level of independence and subjectivity of students is determined by the degree of their proactive participation in the learning process, and not just reactive, when they mainly respond to the incentives and proposals of the andragogist teacher. Therefore, it is important for program developers to recognize where and how often initiative will be given to participants in the professional development process.

What in the practice of adult education may contradict the idea of independence? In our opinion, obstacles to the implementation of this idea arise:

- in goal setting, when the goals in the programs are formulated with an emphasis on what teachers will do: teach, introduce, form, prepare. These goals are limited only by subject orientation (the formation of specific professional knowledge or skills without taking into account personality-oriented goals (what is associated with self-knowledge, self-development, self-education of students);
- in the construction of content, when in the program it is limited only by normative space;
- in technological terms, when preference is given to frontal, lecture-based forms, which impede the proactive active participation of students in the educational process.

The principle of independence merges with the ideas of individualization of learning and variability of the educational program.

Individualization of training involves focusing on the specific educational needs and goals of students, the level of training and other characteristics. In this regard, it is important to take into account their selective attitude towards goals, content, and methods of achieving goals. Thus, it is necessary, on the one hand, to strengthen the targeting of the program, and on the other, to embody the idea of cooperation in education, that is, to create conditions for joint creativity in an adult audience.

Variability and flexibility of the educational program means creating conditions for students to choose goals, content, forms, methods, sources, means, timing, time, place of study, and evaluation of learning results.

The principle of reflectivity- is the presence in the educational program of opportunities for teachers to constantly reflect on the main parameters of the learning process, their actions, and most importantly, changes in their professional and personal development. It is with the development of reflection that new personality formations and the specificity of all manifestations in adulthood are associated. The implementation of this principle is associated with the creation of conditions for participants to understand their own experience, for them to work with the meanings and values of not only their individual professional activities, but also their organizations and teams as a whole. An important place is given to the analysis of ongoing changes and joint problem solving. This is about a dedicated effort to create a reflective learning environment. The most important in this regard are assistance in updating the individual experience of each participant and organizing discussion processes in such a way that they become a "collection" of experience, when participants, comparing what they heard from others with their own ideas and perceptions, could advance in their own activities, thereby helping professionally - personal development of each other.

The principle of developing educational needs takes into account that adult students are ready to learn only what they need and what they are personally interested in. However, asking listeners to formulate their request or problem often causes them considerable difficulties. More often they are ready to simply accept what is offered. Later, when the participants actively engage in work and discuss various problems, they have both questions and suggestions. Consequently, work in this direction requires a certain



attunement of listeners to this action, “warm-up”, and serious organizational efforts on the part of the andragogist teacher. It is important to find out not only obvious, but also hidden, as yet unconscious or non-verbalized requests and needs [5; 6].

However, focusing only on the needs and life experiences of teaching teachers is usually not enough, since this can lead to lowering the educational bar. Adult education cannot be built only on today's needs of the listener. It is important to build learning not only by identifying and filling students' immediate “deficiencies,” but also by promoting the development of new needs in them and the opening of new educational “horizons.”

In the implementation of this principle, the ideas of openness and innovation are embodied, implying familiarity with progressive educational ideas and their development.

The principle of updating learning outcomes is unconditional effectiveness for an adult learner, providing the opportunity for immediate application in practice of acquired knowledge, abilities, skills and qualities, experience and relationships.

Due to the multiplicity and ambiguity of goals, as well as the diversity of individual meanings that participants define for themselves at each stage of advanced training, we can also state the fundamental ambiguity of learning outcomes. One of the key results in postgraduate education should be the dynamics of self-knowledge of students, which is different for everyone. Of course, we can talk about results in personal terms only with a certain degree of probability. But the increased practicality of learning results in advanced training courses, the ability to timely make the necessary changes in one's own professional activities and in the activities of one's teams should be considered as a general constructive feature in the practice of adult education.

Results in postgraduate education can be discussed in different time perspectives (daily, weekly, overall as a result of mastering a course) and at different levels. For example, you can consider the results from the point of view of the emotional state “at the finish line”, the impressions that the courses made on the students, or you can evaluate the results at the level of activity. Today we can talk about different technologies for conducting final classes, where the task is to sum up the results and present a “report product”. This is the technology of micro-research that students carry out during the course learning process; and design technology, where the final product is your own project for solving the most pressing problems; and the technology of reflective workshops, where the final result, expressed in the written word, can be an essay text or an analytical text; and portfolio creation technology.

There is another aspect to this problem. As noted by A.A. Verbitsky, the content and conditions of professional activity are always probabilistic and problematic [4]. Therefore, the main unit of content of postgraduate pedagogical training should not be a “piece of information” or a problem solved according to a model, but a problem situation. In this sense, that section of the thematic plan, which is created with the participation of students of the advanced training system, may look, for example, like a list of the main problems formulated by the students themselves, the resolution of which they plan to work on within the framework of the designed course.

Thus, the introduction of new adult learning technologies into the practice of an advanced training institution is a controlled innovation activity. Its success depends on the correct choice of goal; from the awareness of this goal by teachers who will have to implement it; from understanding the essence, the main features of the new technology for adult education; from psychological support of andragogist teachers, who are primarily entrusted with this function; from normative (providing documents), methodological (providing literature), resource (providing necessary aids and creating conditions for conducting an experiment), psychological (showing interest in the activity, evaluating it) support for these teachers.

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AESTHETICS OF SPORTS AS A SENSE OF BEAUTY AND HARMONY

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ABSTRACT

This article pays attention to the importance of sports in human life, highlights the connection of sports with beauty and harmony as an aesthetic value, and beauty in sports is associated with the movement of an athlete.

KEY WORDS: *aesthetic phenomena, aesthetic feelings, aesthetic pleasure, beauty in sports, athlete's act, heroism in sports.*

The creative process is work, but it is different from mental work, and it is interpreted in different ways that it is carried out by some mysterious spirit. And this is related to the personality of the creator as a private event. The world of aesthetic phenomena of sports, like other aesthetic phenomena, is very complex and diverse. First of all, he defines certain aesthetic values, i.e., the objectively existing features and aspects of sports that have aesthetic value for a person under certain conditions, cause aesthetic feelings, aesthetic pleasure, and are evaluated by him from a special, aesthetic point of view. , includes aspects.

Sport is one of the areas where basic aesthetic values appear in different forms. One of them includes beauty. Beauty is often associated with harmony, which is understood as a harmonious combination, harmony, symmetry, proportion, objects, events, wholes and parts. Beauty in the field of sports is, first of all, a perfect form that best expresses content and helps to effectively perform certain functions that have positive personal and social value. In this regard, for example, the high technical skill of an athlete is an important, but not the only, condition for the aesthetic assessment of his actions. To see the beauty of these actions, it is necessary to compare them with the assigned tasks. The technical skill of the athlete's movements should be inextricably linked with their appropriateness. Otherwise, the important aesthetic principle of the unity of form and content will be violated, and it will not be a "beautiful game", but a "beauty game".

The manifestation of beauty in sports depends on the specific characteristics of the sport, the goals and conditions of the competitive struggle. Socrates said: "... a man who runs beautifully, I swear by Zeus, is not like a man who fights beautifully ... often what is beautiful for running is ugly for fighting, and vice versa, what is beautiful for fighting is ugly for running"[1.]

Traditionally, in scientific literature, the form of manifestation of beauty, such as the body of an athlete, his physical beauty, is not very important in the game of sports. In the history of football, one can find many examples of people who are not distinguished by their physical beauty, and even, on the contrary, have significant physical disabilities, who gave the audience aesthetic pleasure due to their skills. In scientific literature, it is widely believed that the most important display of beauty in sports is the athlete's actions. F. Bacon also wrote: "in the business of beauty, they prefer beautiful forms to the beauty of the face and whole body movements." This view is, of course, first of all fair to sports such as athletics and swimming. As for the team sports game, it needs some tweaking. The main content of this sports game is the fight between two teams consisting of several athletes. For most sports, this fight is characterized by a direct physical confrontation of opponents. In this regard, here you can consider the beauty of the actions of individual athletes, this or that team, as well as the beauty of the game in general.

The concept of grandeur is closely related to the concept of beauty. Deep interpenetration of beauty and grandeur is especially evident in sports, in the field of sports relations. The great moments of sporting events are often of a sublime nature. This has been mentioned several times by many famous athletes, who described their feelings on the top of the podium. The unique feature of high events is that they are associated with certain social ideals and reflect the strength of a person's character, his moral greatness, and the power of the soul. Such high performances are typical of high-performance sports, where a person needs great spiritual strength to overcome physical suffering and pain.

The display of heroism in sports is amazing and it is closely related to spirituality. A heroic act requires a person to mobilize all his forces, show will, strength of mind, and courage. Heroism in a sports duel can take the form of a short-term burst of all the



physical and spiritual abilities of a person, and can require long-term tension, great strength of will, mind and heart. Heroism always includes bright manifestations of courage, loyalty to duty, and the concept of honor. These moral standards, embodied in human behavior, have the status of aesthetic phenomena.

Another form of aesthetic manifestation is tragedy. This aesthetic category describes a certain social conflict that arises in the process of free human movement and is accompanied by human suffering and the collapse of values that are important to a person. The use of this category in this understanding in sports is mostly conditional. After all, sport appears, forms and develops as a game model of competitive situations in real life. In real life, competitions and fights often end tragically, at least for one of the opposing sides. The "sport" model of the competition is designed to protect the participants from negative consequences, if possible. For example, fencing is different from fencing as a sport, and boxing is different from street fighting. In this sense, there is no objective basis for tragic situations in sports. For example, it is not for nothing that in sports, which are characterized by confrontations full of conflicts and high drama, at the end of the competition, as a rule, human gestures of reconciliation with the opponent and showing respect to him are provided. If the tragic situation is atypical for sports in general, then there are ample opportunities for the manifestation of another aesthetic phenomenon - the comic. Often it is manifested in such forms as humor and sarcasm. Different sizes, deceptive movements, clever beating often make the opponent laugh. Sometimes high-level players use this technique to ironically emphasize their superiority over the enemy and psychologically unbalance him. Thus, humor helps to win. The audience usually notices and appreciates such funny situations and reacts violently to them, which in turn is an additional incentive for players to create such situations. This feature is common for, for example, South American football players or American basketball players, who try to entertain the audience with various tricks. However, it's important for an athlete to have a sense of humor, but don't make the comic your goal. Thus, sports really provide great opportunities for the athletes themselves and their spectators to think about different aesthetic values. From this point of view, sport is not only not inferior to other spheres of life, but sometimes even superior to them. Sports festivals and parades are especially bright and expressive in this regard.

People can enjoy beauty and satisfy their aesthetic needs in the field of physical education and sports. After all, the beginning of aesthetic awareness and the activity process based on this goes back to the aesthetic need. The aesthetic need has both a natural-biological and social-spiritual essence as the basis of all aesthetic phenomena that occur in human life; "beautiful soul", thirst for sophistication, while preserving the characteristic of arousing aesthetic feelings in a person, later improves throughout his life, serves the formation of aesthetic discussion, aesthetic evaluation, aesthetic taste and aesthetic ideal [2].

Abraham Maslow developed the US Hierarchy of Needs model in the 1940s and 50s, and Hierarchy of Needs theory is still used today to understand human motivation, management training, and personal development. He named the 6th level of this pyramid as aesthetic needs, and this level includes the appreciation and search for beauty, balance and forms[3].

So, beauty is expressed not only as a research object of the science of aesthetics, but it is also expressed in other fields as a leading feature. The most extensive type of aesthetics is the aesthetics of art, and the second level consists of aesthetic theories based on non-art aesthetic objects in other fields. They are: aesthetics of nature, aesthetics of life, aesthetics of work, aesthetics of technology and aesthetics of sports.

Also in modern Western aesthetics: "Aesthetics is a skill that encourages us to think, which is as necessary for people as water and air, and which increases our taste, level and understanding. If a person does not have aesthetic potential, taste, insight, he will not be able to see the beauty of the world." As we have seen, its importance in beautifying our life, in general aestheticization, is becoming one of the researched topics.

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DEVELOPMENT OF INDUSTRIAL ENTERPRISES IN UZBEKISTAN ON THE WORLD MARKET

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ANNOTATION

The article considers the current situation of the industry of Uzbekistan in recent years. The current state and position of the oil and gas industry is considered. The importance of the oil and gas industry for the economic development of Uzbekistan is noted. A comparison of the amount of funding for research and development among domestic and foreign scientists. The analysis of the global oil and gas industry directions, including Uzbekistan. The states with the highest rates in areas in the oil and gas industry are noted. Including energy generation, crude oil and refining of petroleum products. The main tasks of technological development for the oil and gas complex of Uzbekistan are identified.

KEY WORDS: *innovation, industry, world industry, technological development.*

РАЗВИТИЕ ПРОМЫШЛЕННЫХ ПРЕДПРИЯТИЙ В УЗБЕКИСТАНЕ НА МИРОВОМ РЫНКЕ

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Аннотация

В статье рассмотрены настоящее положение промышленности Узбекистана за последние годы. Рассмотрено современное состояние и положение нефтегазовой отрасли. Отмечена значимость нефтегазовой отрасли для экономического развития Узбекистана. Выполнено сравнение объемов финансирования научных исследований и разработок среди отечественных и иностранных ученых. Приведен анализ мировой нефтегазовой промышленности направлениям и в том числе Узбекистана. Отмечены государства с наивысшим показателем по направлениям в нефтегазовой промышленности. В том числе по выработки энергии, сырой нефти и переработки нефтяных продуктов. Выделены основные задачи технологического развития для нефтегазового комплекса Узбекистана.

Ключевые слова: инновации, мировая промышленность, технологическое развитие.

O'ZBEKISTONDA SANOAT KORXONALARINING RIVOJLANISHI DUNYO BOZORIDA

Sayfutdinova Nigina Furkatovna

"Sanoat iqtisodiyoti" kafedrasida katta o'qituvchisi

I. Karimov nomidagi Toshkent davlat texnika universiteti

Annotatsiya. Maqolada O'zbekiston sanoatining so'nggi yillardagi holati ko'rib chiqiladi. Neft va gaz sanoatining hozirgi holati va holati ko'rib chiqiladi. O'zbekistonning iqtisodiy rivojlanishi uchun neft va gaz sanoatining ahamiyati ta'kidlandi. Mahalliy va xorijiy olimlar o'rtasida tadqiqot va ishlanmalarni moliyalashtirish hajmini taqqoslash. Jahon



neft va gaz sanoatining, shu jumladan O'zbekistonning yo'nalishlarini tahlil qilish. Neft-gaz sanoatida eng yuqori ko'rsatkichlarga ega davlatlar qayd etildi. Bunga energiya ishlab chiqarish, xom neft va neft mahsulotlarini qayta ishlash kiradi. O'zbekiston neft va gaz kompleksi uchun texnologik rivojlanishning asosiy vazifalari belgilab berilgan.

Kalit so'zlar: innovatsiya, korxonalar sanoati, jahon sanoati, texnologik rivojlanish.

INTRODUCTION

In recent years, the oil and gas complex of Uzbekistan has faced a number of new economic and political threats and challenges, forcing to review and reformulate some of the provisions, assessments and guidelines of scientific and technological development. In particular, ensuring technological independence of the industry and sufficient competencies in all types of activities critically important for its sustainable development have come to the fore in a number of strategic goals.

In addition, sectoral features of the current moment should be taken into account. So, in oil refining, in the conditions of stagnation of demand in domestic and foreign markets, development does not imply volume growth, but quality improvement and expansion of the product range, which necessitates a technological breakthrough to ensure competitiveness. In the gas industry, where the opportunities for expanding its presence in traditional markets are also limited, one of the promising areas is the development of the domestic market, including the use of small production and logistics complexes for the gasification of remote territories and the wider use of motor gas in transport.

LITERATURE REVIEW

The oil and gas industry in the economy of Uzbekistan is one of the priority areas, since it largely ensures the well-being of the population of this country and affects not only the economic development of the country, but also its security and energy independence [1], therefore, the formation of the tasks facing the oil and gas industry of Uzbekistan is dictated by the need for the progressive development of the economy and is associated with solving problems of ensuring the cost-effective use of the republic's fuel and energy complex [2], since oil and gas occupy the leading place in the structure of the country's primary fuel and energy resources (96%), and coal (2, 5%) and hydropower (0.8%) occupy a secondary position [3].

The modern oil and gas complex (NGK) is one of the priority areas of state innovation policy and represents a key sector of the economy that ensures the country's dynamic socio-economic development, primarily due to a significant share of oil and gas revenues in the state budget. NGK includes high-tech activities in the field of exploration, extraction of natural resources of oil and gas, their processing, transportation, storage and sale of a wide range of products. In modern conditions of a deteriorating mineral resource base, including an increase in the share of hard-to-recover oil reserves in general, a difficult macroeconomic situation, the rapid complication of production processes, and the increasing demand for new scientific knowledge and technology, NGK maintains a leading position in world energy markets.

RESEARCH METHODOLOGY

A systematic and integrated approach to the study, statistical methods for analysis were used.

The analysis shows that the additional growth in industrial production in 2010 was 34.2%, in 2015 - 16.2%, and in 2019 - 40.7%, the growth rate over these years can be seen in the following table (Table 1) .

Table 1

The state of GDP and the volume of industrial production of the Republic of Uzbekistan, (in trillion soums) [4]

Indicators	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
GDP	74,0	97,0	120,2	144,6	177,2	210,2	242,5	302,5	406,7	511,8
Industrial products	38,1	47,6	57,5	70,6	84,0	97,6	111,9	148,8	235,3	331,0

Despite the measures taken, a long-term shortage of oil is planned in the future to meet the needs of the Uzbek economy. The solution to this problem is seen in the import of this type of raw material or the replacement of the shortage of oil products in the national economy by importing the finished product. Since Russia and Kazakhstan have great potential for oil export, the solution to the emerging problem is seen in the import of oil from these countries into Uzbekistan with its subsequent processing. In addition, it is necessary to establish systematic work on exploration for hydrocarbon raw materials throughout the country [5].

The country's top leadership has set the goal of raising GDP for the coming 10-15 year period at least 7-8% per year. This goal cannot be achieved without proper development of the oil and gas sector, supplying the country's economy not only with energy resources, but also with raw materials for raising the chemical and petrochemical industries to a new level [6], without introducing hydrogenation processes in oil refining, without increasing the depth of oil refining. Oil and gas industry has a delayed coking unit,



which allows oil to be refined to a depth of 73 - 75%. Further deepening is possible during the construction of new recycling facilities - such as catalytic cracking, hydrocracking. These processes, as the world practice of oil refining shows, serve not only to deepen oil refining, but have a great influence to strengthen the raw material base of the petrochemical industry. Based on this, it can be concluded that the primary task of oil refining in Uzbekistan is the construction of a catalytic cracking unit of sufficiently large technological capacity with the use of world-class technology, which should combine the efforts of all the country's refineries, in particular, to ensure the raw material base of the new building. Thus, the task of reforming the oil and gas, oil refining and petrochemical sectors of the country is ripe, and it can be accomplished by mobilizing domestic resources and subject to the attraction of foreign investment.

As shown in Table 2, 14,715 million tonnes of oil energy equivalents have been produced globally in terms of total energy production. This figure is 1.5% higher than in 2018. It should be noted, however, that in the context of the coronavirus pandemic, results are expected to decline significantly this year due to a revised forecast for 2020.

Among the countries, China is the leader in energy production. At the end of 2019, 61.1% of the energy produced by all Asian countries and 18.2% of the world's countries came from China. At the same time, 4.4% more energy was produced in 2019 compared to 2018, which is exactly 2,684 million tonnes of oil equivalent. The next places are occupied by the United States and Russia, which produced 2,303 and 1506 million tonnes of oil energy equivalent by the end of 2019, respectively.

Table 2
Total energy production (million tonnes of oil equivalent) [7]

№	Name of countries	1990	2000	2010	2015	2016	2017	2018	2019	2020/ 2019 difference (+/-, %)	2020/ 2022 difference (+/-, %)
1	Worldwide	8794	10011	12771	13777	13720	14027	14505	14715	1,5	47,0
2	France	112	131	136	139	131	130	136	132	-2,7	1,2
3	Germany	186	135	129	120	116	115	110	103	-5,9	-23,6
4	Great Britain	208	272	148	118	120	120	124	122	-1,9	-55,3
5	Russia	1293	978	1279	1334	1373	1429	1477	1506	2,0	54,0
6	Uzbekistan	39	55	55	55	50	51	54	53	-1,0	-3,4
7	USA	1647	1662	1725	2028	1921	1998	2176	2303	5,9	38,5
8	Argentina	48	83	80	74	76	74	76	81	6,5	-2,4
9	Brazil	105	148	248	278	285	294	296	310	4,7	109,4
10	China	881	1124	2236	2516	2364	2454	2570	2684	4,4	138,9

In the future, JSC "Uzbekneftegaz" needs to increase the achieved results, in particular, the development of such a segment as gas chemistry. A further increase in the deep processing of oil and gas products will allow the production of new types of products and thereby increase the production of value-added products. In general, this is facilitated by our industrial potential, mineral resources of Uzbekistan and the quality of raw materials obtained from them.

Table 3
Crude Oil Production (Million Tonnes) [7]

№	Name of countries	1990	2000	2010	2015	2016	2017	2018	2019	2019/ 2018 difference (+/-, %)	2020/ 2000 difference (+/-, %)
1	Worldwide	3175	3630	3994	4329	4389	4392	4469	4438	-0,7	39,8
2	France	3,5	1,9	1,2	1,1	1,0	1,0	0,9	0,9	-2,7	-73,8
3	Germany	5,5	4,4	3,8	3,6	3,7	3,7	3,4	3,2	-6,8	-42,3
4	Great Britain	91,6	126,4	63,0	45,3	47,4	46,5	50,6	51,5	1,8	-43,7
5	Russia	523,7	321,7	504,1	533,7	547,7	546,4	555,5	559,9	0,8	6,9
6	Uzbekistan	2,8	7,7	4,0	2,8	2,5	2,4	2,5	2,4	-6,4	-15,0
7	USA	413,3	353,0	334,2	566,8	545,2	575,2	671,2	744,7	11,0	80,2
8	Argentina	26,1	41,4	35,3	30,8	29,5	27,9	27,6	30,4	10,0	16,6
9	Brazil	32,7	64,1	107,4	127,5	131,8	137,9	135,7	145,6	7,3	344,9
10	China	138,3	163,1	203,8	216,8	203,0	196,1	193,6	195,3	0,9	41,2

As can be seen from Table 3, by the end of 2019, crude oil production in the world amounted to 4,438 million tons, which is 0.7% less than in 2018 and 39.8% more than in 2000. But of course, you need to consider that the requirements for crude oil production and its refining in 2000 were much less. In terms of crude oil production in 2019, the United States made a sharp jump by as much



as 11% or by 74 million tons than in 2018. The next places were taken by Russia and Saudi Arabia, respectively 560 and 545 million tons of crude oil were produced. Unfortunately, in recent years, the turnover of crude oil production in Uzbekistan has decreased. In 2019, 2.4 million tons of crude oil was produced, i.e., 6.4% less than in 2018 and 15% less than in 2000.

Uzbekistan has significant potential for the development of industry, however, only the proper development of the oil and gas sector, in our opinion, will solve the problem of raising the economy of Uzbekistan to a new level, and maintain the successes achieved in other sectors of the economy. But the production of refined products requires new innovative solutions. In the table below you can see the volume of production of oil products in the world and in the leading countries of the world.

Table 4
Production of Oil Products (Million Tons) [7]

№	Name of countries	1990	2000	2010	2015	2016	2017	2018	2019	2019/ 2018 difference (+/-, %)	2019/ 2000 difference (+/-, %)
1	Worldwide	3156	3594	3962	4180	4209	4295	4348	4339	-0,2	37,5
2	France	78,5	88,6	71,1	60,2	59,4	59,3	55,6	50,7	-9,0	-35,5
3	Germany	105,8	116,0	101,5	99,2	100,2	101,9	97,7	97,4	-0,3	-7,9
4	Great Britain	88,7	87,7	74,4	62,0	61,1	61,1	59,4	59,9	0,7	-32,5
5	Russia	267,7	176,8	246,1	278,1	269,9	280,4	285,2	284,1	-0,4	6,1
6	Uzbekistan	7,9	6,9	3,9	2,7	2,5	2,4	2,5	2,3	-6,4	-70,8
7	USA	754,6	848,8	834,1	860,2	869,6	883,3	900,3	890,4	-1,1	18,0
8	Argentina	23,1	30,9	31,5	32,4	31,0	30,4	26,3	26,3	-0,3	13,7
9	Brazil	61,1	85,0	97,7	108,5	100,7	97,6	95,2	102,0	7,2	66,9
10	China	145,8	232,7	400,9	510,5	533,9	564,3	601,7	642,6	6,8	340,8

In table 4, by the end of 2019, the production of oil products decreased in the world and amounted to 4,339 million tons. In percentage terms, Iran has the largest loss -29.9%, which is 26.9 million tonnes less than in 2018. In the context of the outbreak of the pandemic, only China was able to increase production of oil products by 40.9 million tons. This figure was almost 3.5 times more than in 2000. Uzbekistan for the production of oil refined products in 2019 took a step back and executed volumes less by 6.4%, which amounted to 2.3 million tons. Unfortunately, this figure is decreasing from year to year.

The fall in oil demand due to the spread of COVID-19 and the imposition of restrictive measures to combat it, combined with a tough price war between producers, have led to dire consequences for the oil markets - it seems that the deepest crisis in the history of the global oil industry is now unfolding.

The main blow to the oil market was caused by an unprecedented drop in demand - by 30% in April and by almost 10% on average for the year (9.3 million barrels per day, according to IEA estimates). At the same time, the main drivers of world consumption - China and India - are unlikely to be able to provide additional demand for oil in 2020.

An unprecedented reduction in oil demand with an excess of its supply led to a tremendous imbalance that market participants had not yet encountered before, which caused a record drop in prices. From January to mid-April 2020, the Brent price fell 3.5 times, and WTI futures were sold at a negative price for the first time in the history of exchange trading, clearly demonstrating the vulnerability of the modern pricing system.

The situation on the market was greatly complicated by the relationship between oil producers. However, an extraordinary drop in demand and prices forced manufacturers to sit at the negotiating table. The result is an agreement to reduce production by two years between OPEC + countries (including by 8.2 million barrels per day. On average by 2020) and, for the first time in history, countries outside the coalition (USA, Canada, Brazil, etc. about the intention to reduce production by 5 million barrels per day, although these countries have not taken any strict obligations).

The agreed reduction volumes are approximately in line with current estimates of average annual decline in demand, however, "the devil is in the details": the reduction should be enough so that the storage is not overfilled and prices do not go into the negative zone, but not more, but for successful implementation Agreements require coordinated work of all market participants. Failure to comply with the declared reduction in production may lead to overstocking the market and overflowing of oil storage facilities around the world, and, consequently, to a further reduction in prices.



In fact, the agreement avoided the worst case scenario, but it does not guarantee a quick stabilization of the market. In all scenarios, prices in 2020-2021. will not return to the pre-crisis level and will be in the range of 16-30 dollars per barrel. depending on the speed of demand recovery and the strict compliance with the production reduction agreement. In the short term, the main focus of oil companies around the world will be a radical reduction in costs and the conservation of part of the well stock against the backdrop of commitments on quotas and under pressure from low prices. Global investment in production in 2020-2021 will decrease by 45%, which in the future may be fraught with a crisis of underinvestment, lack of oil in the market and the next price cycle.

The oil industry suffered the most from the coronacrisis. The main destabilizing factor for the oil market was a sharp decline in oil demand, primarily from the transport sector (automobiles and air transportation), which turned out to be the most vulnerable due to quarantine measures around the world.

In China, for example, demand for motor fuels at the height of the epidemic in January-February fell by 13%, judging by official data, and by 20-30%, according to independent estimates. In the USA, oil supplies to refineries from March 6 to April 10 decreased by 20%. In Europe, the reduction in motor fuel consumption in some countries amounted to 70% 7, in Russia, the decrease in demand by mid-April is estimated at 40%. In general, according to IEA estimates, global oil demand in April may decrease by a record 29 million barrels per day compared to April last year. - This is the largest drop in demand recorded in the entire history of the global oil market (Figure 1). At the same time, the previous decline in consumption was caused by a multiple increase in oil prices, but now the situation is reversed - even low oil prices can not spur demand, due to the fact that more than 4 billion people are limited in mobility due to total lockdowns.

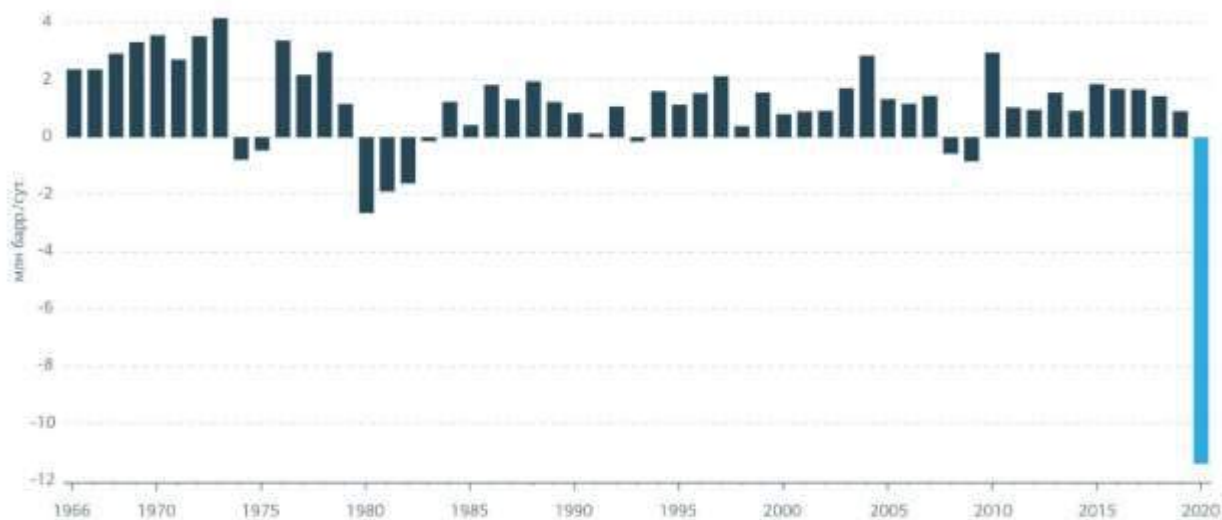


Figure 1 - Annual change in oil demand, 1966-2020 [8]

The Republic of Uzbekistan needs to expand the range, quality and volume of production of oil products. It can be concluded that the development of oil refining in the Republic should go in stages along the way:

- additional loading of oil refining capacities at existing refineries with raw materials of own production and import;
- improving technology and deepening oil refining;
- introduction of innovative technologies in oil refining based on local resources;
- increase the range of products;
- lower production costs and resource savings;
- introduction of environmentally friendly technologies, etc.
- increasing the capacity of oil refineries, with the achievement in the near future of 0.1 tonnes of refined oil per capita.

Only in this case is it possible to meet the annual growth rates facing the country's economy. The tasks are big, however, without improving the country's oil industry, without fully meeting the needs of the economy with high-quality oil products, there is no further prosperity of the country.

As part of the functioning of the quality management system, goals are realized that are aimed at maintaining the quality policy adopted by the management of the company. In particular, scientific, technical and design products are manufactured in accordance with the requirements of customers, the proportion of objects designed using modern information technologies is increasing.



These ways of developing the research and design and research direction in the oil and gas industry are designed to ensure further economic growth of the economy, increase the profitability of work, and gain new positions in the world market. The state must set as its goal the solution of the following tasks:

- increasing the profitability of the industry through the implementation of science-intensive projects for the commissioning of oil and gas fields, the development of feasibility studies, the deep extraction of valuable hydrocarbons and the development of new types of products, reconstruction and development of gas processing capacities;
- further improvement of oil and gas processing activities through the introduction of information technology into the production process, and comprehensive training and retraining of personnel;
- the introduction of modern technologies for the design of facilities and the conduct of research work;
- constant improvement of the image of Uzbekistan as a research and design and survey state in the oil and gas industry and in priority areas of science, technology and technology;
- increasing the level of competitiveness and the relevance of the results of research and design and survey work in the world;
- development of various forms of cooperation with organizations and enterprises in order to jointly solve scientific and practical problems and introduce scientific developments and projects into production;
- expansion of scientific and technical cooperation with domestic and foreign companies, firms for joint competitive development;
- carrying out scientific and practical conferences, seminars, participation of researchers in the work of international conferences, symposia, exhibitions.

Implementation of innovations affects various indicators of the enterprise's activity: consumption rates of consumed materials and energy; volume of manufactured products; labor productivity; the number of employees; production cost; profit; profitability; return on assets, etc. Creation, development and implementation of new technologies can help companies overcome the negative effects of the global crisis and reach a new level of development.

To increase the innovative activity of oil and gas enterprises, it is necessary to create a favorable climate for the expansion of innovative activity, including the creation of appropriate infrastructure, to organize training and retraining of personnel for innovative activities.

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DEVELOPPING THE INSURANCE MARKET OF UZBEKISTAN REGARDING THE LEVEL OF ASSISTANCE SERVICES

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ABSTRACT

This abstract provides an overview of the current situation within the insurance market of Uzbekistan with a focus on the level of assistance services. As of the latest available information, the landscape of the insurance sector in Uzbekistan is subject to ongoing changes influenced by regulatory developments, economic conditions, and evolving consumer demands.

The insurance market in Uzbekistan has witnessed a notable shift in recent years, reflecting a growing emphasis on enhancing assistance services provided to policyholders. A critical aspect of this evolution is the incorporation of advanced technologies and digital solutions to streamline and improve the efficiency of assistance processes. Insurers are increasingly adopting innovative approaches to offer timely and responsive services, aligning with global trends in insurtech.

Regulatory initiatives have played a pivotal role in shaping the assistance services landscape, emphasizing consumer protection and satisfaction. The government's focus on fostering a competitive and customer-centric insurance environment has prompted insurance companies to invest in improving the quality of assistance services. This has led to the development of comprehensive insurance products that not only mitigate risks but also provide a range of support services tailored to the diverse needs of policyholders.

Moreover, there is a discernible trend towards collaborative efforts between insurers and other stakeholders, including healthcare providers, automotive service networks, and emergency response organizations. Such collaborations aim to enhance the overall assistance ecosystem by ensuring swift and effective responses to policyholders' needs, especially in critical situations.

While advancements are evident, challenges persist, including the need for standardized practices, awareness campaigns to educate consumers about available assistance services, and ongoing efforts to align with international best practices. The future trajectory of the insurance market in Uzbekistan is likely to be shaped by the industry's adaptability to emerging trends and its ability to continually elevate the level of assistance services to meet the evolving expectations of policyholders in an ever-changing economic and technological landscape.

KEYWORDS: *Insurance Market, Assistance Services, Regulatory Developments, Consumer Demands, Insurtech, Healthcare Providers, Policyholders*

INTRODUCTION

The insurance market in Uzbekistan stands at a crossroads, marked by dynamic changes and an evolving landscape that reflects the influence of regulatory frameworks, economic shifts, and the ever-changing demands of consumers. This introductory overview delves into the current state of the insurance market in Uzbekistan, focusing on a pivotal aspect—the level of assistance services offered by insurance providers. In recent years, this sector has witnessed a notable transformation, driven by a concerted effort to enhance the overall customer experience and streamline assistance processes.

As the global insurtech wave sweeps through the industry, Uzbekistan's insurance sector is increasingly embracing digital solutions and innovative approaches to cater to the diverse needs of policyholders. This transition is not only shaped by domestic factors but is also influenced by the broader international trends in the insurance landscape. Regulatory initiatives championing consumer protection and satisfaction have played a central role in shaping the assistance services provided by insurers, encouraging them to invest in technological advancements and service quality improvements.

This paper explores the multifaceted dimensions of the current state of assistance services in Uzbekistan's insurance market, examining the integration of advanced technologies, collaborative efforts with external service providers, and the challenges and opportunities that define the industry's trajectory. The intricate balance between regulatory mandates, industry trends, and consumer expectations sets the stage for a comprehensive analysis of how insurers are navigating this dynamic environment to deliver effective and responsive assistance services to policyholders.



LITERATURE REVIEW

A comprehensive analysis of the literature on the development of insurance assistance services reveals several key themes, challenges, and opportunities within this dynamic and evolving sector. The following synthesis provides an overview of the main findings and trends identified in the literature:

1. Technological Advancements and Insurtech:

The literature consistently underscores the transformative impact of technology, particularly insurtech, on insurance assistance services. Researchers highlight the integration of artificial intelligence, machine learning, and data analytics as pivotal in enhancing operational efficiency and the overall customer experience [1].

2. Consumer-Centric Approaches:

Studies emphasize the shift toward consumer-centric approaches in the development of insurance assistance services. Consumer expectations, preferences, and behaviors play a crucial role in shaping service offerings. Personalization, ease of access, and real-time responsiveness emerge as key factors influencing consumer satisfaction [2].

3. Regulatory Landscape:

Researchers delve into the regulatory environment, emphasizing the need for insurers to navigate complex legal frameworks governing assistance services. The literature points out that compliance with evolving regulations is crucial, especially in areas concerning data protection, privacy, and consumer rights [3].

4. Collaborative Initiatives and Partnerships:

Collaborative initiatives between insurance companies and external service providers are recognized as instrumental in advancing assistance services. Successful partnerships contribute to innovation, streamlined processes, and a broader range of service offerings [4].

5. Claims Processing Efficiency:

An area of considerable focus is the integration of assistance services into the claims processing workflow. Studies highlight that efficient assistance services contribute to faster claims settlements, reduced fraud, and increased overall customer satisfaction [5].

6. Global Trends and Cross-Cultural Considerations:

The literature explores global trends in insurance assistance services, acknowledging regional variations and cultural considerations. Researchers recognize the importance of understanding diverse consumer needs and adapting services to different cultural contexts [6].

7. Ethical and Social Implications:

Ethical considerations related to the development and deployment of insurance assistance technologies are discussed. Researchers highlight the importance of responsible use of customer data, transparency in decision-making processes, and addressing potential biases in algorithmic models [7].

8. Challenges and Opportunities:

The literature identifies challenges such as standardization issues, the need for improved communication channels, and the adaptation to rapidly evolving consumer expectations. Opportunities lie in leveraging emerging technologies, exploring new service models, and fostering collaborations to address these challenges [8].

9. Cross-Sector Insights:

Research extends beyond the insurance sector, exploring cross-sector insights, especially in collaborations with healthcare providers, emergency services, and automotive assistance. These interdisciplinary approaches contribute to a holistic understanding of assistance services.

In conclusion, the analysis of the literature on the development of insurance assistance services underscores a paradigm shift driven by technology, consumer-centricity, and collaborative endeavors. As the industry continues to evolve, addressing regulatory challenges, ethical considerations, and adapting to global and cultural nuances emerge as crucial aspects for insurers seeking to optimize and innovate their assistance services.

ANALYSIS AND DISCUSSION

The main macroeconomic indicators of the insurance market:

- the amount of gross calculated insurance premium;
- the share of gross calculated insurance premium in GDP (insurance penetration level);
- the insurance rate (gross amount of insurance premium per capita);
- the loss coefficient (ratio of gross insurance payments to the gross calculated insurance premium).

An analysis of the dynamics of gross insurance premium calculated in recent years (Fig. 2.1.) showed that increased more than 4 times in 2016-2022. A slight decrease in the dynamics of NPS in 2020 compared to 2019 is due to the consequences of the COVID-19 pandemic.



The most important macroeconomic indicator of the importance of insurance as an element of the risk management system of legal entities and individuals is the ratio of total insurance premiums to gross business product. The largest value of this parameter is in Taiwan, where insurance premiums are 19 percent of GDP, Hong Kong (17-18 percent), South Africa (14 percent), South Korea (13 percent) and Finland (12 percent). In the USA and Japan, the value of this indicator is 9.5-10%, in the European Union this indicator is on average 8%, in Latin America, Eastern Europe and African countries - from 2% to 3.5% , in Uzbekistan in recent years, the value of this indicator has ranged from 0.34 to 0.7% (Fig. 1).

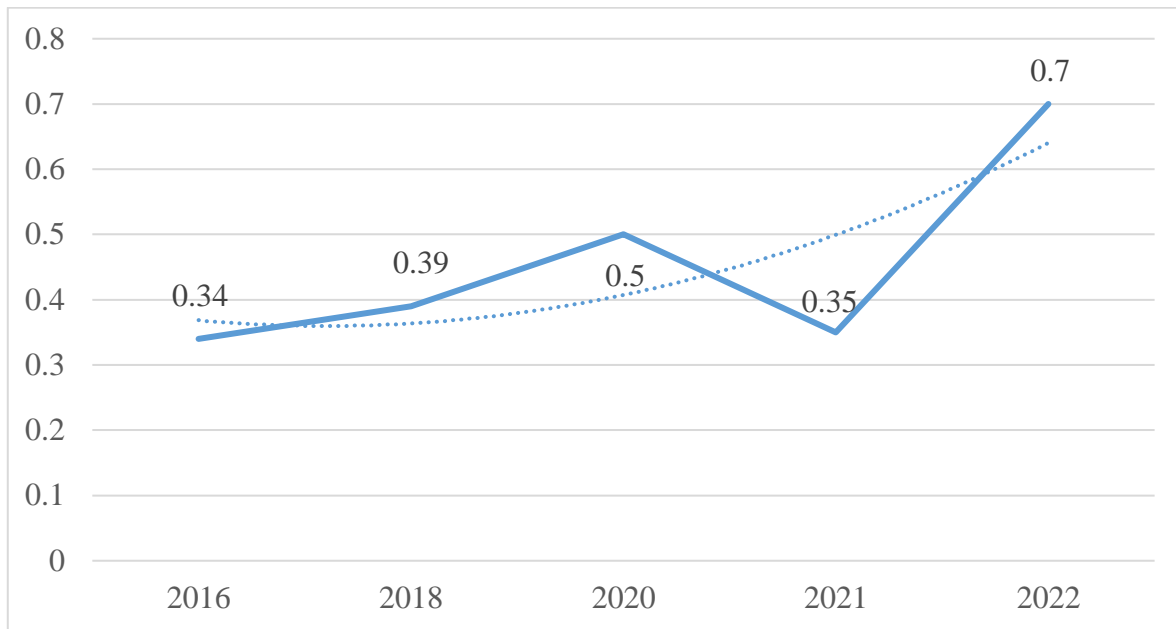


Figure 1. Share of gross business product in gross business product of insurance premium (%)¹

A similar situation of this indication shows that most local insurance companies fulfill the existing demand created by the banking industry. And individuals and private and personal enterprises do not work enough to create demand for such insurance services.

The importance of insurance is also determined by the insurance coverage. In recent years, each inhabitant of the planet has an average insurance premium of 650-700 US dollars.

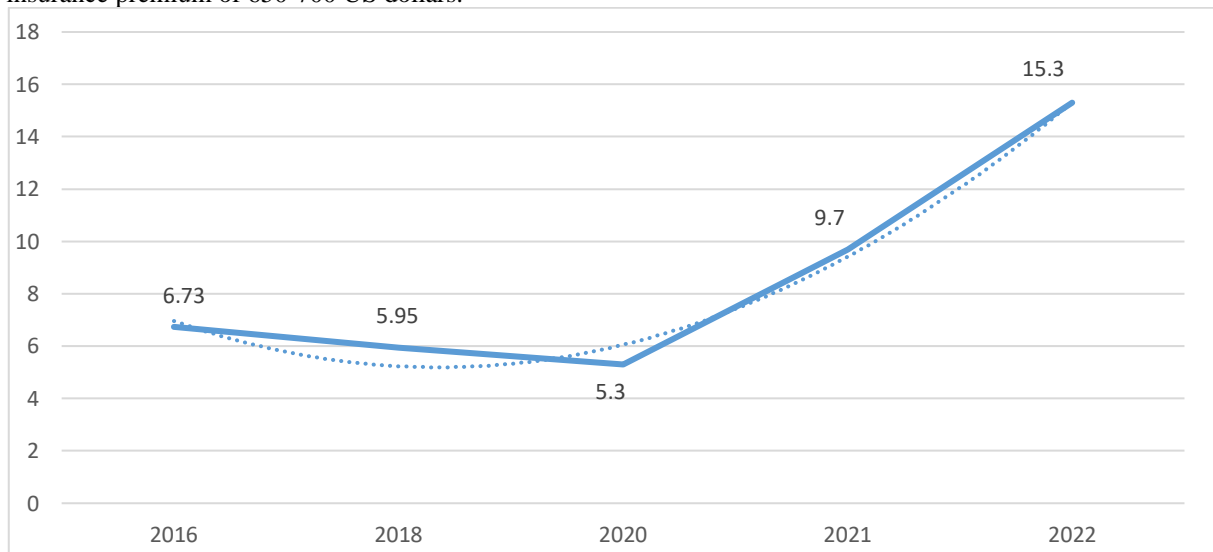


Figure 2. Insurance price in Uzbekistan (USD) Official exchange rate US\$²

¹ Developed by the author based on site data www.mf.uz

² Developed by the author based on site data www.mf.uz



In developing countries, this figure is about \$150. An average of \$80 goes to life insurance premiums. In Uzbekistan, according to the end of 2022, the insurance premium for each resident was slightly more than 15 dollars.

The situation related to the level of insurance penetration and insurance density in Uzbekistan is mainly explained by the insufficient insurance literacy and insurance culture of the population, as well as the distrust of legal entities and individuals in insurance.

At the same time, the general income level of the population also plays an important role, which is much lower in Uzbekistan than in the above countries.

The main point of providing auxiliary services is to optimize the ratio of voluntary and compulsory insurance types. In economically developed countries, the share of insurance premiums by types of compulsory insurance is more than one third of the total insurance premium.

In 2020, the increase in fees for the types of compulsory insurance is explained by the introduction of compulsory civil liability insurance of vehicle owners, compulsory civil liability insurance of the employer and compulsory civil liability insurance of the transporter.

The state of insurance activity in the country allows the insurance market of Uzbekistan to be called a "soft" insurance market, characterized by a relatively high number of participants and low rates of insurance premiums. The structure of the insurance market in 2016-2022 is presented in Table 1. As of the end of 2022, 41 insurance companies operated in the insurance market of Uzbekistan, 8 of them operated in the field of life insurance. Not all domestic insurance companies are active players in the insurance market, 7 insurers have a market share of less than 1% in premiums.

Table 1. The structure of the insurance market of the Republic of Uzbekistan for 2016-2022³

Years	Number of insurance organizations	Including life insurance	Total authorized capital of insurance organizations (million dollars)	Number of insurance brokers	Number of insurance brokers	Number of insurance agents	Number of insurance surveyors and adjusters	Number of assists
2016	29	3	137,1	3	4	5800	12	6
2018	30	6	125,1	4	4	8700	18	6
2020	40	8	137,4	5	5	8870	18	6
2021	42	8	146,7	5	5	9581	18	6
2022	41	8	167,8	5	5	9155	18	6

In recent years, the level of insurance services and tariffs is determined only by market conditions.

The reality of insurance as an element of the risk management system of legal entities and individuals is confirmed by the following indication, the harmfulness of the insurance premium.

Analysis of the harmfulness of the insurance premium (the ratio of insurance payments to insurance premiums) in the general insurance sector in 2016-2022 allows it to determine the very uneven dynamics of this indication (Fig. 2.6). Such a change in this reading may indicate the high quality underwriting of local insurance companies or their policies aimed at increasing insurance payments, some of which have a loss of less than 2 percent of the insurance premium. That is, insurance payments are less than 2 soums per 100 soums of insurance premium.

By the end of 2022, the majority of insurance premiums (more than 23%) were collected by state-owned insurance companies. In the past few years, state-owned insurers have been among the leaders in the business insurance market. But from year to year their influence on the conditions of the country's insurance market is decreasing. During 2015-2022, the total share of state-owned companies in the general insurance sector decreased.

From the point of view of monopolization, the situation in the insurance market is considered a market. In this case, the main part of the total insurance premium is produced by ten or more competitors. At the same time, the largest share of one of them should

³ Developed by the author based on data from the website www.mf.uz



not exceed 31% of the total amount of the insurance premium, two - 44%, thirty - 54%, and four - 64%. The state of the insurance market of Uzbekistan meets the above requirements.

The insurance market of Uzbekistan is characterized by a very high geographical concentration (Table 2). The reason for this is that although the insured objects are distributed in the territory of the republic, almost all financial flows are concentrated in the capital. The main share of the insurance premium (more than 50%) is still formed in the city of Tashkent. This shows the dominance of domestic corporate insurance insurers in the insurance portfolio.

The task of providing the regions with insurance services is solved due to the presence of insurance companies with headquarters in Tashkent, the presence of many divisions (branches and divisions) in the regions, and the presence of assistance companies in the republic.

The current stage of business insurance market development is characterized by an insignificant amount of authorized capital of insurers both in the general insurance network and in the life insurance network. As of January 1, 2023, the total authorized capital of Uzbekistan's insurance companies amounted to 1.8 trillion soums.

Figure 2.
Share of the Insurance Premium Related to the regions⁴

Regions	Share of the insurance premium corresponding to the region, (%)						
	2016	2017	2018	2019	2020	2021	2022
Tashkent city	53,7	54,8	52,2	55,6	52,0	60,9	68,1
Tashkent region	7,3	7,2	7,5	7,5	6,9	4,0	3,0
Fergana region	5,6	5,2	5,4	5,4	5,5	4,3	3,2
Andijan region	4,3	4,2	4,2	4,3	4,5	3,5	3,6
Samarkand region	4,4	4,1	4,3	4,2	4,3	3,0	3,5
Bukhara region	3,9	3,9	4,0	3,8	4,0	3,0	2,7
Namangan region	3,4	3,4	3,7	3,1	3,7	3,6	2,7
Kashkadarya region	4,2	4,0	4,1	3,5	3,4	3,2	2,6
Khorezm region	2,9	2,8	3,2	3,0	3,3	2,4	2,5
Navai region	1,9	1,9	2,3	2,2	3,1	2,7	2,2
Surkhandarya region	2,6	2,6	2,8	2,2	2,8	1,9	1,4
Republic of Karakalpakstan	2,4	2,3	2,5	2,2	2,7	4,3	4,2
Jizzakh region	1,7	2,0	2,2	2,0	2,3	1,6	1,3
Syrdarya region	1,7	1,7	1,5	1,1	1,5	1,5	0,9

Analysis of this indicator for the period 2015-2020 (Fig. 2.7) shows that if the extreme year 2017 is excluded (the insurance market left a number of players), there is a stable growth trend. By the end of 2022, the total volume of authorized capital of local insurers has increased by 4 times from the level of 2016.

⁴ Developed by the author based on data from the website www.mf.uz

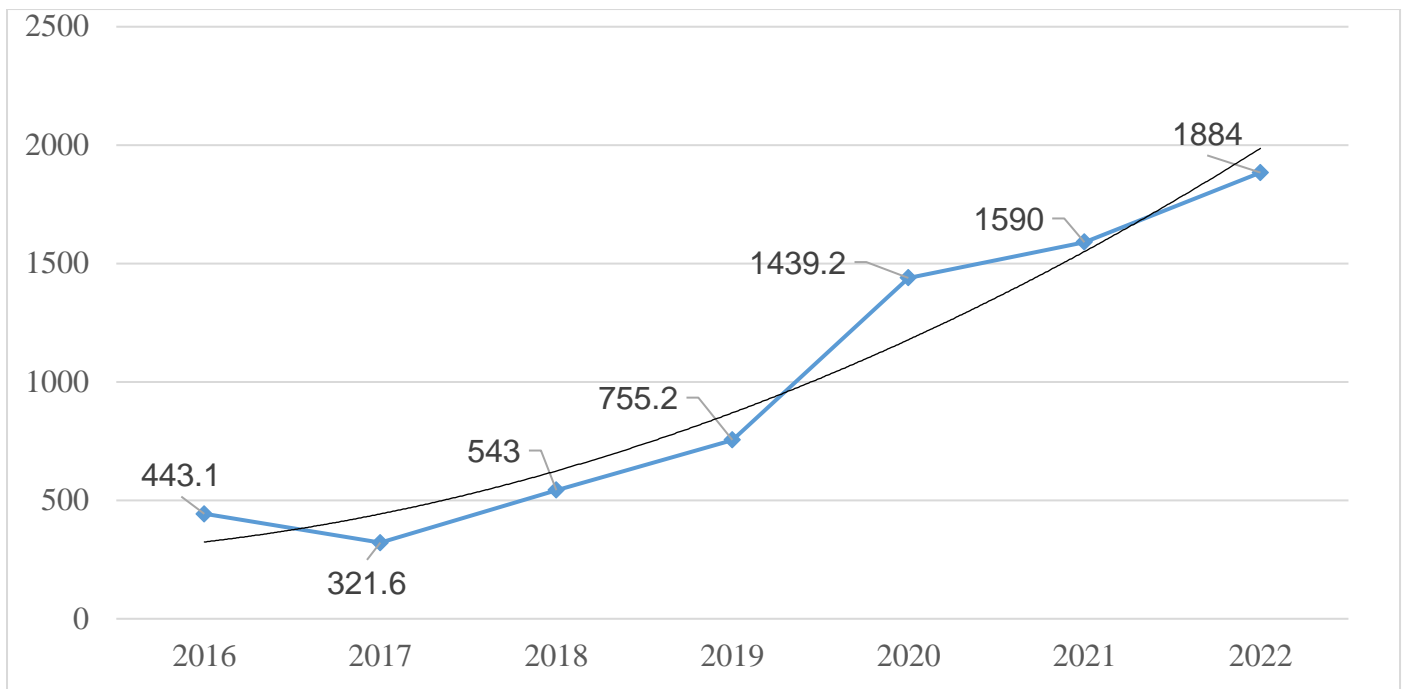


Figure 4. The total amount of authorized capital of local insurers in 2016-2020 (billion soums)⁵

One of the main obstacles to the development of assistance is the underdevelopment of infrastructure (lack of evacuation services in each settlement, lack of private medical facilities, lack of professional personnel, etc.). Therefore, the possibilities of assistance are determined by the geography of the capital and regional centers. Therefore, the main task of assistance companies in the near future will be to develop a network of offices throughout the country, so that the client can be assisted in any region, regardless of where the policy was purchased.

Recently, others should be added to the actively developing types of support mentioned above. On the example of developed countries, the "concierge" service may become very popular in our Uzbekistan. Employees of the Assistance company helps the insured to solve plumbing and other personal problems around the house. They also order gifts, tickets, a table in a restaurant and many other things.

An important issue in the development of assistance is the form of cooperation (relationship) between the insurance company and the assistance. There are three job options. Each has its advantages and disadvantages: 1. The insurance company outsources the care of its customers. 2. It will create a department that will enter into direct cooperation agreements with companies serving customers (medical institutions, service stations, etc.) in his work. 3. It establishes a separate affiliate assistance company.

The simplest way for an insurance company to provide assistance to its customers is to contract with an external assistance company and outsource the service. In most cases, local insurance companies do this. The insurance company burdens itself by transferring part of the work to an external operator, because there is no need to spend money on creating your own service and train employees. The client receives a high level of service, because the assistance company specializes in providing a certain type of service, for which it has the necessary technical base and personnel. In this case, the costs of assistance depend directly on the agreement between the insurer and the company providing it. Although different payment methods can be used, it can be a percentage of collected rewards, a fixed fee per customer served, or a fee per referral.

The payment method, as a rule, depends on the specific characteristics of the insurance product. If the probability of an insured event is high, the service will be cheaper to pay the specified amount. If it's low, it's better to pay a little more for each customer referral. Experts believe that in the future the cost of such outsourcing services of the insurance company will decrease (on the one hand, due to the increase in competition between companies that provide such services, on the other hand, due to the increase in the

⁵ Developed by the author based on data from the website www.mf.uz



number of customers). An obstacle to cost reduction can be the price of Assistance services, which is constantly increasing, and the price of the insurance policy remains almost unchanged.

Some local insurance companies develop their support by establishing a customer support center or assistance affiliate within the insurance company business. In addition, if the number of clients is insignificant, it makes sense to create an additional division within the insurance company itself. According to experts, a similar trend is related to the requests of customers themselves. Potential customers, when choosing an insurance company, ask the question of who will serve them - their assistant or an outsourcer. It makes perfect sense for the client to assume that their support will take better care of the client than a hired contractor. A second argument in favor of developing its own assistance service may be the business interest of the assistant in developing the main insurance company. There is something like a circular motion: the better the assistance works, the wider the insurance company's customer base and, as a result, the more people who use the assistance services.

If the assistance company works with several insurance companies, then there is less reason for self-development and improvement. Another important advantage of own assistance service is the price. Self-care becomes cheaper when assistance services reach a certain volume of clients. Funds saved in working with your own assistance can be directed to further expand the offered services or reduce their price in the conditions of increased price competition in the insurance market.

However, the establishment of a company or division specializing in assistance, in order to be able to provide high-quality service, requires a lot of effort and financial costs from the insurance company.

With a large number of clients and the need to expand the range of services provided, it is preferable to establish a separate company dealing only with assistance. Based on this scenario, the largest local insurance company, Uzbekinvest, created its assistance subsidiary.

By dividing its assistance into a separate structure, the insurance company creates the necessary conditions for the formation of an additional profit center, because the potential of the business unit is determined only by the range of clients of the main insurance company. When an affiliate assistance company sells its services to insurance companies that are not willing to increase their assistance, the insurance company can become a profit center. But on the other hand, when it comes to offering assistance operator services associated with any insurance company, other insurers are wary of it and prefer to work with independent assistance companies. The reason for this is the fear of leaking customer information. By the way, in developed countries, assistance does not always benefit the company, sometimes it works at a loss level.

SUMMARY

Today, it is possible to observe dumping by some companies in the market of assistance services in order to attract customers. As a rule, this applies to new companies. That's because they can't provide a product or quality that's an order of magnitude higher than existed market leaders, but they can only offer a similar service at a lower price. But it doesn't always work. Today, it is very difficult to attract a loyal customer from a reliable assistance company, even when using dumping. Insurance companies understand that you have to pay for quality, so they strive to cooperate with leaders of assistance companies that offer the highest quality services. And since only companies with large capital can lower the price below the cost of service (and such tactics cannot be long-term), dumping will not be a "way to the top" for young and developing companies.

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AESTHETIC FEATURES OF UZBEK FOLKLORE: THE LANGUAGE OF RITUALS SONG

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SUMMARY

Article deals with providing all-inclusive information about kinds of folkloric songs, especially the cultic songs, which were within several centuries the integral parts of the life of Uzbek people and their performance modes, including their protection and transfer to the next generations.

KEY WORDS: *folklore, melody, genre, ceremony, wedding.*

ЭСТЕТИЧЕСКАЯ ОСОБЕННОСТИ УЗБЕКСКОГО ФОЛЬКЛОРА: ЯЗЫК ОБРЯДОВОЙ ПЕСНИ

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Аннотация

В статье представлена исчерпывающая информация о видах фольклорных песен, особенно культовых, которые на протяжении нескольких столетий были неотъемлемой частью жизни узбекского народа, и способах их исполнения, включая их защиту и передачу следующим поколениям.

Ключевые слова: *фольклор, мелодия, жанр, обряд, свадьба.*

It is impossible to imagine the culture of a people without songs. Folklore song occupies a special place in the life of Uzbeks, along with instrumental music and epic poetry. The song invariably accompanies the main milestones of a person's life - birth, wedding, is widespread in everyday life, and serves as a decoration for any celebration. Musical folklore - the unique, original culture of our ancestors - is recognized by modern society as a significant factor in spirituality, continuity of generations, and familiarization with the national origins of life. The results of the centuries-old process of folk art are reflected in works that have preserved the most perfect and significant images in their memory. Life, consciousness, and norms of behavior of distant ancestors reflect rituals, the study of which makes it possible to identify some of the foundations of the traditional worldview.

Ritual action and singing in it are among the symbolic forms of behavior. Among all kinds of needs, a person has a need for symbolization. Its products were precisely ritual (rite), myth, language and other semiotic means of culture. In this regard, ritual and ritual singing act as the highest form and the most consistent embodiment of symbolism. All spheres of life of the Turkmen traditional society - everyday life, food, animal husbandry, raising children, the behavior of various age groups were ritualized. These traditions are still alive among the people today, in rural environments to a greater extent than in urban ones. Compliance with rituals helps society solve vital problems in preserving its basic values, not only material, but also iconic and symbolic. The ritual is a kind of language, a way of expressing main ideas.

Wedding rituals are associated with a wide range of phenomena in folk life; it presents an interesting combination of various folk genres: songs, jokes, games, proverbs and sayings, ritual quatrains and ritual actions. The concept of an Uzbek wedding hides an



incredible variety of different options, transitional, more or less similar or unique forms of the wedding ceremony. Until now, each clan is distinguished by local features peculiar only to it, among which there are the main general aspects of the wedding ritual. Each step of the ritual - from the moment of matchmaking to the wedding fun - is associated with special honors, which have a deep ethical meaning. It is impossible to clearly define the boundaries of the wedding ritual, its beginning and end. What we call ritual is sometimes difficult to separate from other, non-ritual aspects of life. In Uzbek wedding folklore, researchers distinguish three stages: pre-wedding, the wedding itself and the post-wedding period. These stages show the sequential transition of those entering into marriage from one sex and age group to another. Through the language of ritual, Uzbek society marked the change in the social status of the young and the main milestones in the life of traditional society.

The specificity of folklore is that it reveals the features of a syncretic art form. Each work of folk art is of a procedural nature and each time is recreated anew on the basis of the complex interaction of traditionally established elements of the artistic and figurative system, language, genre-functional significance of works of folklore and specific social historical conditions.

The musical arrangement of the ritual actions of an Uzbek wedding is extensive and multifaceted. Music greatly enhances the emotional tone and artistic merits of the ceremony. Songs highlight that side of things and phenomena that are not noticeable in ordinary life, but in fact determine their true essence. Hence the duality of phenomena, the switch from the level of daily life to the level of actual values. The performance of ritual songs refers to the system of musical behavior in the ritual. The question "why this and not otherwise?" didn't matter. The principle of immutability of behavior and obligation for all members of the team had a self-sufficient character in traditional culture. Musical speech acted as a norm, a kind of program that acquired ritual status in ritual action. The linguistic means in which the action was embodied were not similar to ordinary (spoken) language. They acquired a symbolic character. In the structure of rituals, this role was played by rhythmic musical speech, organized according to the type of formula. Gradually, the formula crystallized in the poetic content of ritual singing and "absorbed" certain meanings, becoming materially consolidated in the music through rhythm. Over time, linguistic forms in ritual songs became a means of musical expression, and music turned into a kind of lexicon, dictionary, and the key to understanding ancient musical culture.

The performance of ritual songs is not strictly assigned to a certain stage of the wedding ritual; it is largely arbitrary for each region. It is these features that do not allow us to distinguish the wedding ritual of any locality as the main form of ritual in this territory. The set of songs is not accidental; each village had its own logically clear "musical direction" for the wedding ceremony. The difficulty of figuring out this "direction" is determined by the significant flexibility in assigning songs to a specific ritual action and the fairly easy inclusion of songs of other genres into the wedding. Actually, wedding songs were not supplanted, but were largely overshadowed and gradually lost in the mass of those introduced later.

On the territory of Uzbekistan, there is basically the same repertoire of wedding songs. The ritual begins with the moment of matchmaking, which is already replete with traditional quatrains and sayings. Long before the scheduled wedding day, the bride, surrounded by her friends, began to embroider her dowry. Getting together, the girls joked and sang songs, among which the lyrical "Ulan", "Kelin Salom" and "Yor-yor" are popular in the Fergana Valley and the south of the republic; varieties of the song-game genre "Vakil Berish" ("Give Tribute") are widespread everywhere. Girls' lyrical songs are drawn-out and melodic in nature, with lyrics of a wide variety of content. To this day, these original songs, rich in original national flavor, are brilliant examples of folk art.

The wedding begins at the bride's house, where she says goodbye to her family and friends. In some areas of Surkhandarya and Kashkadarya, there are still crying farewells to the bride, her mother and friends. "Farewell to the bride" of the bride, accompanied by crying and lamentations, is typical for many cultures. It is crying, along with other components of the ritual, that signifies the actual transition from one world to another. Accordingly, the importance and significance of the ritual that opens the "doors" between worlds increases. This completes the girl's life cycle; she is reborn again in the house of her future husband, but in a different capacity - as a mother, a continuer of the family. Despite all the variety of magical actions, the central semantic core of the wedding ritual is precisely the transition of a member of one clan to another. This can also explain the fact that at first after the wedding the daughter-in-law exists in a position of ritual isolation (remember the 40 days after the birth of the child). She does not show herself to her father-in-law and her husband's older relatives, never raises her eyes to them, and does not address them by name. The daughter-in-law mainly communicates with the children of this house.

After all the ceremonies have been completed in the bride's house (farewell, braiding, changing clothes, changing headdress), the action moves to the groom's house. Upon entering a new home, the bride performs a series of ritual actions to welcome members of the new family. In this regard, the ritual of kneeling, which has been preserved in some regions of Uzbekistan - the bride's bow to the main members of the groom's clan, is important. After any bow, the one to whom it relates must announce a gift for it. The tradition of opening and showing the bride's face for a moment is deeply symbolic. In this case, with the help of certain actions, the situation of "birth", the appearance of a new member of the clan, is materialized. Completion of all elements of the ritual, including



the singing of songs, was considered mandatory. The well-being of not only the young, but also the entire family of the groom was associated with them.

After performing the necessary ritual actions, the actual entertainment part of the festival began, with music, songs, games, often traditional wrestling and other entertainment. The performance of song genres brings special fun and youthful excitement to the wedding ceremony. The spread of popular wedding songs “Yor-yor” (“Fire-heat”) among most peoples of Central Asia speaks of the once common roots of the Central Asian tribes. According to tradition, they were performed at the moment of the arrival of the wedding caravan and personified a playful competition between representatives of two clans, on the part of the bride and groom. In the Baysun region, the variety of wedding genres also includes comic songs performed to the accompaniment of doira. The verses were sung solo or by a group of voices and were taken up in the chorus part of the songs by all those present. In Ahal, along with “Yor-yor”, the songs “Yaku-yaku” are also popular, the performance of which was accompanied by clapping and traditional dance movements.

“Chirok yakish” (“burning of the fonus”) is a genre that exists in the southern regions of Uzbekistan. The genre traces its evolution back to dhikr, whose former function was the expulsion of evil spirits. The primary reason for introducing dhikr into the wedding ceremony was the desire to protect the well-being of the newlyweds from the “evil eye.” Thus, the ritual performed at weddings began to serve as a talisman and was called “Chirok Yakish”. The genre is a multi-part cycle, during the performance of which the female participants perform characteristic rhythmic body movements.

Before the start of zikr, a long vocalized appeal to the Almighty is performed solo. The melody and semantic content of the ancient genre have undergone a radical transformation over time, but the emotional tone of the performance and the traditional cries of “Alla”, “Kusht-kusht”, “Ahha-ahha”, “Huv-a” have been preserved. Thus, the ritual function of the ancient genre, which went into the subconscious and is unconscious in modern conditions, was reborn into a wedding game and took shape in a song and dance form of a comic nature.

It is necessary to study song folklore taking into account the history of the formation of local traditions of folk culture. In order to master the subject of folk art in full, it is necessary, in addition to musicology, to involve data from philology, history and ethnography. For example, when considering the chant or text of a wedding ceremony, a researcher may come to random conclusions if he does not take into account the origin of the genre, the structure of its musical and poetic content, or the features of the local tradition. Often, the diversity of the plot development of a song, the dialectological features of the dialect, as well as a huge layer of non-song folklore remain beyond the attention of musicologists. In turn, folklorists-philologists pass by the intonation-rhythmic essence of song texts, which is the only form of existence of these texts and precisely in which the national characteristic of folk song culture is manifested.

Uzbek wedding songs have well preserved their distinctive features. Wedding songs are rich in everyday life; they reflect the nomadic life of the Uzbeks and their tribal customs. Their poetic content reflects the ideas about the world of the traditional consciousness of the people. The images of nature that appear in the poetic metaphors of these genres are a modification of the ideas of the Uzbek ancestors about the three worlds: upper, middle and lower. The symbol of the world tree is known to all Turkic peoples as an object of worship for the middle world; the image of a river and everything connected with water can symbolize the underworld. In addition, the river in ancient Turkic mythology means the border between the worlds of the living and the dead. The categories of fire found in poetic texts are also an echo of ancient beliefs. Thus, according to the ideas of the ancient Turks, earth, water, air and fire constitute the four original essences of the universe.

Samples of the hearth, birds, horse, sun, and moon are scattered in the poetry of almost all ritual genres. The collectivity of these images speaks of the preservation in the historical memory of the people of the cults of totemism and reverence for the forces of nature. A common picture of the world, common memory, uniform rules of behavior determine the viability of a culture. Each society develops its own norms of behavior that have been established over centuries. A reference to the law of ancestors is a universal way of motivating actions in a ritual. Poetic metaphors of Uzbek ritual songs serve as symbols and semantic codes. In the traditional consciousness of Uzbeks, such well-known metaphors led to a strong consolidation of the corresponding rhythmic intonations in music. Poetic clichés as symbols of rituals were clothed in corresponding rhythmic formulas. Ritual speech in this context implements a stereotype of behavior at the musical and poetic level.

Thus, some behavioral stereotypes can be identified in the Uzbek wedding ceremony. Ritual actions are the implementation of certain behavioral programs, where “prescription” is equally important for all components of the ritual: the behavior of participants, gestures, clothing, food, emotional and physical state, special intonation - poetically rhythmic speech, etc. The main character of an Uzbek wedding is the bride, who leaves her home and moves to the house of her future husband. The ritual situation of “opening” doors between worlds is accompanied by many signs and special chants. For the participants of the ritual, the most important thing



is to overcome the border between worlds. Ritual songs have one quality that is not characteristic of material things. They are intangible. A sound, a word, a chant is a certain aggregate, a sequence of sound waves that can easily overcome both physical barriers and reach immaterial worlds. Music is created, performed and sounded in the material world; it belongs to the material world, but at the same time does not have the characteristics of material objects. Singing performs the magical function of communication: only it is capable of penetrating into other worlds, making it possible to be heard and understood. As a special sacred language, singing connects “vertically” representatives of different worlds. In this regard, the musical component of the wedding ceremony has preserved the most ancient features and brought the breath of millennia to our time.

There is something great in folk rituals. Behind it stands the whole way of life, its infinity. Meetings and farewells of the seasons, the spell of rain, the magnification of the harvest, weddings and funerals - all this is connected together: nature, economy, people, music, ritual. And only in this connection, in endless roll calls, connections, associations and metamorphoses, the greatness and meaning of life is learned.

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ADVANCING MATERNAL CARE: A COMPREHENSIVE REVIEW OF MIDWIFERY-LED CLINICS

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ABSTRACT

Midwifery-Led Clinics (MLCs) represent a transformative approach to maternal care, rooted in a woman-centered philosophy. This comprehensive review aims to explore the historical evolution, key features, benefits, challenges, and broader implications of MLCs in enhancing the maternal care experience. By synthesizing existing literature, this review provides a thorough understanding of how MLCs contribute to improved outcomes for women during pregnancy and childbirth. The keywords for this exploration include Midwifery, Midwifery-Led Clinics, Maternal Care, Woman-Centered Care, Pregnancy, Childbirth, and Patient Outcomes.

KEYWORDS: Midwifery, Midwifery-Led Clinics, Maternal Care, Woman-Centered Care, Pregnancy, Childbirth, Patient Outcomes.

1. INTRODUCTION

The introduction of this review serves as a comprehensive exploration of the historical trajectory that has shaped midwifery-led care into its contemporary form. By delving into ancient traditions, it highlights the enduring nature of midwifery as a practice deeply embedded in diverse cultures. The evolution of midwifery from these historical roots to its present-day manifestation is traced, showcasing how this profession has adapted to changing societal norms and medical advancements. This historical context not only provides a rich tapestry of the origins of midwifery but also lays the groundwork for understanding its relevance and transformation into a holistic model that caters to the unique needs of women.

Evolution into a Holistic Model:

As the narrative unfolds, the focus shifts to the present-day landscape of midwifery, where it has evolved into a holistic model of care. The term "holistic" encapsulates the emphasis on addressing not only the physical aspects of pregnancy and childbirth but also the emotional, psychological, and social dimensions. This evolution represents a departure from more medicalized approaches, highlighting a paradigm shift towards recognizing and catering to the comprehensive well-being of women during the maternity journey. The narrative draws attention to how midwifery-led care has become synonymous with a personalized and woman-centered approach, setting it apart from more conventional models of maternal care.

Contemporary Significance of Midwifery-Led Clinics (MLCs):

The introduction further underscores the contemporary significance of Midwifery-Led Clinics (MLCs) as the embodiment of this evolved approach to maternal care. MLCs are positioned as the epitome of personalized and holistic maternity care, encapsulating the core principles of midwifery-led care. In emphasizing the unique features and benefits of MLCs, the narrative aims to showcase their relevance in the current healthcare landscape. This forward-looking perspective positions MLCs not only as a continuation of historical traditions but as a response to the changing needs and expectations of modern women seeking a more individualized and supportive maternity experience.

Outlining Central Themes for Exploration:

The introduction concludes by providing a roadmap for the subsequent sections, outlining the central themes that will be explored in detail. By setting clear expectations, it prepares the reader for an in-depth examination of the key features, benefits, challenges, and implications of MLCs. This structured approach allows for a comprehensive analysis of the various facets of midwifery-led care, ensuring that the reader gains a nuanced understanding of its multifaceted contributions to advancing maternal health. The introduction, therefore, serves not only as a historical overview but as a strategic foundation for the comprehensive exploration that follows in the subsequent sections.

2. HISTORICAL PERSPECTIVE

This section delves into the rich historical roots of midwifery, tracing its origins through diverse cultures and historical periods. It explores the continuity of midwifery practices and highlights how these practices have evolved into the modern midwifery-led care



model. The narrative details the societal and cultural influences that have shaped MLCs, emphasizing the enduring commitment to woman-centered care that characterizes this model.

The historical perspective serves as a foundation for understanding the cultural and societal factors that have influenced the development of MLCs. By examining the historical evolution, this section provides insights into the resilience and adaptability of midwifery practices across time, setting the stage for the subsequent exploration of contemporary applications in MLCs.

3. KEY FEATURES OF MIDWIFERY-LED CLINICS

In exploring the key features of Midwifery-Led Clinics (MLCs), a comprehensive understanding of the distinctive elements that set this model apart from conventional maternity care is paramount. The cornerstone of MLCs lies in the commitment to continuity of care, ensuring that expectant mothers receive personalized and consistent support throughout their entire pregnancy journey. This feature establishes a profound connection between midwives and pregnant individuals, fostering a sense of trust and familiarity that is integral to a positive birthing experience. Additionally, the emphasis on informed choice and shared decision-making empowers women to actively participate in their care, promoting autonomy and a sense of agency throughout the childbirth process.

A further pivotal aspect of MLCs is the creation of a supportive and empowering environment. Unlike traditional models, MLCs prioritize the establishment of a nurturing atmosphere that acknowledges the emotional and psychological aspects of childbirth. This focus extends beyond the clinical aspects of care, recognizing the holistic nature of the maternity experience. This woman-centered approach encourages a collaborative relationship between midwives and expectant mothers, ensuring that care plans align with individual preferences, values, and cultural considerations. MLCs recognize the uniqueness of each pregnancy, aiming to provide tailored care that addresses the diverse needs of women.

Continuing the exploration, the review delves into how the MLC model facilitates an ongoing relationship between midwives and expectant mothers. This continuity of care extends from prenatal visits to labor and delivery, and through the postpartum period, fostering a sense of familiarity and trust. The literature is examined to highlight the positive impact of this ongoing relationship on patient outcomes, demonstrating that the personalized connection established in MLCs contributes to reduced rates of medical interventions, increased maternal satisfaction, and improved neonatal outcomes. By focusing on these key features, the review underscores the transformative potential of MLCs in shaping the childbirth experience into one that is not only medically sound but also emotionally fulfilling and empowering for women.

4. BENEFITS OF MIDWIFERY-LED CARE

Building upon the foundation laid in the previous sections, this segment critically reviews empirical evidence supporting the benefits associated with MLCs. Reduced rates of medical interventions, improved maternal satisfaction, and enhanced neonatal outcomes are explored in depth. Each benefit is substantiated with references to relevant studies, providing a comprehensive understanding of the positive outcomes attributed to midwifery-led care. The synthesis of evidence underscores the potential of MLCs to not only improve clinical outcomes but also enhance the overall childbirth experience for women. By focusing on the dual aspects of medical outcomes and patient satisfaction, this section contributes to a nuanced understanding of the multifaceted benefits of midwifery-led care.

5. CHALLENGES AND CONSIDERATIONS

While the benefits of midwifery-led care are evident, this section recognizes and addresses the challenges associated with the widespread implementation of MLCs. Regulatory hurdles, the need for effective interprofessional collaboration, and strategies to overcome these challenges are thoroughly discussed. Drawing on real-world examples and case studies, this section aims to provide a practical understanding of the complexities involved in integrating MLCs into existing healthcare systems. By acknowledging and dissecting these challenges, the review encourages a constructive dialogue on how healthcare systems can adapt to fully embrace the woman-centered care model advocated by MLCs.

6. THE ROLE OF MIDWIVES IN MATERNAL CARE

This section shifts focus to the central figures in MLCs – the midwives. It delves into the unique skills and competencies that midwives bring to maternal care, encompassing the entire spectrum from prenatal education to postpartum support. The discussion emphasizes the holistic and personalized nature of midwifery practice, showcasing how midwives contribute to positive birth experiences and improved maternal outcomes within the MLC model. By highlighting the collaborative and supportive relationship between midwives and expectant mothers, this section underscores the importance of midwives in delivering high-quality, woman-centered care.



7. IMPLICATIONS FOR HEALTHCARE POLICY AND PRACTICE

Examining the broader implications of integrating MLCs into healthcare systems, this section discusses recommendations for optimizing this integration and potential impacts on healthcare policy and practice. Drawing on successful case studies and lessons learned, the section provides actionable insights for stakeholders interested in advancing woman-centered care within existing healthcare frameworks. By navigating the complexities of policy implementation and system integration, the review contributes to the ongoing discourse on how to make MLCs an integral part of comprehensive maternal care.

Enhancing Maternal and New-born Healthcare: Midwifery-Led Care Units in Punjab, Bangalore, Telangana and Hyderabad

In a significant stride towards improving maternal and newborn healthcare services, the governments of Punjab, Bangalore, Telangana, and Hyderabad have instituted Midwifery-Led Care Units (MLCU) within public hospitals. The establishment of these units aims to ensure the provision of high-quality care during childbirth. With a focus on promoting natural birthing, the initiative also targets maintaining cesarean (C-section) deliveries within the World Health Organization's recommended range of 10 to 15%, thereby fostering optimal birthing practices and enhancing overall maternal and newborn well-being

8. CONCLUSION

In conclusion, the review synthesizes the key findings, emphasizing the profound significance of MLCs in advancing maternal health. It reiterates the need for continued research, policy support, and seamless integration into healthcare systems to promote widespread access to woman-centered care. By summarizing the multifaceted aspects explored throughout the review, the conclusion serves as a call to action, advocating for the ongoing development and implementation of midwifery-led models to enhance the overall maternal care landscape.

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GENDER RESPONSIBILITIES IN COMMUNITY DEVELOPMENT AND ITS INFLUENCE ON NURSING

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ABSTRACT

This article provides a comprehensive exploration of the intricate interplay between gender responsibilities within community development and their profound influence on the nursing profession. Recognizing and addressing gender roles are crucial components in promoting effective healthcare interventions. The article sheds light on the multifaceted nature of gender responsibilities and how they influence community dynamics and development, emphasizing the necessity for a nuanced understanding of these roles in nursing practice. By examining the intersectionality of gender and healthcare, the article aims to contribute valuable insights into fostering gender-sensitive nursing approaches for more equitable and inclusive community health outcomes.

KEYWORDS: *gender responsibilities, community development, nursing, gender roles, healthcare, gender equity, community engagement, gender-sensitive healthcare, social determinants of health*

INTRODUCTION

Gender roles exert a substantial impact on community dynamics, shaping the distribution of responsibilities, access to resources, and opportunities for community members. Understanding these roles is essential for the development of targeted and effective nursing interventions within communities. This article's introduction establishes the significance of unraveling the complexities of gender responsibilities, emphasizing their implications for community development and nursing practice. It highlights the role of nursing professionals as key agents in addressing gender-specific issues within communities and sets the stage for an in-depth exploration of the interconnectedness between gender responsibilities, community development, and nursing.

Background: The influence of gender responsibilities on community development is deeply rooted in cultural and societal norms. Traditional expectations often dictate roles related to education, employment, and healthcare access, contributing to disparities in community well-being. An understanding of these gender-based responsibilities is critical for the development of community programs that acknowledge and address the diverse needs of individuals. The background section thus provides a contextual foundation for the subsequent discussions on the impact of gender responsibilities on nursing practice and the broader community.

Historical Perspective: Examining the historical evolution of gender roles within communities offers insights into the roots of contemporary disparities. Historical perspectives help identify patterns of gender-specific responsibilities and their enduring impact on community structures. This historical lens provides a framework for understanding the persistence of gender-related challenges and informs strategies for nursing professionals to navigate and contribute positively to community development.

GENDER RESPONSIBILITIES IN COMMUNITY DEVELOPMENT

Gender responsibilities within community development are complex and multifaceted, reflecting the societal expectations placed on individuals based on their gender. These responsibilities influence various aspects of community life, including family structures, education, employment, and healthcare access. This section delves into the nuanced nature of gender roles, emphasizing their dynamic impact on the overall development of communities.

Socioeconomic Implications: The socioeconomic implications of gender responsibilities are profound, contributing to disparities in educational attainment, economic opportunities, and access to healthcare. Analyzing the socioeconomic aspects of gender roles provides valuable insights into the structural barriers that may hinder community development. Understanding these implications is essential for nursing professionals seeking to address the root causes of health disparities within communities.

Intersectionality and Diversity: An exploration of gender responsibilities should also consider the intersectionality of identities, recognizing that individuals experience overlapping and intersecting forms of privilege and discrimination. This section discusses how factors such as race, ethnicity, socioeconomic status, and sexual orientation intersect with gender roles, influencing community



development. Recognizing this diversity is crucial for nursing professionals in tailoring interventions that are inclusive and culturally competent.

Community Empowerment Strategies: Empowering communities involves strategies that acknowledge and challenge traditional gender responsibilities. This section explores community engagement approaches that promote inclusivity and participation. Nursing professionals can play a pivotal role in facilitating community empowerment by fostering collaboration, amplifying marginalized voices, and promoting gender equity within healthcare initiatives.

IMPACT ON NURSING PRACTICE

Gender responsibilities significantly impact nursing practice, shaping the nature of healthcare delivery and the challenges faced by nursing professionals. This section explores the direct and indirect ways in which gender roles influence nursing practice, emphasizing the need for a gender-sensitive approach in healthcare.

Gender-Sensitive Healthcare Delivery: Nursing professionals are at the forefront of healthcare delivery, interacting directly with individuals and communities. This subsection discusses the importance of adopting a gender-sensitive approach in nursing practice, considering the unique healthcare needs influenced by gender responsibilities. Integrating gender sensitivity into healthcare delivery enhances the quality and effectiveness of nursing interventions.

Training and Education: Ensuring that nursing professionals are equipped with the knowledge and skills to navigate gender-related challenges is crucial for effective healthcare delivery. This section discusses the importance of integrating gender-sensitive training into nursing education programs, emphasizing the need for ongoing professional development. By enhancing the cultural competency of nursing professionals, healthcare systems can better address the diverse needs of communities.

Advocacy and Policy: Nursing professionals, as advocates for their patients and communities, can contribute to shaping policies that address gender-related health disparities. This subsection explores the role of nursing advocacy in influencing healthcare policies that promote gender equity. By actively participating in policy development, nursing professionals can contribute to systemic changes that address the root causes of gender-related health disparities.

GENDER-SENSITIVE HEALTHCARE

Gender-sensitive healthcare involves recognizing and responding to the specific healthcare needs influenced by gender responsibilities. This section explores the principles of gender-sensitive healthcare and discusses how nursing professionals can integrate these principles into their practice to promote more equitable and inclusive healthcare outcomes.

Addressing Social Determinants of Health: Gender roles are interconnected with social determinants of health, influencing factors such as access to education, employment opportunities, and socioeconomic status. This subsection discusses how nursing professionals can address these social determinants through targeted interventions that consider the impact of gender responsibilities on health outcomes. By adopting a holistic approach, nursing professionals can contribute to breaking down systemic barriers to healthcare access.

Creating Inclusive Healthcare Spaces: Promoting gender-sensitive healthcare involves creating inclusive healthcare spaces where individuals feel respected and understood. This section explores strategies for nursing professionals to create environments that are sensitive to diverse gender identities and roles. By fostering inclusivity, healthcare settings can become more accessible and welcoming for all community members.

Community Health Education: Educating communities about the influence of gender responsibilities on health is a crucial aspect of gender-sensitive healthcare. This subsection discusses the role of nursing professionals in providing community health education that addresses gender-specific health concerns. By raising awareness and promoting health literacy, nursing professionals can empower communities to actively participate in their healthcare and advocate for their unique needs.

COMMUNITY ENGAGEMENT STRATEGIES

Developing effective community engagement strategies requires an understanding of local gender dynamics. This section explores various strategies that nursing professionals can employ to actively involve community members in healthcare decision-making processes, emphasizing the importance of building trust and fostering collaboration.

Cultural Competence in Nursing Practice: Cultural competence is integral to effective community engagement, and nursing professionals should strive to understand and respect diverse cultural and gender norms. This subsection discusses the significance of cultural competence in nursing practice, highlighting the role of cultural humility in building trust with communities. By



approaching healthcare with sensitivity to cultural and gender diversity, nursing professionals can enhance their ability to engage communities effectively.

Participatory Action Research: Engaging communities in the research process is a powerful strategy for nursing professionals. This section explores the concept of participatory action research as a method for involving community members in identifying health priorities, developing interventions, and evaluating outcomes. By actively involving communities, nursing professionals can ensure that healthcare initiatives are tailored to address the specific needs shaped by gender responsibilities.

Collaboration with Community Leaders: Building partnerships with community leaders is essential for successful community engagement. This subsection discusses the importance of collaborating with local leaders who understand the intricacies of gender responsibilities within their communities. Nursing professionals can leverage these partnerships to gain insights, build trust, and ensure that healthcare initiatives are culturally and gender-appropriate.

CONCLUSION

In conclusion, gender responsibilities within community development exert a profound influence on nursing practice, shaping the way healthcare is delivered and experienced. This article has explored the complexities of gender roles, their impact on community dynamics, and the vital role of nursing professionals in addressing gender-related health disparities. By recognizing and actively responding to gender responsibilities, nursing professionals can contribute to more equitable and inclusive community health outcomes.

Summary of Key Findings: The article summarizes key findings, emphasizing the interconnectedness of gender responsibilities, community development, and nursing practice. It reiterates the importance of adopting a gender-sensitive approach in healthcare to address the diverse needs of communities.

Future Directions: As the field of nursing continues to evolve, future directions should focus on further integrating gender-sensitive principles into nursing education, practice, and research. This subsection discusses potential avenues for future research and initiatives aimed at advancing gender equity in healthcare.

Call to Action: The conclusion ends with a call to action, urging nursing professionals, policymakers, and researchers to prioritize gender-sensitive approaches in community development and healthcare. By working collaboratively, stakeholders can contribute to creating a healthcare landscape that is more responsive to the unique needs shaped by gender responsibilities.

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A MINI-REVIEW ON *Musanga cecropioides* R. Br. ex Tedlie

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ABSTRACT

Musanga cecropioides R. Br. ex Tedlie (family Urticaceae) is a tree distributed across some parts of Africa including Nigeria. Ethnomedicinal surveys of *Musanga cecropioides* implicate that its various parts are used in the management of several health conditions asides the numerous uses reported ethnobotanically. This review was thus aimed at assessing the extent of work done on *Musanga cecropioides* parts scientifically in order to identify the gaps that exist in literature. The review revealed the widespread application of *Musanga cecropioides* parts in the management of cough, diabetes and several other illnesses with little or no scientific work carried out to validate such claims.

KEYWORDS: *Musanga cecropioides*, ethnobotany, ethnomedicine, characteristics and properties.

INTRODUCTION

Traditionally, the use of plants to treat and manage illnesses, diseases, wounds and general wellness dates as far as man begun to dominate the earth as over 90% of traditional medicine recipes and remedies have been known to contain medicinal plants (Sofowora et al., 2013). In Africa, over 80% of the population depends on the use of medicinal plants in meeting their health care needs (Mahomoodally, 2013). This practice has evolved over the years with knowledge acquired from the use of plants, passed on from generation to generation, with some of this knowledge being lost (Oyeyemi et al., 2019). Man's reliance on plants for health care needs has transcended from being an age long tradition in Africa, into being a major influencer of modern medicine globally. The emergence of modern drug development and discovery depends greatly on indigenous knowledge of the use of medicinal plants (Yuan et al., 2016; Oyeyemi et al., 2019). The retrieval of these indigenous knowledge has been made possible by collective efforts of ethnobotanists, anthropologists, botanists, indigenes of communities, traditional medicine practitioners, academic researchers and other individuals or professionals. Ethnobotanical and ethnomedicinal surveys reveal that hundreds of thousands of plant species are used in traditional medicine systems, however, only limited number of plant species have been explored for their phyto-constituents and pharmacological properties in order to elucidate the safety and efficacy of such remedies (Yuan et al. 2016;). This review is aimed at bringing together information on the ethnomedicinal uses of *Musanga cecropioides* available in literature and also scientific works carried out on the different parts of the plant with the purpose of identifying scientific gaps that might exist in the investigation of the different parts of the plant. The data generated in this review was gathered from textbooks, plant database websites, and journal articles.

Taxonomic Classification

Musanga cecropioides R.Br. ex Tedlie is commonly known as Umbrella tree or African corkwood in English, Parasolier or bois bouchon in French, Oghohen in Bini. *Musanga cecropioides* belongs to the family Urticaceae (Global Biodiversity Information Facility GBIF, 2017). *Musanga cecropioides* may be taxonomically classified as follows:

Kingdom: Plantae

Phylum: Tracheophyta

Class: Magnoliopsida

Order: Rosales



Family: Urticaceae

Genus: *Musanga*

Species: *cecropioides*

Musanga cecropioides is reported to have originated from the Democratic Republic of Congo and is also native to Angola, Cameroon, Cote d' Voire, Ethiopia, Ghana, Liberia, Sierra Leon, Sudan, Togo, Uganda and Nigeria (Burkill, 1985). It has been introduced in Madagascar (Todou and Meikeu Kamdem, 2011). *Musanga cecropioides* are usually fast growing pioneer species of secondary forests (Letouzey, 1985; Sonké, 1998; Betti, 2004). Figure 1 shows the distribution of *Musanga cecropioides* in Africa.

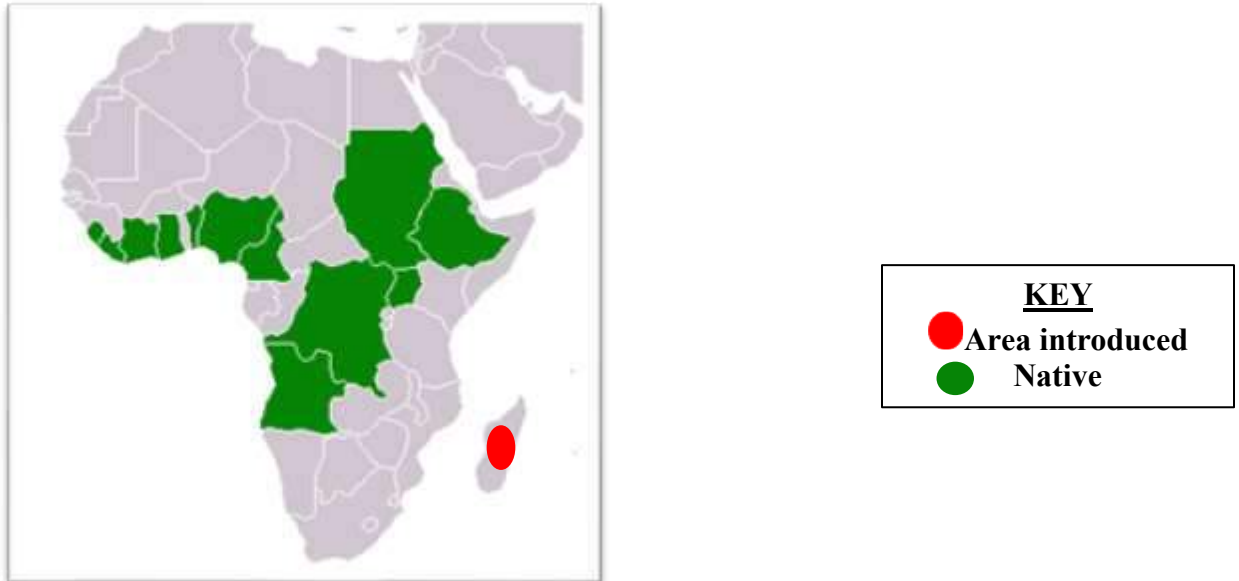


Figure 1: Map of Africa showing the distribution of *Musanga cecropioides* (Plantspedia, 2017)

Botanical Description of *Musanga cecropioides*

Musanga cecropioides is a deciduous, dioecious tree which grows up to the height of 30 m. The trunk is often branchless for up to 15 m of its height with a diameter of about 120 cm, usually with well-developed stilt roots. The leaf is digitately divided into 12-18 spreading segments which are entire, narrow and shortly acuminate and cuneate at the apex and base respectively with petiole of about 110 cm in length. The stipules are hairy and large (7–30 cm long), fused and completely embracing the stem. Flowers unisexual, sessile or with short pedicel. Fruit is yellowish green and succulent (Kadiri and Ajayi, 2009).

Uses of *Musanga cecropioides*

Musanga cecropioides is a pioneer specie and with good forest regeneration properties. It is used as a shade or ornamental tree. The wood and bark are used in construction of some house hold furniture and furniture materials like particle boards and plywood, utensils, sporting goods, rope, paper, crates, musical instruments, toys, fishing equipment and industrial insulation while the boles are made into palm-wine bowls and thin split boards. The wood ash is used in soap making and as vegetable salt. The bark can also be in palm wine preparation as an intoxicant and the stem sap has been used to prepare ink. Edible caterpillars are also collected from the leaves. The flowers also play an important role in pollination while the fruit may be edible and serves as food for some animals (Astaras et al., 2008; Orwa et al., 2009; Todou and Meikeu Kamdem, 2011; Essien et al., 2012).

Ethno Medicinal Uses

Musanga cecropioides is an important medicinal plant as most of its parts are used in traditional medicine in Nigeria, Cameroun and other countries in Africa. The stipules are used to stimulate menstrual flow, induce childbirth, to treat stomach related issues, hiccough and wounds. The leaves are used to manage hypertension, gonorrhoea, cough and in the preparation of vaginal wash to manage painful menstruation (Bouquet, 1969; Burkill, 1985; Ayinde et al., 2003; Orwa et al., 2009; Todou and Meikeu Kamdem, 2011).

A decoction of inflorescence is used to ease labour (Todou and Meikeu Kamdem, 2011). The stem bark decoctions are also useful in the treatment of cough, hypertension, constipation, labour pain, schizophrenia, diabetes, anthelmintic, tuberculosis (in polyherbal formulations), skin diseases and toothache. The bark is used to correct and treat stiffness, lumbago, fever, jaundice, chest pains,



diarrhoea, gastrointestinal disorders and liver diseases (Ayitey-Smith, 1989; Orwa et al., 2009; Adeneye, 2009; Todou and Meikeu Kamdem, 2011; Mabeku et al., 2011).

Stem sap is used to stimulate breast milk production and to ease menstrual cramps (Orwa et al., 2009; Todou and Meikeu Kamdem, 2011). The root bark and kolanut are eaten together to cure cough. Root decoction or infusion is used as anthelmintic (Gill, 1992; Adeneye, 2009; Orwa et al., 2009). Root sap is used to manage and cure diarrhoea, gonorrhoea, vaginal candidiasis, pulmonary complaints, treatment of upper respiratory tract infection (cough), trypanosomiasis, treatment of dirty wounds and skin diseases, otitis, rheumatism, epilepsy, oedema, and in childbirth. It is also used to cure conjunctivitis, headache and as a laxative (Idu et al., 2009; Todou and Meikeu Kamdem, 2011; Isaac, 2012; Uwah et al., 2013). Dike et al., 2012 reported that *Musanga cecropioides* is used to treat malaria, leprosy, as anticonvulsant and anthelmintic, but the various parts used were not specified.

Scientific Studies - Pharmacological reports

Some scientific studies have been carried out on different parts of *Musanga cecropioides*. Ayinde et al. (2006) reported the positive oxytocic effect of *Musanga cecropioides* stem bark aqueous extract, while the uterotonic effect of the leaves was observed by Kamanyi et al. (1992).

The positive hypotensive activity of the crude stem sap, aqueous leaf extract and aqueous stem bark extract have been reported (Kamanyi et al., 1996; Dongmo et al., 1996; Adeneye et al., 2006b; Senjobi et al., 2012; Ajagbonna et al., 2015). Mabeku et al. (2011) reported the antimicrobial activities of different extracts of the stem bark while Uwah et al. (2013) reported the antimicrobial activity of the crude root sap.

Ethanol leaf extract have shown anti-inflammatory activity (Sowemimo et al., 2015) while analgesic activity have been reported with both aqueous and ethanol leaf extracts (Aziba and Gbile, 2000; Senjobi et al., 2012; Sowemimo et al., 2015). Anti-hyperglycemic activity of water, ethanol, water-ethanol extracts of *Musanga cecropioides* stem bark was also recorded (Adeneye et al., 2007; Nyunai et al. 2016). *Musanga cecropioides* crude stem sap was also reported to increase urinary output and sodium excretion in a diuretic study using normotensive Sprague Dawely rats (Ajagbonna et al., 2015). The aqueous extract of the leaves revealed vasodilatory activities (Kamanyi et al., 1991; Aziba, 2005), while the aqueous extract of the stem bark revealed hepatoprotective activities (Adeneye, 2009).

To elucidate the safety of the plant, toxicity studies were carried out on the crude stem sap (Ajagbonna et al., 2015) and aqueous extract of the stem bark (Adeneye et al., 2006a), with no mortality reported in both studies. While Kadiri and Ajayi (2009) carried out anatomical studies on the leaf and petiole of *Musanga cecropioides*.

Microbial and physicochemical studies of *Musanga cecropioides* crude root sap was done by Isaac (2012), in an attempt to determine the portability of the sap used locally in Akwa Ibom state. The study revealed the presence of minerals and heavy metals in acceptable limits and also three pathogenic microorganisms which could be gotten rid of by boiling.

The antioxidant activity of *Musanga cecropioides* leaves and stem bark was investigated using the DPPH radical scavenging assay, the result revealed antioxidant activity comparable to vitamin C which was used as the standard drug (Tchouya and Nantia, 2015; Nyunai et al. 2016).

In reporting the scientific studies carried out on the various parts of *Musanga cecropioides* to elucidate the pharmacological activities of the plant, there is an observed gap as several of the ethnomedicinal uses reported have not yet been validated scientifically.

Phytochemistry

Phytochemicals are biologically active compounds available in the various parts of plants and show therapeutic effects against a number of diseases including asthma, arthritis, cancer and diabetes (Saxena *et al.*, 2013; Banu and Cathrine, 2015). The beneficial physiological and therapeutic effects of plant materials typically results from the combinations of the phytochemicals present in the plant. Several phytochemical compounds have been identified in different plants, some of which are broadly grouped as alkaloids, tannins, saponins, flavonoids, phenols and terpenoids. In elucidating the efficacy of medicinal plants, it is expedient to identify the phytochemicals present in the plant materials. The phytochemicals identified in *Musanga cecropioides* parts are given below.

1. **Stem bark:** alkaloids, phenolic compounds, catechic tanins, flavonoids (or bioflavonoids), triterpenes, sterols, coumarins, tannins (gallic), free and bound anthraquinone, saponin and cardiac glycosides have been identified in methanol, water/ethanol, ethanol and water extracts (Adeneye et al., 2006a; Kadiri and Ajayi, 2009; Mabeku et al., 2011; Tchouya and Nantia, 2015; Nyunai et al., 2016).



3,4-dihydroxybenzoic (Protocatechuic acid) and 3,4-dihydroxybenzaldehyde acid (Protocatechualdehyde) have also been isolated from phenols present in the stem bark of *Musanga cecropioides* (Ayinde et al., 2007). While methyl kalaate (Kalaic acid), methyl oleanolate, methyl ursolate and 1, 2, methyl pomolate have been isolated from saponin present in the stem bark of *Musanga cecropioides* (Lontsi et al., 1998a).

2. **Adventitious root sap:** total oxalate, soluble oxalate, tannin, saponin have been identified in crude adventitious root sap of *Musanga cecropioides* (Uwah et al., 2013).

3. **Stem sap:** Alkaloids, tannins, cardiac glycosides, flavonoids, anthraquinones, phlobatannins, anthocyanosides, saponins, cyanogenic glycosides and reducing sugar have been identified in the crude stem sap of *Musanga cecropioides* (Ajagbonna et al., 2015).

4. **Leaves:** coumarins, flavonoids, phenols, triterpenes, tannins (gallic), alkaloids, free and bound anthraquinone, saponin and cardiac glycosides have been identified in water/ethanol and ethanol extracts of *Musanga cecropioides* leaves (Kadiri and Ajayi, 2009; Tchouya and Nantia, 2015).

5. **Root:** 2 α .11 α -diacetoxy-3 β , 19 α -dihydroxyurs-12-en-28-oic acid, methyl tormentate, methyl 2-acetyl tormentate 28-glucosyl tormentate, methyl pomolate, methyl musangicate, euscaphate, Musancropic acids A and B and cecropiacic acid, have been isolated from triterpene found present in the root of *Musanga cecropioides* (Lontsi et al., 1991a; Lontsi et al., 1991b; Lontsi et al., 1992; Lontsi et al., 1998b).

Mineral Elements Present

Minerals elements are inorganic substances required by the body in small amounts for a variety of functions. They are components of enzyme systems and are essential for nervous system function. The body requires different amounts of each mineral and imbalance or deficiency of these elements have been linked to metabolic abnormalities and diseases. Plants are known sources of the mineral elements, it is also important to determine the concentration of heavy metals

The studies on the elemental composition of *Musanga cecropioides* root sap indicated the present of important mineral elements (Calcium, Phosphorus, Magnesium, Potassium, Sodium, Zinc, Iron, Copper and Manganese) in appreciable quantities and also the low concentration of toxic heavy metals such as Cadmium, Lead, Nickel, Mercury, Chromium, Vanadium (Isaac, 2012; Uwah et al., 2013). However, the other parts of *Musanga cecropioides* need to be evaluated for mineral element composition.

Further Research Areas Recommended by Previous Authors

Several recommendations have been made by few researchers with regards to exploring the pharmacological potentials of *Musanga cecropioides*. Pharmacological activities recommended for further research include antioxidant activities, hypoglycemic activity, hepatoprotective principle, adrenergic and analgesic effects (Aziba and Gbile, 2000; Adeneye, 2009; Senjobi et al., 2012; Nyunai et al., 2016). To better ascertain the phytochemicals responsible for each pharmacological activity, the need for isolation, identification and purification of phytochemical compounds have suggested (Adeneye, 2009; Senjobi et al., 2012; Nyunai et al., 2016). Also, Adeneye et al. (2006b) further suggested that studies are carried out on the phytochemical and elemental constituents of the stem bark as well as the toxicity.

The contributions of identified authors have been summarized in this review article, however, there seems to be a dire need for more studies to be carried out on this plant. For example, none of the reported ethnomedicinal uses of the flowers, stipules, fruit and root have been investigated in order to determine the efficacy. Bioactive components of some parts reportedly used ethnomedicinally have also not been investigated. It is recommended that future studies should target exploring the wound healing, antimicrobial, antiviral, antidiabetic, antitussive, anti-asthmatic, antidiarrheal, anthelmintic, antimalarial and anticonvulsant properties of *Musanga cecropioides* parts. The toxicity profile of the plant should also be well documented. Detailed phytochemical studies and nutrient profiling should also be carried out using modern techniques such as Gas chromatography-mass spectroscopy and High Performance Liquid Chromatography.

CONCLUSION

Musanga cecropioides is a plant species of immense phytomedicinal and economic potential, however, most of the ethnomedicinal claims outlined in various publications have not been scientifically validated. This review focused on exploring what has been done on this valuable plant and exposing the gaps in scientific evaluation of the plant that needs to be filled. Subsequent research works would be targeted at validating the ethnomedicinal claims associated with this plant.



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MEDICINAL PLANT REVIEW: *Katuki (Picrorhiza kurroa Royle ex. Benth)*

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ABSTRACT

Throughout human history, plants have played a significant role in medical treatments, and traditional medicine continues to be widely practiced today [1]. Countries like India and China have a strong emphasis on their traditional systems of medicine, and their respective governments take necessary measures to support these practices. The World Health Organization estimates that traditional medicine serves as the primary healthcare for approximately 80% of the global population. One of the main reasons for this is the low cost of herbal medicines compared to modern pharmaceuticals, as they can be grown from seeds or sourced from nature at minimal or no expense. In Ayurvedic medicine, *Katuki (Picrorhiza kurroa Royle ex Benth)* is a highly popular hepatoprotective drug. It is primarily used for treating hepatic disorders but also known for its anti-inflammatory, anti-microbial, anti-diabetic, immunomodulatory, anti-asthmatic, and weight management properties. The plant's bioactive compounds, such as iridoids, cucurbitacin, and acetophenones, are considered to be the most important. This review aims to provide a comprehensive overview of the herb, including information from various *Samhitas* (ancient Ayurvedic texts) and its study in modern areas.

KEYWORDS: *Katuki*; *Picrorhiza kurroa*; Habitat; Morphology

INTRODUCTION

Katuki, also known as *Picrorhiza*, is a well-known herb that exhibits hepatoprotective properties and a wide range of pharmacological activities. It is effective in removing excessive fire energy from the body, making it a cooling agent. By balancing pitta and *Kapha*, it aids in preventing acidity, digestive issues, and fat accumulation. Furthermore, *Katuki* improves digestion and facilitates the metabolism of carbohydrates, proteins, and fats. Enhanced metabolism assists in managing various conditions such as elevated levels of urea, creatinine, diabetes, heat, and hyperthyroidism. It is worth noting that this medicinal herb has been used for therapeutic purposes for over 5000 years.

HABITAT

The stems and the conical buds along with the drugs usually form a part of the drug itself¹. The rhizome of this perennial herb is long, externally grayish-brown, surface rough due to longitudinal wrinkles & Taste is bitter². Rhizomes are jointed and zigzag, cylindrical, irregularly curved with branching and rooting at the jointed nodes³. The roots are invariably wrinkled in the longitudinal fashion having transverse cracks. They are grayish to brown in appearance, while the fracture is tough¹. Root stacks are irregularly curved as thick as the little finger^{4,5}. Leaves are basal and alternate with terminal spikes present in this species. They are of 5-10 cm in length^{2,5}. 9-10 mm long, 4-lobed, and bilabiate; stamens slightly di-dynamous almost equaling corolla². Stem is small, weak, creeping, erect at flowering, leafy, and slightly hairy³

REVIEW OF LITERATURE

Katuki is known in *Ayurveda* as '*Katuka*'. In several *Nighantus* and *Samhitas*, the synonym and the properties of *Katuka* are mentioned. In '*Vedas*' there is no written description is given. Following is an overview of some representative sources in which *Katuka* is described. From various *Ayurvedic* literatures starting from *Samhitas* to *Nighantus* we get the various description of the plant *Katuki*. Even we can find the scattered references in the classics like *Charaka Samhita*⁶, *Sushruta Samhita*⁷, *Astang Samgraha*⁸, *Dhavantari Nighantu*⁹. In *Dhavantari Nighantu* various synonyms of *Katuka* is mentioned like *Matsyaskala*, *Katuka*, *Tikta*, *Chakrangi*, *Asokarohini*, *Tiktakarohini*, *Arista*, *Janani*. Here also the properties of *Katuka* is been mentioned like *Tikta*, *Katu*, *Pittajit*. *Katuka* conquers cold, blood and burning sensation, destroys *Kapha* and overcomes digestion of food and removes remittent fever (*Visamajvaranasini*). List of formulation mentioned in *Sarangadhara Samhita*¹⁰ where *Katuki* is one of the main ingredient.



NIGHANTU

BHAVAPRAKASHA NIGHANTU: Different synonyms like *Katvi*, *Tikta*, *Asoka*, *Katuka*, *Katambhara*, *Rohini* and *Katurohini* are mentioned. *Rasa* of *Katuka* is *Tikta*. *Guna* is *Rukshma*, *Sheet*, *Laghu*. *Vipak* of *Katuka* is *Katu* and it works as *Agnidipak* and the other indications of *Katuka* are *Pittajwar*, *Prameha*, *Swash*, *Sasa*, *Rakta Dosha*, *Daha*, *Kustha*, *Kriminasak*¹¹.

RAJ NIGHANTU: *Ras* of *Katuki* is *Katu*; *Veerya* is *Sheeta* and well known for the disease like *Jwar*, *Swasa*, *Kaphaja Vikara*, *Rajyakshma*, *Ruchya Bardhak*¹²

NIGHANTU ADARSA: In this text we found the drug is called as '*Katuki*' or '*Kutki*', also the synonyms and '*Nirukti*' for the plants are mentioned. With this distribution, description and *Upayog* of the drug is also mentioned. Most importantly the main part of use is also described as root (*Mool*) and also it has been confirmed that though it is supposed that *Gentiana kurroo* (*Trayaman*) and *Picrorhiza kurroa* are same but they are different from each other¹³.

SYNONYMS¹⁴ :-

- *Katuka*, *Tikta*, *Katurohini*
- *Matsyashakla*
- *Chakrangi*, *Krishna*, *Shat parva*
- *Kaandrooha*

VERNACULAR NAME¹⁵ :-

Language	Name
Sanskrit	Katuka, Tikta, Katurohini,
Hindi	Katuka
Bengali	Kattki
Punjabi	Kaundd
Marathi	Bal kadu, kali katuki
Gujrati	Kadu
Telugu	katukarohini
Tamil	Katukarogini

AYURVEDIC PROPERTIES¹⁴ :-

Rasa	<i>Tikta</i>
Guna	<i>Ruksha</i> , <i>Laghu</i>
Virya	<i>Sheeta</i>
Vipaka	<i>Katu</i>
Karma	<i>Kapha-pittahara</i>

GHANA

CHARAKA: *Bhedaniya*, *Lekheniya*, *Stanyashodhana*, *Tikta skandhas*¹⁶

SUSHRUTA: *Patolyadi*, *Pippalyadi*, *Mustadi*¹⁷

VAGHBHATA: *Patolyadi*, *Mustadi*, *Pippalyadi*¹⁸

DISTRIBUTION-: This plant is mainly found in the Himalayas, from Kashmir to Sikkim at an elevation of 2,700-4,500 mt. Its rhizome are generally used in the Tibetan & Chinese traditional medicine to treat various ailments like liver disease, fever, asthma, jaundice & also have pharmaceutical values for hepato protective, antiasthma activities^{19, 20, 21}.

CHEMICAL CONSTITUENTS OF KATUKI

The therapeutically potent constituents of the drug essentially comprises of three vital bitter glycosides, namely: Picroside I, Picroside II and Kutkoside. Among them chemically both Picroside and Kutkoside are C-9 monoterpenes. Iridoid glycosides having an epoxy moiety present in the cyclopentane ring. Besides, it also contains organic acids, resin, sugar and tannins along with cucurbitacin glycosides (highly oxygenated triterpenes), apocynin androsin, D-mannitol, Kutkiol, Kutkisterol, Apocyanin, Phenol glucosides, Androsin, and Picein Iridoid glycosides, Kutkin, Picroside I, II, III, IV, V, Kutkoside, Picrorhizin^{2, 4, 22, 23, 24}.



USES OF KATUKI

Medicinal Uses-: *Bhedniya, Dipana, Hridya, Jwaraghna, Shvashara, Kaas hara, Kushtaghna, Kamlahara*²⁵.

Traditional uses-: This plant is used as *Swasa, Daha, Jvara, Kamala, Kustha, and Aruchi*⁴. **PART USED-:** Rhizome¹⁵

DOSE-: 1- 3 gm. of the drug in powder form²³.

IMPORTANT FORMULATION²³-:

Arogyavardhini Gutika is a formulation mainly used for *Pitta Vikar* (disease due to abnormality of *Pitta*) like skin diseases and blood disorders like jaundice, anaemia and useful in poor appetite and one of the major ingredients is *Katuka*.

Tiktaka Ghrita is a formulation mainly used in *Kandu, Meda, Gulma, Grahani and Katuka* is also used to prepare the formulation.

Sarvajvarahara Lauha is an *Ayurvedic* formulation mainly used in *Jirna-Jvara; Pliha-Roga, Yakrit-roga*.

Mahatikataka Ghrita is a formulation found in *Bhaisajya Ratnavali* and used for all chronic skin diseases that are deep in the plasma, blood and muscle tissue with red eruptions and itching. In this formulation one of the main ingredients is *Katuka*.

Therapeutic Uses

- **Hridroga- Katuki** and **Madhuka** are taken with sugar dissolved in water in *Pittaj Hridroga* (*C.S. Ci. 26 & A.H.Ci. 6*)
- **Kushtha- Katuki, Ativisha, Ushira** and **Chandana** are collectively given for internal usage [*C.S.Ci. 7*]

Adulteration -: The stems and roots of the same plant are commonly used to adulterate the rhizomes of *Katuka/katuki*. *Gentiana kurroa* Royle, *Gentiana decumbens* Linn. f., *Gentianatenella* Fries, *Helleboursniger* Linn. are used as substitute for *Katuka*²⁶. Roots of *Picrorhizascrophulariiflora* Pennell, *Actaea spicata*, *Cimicifugafoetida*, *Coptisteeta*, *Cosciniunfenestratum*, *Swertia chirayita* are sold in the drug market under the name *Katuki* or *Karu*²⁷. Roots of *Lagotis glauca* Gaertn. are sometimes intentionally collected and mixed by the local sellers of Kashmir and Kullu regions²⁸.

Pharmacological studies

Anti-asthmatic activity: *P.kurroa* has been studied extensively for its anti-asthmatic activity. The crude extract of *P.kurroa* roots reduced the frequency and severity of asthmatic attacks and the need for regular bronchodilators. The activity has been attributed to compounds such as androsin and apocynin, which have been shown to inhibit allergen and PAF- induced bronchoconstriction²⁹.

Digestive activity: *Picrorhiza* is used in India for the people with constipation due to insufficient digestive secretions²⁹.

Anti-diabetic activity: Extract of *Picrorhiza* was found to lower blood glucose in laboratory animals. Chronic administration of the extract significantly reduced blood sugar in alloxan-induced diabetic rats for 10 days. The extract was also found to reduce the increased blood urea nitrogen & serum lipid peroxides in alloxan-induced diabetic animals and to inhibit the body weight reduction and leukopenia induced by alloxan administration²⁹.

Hypolipemic activity: A hypolipemic effect of the water extract of *Picrorhiza kurroa* was observed in a high fat diet feeding hyperlipemic mouse at doses of 50, 100 and 200 mg/kg, orally, once a day for 12 weeks. Liver weight, serum aspartate transferase (AST), alanine transferase (ALT), low density lipoprotein (LDL), triglyceride and total cholesterol levels were significantly reduced by the treatment. On the contrary, serum HDL level seems not affected by *P. kurroa* water extract³⁰.

Anti-inflammatory activity: Apocynin is a constituent of root extracts of *Picrorhiza* and has been reported to possess anti-inflammatory properties in laboratory animals. Apocynin concentration dependently inhibited the formation of thromboxane A₂, whereas the release of prostaglandins E₂ and F_{2α} was stimulated. Apocynin inhibited arachidonic acid-induced aggregation of bovine platelets, possibly through inhibition of thromboxane formation²⁹.

The rhizome of *Picrorhiza scrophulariiflora* is used to treat inflammatory diseases as a traditional medication. The ethanol extract of *Picrorhiza scrophulariiflora* in rabbits improves accelerated atherosclerosis through inhibition of redox-sensitive inflammation³¹.

Hepatoprotective activity: Alcoholic extract of the plant and kutkin possess hepatoprotective activity. Plant is a potent immunostimulant of both cell mediated and hormonal immunity and exhibits choleric activity in dogs. *Picrorhiza kurroa* is also beneficial in the management of bronchial-asthma²⁹. The hepato-protective effect of *Picrorhiza kurroa* roots have been shown in diverse models of liver injury. The crude extract, and the isolated active principles of the roots have been shown to protect the liver from various types of drug-induced injury isolated compounds from *P. kurroa* have also been shown to have hepatoprotective



activity²⁹. Non-alcoholic fatty liver disease (NAFLD) in rats was cured by giving standard hydro-alcoholic extracts of picrorhiza kurroa. It reduced the lipid content of liver significantly at the dose of 400mg/kg³².

CONCLUSION

Katuki has been one of the important sources of *Ayurvedic* medicine as well as modern medicine. Although it's majorly used for liver disorders, but its active components present in various parts of plant are providing relief and saving millions of life from the very ancient time. Due to wide spectrum of biological activities this plant is widely used in drug industries. Iridoids present in it is also widely known for antitumor, choleric, hypolipidemic, antiphosphodiesterase, cardioprotective, neuritogenic, molluscicidal and leishmanicidal activities³³.

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KNOWLEDGE OF MOBILE LEARNING AMONG STUDENT-TEACHERS

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ABSTRACT

The global COVID-19 pandemic has brought about unprecedented times, and the education sector has been impacted just like other industries. Numerous educational institutions have closed or halted their traditional in-person classroom operations. The practice of teaching and learning has shifted to an online format known as "e-learning," which is a web-based digital system that uses cutting-edge information and communication technology to create interactive, learner-centered learning environments.

In this study, purposive sampling techniques were used to collect data from the population of student teachers (Male and Female). The major findings displayed that there was a moderate level of knowledge of mobile learning among student teachers. It indicated that mobile learning is essential for today's technological world for the teaching-learning process. So, the government and educational policymakers plan to take necessary action to incorporate online learning management systems for teaching-learning purposes.

INTRODUCTION

The instructor used to be the only source of knowledge. But, as of late, the curriculum, the teacher, and the student work together as a cohesive entity. The success of the educational process depends on this unit. As a result, the quality of the educational process is adversely affected by any weak or weak component. To fulfill the diverse requirements of pupils, teachers must employ a variety of instructional strategies in their new job. The instructor should also implement student-centered activities and real-world applications to help the pupils connect with their environment.

Digital technologies have replaced physical settings for student learning. To uncover insights about individual learning patterns and to provide a personalized and equitable learning experience that guarantees no student is left behind, administrators and institutions across schools, vocational training centers, and higher education institutions are turning to effective analytical methods as a result of increased learning data collection. There is a great deal of promise in AI and ML to help India overcome some of the major obstacles it confronts in reaching the SDGs. Growing numbers of people are subscribing to online learning, and they are moving away from Netflix and toward Google Maps. In the first case, data is analyzed to suggest products that other customers who are similar to you may have bought; in the second case, the platform offers a customized route based on the user's present location, the preferred mode of transportation, and the intended destination. With this method, students can have access to tailored learning pathways based on their unique interests, weaknesses, and above all qualities.

The concepts and methods of what has become known as "mobile learning" originated at the turn of the century, with a small group of researchers, developers, activists, and practitioners, as well as a few colleges and organizations. A few years later, as mobile phones gained power, functionality, coverage, and ownership, they became very appealing to international agencies, humanitarian foundations, policymakers, program managers, and workers in the global south who wanted to provide resources and educational opportunities to people, communities, and regions. The last part is a collection of freely available materials, some of which are especially pertinent to global learning. The expanding body of research on mobile learning, the increasing number of researchers focusing on this topic, and the appealing and safe potential of mobile learning point to the necessity for further study to support policy, capacity building, and raising awareness as well as any future investments.



Online learning is being used by educational institutions as a way to distribute course content. Educational institutions are increasingly sending students data, materials, or learning content via the Internet. It must be believed that there are considerable advantages to embracing online learning for educational institutions to take a big step forward. It was also discovered that educational colleges particularly need the availability of high-caliber online professors. Technological developments give at-risk students multiple ways to study and assess what they have learned, as well as numerous chances to obtain credit and graduate on schedule. One of the main ways that current online learning programs diverge from traditional schooling is the number of pupils they serve. Students of various ages, skill levels, and educational backgrounds can benefit from online learning programs.

“Mobile devices are widely used in the digital age. Social network sites, which are becoming indispensable with Web 2.0 technologies, facilitate the acceptance of mobile devices by teachers and students. The educational use of mobile devices in and outside of the classroom helps students develop positive attitudes towards courses”. (Özdamar Keskin, 2011). “The use of mobile devices in the learning environments encourages students to participate in learning activities. Therefore, it can be said that mobile devices may become a necessity for students and educators”. (Yılmaz and Akpınar, 2011). “One of the advantages of mobile learning is the ability to provide access to learning contents outside of the course time. Mobile learning management systems might be used to provide this. Additionally, mobile learning contents are produced based on design principles for qualified interactions”. Researchers suggest that the duration of access time should be increased. (Çelik, 2012).

NEED AND SIGNIFICANCE OF THE STUDY

The most reliable cognitive resource created by humans for enlightenment purposes is education. This is true because receiving a high-quality education gives one the tools necessary to comprehend concepts accurately and apply learned knowledge to practical situations. Education's goal has always been to empower people and transfer knowledge and skills, therefore receiving a specific caliber of education is essential.

The greater use of the Internet in educational applications in this new trend era may indicate a rise in the use of technology by educators and students in open and flexible learning environments. Technology is essential to the development and improvement of our educational system. It is necessary to investigate both the anticipated and unexpected effects of utilizing mobile learning strategies for teacher professional development. Both teachers and students need to be able to use various mobile teaching tools with specific skills and abilities. As a result, we must get students ready for the era of mobile learning technologies. Due to the unique circumstances created by the global COVID-19 pandemic, numerous educational institutions have ceased operations and halted regular in-person classroom instruction. This layout of mobile learning strategies aids in the future development and successful use of e-learning methodologies. Certain e-learning competencies, along with the emerging trend in mobile learning capabilities through the use of various mobile learning technologies, are required on an individual basis and will be supervised by both teachers and students.

The investigator's primary goal is to ascertain the kind of issues that student-teachers encounter when attempting to teach online and how to integrate mobile learning with authentic online resources for students in the classroom from home and in everyday life. Additionally to comprehend the issues with their pedagogical approaches and to discover how to apply learning outcomes strategies to make use of online learning activities outside of the classroom. The investigator is aware of the significance of the issues surrounding students' use of mobile devices for learning through both online and in-person classroom settings. They also know how to keep an eye on the students and provide them with ongoing support via online learning environments. Thus, the researcher made an effort to discover more about the survey concerning students' knowledge of mobile learning from colleges of education in the Dindigul District.

OPERATIONAL DEFINITION OF THE KEY TERM

Mobile Learning

Mobile learning, also known as M-learning, is a new way to access learning content using mobile devices. It's possible to learn whenever and wherever you want, as long as you have a modern mobile device connected to the Internet.

RESEARCH METHODOLOGY

Method

For the present study, the investigator decided to adopt the descriptive survey method. To accomplish the objectives of the present study, the descriptive survey method was considered appropriate for gathering data about knowledge on mobile learning among student teachers.



Population of the Study

In the present study, student teachers studying bachelor of education courses in colleges of education from the Dindigul district constituted the population of the study.

Sample of the Study

In the present study, the investigator decided to collect data from the Dindigul district. As such 200 student teachers of male and female (100 male and 100 female student teachers) constituted the sample of the present study. As the sample has been selected purposively, it comes under purposive sampling.

Tools Used for the Study

1. Mobile Learning inventory developed and validated by the investigators.

Statistical Techniques Used for the Study

For the present study, the Investigator used the following statistical techniques.

1. Level
2. 't' Test
3. ANOVA

OBJECTIVES OF THE STUDY

The objectives of the study are as follows:

1. To study knowledge on mobile learning among student teachers.
2. To find out if there is any significant difference between male and female student teachers in their knowledge of mobile learning.
3. To find out if there is any significant difference between married and unmarried student teachers in their knowledge of mobile learning.
4. To find out if there is any significant difference among student teachers' parental education in their knowledge of mobile learning.
5. To find out if there is any significant difference among student teachers having the age of below 25 years, 26-30 years, and 31 years and above in their knowledge of mobile learning.
6. To find out if there is any significant difference between co-education and women college student teachers in their knowledge of mobile learning.
7. To find out if there is any significant difference between rural and urban student teachers in their knowledge of mobile learning.

HYPOTHESES OF THE STUDY

The hypotheses of the study are as follows:

1. There is no significant difference between male and female student teachers in their knowledge of mobile learning.
2. There is no significant difference between married and unmarried student teachers in their knowledge of mobile learning.
3. There is no significant difference among student teachers' parental education in their knowledge of mobile learning.
4. There is no significant difference among student teachers having the age of below 25 years, 26-30 years, and 31 years and above in their knowledge of mobile learning.
5. There is no significant difference between co-education and women college student teachers in their knowledge of mobile learning.
6. There is no significant difference between rural and urban student teachers in their knowledge of mobile learning.



ANALYSIS OF THE STUDY

Percentage Analysis

Table-1
Level of Knowledge of Mobile Learning of Student Teachers

Variable	Low		Moderate		High	
	N	%	N	%	N	%
Knowledge of Mobile Learning	38	27.8	138	51.7	24	20.5

It is inferred from Table 4.2.1 that 27.8% of student teachers have low, 51.7% of them have moderate and 20.5% of them have high levels of knowledge of mobile learning.

Differential Analysis

Null Hypothesis - 1

There is no significant difference between male and female student teachers in their knowledge of mobile learning.

Table – 2
Mean Score Difference between Male and Female Student Teachers in their Knowledge of Mobile Learning

Variable	Gender	Mean	SD	't' value	Remarks at 5% Level
Knowledge of Mobile Learning	Men	102.18	9.65	3.52	Significance
	Women	97.53	7.73		

(At 5% level of significance, the table value is 1.96)

The above table shows that there is a significant difference between male and female student teachers in their knowledge of mobile learning as the calculated 't' value of 3.52 is greater than the table value of 1.96 at a 5% level of significance. While comparing the mean scores, male student teachers are higher in their knowledge of mobile learning than female student teachers. Hence the null hypothesis is rejected.

Null Hypothesis - 2

There is no significant difference between married and unmarried student teachers in their knowledge of mobile learning.

Table – 3
Mean Score Difference between Married and Unmarried Student Teachers in Their Knowledge of Mobile Learning

Variable	Marital Status	Mean	SD	't' value	Remarks at 5% Level
Knowledge of Mobile Learning	Married	104.63	10.58	2.73	Significance
	Unmarried	98.42	8.20		

(At 5% level of significance, the table value is 1.96)

The above table shows that there is a significant difference between married and unmarried student teachers in their knowledge of mobile learning as the calculated 't' value of 2.73 is greater than the table value of 1.96 at a 5% level of significance. While comparing the mean scores, married student teachers are higher in their knowledge of mobile learning than unmarried teachers. Hence the null hypothesis is rejected.

Null Hypothesis - 3

There is no significant difference among student teachers' parental education in their knowledge of mobile learning.

Table - 4
Differences among Student Teachers Having Illiterate, School Education, and Higher Education Parents in their Knowledge of Mobile Learning

Variable	Source of Variation	Sum of Square	Mean Square	Calculated 'F' Value	Remarks at 5% level
Knowledge of Mobile Learning	Between	318.941	156.471	8.46	Significance
	Within	10641.004	10.666		

(At a 5% level of Significance, for the df (197) the table value of 'F' is 3.00)



It is understood that there was a significant difference among student teachers having illiterate, school education and higher education studied parents in their knowledge of mobile learning as the calculated 'F' value of 8.46 was greater than the table value of 3.00 at a 5% level of significance. Hence the null hypothesis was rejected.

Null Hypothesis - 4

There is no significant difference among student teachers having the age of below 25 years, 26-30 years, and 31 years and above in their knowledge of mobile learning.

Table - 5

Differences among Student Teachers Having the Age of Below 25 Years, 26-30 Years, and 31 Years and Above in their Knowledge of Mobile Learning

Variable	Source of Variation	Sum of Square	Mean Square	Calculated 'F' Value	Remarks at 5% level
Knowledge of Mobile Learning	Between	104.460	121.980	5.29	Significance
	Within	10148.230	49.861		

(At a 5% level of Significance, for the df (197) the table value of 'F' is 3.00)

It is understood that there was a significant difference among student teachers aged below 25 years, 26-30 years, and 31 years and above in their knowledge of mobile learning as the calculated 'F' value of 5.29 was greater than the table value of 3.00 at 5% level of significance. Hence the null hypothesis was rejected.

Null Hypothesis - 5

There is no significant difference between co-education and women college student teachers in their knowledge of mobile learning.

Table – 6

Mean Score Difference between Co-education and Women College Student Teachers in Their Knowledge of Mobile Learning

Variable	Type of College	Mean	SD	t value	Remarks at 5% Level
Knowledge of Mobile Learning	Co-Education	100.58	9.82	3.82	Significance
	Women	107.36	10.43		

(At 5% level of significance, the table value is 1.96)

The above table shows that there is a significant difference between co-education and women college student teachers in their knowledge of mobile learning as the calculated 't' value of 3.82 is greater than the table value of 1.96 at a 5% level of significance. While comparing the mean scores, student teachers of women's colleges are higher in their knowledge of mobile learning than co-education college student teachers. Hence the null hypothesis is rejected.

Null Hypothesis - 6

There is no significant difference between rural and urban student teachers in their knowledge of mobile learning.

Table – 7

Mean Score Difference between Rural and Urban Student Teachers in their Knowledge of Mobile Learning

Variable	Locality of the School	Mean	SD	't' value	Remarks at 5% Level
Knowledge of Mobile Learning	Rural	99.49	10.63	2.99	Significance
	Urban	103.56	12.27		

(At 5% level of significance, the table value is 1.96)

The above table shows that there is no significant difference between rural and urban student teachers in their knowledge of mobile learning as the calculated 't' value of 2.99 is greater than the table value of 1.96 at a 5% level of significance. While comparing the mean scores, urban student teachers are higher in their knowledge of mobile learning than rural student teachers. Hence the null hypothesis is rejected.

MAJOR FINDINGS OF THE STUDY

1. The knowledge of mobile learning is moderate and above.



2. There is a significant difference between male and female student teachers in their knowledge of mobile learning.
3. There is a significant difference between married and unmarried student teachers in their knowledge of mobile learning.
4. There is a significant difference among student teachers having illiterate, school education and higher education studied parents in their knowledge of mobile learning.
5. There is a significant difference among student teachers having the ages below 25 years, 26-30 years, and 31 years and above in their knowledge of mobile learning.
6. There is a significant difference between co-education and women college student teachers in their knowledge of mobile learning.
7. There is a significant difference between rural and urban student teachers in their knowledge of mobile learning.

CONCLUSION

Based on the above findings, the following ends have been drawn by the investigators; The results show that the mobile learning knowledge of student teachers is at a moderate level. Through the use of mobile learning techniques, students can now take part in global learning community activities. Through cooperative activities and information sharing, they can engage in virtual learning communities and learn jointly. The teaching and learning process is facilitated more effectively by mobile learning technologies. To comply with international standards, mobile learning involves reorganizing the teaching-learning process at the external layer.

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FINE NEEDLE ASPIRATION BIOPSY OF THE THYROID GLAND

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SUMMARY

The article discusses the diagnostic capabilities of fine-needle aspiration biopsy (FNA) for the detection of malignant tumors of the thyroid gland. A central place in diagnosis is occupied by fine-needle aspiration biopsy, the results of which were the basis for the selection of patients subject to surgical treatment. The results of FNA, indicating the presence of carcinoma or the impossibility of excluding its presence, served as the basis for surgical intervention for the patient.

KEY WORDS: *fine needle aspiration biopsy, histological examination, cytological examination.*

RELEVANCE

Recently, in the structure of endocrine diseases, the number of different variants of thyroid gland (thyroid) pathology has been growing, which is associated with endemic goiter, environmental problems and weakening of the preventive direction in medicine [1-5]. Multinodular euthyroid goiter (MEZ) is a collective clinical concept characterized by the presence in the thyroid tissue of two or more focal formations, which can be located in one or both lobes of the thyroid gland in a euthyroid state. They can be detected by palpation or using ultrasound (US), fine-needle aspiration biopsy (FNA) followed by cytological examination, computed tomography (CT) or magnetic resonance imaging (MRI) [2,3,6-8]. Frequency of MEZ, according to Tsurkan A.Yu. [6], is 56.54%, and Chernikov R.A. [2] gives a figure of 52.68%. It should be noted that the prevalence of this disease in the structure of surgical pathology of the thyroid gland has increased significantly over the past decades and tends to grow [2,5,9]. According to most authors, MEZ is an indication for surgical intervention (hemithyroidectomy, subtotal resection or thyroidectomy) [2,3,9]. However, the question of whether thyroid nodules, which were initially identified by palpation or instrumental methods and confirmed by histological examination during FNA, correspond to the data of postoperative histological examination or not, is still a topic of discussion among researchers [5].

PURPOSE OF THE STUDY

Study based on an assessment of the results of fine-needle aspiration biopsies and verify by histological examination of thyroid gland preparations removed during surgical interventions.

MATERIAL AND RESEARCH METHODS

The work is based on a study of long-term and short-term results of treatment of patients with thyroid cancer in the Andijan branch of the Russian Scientific and Practical Center for Surveillance and Radiotherapy from 2011 to 2021. The duration of the study is limited to 10 years, since about 10 years ago, the branch completely switched to a modern diagnostic algorithm, which includes mandatory fine-needle puncture biopsy for all patients with nodes > 1 cm in size - the "gold standard of diagnosis." This made it possible to significantly increase the number of patients who underwent surgery in the early stages of the disease. All diagnoses were established on the basis of a comprehensive clinical and laboratory examination with mandatory confirmation of the diagnosis by histological examination. The examined group consisted of 197 patients with thyroid cancer aged from 14 to 75 years.

RESULTS

To assess the accuracy of diagnosis using FNA in 197 patients operated on in 2011 - 2021, a comparison was made of the data from the preoperative cytological report and the postoperative histological diagnosis. In 29 (15.3%) patients, papillary carcinoma was suspected. The diagnosis after surgery was confirmed in 57 (43.5%) patients; false positive results were obtained in 74 (56.5%) patients. Among 87 benign cytological findings, subsequent histological examination revealed 8 (2%) cancers. Additional analysis of these observations showed that in 5 cases there were errors by the cytologist when interpreting a cytological smear, in 2 cases the patients had microcarcinomas against the background of colloid goiter, and in one case there was insufficient sampling of material from a patient with a malignant tumor against the background of polynodous goiter. Among 17 patients operated on with a cytological diagnosis of follicular tumor, histological examination revealed papillary carcinomas in 2 (12.4%).

47 patients were diagnosed with "classic" papillary thyroid cancer, 24 patients had the follicular variant of papillary cancer, 2



patients suffered from papillary-trabecular cancer, and in one case there was a sclerosing variant of papillary cancer . In 23 (36.5%) cases, cancer arose against the background of goitrous transformation of the gland, in the remaining 51 (63.5%) against the background of an unchanged gland .

Table 1. Results of cytological diagnosis of operated patients

Number of Operated Patients	Cancer	Sensitivity	Specific Nost	False Negatives	False Positives
197 (100%)	24 (12%)	87.7	84.4	12.3	15.6

Fine-needle aspiration biopsy followed by cytological examination was performed at the preoperative stage in 129 patients with thyroid nodules (Table 2).

Table 2 . Findings from fine-needle aspiration biopsy in patients with thyroid carcinoma.

	Cytological conclusion	Amount of pain nykh
Positive result - 112 (83.5%)	Papillary carcinoma	61 (45.5%)
	Medullary carcinoma	2(1.5%)
	Follicular carcinoma	1 (0.75%)
	Undifferentiated cancer	1 (0.75%)
	Follicular tumor	47 (35%)
False negative result - 16 (12.05%)	Colloid goiter	15(11.3%)
	Autoimmune thyroiditis	I (0.75%)
	Not informative	1 (0.75%)
	Not produced	5 (3.7%)

When considering the results presented in Table 2 , 16 (12%) false-negative cytological responses are noteworthy. Basically, these answers were obtained in the first years of development of fine-needle aspiration biopsy (2016-2017) and were associated with insufficient experience of the team performing FNA and the cytologist . Subsequently, the number of false negative results did not exceed 2% (8 cases of cancer per 408 cytological reports of colloid goiter over the past 4 years).

The data presented in Figure 5 shows the variants of histological subtypes of papillary thyroid cancer that we encountered during our work.

CONCLUSIONS

Thus, a study of 197 fine-needle aspiration biopsies of the thyroid gland followed by histopathological examination showed high sensitivity and specificity of the method in the diagnosis of papillary carcinoma. As can be seen from the above data, there is a significant number of false positive cytologist reports. The reason for this is the insufficiently clear cytological criteria for papillary cancer, in particular, an ambiguous interpretation of the meaning of papillary structures.

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HOLISTIC APPROACH IN LIVER DISEASE THROUGH AYURVEDA AS PRIMARY HEALTH CARE

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ABSTRACT

Introduction- Health care is defined as a multitude of services rendered to individuals, families or communities by the agents of health services, for the purpose of promoting, maintaining, monitoring or restoring health. India is rapidly recognizing liver disease as a priority for Public Health. Because it alone was responsible for 18.3% of the two million deaths caused by liver disease worldwide in 2015, liver disease has a high burden in India.

Aims & Objectives- To improve the quality of life, promotion of healthy lifestyle and prevent progression of diseases.

Discussion- To embed Chronic liver disease management in routine primary care work must be aware of implementation challenges. Approach of many disciplines- nutrition, food technology, health administration, health education etc.

Conclusion- Ayurveda has a remarkable ability to improve public health and stop the global health situation from getting worse.

KEYWORDS: Health care, Liver disease, Healthy lifestyle.

INTRODUCTION

Ayurveda, an ancient Indian system of medicine, has been used for thousands of years to treat various health conditions, including liver diseases. The holistic approach of Ayurveda focuses on the overall health and well-being of an individual, rather than just treating the symptoms of a disease. Ayurvedic practitioners believe that liver diseases are caused by an imbalance of the three doshas (*Vata, Pitta, and Kapha*) in the body. Imbalances in these doshas can lead to the accumulation of toxins in the liver, which can cause liver damage and disease.

Primary health care is essential health care made universally accessible to individuals and acceptable to them, through their full participation and at a cost the community and country can afford. The Liver plays a central role in carbohydrate, lipid and amino acid metabolism, and is also involved in metabolizing drugs and environmental toxins. In UK, liver disease is the only one of the top causes of mortality that is steadily increasing. Mortality rates have risen substantially over the last 30 years, with a near-fivefold increase in liver-related mortality in people younger than 65 years. The liver champion's mandate is to support primary care to work towards better identification of patients at risk of, or in the early stages of liver disease. Increasing sedentary lifestyles and changing dietary patterns mean that the prevalence of obesity and insulin resistance has increased worldwide, and so fat accumulation in liver is a common finding during abnormal imaging studies and on liver biopsy. NAFLD is the leading cause of liver dysfunction in the non-alcoholic, viral hepatitis-negative population in Europe and North America, and is predicted to be the main etiology in patients undergoing liver transplantation during next 5 years. Overall NAFLD is estimated to affect 20-30% of the general population in western countries and 5-18% in Asia, with about 1 in 10 NAFLD cases exhibiting NASHⁱⁱⁱ. Mostly cases of chronic liver disease are preventable and treatable if caught early and lifestyle interventions are enacted. Currently around 70% of patients who present to accident and emergency departments with decompensated (end-stage) liver cirrhosis have had no previous diagnosis or management for their liver diseases. Ayurveda is a comprehensive natural health care system that originated in India more than 5000 years ago. It is still widely used in India as a system of primary health care, and to address healthcare throughout the course of life.

MATERIAL & METHODS

All the materials are collected from Samhitas, pubmed, articles etc.

NIDANA (CAUSES)

- Inadequate intake of food in quantity & Quality.
- Less exercise or lazy to exercise.
- Sedentary life styles.
- Excessive angerness.



- Irregularities in sleeping pattern.
- *Diwaswapna, Vegadharana etc.*
- *Samashana, Adhyasana, Vishmashana*

DIAGNOSIS & ASSESSMENT

Liver Function Tests:

- ALT (alanine transaminase)
- AST (aspartate transaminase)
- ALP (alkaline phosphatase)
- Bilirubin levels.
- Complete Blood Count (CBC):
- **Imaging Studies: Ultrasound**
- **CT Scan and MRI**
- **Fibro Scan**
- **Liver Biopsy**

MANAGEMENT

To address liver diseases through Ayurveda, a holistic approach is taken, which includes several components:

1. *Nidana parivarjana* (Avoid causative factors)

Diet: Ayurvedic practitioners recommend a diet that is rich in fresh fruits and vegetables, whole grains, and lean protein sources. Foods that are high in fat, sugar, and salt should be avoided, as they can increase the workload on the liver.

2. **Lifestyle changes:** Ayurvedic practitioners may recommend lifestyle changes such as regular exercise, stress reduction techniques such as meditation, and getting adequate sleep.

Diet

- ✓ Avoid processed and fried foods.
- ✓ Include plenty of fresh fruits and vegetables in your diet.
- ✓ Consume high-fiber foods such as oats, whole grains, legumes, nuts, and seeds.
- ✓ Avoid dairy products and red meat.
- ✓ Consume foods rich in antioxidants such as turmeric, garlic, ginger, and green tea.
- ✓ Drink plenty of water throughout the day.
- ✓ Consume herbal teas such as chamomile and licorice root tea.
- ✓ Include healthy fats such as olive oil, nuts, and avocados in your diet.
- ✓ Avoid alcohol and smoking.
- ✓ regular times throughout the day, typically three meals and two snacks. It is best to eat
- ✓ breakfast between 7-9am,
- ✓ lunch between 12-2pm, dinner between 6-8pm, and
- ✓ snacks between 10am-12pm and 4-6pm.
- ✓ Eating at regular times helps to maintain balance in the body and allows for better digestion.
- ✓ liver disease, a healthy *dincharya* (daily routine) is important for maintaining overall health and wellbeing. It should include:

1. **Herbal remedies:** Ayurvedic herbs such as milk thistle, turmeric, and dandelion root are often used to support liver function and promote detoxification. Each drug have special property like Anti-viral, Anti-inflammatory, Hepatoprotective, anti-oxidant, anti-viral, Stop progression of NASH.

Medicinal Plants with Ayurvedic Formulationⁱⁱⁱ

<i>Kalmegha</i>	<i>Karanja</i>	<i>Triphala churna</i>
<i>Kakmachi</i>	<i>Parijata</i>	<i>Arogyavardhini vati</i>
<i>Punarnava</i>	<i>Daruharidra</i>	<i>Jaloudarari ras</i>
<i>Kirattikta</i>	<i>Guduchi</i>	<i>Kutaki churna</i>
<i>Chitraka</i>	<i>Bhringraj</i>	<i>Avipattikar churna</i>
<i>Haridra</i>	<i>Mulethi</i>	<i>Punarnava mandoor</i>
<i>Ajwain</i>	<i>Pudina</i>	<i>Dhaniya</i>
<i>Jeera</i>	<i>Hingu</i>	<i>Katukyadi churna</i>
<i>Rasona</i>	<i>Adraka</i>	<i>Patola katu rohiniyadi kashaya</i>
<i>Haldi</i>	<i>Maricha</i>	<i>Phalatrikadi Kashaya</i>



2. *Panchakarma*

This is a detoxification process that involves a series of therapeutic treatments such as massage, herbal steam baths, and enemas. *Panchakarma* is used to eliminate toxins from the body and restore the health. *Panchakarma* can modulate the gut bacterial composition and modulate the lipid metabolism by bile acid synthesis.^{iv}

Snehana (Oleation)

Swedana (Sweating)

Vamana (Vomiting)

Virechana (Purgation)

Basti (Enema)

3. *YOGA, DHYANA, VYAYAMA*

Yoga, dhyana, and Vyayama can be beneficial for overall health, including liver health. Below are some yoga poses, meditation techniques, and exercises that can help improve liver health:

1. *Ardha Matsyendrasana* (Half Lord of the Fishes Pose): This pose helps to massage the liver, stimulate digestion, and improve blood flow to the liver. Sit with legs stretched out in front of you and bend the left leg, placing the foot outside the right knee. Place the right arm behind you and the left arm on the right knee, twisting your torso to the left. Hold for a few breaths and repeat on the other side.

2. *Pranayama* (Breathing Exercise): *Kapalbhati pranayama* is a breathing exercise that helps to detoxify the liver by increasing oxygen intake and blood flow. Sit comfortably and take a deep breath in, then forcefully exhale through the nose while pulling the stomach muscles in. Inhale passively and repeat this process for 10-15 minutes.

3. Meditation: Mindful meditation can help reduce stress and anxiety, which can be beneficial for liver health. Sit comfortably and focus on your breath. Whenever your mind wanders, gently bring it back to your breath. Practice for 10-15 minutes daily. Long term practice of meditation (minimum 12 weeks) decrease cravings for alcohol, nicotine, decrease peer pressure and reduce physical symptoms of withdrawal.

4. *Vyayama* (Exercise): Jogging, cycling, and swimming are all great exercises that can improve liver health. These exercises increase blood flow and oxygen intake. Physical exercise in moderate intensity can reduce fatty liver index, intrahepatic fat and reduce NASH.

Do's

Vegetables- Leafy vegetables, gourd, pumpkin, bitter gourd.

Oils- Mono Unsaturated Fatty Acid such as olive or canola oils, Poly unsaturated **fatty** acids present in sunflower, cotton seeds etc. Cut down intake of fat and fat-rich foods.

Shuk dhanya- *Yava, purana shali, Kodrava*

Shami dhanya- *Mudga, Masur*

Fruits- *Amalaki, Haritaki, Maricha, Pippali*

Ritucharya-^v

Shishira- *Abhyanga, Swedana, Utsadana, Vyayama, Shiroabhyanga*

Basant- *Utsadana, Vyayama, Gandush, Kawal, Vamanadi*

Grishma- *Sheetal jal se snana*

Varsha- *Pragharsna, Udvartana, Snana, Basti*

Sharada- *Virechana, raktamokshana*

Getting adequate sleep each night.

Exercising regularly to maintain a healthy weight and improve overall health.

Don't's

- Avoid alcohol.
- Avoid beverages like tea and coffee.
- Avoid fried foods or foods that are oily.
- Avoid sugars that are refined, such as jams, artificial sweeteners, etc.
- Processed Meats or processed food.
- A sedentary lifestyle can make liver damage worse.
- Avoid *Ratrijagarana, Diwaswapna*.



DISCUSSION & CONCLUSION

Ayurveda is a holistic system comprising diet, Yoga, massage, herbal remedies, detoxification, meditation, lifestyle. Ayurveda improves not only person health but also their well being, behaviour and state of mind. Liver is one of the crucial organ for maintaining the body's health and well being, and its proper function is essential for a healthy life. Unhealthy diets change the gut microbiota, resulting in the production of pathogenic factors that impact the liver. If our liver is affected, it can lead to various health problems. Due to this, liver is unable to performs its functions properly. Ayurveda medication can improve the hepatic lipid metabolism, stop hepatic lipogenesis, regulate the mitochondrial function, modulate lipid metabolism by bile synthesis, modulate the hepatic inflammation through apoptosis , correction of gut bacterial composition.^{vi}

If we promote health by following *Dincharya, Ritucharya, Sadavritta, Ahara, Vihara, Panchkarma*, we can live healthy and prevent the progression of any disease.

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UDK: 330.332.338.49

REGIONAL AND SECTORAL ANALYSIS OF SMALL BUSINESS AND PRIVATE ENTREPRENEURSHIP (SBPE) SECTORS IN THE CONSTRUCTION FIELD IN THE SOCIO-ECONOMIC DEVELOPMENT OF KHOREZM REGION

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ABSTRACT

This article discusses issues of sectoral and regional analysis of small businesses and private entrepreneurship in the construction sector in the socio-economic development of the Khorezm region.

KEY WORDS: *construction, small business, gross regional product, housing construction, non-state and public sectors, small business activity indicators, small business demography.*

The construction and SBPE sector is a significant contributor to the country's economy, creating jobs and improving the living standards of the people. In this article, we will analyze the regional and sectoral development of SBPE in the construction industry.

According to our analysis conducted during our research, the volume of gross national product (GNP) produced in the region in 2022 was 31,963.1 billion UZS and the growth rate compared to 2021 was equal to 105.7% . In 2022, the GNP deflator index was 114.3 percent. The observed growth rates in the main sectors of the economy served as the main factor in the growth of GNP. For example, agriculture, forestry and fisheries - 103.3 percent (46.0 percent of the total share), services - 105.4 percent (32.7 percent of the total share), industry - 115.1 percent (14.4 percent of the total share) (see Table 1).

Table 1
Composition of GNP in Khorezm region in 2021-2022 by types of Economic Activity¹

	Billion Soums		Compared to 2021, in percentage
	In 2021	In 2022	
I. Gross national product, total	26 464,3	31 963,1	105,7
<i>Including:</i>			
Gross added value of industries	25 575,3	30 895,7	105,5
Net taxes on products	889,0	1 067,4	111,3
II. Gross value added of networks	25 575,3	30 895,7	105,7
Agriculture, forestry and fisheries	11 789,7	14 212,1	103,3
Industry (without construction)	5 150,7	6 553,8	110,5
Industry	3 325,8	4 436,7	115,1
Construction	1 824,9	2 117,1	102,1
Services	8 634,9	10 129,8	105,4
Shopping, living and dining services	1 359,5	1 636,2	106,6
Transportation and storage, information and communication	1 427,0	1 703,6	113,3
Other service industries	5 848,4	6 790,0	103,2

In 2022, the main influence on the growth rate of the GNP of the region is due to the contribution of industry (production index 115.1 percent) and services (growth rate 105.4 percent). SBPE accounted for 71.6 percent of the total volume of GNP production, and this indicator was 73.7 percent in 2021.

¹ Calculations were conducted by the author



The Khorezm region contributed 3.6% to the GDP of Uzbekistan in 2022, which remained the same as in 2021. The GNP per capita increased by 103.9% compared to 2021, reaching a value of 16,465,700 soums.

In 2022, the GNP of the Khorezm region amounted to 31,963.1 billion soums, its share in the GNP of the republic was 3.6 percent, and the growth rate compared to 2021 was 105.7 percent. In 2022, the production volume of industrial products amounted to 18,325.8 billion soums (3.3% of the total industrial product), and the growth rate compared to 2021 was 115.1%. In 2022, 11,466.1 billion soums worth of consumer goods (5.8 percent of the total consumer product) were produced in the region, and the growth rate compared to 2021 was 125.5 percent.

In 2022, the total amount of agricultural, forestry and fishery products produced was 24,610.4 billion soums (its share in the republic is 6.7 percent), and the growth rate compared to the same period of 2021 was 103.4 percentage.

In 2022, 8,806.6 billion soums will be invested in fixed capital from the total sources of financing for the development of the economic and social sphere of the region, and the growth rate was 94.5 percent compared to the same period of 2021 (the share in the republic is 3.3 percent).

Table 2
Main Macroeconomic Indicators of the Republic of Uzbekistan and Khorezm Region in 2022²

	Republic of Uzbekistan		Khorezm region		The share of Khorezm region in the republic, in %	
	Billion Soums	Growth Rate In %	Billion Soum	Growth Rate In %	In 2021	In 2022
GNP	888 341,7	105,7	31 963,1	105,7	3,6	3,6
Industry	551 050,9	105,2	18 325,8	115,1	3,0	3,3
Consumer products	197 892,7	119,4	11 466,1	125,5	5,5	5,8
Agriculture	364 522,8	103,6	24 610,4	103,4	6,4	6,7
Investments	269 857,5	100,9	8 806,6	94,5	3,5	3,3
Construction works	130 767,1	106,6	4 891,7	102,1	3,9	3,7
Retail turnover	319 288,2	112,3	13 414,8	112,6	4,2	4,2
Services, total	357 554,5	115,9	10 303,2	114,6	2,9	2,9
Export (million USD)	19 309,1	115,9	245,2	106,0	1,4	1,3
Import (million USD)	30 699,3	120,4	540,3	188,9	1,1	1,8

In 2022, construction works worth 4,891.7 billion soums (3.7 percent in the republic's share) were completed, and the growth rate was 102.1 percent compared to the same period last year. Retail trade turnover was 13,414.8 billion soums (4.2 percent in the republic's share), the growth rate was 112.6% compared to the same period of 2021. The volume of production of market services by types of economic activity was 10,303.2 billion soums (2.9 percent in the republic's share), and compared to 2021, the increase was 114.6 percent.

Foreign trade turnover in 2022 was 785.5 million US dollars (1.6 percent in the republic's share), the growth rate was 151.9%, including: export - 245.2 million US dollars (1.3 percent in the republic's share), the growth rate was 106.0 percent, import was 540.3 million US dollars (1.8 percent in the republic's share), the growth rate was 188.9 percent.

²Calculations were conducted by the author



As a result of measures implemented within the framework of state programs, the share of SBPE subjects in industrial production is increasing year by year. In particular, in 2022, the volume of production of industrial products by them in the region increased by 116.1% compared to 2021, and the volume of production increased by 2,956.0 billion soums while the share of SBPE in the total industrial production was 16.1%.

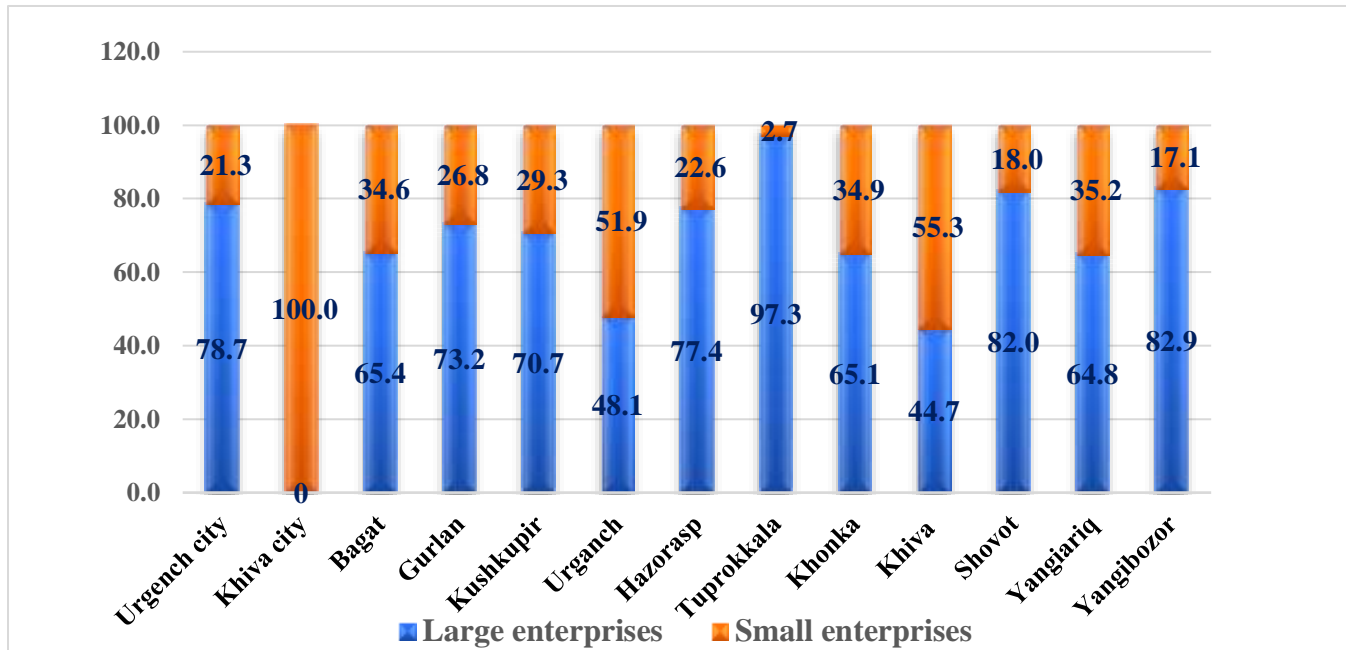


Figure 1. The share of large and small businesses in the production of industrial products by regions of Khorezm region in 2022³, in %

In terms of regions, the highest share of SBPE in the production of industrial products is the city of Khiva (100.0 %), Urgench (51.9 %), Khiva (55.3 %), Bagat (34.6 %), Khonka (34.9 %), Yangiariq (35.2 %) districts, and the smallest share fell to Tuprokkala (2.7 %) district.

In 2022, 3935 houses (104.7% compared to 2021) were built, totaling 1069.0 thousand sq.m., with 948.1 (111,4 %) thousand sq.m. in rural areas. Investments in housing construction amounted to 1,274.3 billion soums, which represents 14.5% of the total investments. In 2022, 198.9 billion soums were allocated for the construction of drinking water networks.

Although soums of investment were utilized, the investment in the construction of gas networks was not utilized in 2022. Moreover, the construction works worth 4,891.7 billion soums were completed in 2022, which is 102.1% higher than in 2021. The districts of Hazorasp and Tuprokkala showed the highest growth rates of construction works, with 138.3% and 111.6%, respectively.

Non-state ownership organizations carried out construction works worth 4,624.3 billion soums, accounting for 94.5% of the total construction works. Of the total construction works, 72.2% was attributed to the construction of buildings and structures, 23.2% to the construction of civil engineering objects, and 4.2% to specialized construction works.

³ Muallif hisob kitoblari



Table 3
Residences launched in Khorezm region in 2021-2022⁴

	All from the Financing			
	Launched		Among them are individual residences	
	Thousand Square Meters	Compared to 2021, in %	Thousand Square Meters	Compared to 2021, in %
Khorezm region	1069,0	104,7	1057,2	109,5
Urgench city	106,1	106,1	106,1	106,1
Khiva city	111,5	111,5	111,5	111,5
Bagat	86,8	86,8	86,8	86,8
Gurlan	124,4	124,4	124,4	124,4
Kushkupir	105,1	105,1	105,1	105,1
Urgench	106,1	106,1	106,1	106,1
Hazorasp	111,5	111,5	111,5	111,5
Tuprokkala	86,8	86,8	86,8	86,8
Khonka	124,4	124,4	124,4	124,4
Khiva	105,1	105,1	105,1	105,1
Shovot	106,1	106,1	106,1	106,1
Yangiariq	111,5	111,5	111,5	111,5
Yangibazar	86,8	86,8	86,8	86,8

Table 4
Commissioning of residences and social facilities at the expense of new construction and reconstruction in Khorezm region in 2021-2022⁵

	All from the Financing			
	Launched		Compared to 2021, in %	
	Total	Including: in Rural Areas	Total	Including: in Rural Areas
Total area of residences, thousand square meters	1069,0	948,1	104,7	111,4
Of this:				
Individual residential buildings	1057,2	945,3	109,5	116,2
General education and specialized schools, student places	8158	7728	x	x
Water network, km	524,1	484,4	97,7	99,4

⁴ The Data of Khorezm Region Statistics Department

⁵ The Data of Khorezm Region Statistics Department

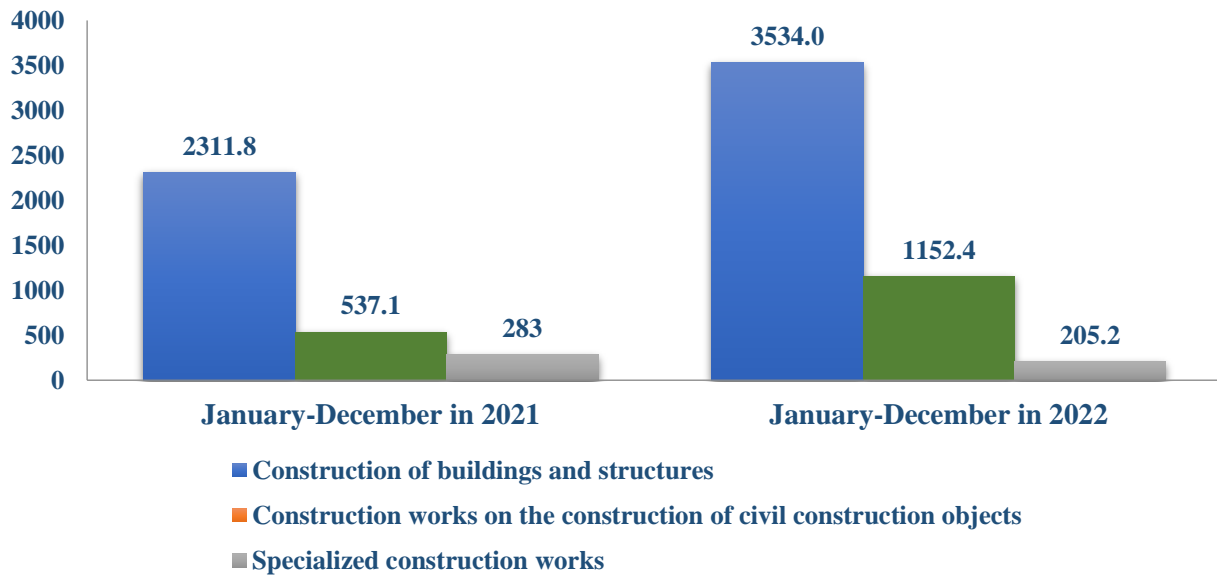


Figure 2. Dynamics of types and volume of construction works in Khorezm region in 2021-2022 (in billion soums)⁶

Among them, 79.7% of the total volume corresponded to the volume of new construction, reconstruction, expansion, and technical rearmament. The main part of the construction works performed in the region in terms of types of economic activity corresponded to the construction of buildings and structures (3534.0 billion soums), which made up 72.2% of the total volume of the region. At the same time, construction works performed on civil construction objects (1152.4 billion soums) accounted for 23.6% of the total volume of the region, and specialized construction works (205.2 billion soums) accounted for 4.2 % (see Figure 2).

In 2022, the total number of registered SBPE subjects was 27,507, and the largest number of SBPE subjects was in Urgench city (5,309) and Khiva city (2,312), as well as the districts Khiva (2,076), Urgench (3,137), Kushkupir (2188), Khonka (2052). The number of SBPE subjects corresponds to the relatively average share of regions Yangiariq (1545), Hazorasp (1601), Gurlan (1857), Bagat (1796), Shovot districts (1620), and relatively few SBPE subjects corresponds to the share of Tuprokkala (654) and Yangibazar districts (1360).

The largest number of SBPE entities are in the trade sector (37.5 percent of total entities), in the industrial sector (21.0 percent), in agriculture, forestry and fisheries (16.1 percent), transportation and storage organized in services (5.0 percent) (see Figure 3).

In 2022, the number of SBPE sectors (units per 1,000 inhabitants) was the highest by region in the cities of Urgench and (33.1 units) and Khiva (22.2 units), compared to the average Urgench (13.8 units), Yangibazar (13.7 units), Khiva (12.6 units), Yangiariq (11.5 units), Gurlan (10.8 units) and Tuprokkala districts (10.5 units). The regions with the least number of SBPE entities are Kushkupir (10.5 units), Khonka (10.0 units). Shovot, Bogot, Hazorasp districts have the lowest share in the regional average (9.7 units) (see Figure 4).

⁶Calculations were conducted by the author

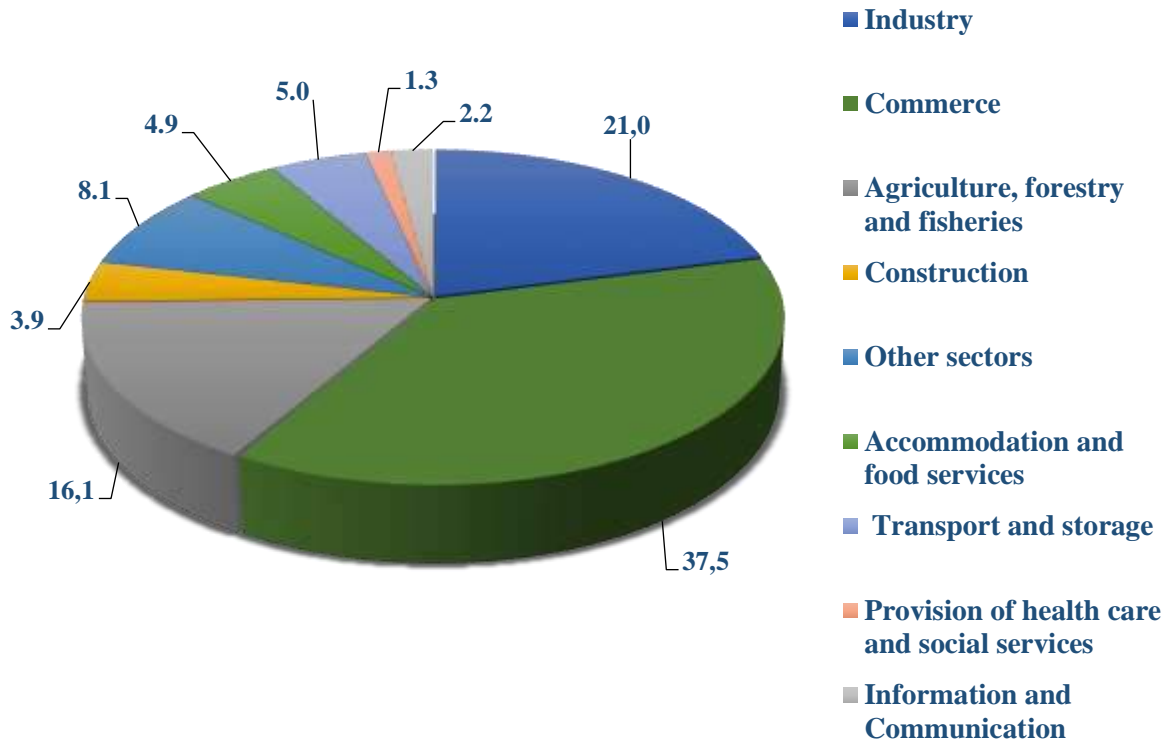


Figure 3. Distribution of the number of newly established SBPE subjects in Khorezm region in 2022 by sectors of economic activity⁷

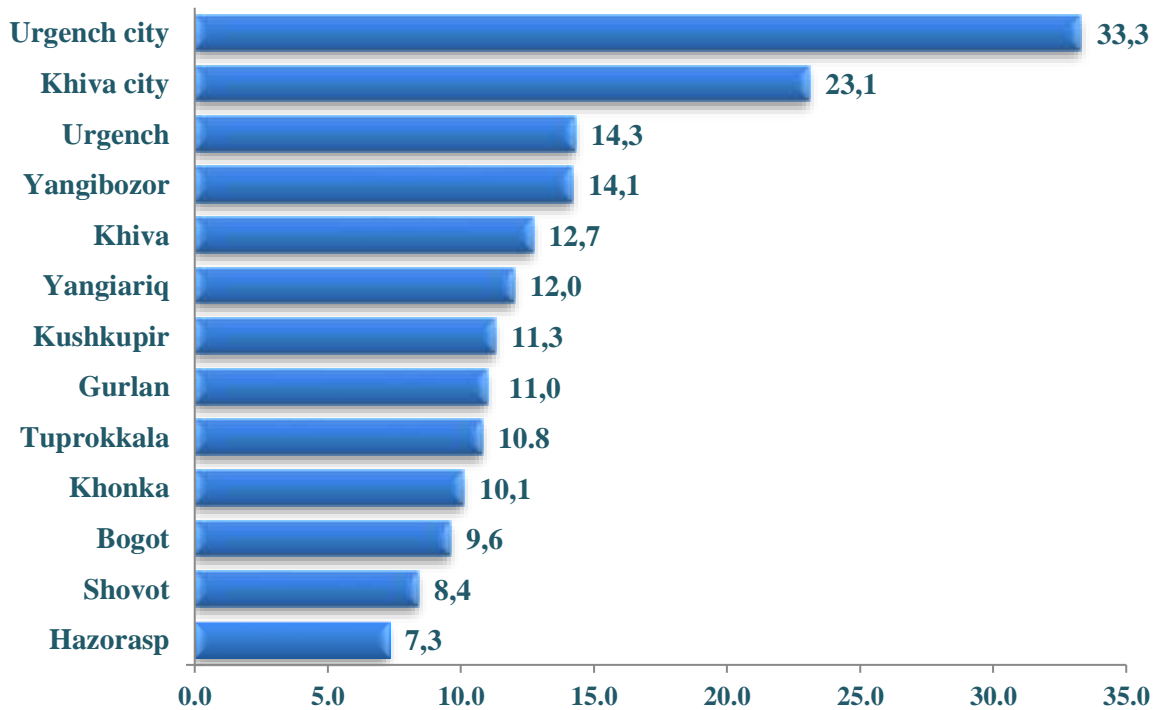


Figure 4. The number of SBPE sectors per 1000 people in Khorezm region in 2022⁸

⁷The author's account books based on the data of the Khorezm Region Statistics Department

⁸ The data of the Khorezm Region Statistics Department



In 2022, the number of new SBPE entities registered in the region was 5,655, this indicator was 750 in Urgench city, 585 in Urgench district, 334 in Khiva city, 347 in Khonka, 548 in Kushkupir, 446 in Hazorasp, 367 in Khiva, 480 in Shovot, 397 in Yangiarik, 436 in Gurlan, 506 in Bogot, 311 in Yangibazar, and 148 in Tuprokkala.

Table 5
Number of regional SBPE Subjects in Khorezm Region in 2022 (per 1000 inhabitants)

	Registered as of January 1, 2023	In 2022	
		Established	Finished
By region:	27 507	5 655	1 465
Urgench	5309	750	280
Khiva	2312	334	64
Bogot	1796	506	87
Gurlan	1857	436	123
Kushkupir	2188	548	106
Urgench	3137	585	153
Hazorasp	1601	446	162
Tuprokkala	654	148	36
Khonka	2052	347	87
Khiva	2076	367	82
Shovot	1620	480	71
Yangiarik	1545	397	128
Yangibazar	1360	311	86

In 2022, 71.6 percent of GNP (73.7 percent in 2021) was produced by SBPE entities. In 2022, SBPE entities produced 2,956.0 billion soums of industrial products (16.1% of total industrial production), agricultural, forestry and fishery products worth 23,723.5 billion soums (provided services), the growth rate was 103.3 percent (96.4 percent of the gross product of agriculture, forestry and fisheries), investments of 4681.3 billion soums (total investments 53.2 percent of the total) was used and compared to 2021 it was 90.2 percent. Also, construction works worth 4373.8 billion soums (89.4 percent of the total volume of construction works) were completed and it was 99.4 percent compared to 2021, 104.8 percent of the road transport cargo turnover (83, 5 percent), and 103.9 percent of the passenger turnover (96.2 percent of the total passenger turnover), 82.6 percent of the total volume of retail goods turnover or 11075.3 billion soums (an increase of 106.7 percent) and services accounted for 62.1 percent or 6396.5 billion soums (an increase of 110.2 percent), respectively. In 2022, goods and services were exported in the amount of 142.4 million US dollars (58.1% of the total export volume), and goods and services were imported in the amount of 189.1 million US dollars (35.0% of the total import volume).

In short, the share of the construction industry and small business entities in the main macroeconomic indicators of Khorezm region's socio-economic development is steadily increasing. However, the analysis of small business demography, which represents the activity of SBPE subjects, shows disparities and significant differences in the establishment, liquidation, and non-registration of SBPE enterprises within the regions and cities of the region. For this reason, it is advisable to work directly with relevant officials at the level of districts and cities, LCGs, assistant governors, tax officials, the chamber of commerce and, if necessary, representatives of the business ombudsman at the level of SBPE subjects.

We believe that the implementation of the above measures will lead to the rapid and stable development of SBPE entities not only in the construction sector, but also in all sectors of the economy.

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SUFISM AND THE PEDAGOGICAL TEACHINGS OF SULAYMAN BAKYRGANI

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ABSTRACT

This article explores the intersection of modern pedagogy with diverse fields such as philosophy, psychology, and cultural studies. It highlights the significance of religious and spiritual traditions in shaping moral education. The focus extends to Sufism, a mystical worldview within Islam, emphasizing spiritual contemplation and connection with the divine. The paper delves into the teachings of prominent Sufi thinkers, including Najmiddin Kubro and Sulayman Bakyrangani, who emphasize the role of intelligence, knowledge acquisition, and the pursuit of truth in the path to perfection.

KEY WORDS: *Spiritual Education, Sufism, Moral Purification, Existential Forms, Psycho-emotional State, Technocratic Age, Moral Values, Sufi Narratives, Parables, Wisdom, Intuition*

In the course of the development of modern pedagogy, it is also relevant to use the experience of related fields of science, such as philosophy, psychology, cultural studies and other humanitarian sciences. It is also important to emphasize the influence of religious and spiritual traditions, which are not directly related to pedagogy, but reflect the system of moral education and upbringing, which in their own way form the basis of pedagogical thought. European and Eastern cultures have a unique approach to the process of education and upbringing. If we dwell on the idea of the importance of education in the context of the involvement of religious traditions, a look at the pedagogical process in this case shows that special attention should be paid to spiritual potential. Therefore, the methods of education and upbringing in Sufism, in our opinion, are of great interest to many people, because they have their own pedagogical foundations. Sufism is a special mysterious religious and philosophical worldview that developed within the framework of Islam for 12 centuries, spread in the East, especially in Central Asia, and partially penetrated the West. Its representatives believe that it is possible to achieve spiritual contemplation of the individual, or to connect the individual with the divine world through a psychological experience. This result is achieved through a strong inner experience or divine love, which leads "along the path that leads to God with love in the heart". Explaining this situation on the example of the famous Italian artist Raphael, the famous Russian writer Merezhkovsky says about the inspiration of painting: "... When you draw, you don't need to think. Then there is a perfect harmony between feelings and thinking, between love and knowledge [1]".

The goal of life, defined by the Sufis, is spiritual-intuitive direct knowledge of the divine world. The development of Sufism pedagogy is based on the idea of moral purification and improvement of a person. This idea is manifested in the form of a high moral idea and the theory of moral virtues.

Issues of honesty, responsibility and other similar moral values were raised in pedagogical anthropology as a humanistic direction. The educational value of existential forms of human existence - crisis, encounter, trust, etc. were considered. Education created a pedagogical environment filled with a certain mental attitude. The most important existential form for education is the personal crisis that occurs when the usual way of life is disturbed. But as a result, life prospects are being renewed. However, today the science of pedagogy is facing contradictions and problems in teaching and educating the young generation. As noted in our research, the psycho-emotional state of a person in the technocratic age is experiencing a crisis, which gives ample opportunity to think about the problem in the modern pedagogical process of personality education. From birth, every child is forced to accept the rules of morality that the environment has set for him.

One of the methods of imparting knowledge is through Sufi narratives and parables, which contain the wisdom of ages, teach how to find solutions to problems, and develop thinking, intuition, and imagination. In the history of Sufism, some educational parables inspire us, others make us laugh, and others make us think seriously.



Morality is called the moral qualities and habits that lead people to be defined as good or bad, as well as all voluntary actions revealed by their influence. Therefore, Najmiddin Kubro said, "I traveled the world, gained experience, faced difficulties, talked with people, touched the edge of great things, tasted the bitterness of living, became familiar with books, stood in the service of scientists, wasted my life in search of the world, I fell in love with miracles. I saw that there is nothing more fleeting than life and the world, closer than death and the hereafter, more distant than a dream, and more beautiful than peace of mind [2]".

The purpose of Sufism is to be cleansed of bad qualities and beautified with good habits. From this point of view, Sufi people have connected good morality and Sufism with each other in different ways. Sufism is about adopting every good habit and getting rid of every bad habit. According to I.A. Choriev, "... pedagogy in the subject of education is historically and logically connected with the teachings of Sufism, the formation of a perfect person is the spiritual and spiritual experiences introduced in Sufism, the theoretical basis of all religions, including Islam, which focuses on the person first of all, makes the person himself, inspires to know and observe the divine essence [3]".

When the terms of Sufism are studied, the concepts expressed as "maqam" in particular include moral principles such as patience, gratitude, consent, and trust. For this reason, Najmiddin Kubro says: "My dear friend, open your eyes and look! Come on, what can you see and how do you see it? If you say you don't see anything, you are wrong. In fact, you see it right there. But the darkness of your body and physical existence keeps it away from your insight and gaze, and therefore you cannot find or see anything.

Bakrygani is a typical representative of the advanced ideas of Middle Eastern thinkers. He believes that a person acquires all sciences and arts with the help of his intelligence, understands the world around him. It is said that intelligence is given to man to distinguish good from evil, to do good and to fight against evil.

Sulayman Bakrygani glorifies human intelligence, shows that the path to perfection consists of a person's desire for knowledge, tireless creative work, and the search for truth. But it will be necessary to educate the human intelligence, to mature based on the experience of the predecessors and one's own. The thinker was very aware of the difficulties and sometimes insurmountable obstacles encountered on the way to gaining knowledge and understanding scientific truths.

Sulayman Bakrygani's main and well-known work "The Book of the End Times" is devoted to the issues of morality, purity, harmony of the human heart with beauty. According to him, eternal beauty is God. God is a pure absolute being. God created the world into four parts (fire, water, earth, air). He then created plants, insects, animals, and humans with four limbs (legs, arms, head, and body) that govern them. According to Sulayman Bakrygani, not every person can recognize the beauty of God. Because there is an invisible "veil" between the common man and God. A person who wants to remove this "veil" and who wants to get to know God and have deep faith in him must first follow the path of Sufism and go through its main stages (the path of Sharia, Tariqat, Marifat and Haqiqat). As a result, the "inner eye" is opened and the spiritually purified person gets closer to God. God can be known not by reason, but by love. Love is a great feeling. "Why Love God?" The question is answered in verse 61 of the Holy Qur'an. The beauty of God is in His mercy, forgiveness and infinite goodness to His servants. His goodness lies in his love for creatures. Only a generous, patient and knowledgeable person can approach God. God is between man and his heart. One day people will gather under his rule. The laws of nature and humanity are interrelated. Man can know God only by knowing himself. Only a person who is free from pride, greed, jealousy, avarice and strife will have complete spiritual and moral freedom. Sulayman Bakrygani writes about this:

"Сани дардинг манго дармондин ортук,
Санга кул бўлғоним султондин ортук [5]".

It can be known from this verse, which uses the art of mutanosib, that the love of God is better than health for a servant. According to the content of the next verse, it is not happiness to be a slave to Allah, the ruler of the world.

Санинг ёдингни айсам чўл ичинда,
Бўлур ул чўл бўстондин ортик.

The purpose of saying "Your memory" is zikr. The zakir, that is, the one who remembers God, reaches such a status that he finds pleasure only in the remembrance. In general, all possibilities of perfection are manifested in a person through the medium of beautiful morality. Because the main essence of Islam consists of good morals.

Sulayman Bakrygani's morals say that he refers to a character that leads to happiness. His teaching is known because of the simplicity of his writings and the fact that anyone can understand them. The purpose of putting an animal rhyme in the poem is that if a person is deprived of good morals, does not understand knowledge, does not find love for God and humanity, does not understand the purpose of life, then what is the difference between him and an animal, the meaning of human life is to unite his intellect with his heart he wants to say or n-ot.



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STUDY OF THE SCIENTIFIC AND LITERARY HERITAGE OF ZAHIRIDDIN MUHAMMAD BABUR

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ABSTRACT

The study of the scientific and literary heritage of Zahiriddin Muhammad Babur, as well as his great role in the cultural life of Asia and India, is always relevant. Babur is known as one of the best representatives of feudal culture in Asia and is one of the representatives who made a huge contribution to the development of Indo-Muslim culture and history. His work as a historian, geographer, ethnographer, prose writer and poet brought him recognition and calling as a great scientist today.

KEYWORDS: *science and culture, expert on fiqh (jurisprudence), creative literary and scientific heritage, praise, the power of words*

Zahiriddin Muhammad Babur, who took a special place among the famous figures of science and culture of the Middle Ages of the East, is the author of a wonderful work called "Baburnama".

Babur was a talented writer, well-versed in art, literature and geography, a king and poet who had a unique broad worldview and left an important mark on the lives of the peoples of Central Asia, Afghanistan and India.

Babur, who was not only a commander and ruler, a scholar and a poet, the founder of the Babur dynasty in India, but also a scholar of jurisprudence, left a rich creative literary and scientific legacy in the field of Muslim jurisprudence due to his outstanding abilities. He is a great scholar who wrote down his original lyrical works (ghazals, tuyuks), treatises on Islamic law (Mubayyin), verse (Aruz treatise), music, military works, as well as the alphabet "Hatti Baburi".

The work "Mubayyin" includes introductions, such as "Hamd" - praise to Allah, "Na't" - descriptions of our Prophet (peace be upon him), "The reason for the verse of the book" and five chapters "Etiqadiya", "Kitobus salat" (Book of Prayer), "Kitabuz zakat", "Kitobus Sawm" (Book of Fasting), "Kitobul Haj" and "Kitob Khotimasi" ("Conclusion of the book") sections.

Babur continued in praise: "As many hairs as there are on the body of a person, they are the tongue of your body and all other people. If everyone praises God and remembers Him, and praises Him for months and years, all of them will say the same thing: they will all confess their own weakness". That is, in front of the only and powerful God, everyone confesses their weakness. These definitions are classic examples of Babur's enlightenment [1].

Among Babur's works, the central place is occupied by an invaluable literary prose monument - his historical work "Baburnama" (Tuzuki Baburiy). The book, published in India, is mainly an autobiographical work, a memorial reflecting the history of the peoples of Central Asia, Afghanistan and India in the late 15th - early 16th centuries. In terms of generality and reliability of information, "Baburnama" is the most important and valuable historical and prose work, unmatched among similar works written in Central Asia, Iran, Afghanistan and India in the Middle Ages.

"Baburnama" is considered the best among the historical chronicles of that time in terms of richness and variety of expression of episodes in the work, language and style. Therefore, it is not surprising that at different times this book has attracted the attention of scientists from all over the world.

"He was inferior to all the commanders in the East. But whatever men may think of him, we recognize him as a man of greatness and unsurpassed in courtesy" [2].

Babur's scientific and literary heritage occupies a great place in the cultural life of Central Asia and India. In addition, he is one of the best representatives of the feudal culture that dominated in Central Asia, and one of the representatives who contributed greatly to the development of Indo-Muslim culture, especially Central Asian and Indian historiography.



“Baburnama” is a unique historical document, a scientific treatise written by Babur, and a heritage of primary importance, created during careful observation of the world around the country. It describes in detail the political situation that arose in Central Asia, Afghanistan and North India at the end of the 15th century - the beginning of the 16th century.

It is a literary and historical monument to the study of feudal relations in Central Asia, Afghanistan and India at the end of the 15th century - the beginning of the 16th century. The accuracy of the information in the book “Baburnama” is priceless in evidence.

Babur's services as a historian, geographer, ethnographer, prose writer and poet are recognized today among world orientalists, besides, he is a great figure who is also recognized as a scientist. His heritage is being studied in the centers of the study of Eastern culture almost all over the world (CIS, Czech Republic, Slovakia, Germany, Turkey, Italy, France, USA, England, India, Pakistan, Afghanistan). As a practical confirmation of this, the “Baburnoma” translated into French, published in Paris under the authority of UNESCO in 1980 and 1985, is a clear example. The famous French orientalist Louis Bazan wrote in his French translation (1980) that “Baburnama is an autobiographical treatise which is a very rare genre in Islamic literature”[3].

“Baburnama” is a beautiful example of written speech. This work is rich in extremely beautiful descriptions, and it is noted in it, and at the same time, his descendants, contemporaries, historians say that Babur is a master poet. He remained forever in history as a just, enlightened, progressive, good-hearted king who did many great things for the country of India.

“Baburnama” contains a lot of ethnographic facts: the different clothes of the Indians, their sects, customs, the way of life of the common people and the curious nature of the feudal nobility are recognized. For example, in the work “Baburnama”, the history and formation of the term for Indian men's clothes called “dhoti” and women's “sari” is presented. Babur also mentions the Central Asian term “langut” and describes the style of dress in detail. Similar information is not found in other historical chronicles, and this information is considered valuable information among historical-ethnographic works.

It is clear that his opinion “...if you don't do good in this life, why are you living?” will serve as an admonition for today's benevolent creators of science.

The book also describes in detail the life and activities of various Afghan tribes inhabiting the vast area between Wakhsh and Punjab, as well as the life and activities of nomadic and semi-nomadic tribal associations. He gives a lot of information about the land and handicraft farms, describes the methods of farming, the methods of irrigation of fields in different regions of Afghanistan and North India.

Zahiriddin Muhammad Babur occupies a special place in the history of Uzbek speech and the art of oratory. The power of words is immeasurable. There have been many events in our history when fortifications that could not afford cannons surrendered simply by word of mouth.

Babur is a great representative of Uzbek literature, a great statesman and a talented writer who has an inevitable place in the history of mankind. Here it is enough to quote the following excellent opinion of Jawaharlal Nehru: “Babur was a charming person, a typical Renaissance ruler, a man of courage and enterprise. He loved art, literature, and enjoyed life...”

There is a lot of living evidence of the power of the artistic word in martial arts. Babur's speech in military units is the most vivid example of eloquence.

In particular, it is worth quoting one incident in which Babur's oratorical skills stopped the disunity that had begun among the army. Before Babur's battle with Rano Sango in India (1527), disunity began among his troops due to some untoward reasons. Seeing this situation, Babur gave a speech in front of the army. According to Gulbadanbegim, “everyone in the meeting agreed to this... and swore that we will fight rivals until we have a drop of blood left in our veins...”:

“Whoever enters the meeting of life, he drinks the death, and whoever enters the destination of life, he experiences the end of the world. It is better to die with a good name, rather than to live with a bad name... May God grant us this kind of happiness and make us grow old in this world. blame I must swear by the word of God, the dead martyr and the murdered ghazi, that no one will turn away from this war, until the soul of the body is lost, this war will not be lost...”

It is evident that after this fiery speech of Babur, all the soldiers went into battle and fought as one. Babur's oratorical skills came in handy, and he was able to motivate the entire army to fight.

Zahiriddin Muhammad Babur mastered the art of oratory, and he was the master of not only military oratory, but also the art of preaching in general. Since “the goal of humanity is to speak”, one should speak in such a way as to arouse respect and attention in the heart of the listener. It takes many years of work, study and research to become an eloquent person. But some people are born



with this ability. Babur was a master orator, a ruler who could direct the armies with his speech and bind them with the bonds of charm.

Babur is a gifted and skilled orator. In his works, noteworthy thoughts about speech etiquette and beautiful speech are expressed. The poet emphasized that a person's morals can be determined by his words:

*Сўзингким ҳизр суйидин нишондур,
Вале ул сув киби мендин ниҳондур.
Ҳар вақтке кўргасен менинг сўзумни,
Сўзумни уқуб англагайсен ўзумни,*

In the opinion of the author, with a good word, with an opinion expressed in its place, "... put yourself together and put your words together..." you can "bring" another to you. The ability to draw people's attention to oneself is characteristic of an orator, a preacher. A sensitive poet, a statesman, a famous commander Babur managed to do this.

Through Babur's writings, we can have a source of some historical and ethnographic information, as well as the naming of some economic terms of that time [4]:

Terminology of the Babur's period (XV-XVI centuries)

Avkof - property (profitable property, real estate);
Ajnos - a valuable property;
Amvol - property;
Amin - the custodian of the deposit;
Amlok - owned property;
Aanora - profit;
Arsa - land, width;
Ato - a gift;
Agziya - product;
Badamosh - crisis;
Bay - purchasing;
Baytul - goods - confiscated goods - property;
Barid - courier;
Bahshish is a donation;
Baqoe - remainder (share);
Bergu - purchasing;
Bazargan - merchant;
Burjlug - borrowed money, credit;
Vabol - shortcoming, deficiency;
Vazifa - salary, monthly allowance;
Valiahd- the heir;
Valine'mat - master, property owner, owner;
Waqf - profitable land, property;
Vomkhoh - lender, creditor;
Voridat - income, income;
Gazand - damage;
Ganj - treasure, state treasure;
Ganjur - treasurer;
Garonmaya - valuable property;
Dabbog' - herdsman;
Dallola - broker;
Dangona - savings;
Daqqok - businessman;
Dagal - a fraud;
Debo - silk fabric;
Devon - state court dealing with import and export affairs;
Diydbon - bank employee;
Dinar - gold;
Dirham - silver coin;
Dong - contribution, amount; money;
Jiybachi - warehouse manager;
Jurmona - fine;



Zakat - a type of religious tax;
Zar - gold;
Zarbkhona - a place where money is made;
Ziyo - cultivated land, property;
Imdod - aid money; allowance;
Iqola – breaking the trade contract;
Yiyin - a bank; place where money is collected;

Babur's trade relations with India and other countries, the terms mentioned in the edicts written in the old Uzbek language are used today in translation or as synonyms.

Babur played a great role in the development of Uzbek poetry and language. His poetic works written in Uzbek language are well recognized in the works of world scientists.

At the same time, his achievements in all fields are worthy of praise, including in historical records, Babur's proposal of "friendship and brotherhood" in Uzbek language sent to the Moscow embassy in 1528 was also recorded in the Nikon Chronicle. It is known from the Nikon chronicle that this letter of Babur, unfortunately, has not been preserved. It is also known that during the reign of Mikhail Fedorovich (1613-1645), the first representative of the Romanov dynasty, Indian traders went to Russia along the Volga. The emergence of Indian traders in the city of Astrakhan in the 17th century is the basis for the fact that Russian-Indian relations have been established since the time of Babur's rule [5].

Babur was a multifaceted creator, a famous person of his time, a well-known and enterprising representative. Therefore, it is logical that his state activities in Central Asia, Afghanistan and North India were mainly aimed at strengthening the foundations of the feudal society of that time and strengthening the position of power.

The multifaceted activity of Zahiriddin Muhammad Babur still serves an educational purpose for the young generation. The ideas of goodness and humanity put forward in his works have not lost their importance over the centuries and are very compatible with the great changes that have taken place in the life of our country today.

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THE ESSENCE AND SCIENTIFIC-THEORETICAL FOUNDATIONS OF THE CONCEPT OF INFORMATION SECURITY

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ABSTRACT

This article analyzes the role of information security in ensuring military security, the history and development of information security, the essence of information security, scientific and theoretical foundations, as well as the technical and humanitarian directions of information.

KEYWORDS: *security, information security, revolution, analysis, history, antiquity, development, information, message, technical, humanitarian, scientific, theoretical, geopolitical, essence, object.*

Sharp changes in geopolitical processes, political, military, economic, social, information security and other problems are manifesting themselves in the conditions of various levels of contradictions. The complex international situation, increasing risks and threats to information security in the military sphere are also observed in Central Asian countries. Therefore, in the Republic of Uzbekistan, attention is being paid to the issue of ensuring information security at various levels from a strategic point of view.

Although it is necessary to express the content and essence of information, the dynamics of the process, the explanatory dictionary of the Uzbek language states that information is “a message, information that gives an understanding of work, events” [1]. Briefly, information means an idea, a concept and a message. In general, information is a concept that can be received by people or special devices as a reflection of events in the process of communication, regardless of the form of presentation.

In the Law of the Republic of Uzbekistan “On Principles and Guarantees of Freedom of Information”, the word information is defined as follows: “information is defined as the data about persons, objects, evidence, events and processes, regardless of their sources and form of presentation” [2].

In the encyclopedia of information security, it is stated that: “information security is the state of security of information processed by computer technology or an automated system against internal or external threats” [3]. Therefore, information security is assessed by the state of protection of individuals, society, the state and their interests from threats, destructive and other negative effects in the information space. Islamic sources use the concepts of security (امنية or امن), military security (الامن الاسكري), information security (المعلومت الامن).

It should be noted that the difference between the concepts of information security and cyber security is that the goal of information security is to ensure confidentiality, integrity and availability of information in all areas. Cyber security, on the other hand, is a set of strategies, security principles and guarantees, measures and tools aimed at ensuring security in cyberspace (ie, the Internet, information systems, etc.), and human resources [4].

In other words, cyber security is a set of measures to combat cybercrime. Cybercrime includes many types of crimes in the field of information and communication technologies. These include threats to the virtual network, viruses and other malicious programs, preparation and distribution of illegal information, mass distribution of e-mails, hacking, illegal access to websites, fraud, copyright infringement and various other offenses.

In such cases, criminals aim to cause material or moral damage to the “objects” they are interested in.

Articles 12-15 of the Law of the Republic of Uzbekistan No. 439-II “On Principles and Guarantees of Freedom of Information” dated December 12, 2002 specifically focus on the protection of the information security of the individual, society, and the state interests.



According to our research, threats to information security are divided into natural and artificial threats. (See Figure 1)

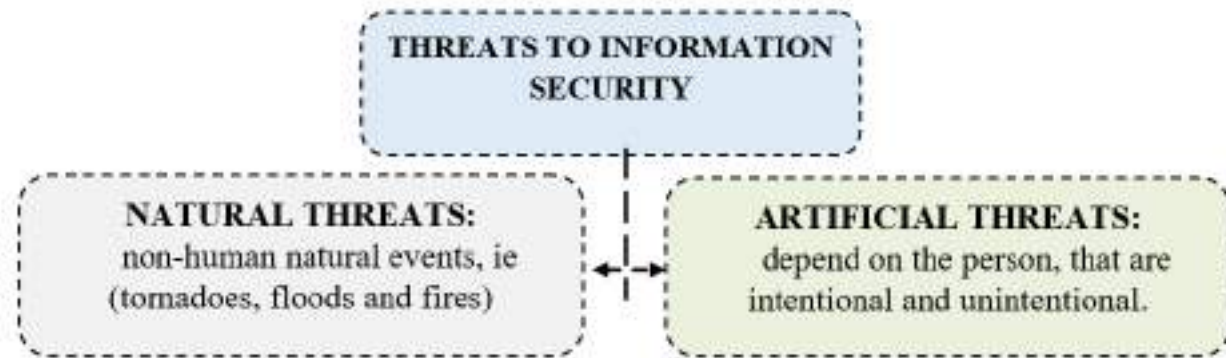


Figure 1. Natural and artificial threats to information security

As a result of such threats, it is explained by the complication of human development, the wide spread of nuclear, atomic and other weapons of mass destruction, the worsening of the ecological situation, the emergence of new dangerous diseases, the division of the world into opposite poles, the violation of the balance between states, and the emergence of new independent states.

Article 4 of the “International Convention on Information Security”, adopted by the UN on September 22, 2011, the following are seen as the main threats in the information space that could damage international peace and stability:

The use of information technology and means of storing and transferring information to engage in hostile activity and acts of aggression;

Purposefully destructive behavior in the information space aimed against critically important structures of the government of another State;

The illegal use of the information resources of another government without the permission of that government, in the information space where those resources are located;

Actions in the information space aimed at undermining the political, economic, and social system of another government, and psychological campaigns carried out against the population of a State with the intent of destabilizing society;

The use of the international information space by governmental and non-governmental structures, organizations, groups, and individuals for terrorist, extremist, or other criminal purposes;

The dissemination of information across national borders, in a manner counter to the principles and norms of international law, as well as the national legislation of the government involved;

The use of an information infrastructure to disseminate information intended to inflame national, ethnic, or religious conflict, racist and xenophobic written materials, images or any other type of presenting ideas or theories that promote, enable, or incite hatred, discrimination, or violence against any individual or group, if the supporting reasons are based on race, skin color, national or ethnic origin, or religion;

The manipulation of the flow of information in the information space of other governments, disinformation or the concealment of information with the goal of adversely affecting the psychological or spiritual state of society, or eroding traditional cultural, moral, ethical, and aesthetic values;

The use, carried out in the information space, of information and communication technology and means to the detriment of fundamental human rights and freedoms;

The denial of access to new information and communication technologies, the creation of a state of technological dependence in the sphere of informatization, to the detriment of another State;

Information expansion, gaining control over the national information resources of another State.

Information protection is “measures to prevent threats to information security and eliminate their consequences” [5].

According to the approach of the Uzbek scientist N. Abdusamatov, “...security in any country is not the absence of danger at all, but the level of protection against it”, [6] he emphasizes protection from the expected danger. In our opinion, such changes in the world are likely to increase the attention of foreign countries to the problems of security, military security, especially information security. Therefore, a paradigmatic analysis of approaches to ensuring information security in the military sphere is one of the urgent tasks.

Nowadays, the concept of information security is much narrower, and it is expressed only in the technical-technological section. In particular, the concept of information security is expressed in the following interpretation: [7]



- Confidentiality, integrity, ease of use of information, protection from possible threats or deliberate distortion;
- Is a system of taking legal, organizational and technological measures to prevent intentional or accidental damage to confidentiality, completeness, ease of use or distortion of information.

In our opinion, information security includes technical and ideological directions. When defining these, it is appropriate to approach them taking into account internal and external risks, and to express the definition briefly and clearly, and separate it into technical and ideological directions:

Technical direction of information security:

- Infrastructures supporting state activities – telecommunications, transport networks, power stations, banking system;
- Electronic intervention in the processes of command and control of military facilities and systems, “headquarters wars”, derailment of military communication networks;
- Military espionage – theft of patented information, confidential information of special importance, disruption/alteration or loss of services, collection of extensive information about opponents;
- VIR (Very Important Person) - hacking and using the passwords, identification numbers, bank accounts of individuals, obtaining confidential information, spreading disinformation.

ideological direction of information security:

- in order to understand, research and ensure information security, on the one hand, as an individual and a citizen, and on the other hand, it is related to the need to coordinate the balance of the interests of the state and society;
- paying special attention to ensuring information security in the system of the Ministry of Defense, that is, studying the threats of social instability, disruption of gradual evolutionary development and degradation of military personnel;
- by influencing the social, cultural, spiritual, educational, legal aspects, gradually forgetting the national identity;
- there is a possibility of bringing the society and the state into dependence by influencing the human mind through destructive information;
- instilling negative thoughts in the minds of military personnel by spreading false information about superiors. In this case, promoting disobedience of the military to the commanders (chiefs).

Therefore, one of the main indicators that are focused on providing high-quality service to users through telecommunication networks is the effectiveness of the state of information security. The problem of ensuring information security is gaining urgent importance today. It is closely related to issues such as confidentiality, integrity, access to information, and prevention of leakage of military secrets.

According to the well-known scientist N.N.Kunyaev, “the development of the global information space forces the state and its citizens to new legal and organizational coordination in the information sphere, as well as the aggression of other states or terrorist organizations” [8].

According to the definition of the American philosopher E. Toffler, “one of the main types of raw materials for the third wave civilization will be information” [10], he draws attention to the role of information in the development of the state, the essence and importance of information. In our opinion, because information is a broad concept, it has become more important in the political environment. Therefore, foreign political success began to focus not only on economic and military power, but also on establishing control over basic information.

Taking into account the different views of scientists, it is appropriate to approach the concept, essence and importance of information security as follows:

First, information security - the protected state of the information environment of the society that ensures the formation, application and development of the interests of people, institutions, and the state;

Secondly, information security is the level of protection of the vital national interests of the individual, society and the state, which minimizes the damage caused by incompleteness, untimeliness and unreliability of information and unauthorized dissemination of information.

According to the words of the President of the Republic of Uzbekistan - Commander-in-Chief of the Armed Forces Sh. Mirziyoyev, in the current situation where there is a sharp struggle in the world information space, ensuring information security, protecting young people from foreign ideas, and strengthening the psychological training and fighting spirit of military personnel remain relevant.

Taking into account the strategic importance of information security, we can make the following conclusions:

Firstly, although the concepts of information security and cyber security are used synonymously, information security consists of ensuring the confidentiality, integrity and availability of information, and the concept of cyber security mainly means ensuring security in the Internet network, information systems and the like;



Secondly, there are technical and technical-anthropogenic or technical-humanitarian and integrative approaches to the content and importance of information security, which are emerging due to the existence of technical and ideological directions of information security, internal and external risks.

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PEDAGOGICAL INNOVATIONS IN MILITARY TRAINING: GLOBAL PERSPECTIVES AND BEST PRACTICES

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ABSTRACT

This article explores global pedagogical innovations in military training, investigating strategies and practices adopted by armed forces worldwide. Focusing on experiential learning, adaptive technologies, cultural competence, leadership development, ethical decision-making, e-learning, and collaborative international programs, the research reviews their impact on enhancing the effectiveness, adaptability, and ethical awareness of military personnel. Results reveal the success of these innovations in fostering practical skills, individualized learning, cultural understanding, cohesive leadership, and ethical decision-making. The synthesis of diverse pedagogical approaches reflects a collective commitment to preparing armed forces for contemporary security challenges.

KEYWORDS: *Military Training, Pedagogical Innovations, Experiential Learning, Adaptive Technologies, Cultural Competence, Leadership Development, Ethical Decision-Making, E-Learning, Collaborative International Programs, Global Security.*

INTRODUCTION

Military training has evolved significantly over the years, incorporating pedagogical approaches to enhance the effectiveness and adaptability of armed forces globally. This article aims to explore the world practices in pedagogical issues within military training, shedding light on innovative strategies and best practices adopted across different nations. The evolving landscape of military operations, coupled with advancements in technology and a growing need for cultural competence, has led to a paradigm shift in how military training is approached.

LITERATURE REVIEW

Modern military training increasingly emphasizes experiential learning, taking cues from civilian education methodologies. Simulation exercises, virtual reality (VR), and augmented reality (AR) technologies are now integral components of training programs. These tools provide realistic scenarios, enhancing decision-making skills, teamwork, and adaptability in diverse environments (Smith, 2018). The integration of adaptive learning platforms and personalized instruction in military training reflects a global commitment to addressing individual learning needs. Real-time assessment tools allow instructors to tailor training modules to specific weaknesses, ensuring a more comprehensive and efficient learning experience for each recruit (Jones et al., 2020). In an era of multinational collaborations, military forces worldwide recognize the importance of cultural competence and language skills. Pedagogical approaches now include immersive language training and cultural sensitivity programs to equip personnel with the ability to operate effectively in diverse international settings (Smith & Johnson, 2019). Pedagogical practices in military training extend beyond tactical skills to encompass leadership development and soft skills. Emphasis is placed on critical thinking, emotional intelligence, and effective communication, recognizing the pivotal role these attributes play in building cohesive and adaptive military units (Brown & Miller, 2017). With an increasing focus on ethical conduct and respect for human rights, military training pedagogy incorporates modules addressing ethical decision-making. Scenarios challenging recruits to navigate moral dilemmas contribute to the development of ethical leaders within armed forces (Johnson, 2016).

The global trend towards digitization has led to the integration of e-learning platforms in military training. Online courses, webinars, and interactive modules facilitate continuous learning, allowing military personnel to enhance their skills at their own pace, irrespective of geographical constraints (Wang & Zhang, 2021). Recognizing the interconnected nature of global security challenges, military forces are engaging in collaborative international training programs. These initiatives promote knowledge exchange and expose personnel to diverse perspectives and operational strategies, enriching their overall training experience (Smith et al., 2018).



RESULTS AND DISCUSSION

1. Experiential Learning in Military Training:

The integration of experiential learning methodologies has shown promising results in enhancing the practical skills of military personnel. Simulation exercises and immersive training scenarios provide a controlled environment for recruits to apply theoretical knowledge, fostering a deeper understanding of strategic and tactical concepts (Jones et al., 2020).

2. Adaptive Learning Platforms and Personalized Instruction:

Results indicate that the use of adaptive learning platforms positively impacts individual learning outcomes. Real-time assessments allow instructors to identify specific areas of improvement for each recruit, tailoring instruction to address weaknesses. This personalized approach contributes to more effective skill acquisition and retention (Brown & Miller, 2017).

3. Cultural Competence and Language Acquisition:

The incorporation of cultural competence training and language acquisition programs has proven beneficial in enhancing the effectiveness of military operations in diverse international settings. Armed forces equipped with linguistic and cultural knowledge demonstrate improved communication, cooperation, and understanding in multinational collaborations (Smith & Johnson, 2019).

4. Leadership Development and Soft Skills:

The focus on leadership development and soft skills has resulted in more cohesive and adaptable military units. Critical thinking, emotional intelligence, and effective communication are identified as critical components of successful leadership within armed forces. The emphasis on these skills contributes to enhanced decision-making and team dynamics (Johnson, 2016).

5. Ethical Decision-Making in Military Scenarios:

The integration of ethical decision-making modules in military training has led to a more conscientious and morally aware armed forces. Recruits exposed to scenarios challenging their ethical judgment develop a heightened sense of responsibility and adherence to international humanitarian laws. This contributes to the development of ethical leaders within military ranks (Wang & Zhang, 2021).

6. E-Learning Platforms and Flexibility in Training:

The integration of e-learning platforms has provided military personnel with flexible and accessible training opportunities. Online courses and interactive modules allow recruits to enhance their skills at their own pace, overcoming geographical constraints. The flexibility of e-learning contributes to continuous learning and skill development (Smith et al., 2018).

7. Collaborative International Training Programs:

Collaborative international training programs have proven to be valuable in fostering global perspectives and operational strategies. Military personnel engaged in such programs benefit from exposure to diverse approaches and cultural contexts, contributing to a more nuanced understanding of international security challenges (Jones et al., 2020).

Abovementioned methods have a lot of benefits, providing recruits with practical, real-world scenarios to enhance their skills and decision-making abilities.

Experiential learning in military training involves immersive exercises that simulate actual combat situations. Recruits are exposed to realistic scenarios, allowing them to apply tactical knowledge gained in classrooms to dynamic and unpredictable environments. These exercises provide a bridge between theoretical understanding and practical application, ensuring that military personnel are well-prepared for the complexities of real-world operations.

Technological advancements have significantly augmented experiential learning in military training. Virtual reality (VR) and augmented reality (AR) simulations recreate combat situations, offering recruits a safe yet realistic environment for training. These technologies allow for the integration of various scenarios, including urban warfare, reconnaissance missions, and strategic planning, providing a versatile and adaptive learning experience.

Experiential learning emphasizes collaborative exercises that require teamwork and effective communication. Military personnel engage in group activities, fostering a sense of cohesion and mutual reliance. These experiences contribute to the development of leadership skills as recruits are often required to take charge of specific tasks or lead their teams through challenges, mirroring the hierarchical structure of military operations.

One of the key benefits of experiential learning in military training is the exposure to high-pressure situations. Recruits are forced to make critical decisions in real-time, replicating the stress and urgency of actual combat. This aspect of experiential learning hones the ability to think on one's feet, make swift decisions, and adapt to rapidly changing circumstances – essential skills in military operations.

A critical component of experiential learning in military training is the incorporation of after-action reviews (AARs). Following each exercise, recruits participate in a structured debriefing session. This reflective process allows them to analyze their actions,



identify areas for improvement, and understand the consequences of their decisions. AARs facilitate a continuous learning cycle, ensuring that lessons learned from one exercise inform the preparation for subsequent ones.

Experiential learning integrates realistic equipment and environments to create an immersive training experience. Military personnel train with the actual gear they would use in the field, becoming familiar with the weight, functionality, and limitations of their equipment. Training environments are designed to mimic the complexities of real-world settings, providing recruits with a nuanced understanding of the challenges they may encounter.

Experiential learning instills adaptability and flexibility in military personnel. Through exposure to a variety of scenarios, recruits learn to adjust their strategies and tactics based on the specific challenges presented. This adaptability is a crucial skill in modern military operations, where unpredictable circumstances demand quick thinking and versatile responses.

CONCLUSION

In conclusion, the incorporation of pedagogical innovations in military training reflects a global commitment to preparing armed forces for the complexities of the 21st century. The diverse range of strategies discussed, including experiential learning, adaptive technologies, cultural competence training, and ethical decision-making modules, collectively contribute to the evolution of military training methodologies. As the world continues to change, the synergy between military training and innovative pedagogy ensures that armed forces remain at the forefront of global security efforts.

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NAMES OF RELIGIOUS RANKS AND POSITIONS FOUND IN ABULGHAZI'S WORKS

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ABSTRACT

This article highlights the topic of Abulghazi Bahadirkhan's works and the issues covered in them are discussed in more detail. Positions and religious terms were selected as such subject groups. The number of words denoting religious concepts in the lexicon of Abulghazi's works is also large. Some of them are widely used today, while others have become archaisms.

KEY WORDS: *religious rank, positions, mujahid, shahadat, shahid, ghazat and ghazi, yuzbashi.*

The number of words denoting religious concepts in the lexicon of Abulghazi's works is also large. Some of them are widely used today, while others have become archaisms.

For example, the words “*ghazat*” and “*ghazi*” have a narrow meaning compared to their synonyms “*jihad*” and “*mujahid*”. If “*ghazat*” means war in the path of religion, “*jihad*” represents a common effort and aspiration in this direction. That is why these two words cannot be absolute synonyms. For example, the concept of “*jihad against the nafs*” cannot be expressed in the form of “*ghazat against the nafs*”.

The term “*mujahid*” also has a wider meaning than “*ghazi*”, it is also applied to a person who fights for the cause of religion by means other than military means, including enlightenment.

The words “*shahadat*” and “*shahid*” are related, “*shahid*” means “a person who died in the path of religion or sect [14]”, and “*shahadat*” means to die as a martyr.

In Islamic jurisprudence, the term “*shahid*” has a wider meaning than explained above. According to the Sharia, “a *shahid*” is a Muslim [7] who has been killed by oppression while being free from decency and nifas. Also, if a fighter dies before being taken out of the battlefield, he is considered a “*shahid*”.

“*Voliy*” is also used in the sense of ruler, king.

The above terms belong to the Arabic vocabulary, and together with the Iranian words “*shah shah, king*”, the following words are used to express this concept:

“*Shahanshah*” was officially applied to the kings of Iran. It is known from historical and artistic works, as well as examples of folklore that the title of Khans of Khiva was officially and popularly called Khan. But in Khorezm's historiography, in the works created in the later periods, according to its own style, we observe that this term is rarely used compared to other words expressing the concept of monarch.

“*Khan*” was a monarch, a head of state with khanate government. Sh.Rahmatullaev gives detailed information about the etymology of the words “*khan*” and “*khoqon*”. Without repeating this information, we would like to emphasize that in the historical works of Abulghazi Bahadirkhan, *khan* (absolute ruler of a smaller state, shah) and *khoqon* (the absolute ruler of a large country, great khan) were used differently [11].

“*Bek*” بېك is a term used in Abulghazi's works to refer to the head of a number of soldiers; means the head of the people. This word originally meant “big”, “large”, and later, as a result of the development of meaning, it became a noun. (This meaning of the word *beg/bek* is preserved in the Khorezm Oghuz dialect today.)

“*Beklarbegi*” بېكلربېگى - head of the beks, a high-ranking position in the palace.



“*Yuzboshi*” is the head of a hundred soldiers [17]. *Yuzboshi* was the head of ten groups, in which 10 soldiers serve [3]. Amir Temur writes the following about this in his “*Tuzuk*”: “If there are ten *o’nboshi* in total, the one who has done the most work, who has gained experience on the battlefield, and who has gained a name in the valor, will be appointed as the head, and call him *yuzboshi*”. In the army of Amir Temur, the monthly salary of a *yuzoshi* was twice as much as that of a *o’nboshi*, i.e. the price of twenty horses [3].

Historically and etymologically, this term is formed from the lexical-syntactic combination of the words “*yuz*” (100) and “*bosh*” (head). “*Yuz*” is the amount equal to one hundred... This word, which had the same meaning in the ancient Turkish language, was originally pronounced in the form of “*yo’z*” [11].

The term “*yuzboshi*” also exists in the historical lexicon of the Persian language. In “*Ghiyosul-lugot*” this term is explained as “head of a hundred (warriors), a Turkic word” [5].

“*O’nbegi*” اونبېگى – *o’nboshi*, leader of ten soldiers. It is a combination of the words “*o’n*” (10) and “*bek*” (head). The terms *o’nbegi* and *o’nboshi* are used in parallel in Uzbek historical works.

“*Otaliq*” اتالېق is the tutor of an underage ruler (note by N.Norkulov.) This term was created by adding the suffix “- liq” to the Turkish word “*ota*” (father). The word “*ota*”, which is the basis of the term, is used in almost all modern Turkic languages. In particular, the form of *ota* in Azerbaijani, Bashkir, Kazakh, Karakalpak, Kyrgyz, Tatar, Turkish, Turkmen, and Uighur languages corresponds to its form in ancient Turkic records. “*Ota*” in Uzbek, “*atte*” in the Chuvash literary language, “*ati*” in the upper dialect of the Chuvash language; “*ada*” in Altai, Tuva, and Khakas languages [10].

The naming of clan chiefs as “*otaliq*” is related to the reforms of Abulghazi. In the works of Abulghazi, the following terms representing positions of different position are found:

“*Vazir*” is a high-ranking official in charge of a particular field.

“*Mushir*” is the state adviser of the ruler.

“*Devonbegi*” is the head of the registry office, an official responsible for keeping political and departmental documents.

“*Mahram*” is a consultant, an official who performs special tasks.

“*Sipohsolar*” - this compound word belonging to the Iranian stratum is the name of a high military position.

“*Sarhang*” is the head of a “*hanch*” (regiment), a military position equivalent to a colonel.

“*Sarkhayl*” is the head of a “*khayl*” (small military unit).

“*Mulozim*” is an official who manages various affairs of the state.

Below is a brief explanation of these terms and their examples:

“*Sultan*” as a term has acquired different meanings in different periods of our history:

1. In the 10th century, the ruler of Muslim countries was called a sultan. Starting with the Seljuks in the 11th century, this title was taken by the rulers of states independent of the Arab caliphate. Currently, the state administration is preserved only in some Islamic countries with a monarchy. For example, the Sultan of Brunei [13].

2. After the collapse of the Mongol feudal empire, the Genghis Khans, who did not reign, were considered sultans [13].

The root of the word “*sultan*” is سلط, which means to rule, to own. The term is the noun form of the action of this root in fulan weight فعلان. The word “*sultan*” is based on the verb of Chapter I. The formation of action name forms of this chapter is quite complicated. It is formed in more than 40 weights and “even from some verbs the infinitive is formed in two different weights [6]”. Fulan is considered one of these weights, and there are dozens of words in the Uzbek language, such as “*urfon*” and “*kurf*”, which are formed in this way. In the historical lexicon of the Uzbek language and in the Persian language, there are words cognate with the word sultan. In Persian, “*solte*” سلطه means power, ownership [9]. The word *salita* سلطه, found in the language of Navoi’s works, means shameless [16]. This word is in the form of “*muannas*” (feminine) and means “*ruling woman*”. It seems that this word acquired such a meaning because it was used in relation to women who act according to their own will.

“*Saltanat*” as a term has two meanings in historical works:

1. Kingdom, sultanate;

2. Territory, country ruled by sultan, king (monarch). In “*Ghiyosul-lugot*” this word means dominion, length of hand; heroism; it is noted that there are meanings of victory [5]. The term “*sultan*” was used not only for men, but also as the second component of noble women’s names. (For example, in the line “*Shukrkim, xomiyi din Komila sulton o’ldi*” about Nadira’s description, the names of Timurid ladies Ruqiya Sultanbegim and Poyanda Sultanbegim).

“*Hokin*”- 1. Governor of the province, administrative area.

2. This term is also used to refer to the ruler of the country.

“*Amir*” is an emir, the head of a state with an emirate (amorat).



“*Voliy*” - ruler, king. This meaning of the term is based on the meaning of the verb *waliya* ولي to possess. “*Voliy*” is the relative adjective of this verb. In historical works, we see that the term “*voliy*” is used in the following meanings:

1. Provincial governor.
2. The ruler of the country.
3. In Persian sources created after the second half of the 19th century, it means governor-general. The broken plural form of “*voliy*” is “*vullot*” ولاوت or ولّاة [9].

“*Shah*” شاه Pahlavi shâh [12]. In ancient Persian, it was in the form of *xhayathiga*. According to Dr. Muhammad Mu'in, this word is cognate with the word “*shathr*” (city) belonging to the south-western group of Iranian languages [15]. Indeed, there is a logical connection between the words “*shah*” and “*shahar*” (city). This is shown by ancient sources, the development of the form and meaning of the Persian language in the historical periods, and the comparison of this word with different Iranian languages.

Although the word “*shah*” is clearly visible in the term “*padshah*”, this word is considered root in the synchronic aspect. In “*Ghiyosul-lugot*” it is shown that the king is formed from the combination of the words “*pod*” (throne) and “*shah*” (king) [5].

Even though “*shah, shahanshah*” represents the title of the kings of Iran from long periods of Eastern history to the recent past, in many historical and artistic works, we do not see a definite ideological difference between the terms *shah, khan, sultan, emir* (these terms are relatively different). For example, in “*Riyaz ud-Dawla*” the term “*shahanshah*” was used as an expression of respect and praise for Khan of Khiva. For example, ...*hazrati shahanshoi jannat joygoh... har guruhi qalaning bir tarifiq'a buyurdi, tokim xar guruh qala yovuqiga borub, bir sarkub bino qilg'aylar.* (p. 120)

In addition, the word “*khusrav*” can be found in the Ogahi's lexicon as a synonym for the above. (Let's remember the verse “*Ayo, Khusravi*”). Also, for the Ogahi's lexicon, the adjectives related to it, “*khusravona, khusravoni*”, are also active. The word “*khusrav*” was in the form of *husrüv* (a good name, there is also a form of *khusrav*) in Pahlavi, *khusravah* in “*Avesta*”, “*sushravas*” in Sanskrit, “*khosrau*” in Middle Persian [4]. According to Abu Abdullah Khorezmi, the Arabicized (Murrab) form of *khusraw* is “*kisra*”. That is why our prophet is said to have sent a letter to the Iranian king *Kisro* at the beginning of his prophethood.

So, in the Ogahi's lexicon, there are words *padshah, shah, shahanshah, shahriyor, khusrav* belonging to one universal level to express the meaning of king. In addition, in the language of our classical writers, there is also the word “*khudovand*”, which expresses the concept of king with one of its meanings. According to written sources, the word “*khudo(y)*”, which is the first part of this word, was in the form of “*khvatay*” in Pahlavi, “*khvatadh*” in Pahlavi of the Ashkanite period, and “*khvadai*” in medieval Persian. The original meaning of this word is survived in the words *khudo, dekhudo, khonakhudo, katkhudo, Turonkhudo*. In addition, “*khudovand*” initially meant king, chief, leader, and later acquired the meaning of god [8]. It is also known from history that before Islam, the kings of Bukhara were called *Bukhorkhudot* (King of Bukhara). Summarizing the above points, we think it would be good to draw the following conclusion: the word “*khudo*”, meaning owner, master, leader, manager, belongs to the Pahlavi language, and later acquired the meaning king, and in the further development of meaning, became the name of a god. We can compare this situation with the Turkish word “*tangri*” meaning the sky. (“*Bilga hokan*” solid stone, first line). Also, the use of the word “*egam*” today also sheds light on this idea.

In classical Persian, we often find that the word “*khudovand*” is used in the sense of a king: For example, in “*Saddi Iskandariy*”:

*Xudoyo, musallam xudoliq sanga,
Birov shahki, da'bi gadoliq sanga.
Xudovandi bemislu monandsen,
Xudovandlarg'a xudovandsen* [2].

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EXPRESSION OF LANGUAGE UNITS RELATED TO THE OGHUZ DIALECT IN HAFIZ KHOREZMI'S LYRICS

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ABSTRACT

The article analyzes the lexical and grammatical elements of the Oghuz dialect in the poetry of Hafiz Khorezmi. Through the study of the language of Hafiz Khorezmi's divan, the characteristics of the old Uzbek language of the period in which he lived were described.

KEY WORDS: *Hafiz Khorezmi, devan, old Uzbek language, linguopoetics, lexical resource, Oghuz dialect, Qarluq dialect, Kipchak dialect, dialect elements, grammatical forms.*

In our opinion, the question of the role of dialects in the formation and development of the Uzbek literary language is a very relative concept, for example, first of all, it is not for the purpose of determining which dialect is the leader and comparing its influence on the literary language, on the contrary, it is necessary to show the commonality between them and to emphasize that each dialect of the Uzbek language is closely related to each other. In fact, differences between dialects are mostly the result of phonetic phenomena, which in turn create some lexical differences, and morphological differences in turn create syntactic differences.

For example, A.Ahmedov, who has been extensively analyzed this issue, points out the phonetic situations specific to the Oghuz dialect, summarizes the opinions in the existing literature, and substantiates his comments with several examples [2].

Karluq and Kipchak dialects have a sonorous [m] phoneme at the beginning of the word, such as (men, murun, muncha, ming, mayram, muz...), presence of a sonorous [b] phoneme in the Oghuz dialect, such as ben, burun, buncha, bing, bayram, buz....

If we look at the given examples in the case of the materials of the old Uzbek language and the current Uzbek literary language, the old Uzbek literary language and our current literary language are recorded in some cases of Kipchak and Karluq dialects, and in some cases of the Oghuz dialect. The priority of the elements is visible. That is why such examples show the relativity of determining the obvious superiority of a dialect in our literary language.

For example, in the modern Uzbek literary language, the pronoun form “*buncha*” is active, while in the old Uzbek language, in particular, in the language of Alisher Navoi's works, the pronoun form “*muncha*” was actively used. As we can see, in “Badoyi ul-bidaya” this pronoun was used in the form of “*muncha*” in all cases (22 times).

One of them is about the word “*bayram*” (holiday).

In old Uzbek, the form “*bayram*” is also active:

Muning shukronasi qurbon bo'loyin [5],

Shami emas erdin, kavokib charxdin bayram tuni,

Kim erur er-tuman ming ko'z bilan hayron sanga [4].

In the “Annotated Dictionary of the Language of Alisher Navoi's Works”, the word “*bayram*” is interpreted as a combination of “wedding: celebration, holiday, joyous day” [9], and the combination of “two holiday days” and in other examples with the word “*bayram*”, it was used in the meaning of Eid. This proves the following ideas of Mahmud Koshgari: “... in the folk language, the word “*bazram*” in the meaning of the day of happiness and joy is connected with this word, the meaning has changed in this place. Because in the era of Jahiliyyah, it was the holiday itself that required the origin of such a word. If it existed, the Turkic peoples would have known about it. However, they do not know it. Only those who pronounce the letter ð by turning it into ʻ know this” [16].



Thus, Mahmud Koshgari specially emphasizes that this word is special. The word “bayram” meaning “celebration, joyous day”, “blessed day” was formed by adding the suffixes (‘)r and –a, which expresses the meaning of strengthening, and –m to the form “bay” of the verb “baz” in the old Turkic language [19]. It is formed from the form of shib with suffix –m. The information given by Mahmud Koshgari about this word leaves no doubt that it is an Oghuz element: “Baz’ram is joy and laughter among people. ... The Oghuz people call the day of joy a holiday. That is, joy and a pleasant day. So, as their interpretation, ÷ and ʻ are special words” [16].

This word has the forms “bayram, beyram, beyrem, bāyrām, mayram, meyram, meyrem, payram, peyram, peyrem” in Turkic languages [13]. G.Clouson connects the etymology of this word with the Persian word “baḍrām” [6].

Now, in this regard, we analyze the use of the word “bayramlik” in the ghazal quoted above from Alisher Navoi:

Notovon jismimg‘a bayramliq bila ber suhbate,

Kim ko‘ngul ummedvoru muntazirdur jon sanga [4].

The point that attracted our attention is that the word “bayramliq” is reflected in the mother tongue. This word is included in “Dictionary of works of Alisher Navoi” by E. Fazilov, and it is mentioned in the example of this verse [10]. As E. Fazilov firmly corrected, the word “suhbate” in this verse is in accordance with the content. First of all, it should be read in the form of “suhbate”. This error was corrected in the next edition [3]. Secondly, the word “bayram” was represented as بېرام , that is, by the letter “alif” with the vowel “a”, which proves once again that it is a word of its own class. Because the short vowel “a” in old Uzbek borrowings was not expressed by “alif” in the middle of the word, but by “fatha” [13]. We support T.Gulensuy’s opinion that it is a mistake to say that the word “bayram” belongs to Persian.

In dialects, in the middle of a word, the unvoiced phoneme [t] turns into the voiced phoneme [d]: *bolta, o‘t, o‘tin, butaq... – boldu, ud udin budaq...*

Let’s pay attention to one of the given examples: “baltu/balta” (axe) was used in the form of “baltu” in the second half of the first millennium [18], as well as in the form of “bolta” in some dialects of the Bulgarian language. It was found that it was used in the form of “baldu” from the 11th century. In modern languages, it is common for the final sound to take the form of “a”. The final sound “u” form is still preserved in the Uyghur language and is widely used. The antiquity of the word is confirmed by the Hungarian language in the form of “balta // bolta” (in Russian – *monop*). The historical etymological description of this word is quite controversial. In particular, V.I.Abayev sees this word among the Iranian acquisitions in Turkic languages [1]. But the common Iranian form of the word in question, the stem is “parasu”, the supposed old Iranian form “palaθu” (such as Ossetian “farse”, Tokharian “peret (porat)”, Finno-Ugric forms and Tokhar-chuvash forms “porte”). There is a strong possibility that Turkic form “balta” is the result of the development of the consonant and the preservation of the inlaut (-l) in the Iranian word “palaθu”. In this case, it is understood that this word was formed in connection with Indo-European languages, but there is still no clear source for this. The source of the word “peleku” (halberd, pole-axe) in Indo-European languages is Semitic languages.

G. Remstedt stated that “balag, balya” is actually a long (wide) knife in the shape of a crescent moon. This word is used as “paraçu, parçu” in Sanskrit, “pilaqku” in Assyrian, “balaq” (axe) in Sumerian, “plexus” in Greek. This can be a proof of the above opinion. K. Manges, who continued his opinion to a certain extent, said that the “balqa” had different forms in different historical periods and shows its place in the form of a universal Turkish “balta”. According to its qualification, the word “bolta” is connected to the root of “balag” (Sumerian) and “pilaqku” (Assyrian-Babylonian), “plexos” (Greek), “parasuh”, “parsuh” (Sanskrit). In the Siberian Turkic languages, it is represented by another ancient Mesopotamian word (balta, balta– bolta). Close to the opinion of G. Romstedt and K. Menges, M. Resenen compares “balkan”, the Mongolian “aluqa” (malot) and the common Turkic “bolta” (topor) with “baska” - a big hammer. Similar works are also available in the works of G. Dyrfer, N. Poppe. B. Collinder’s work can also be added to this list. He compared the Finnish “parquet”, “patkele” - small lopat; “petkel”, “petkol” - heavy handle, New Persian “putik” (claw hammer), Greek “pulk”, and Turkic “bolg‘a” and notes that these are derived from a common root “bal”. The analysis shows that it is not accidental that the word “bolta” has different forms in the historical stages and dialects of the Uzbek language.

Determining the elements of a dialect in the language of written monuments is a very difficult matter. First of all, when we say Oghuz elements in the language of the written monuments of the XV-XVI centuries, the analyzed materials are defined in relation to the Oghuz dialect of today’s Uzbek language. Available scientific sources cannot give a detailed idea of the Oghuz dialect of that time. That is why it is better to study them as elements of a dialect, rather than logically accepting the expression “dialects” in a written source language. In addition, the object can be compared to the Turkic languages of the Oghuz group in the language of the records. Secondly, some phonetic, grammatical and lexical units defined as Oghuz elements are not unique to this dialect,



some have commonalities with Kipchak and some Karluq dialects. Therefore, there is a need to divide such units into internal groups as pure Uyghur elements and common elements. Based on this, it is necessary to accomplish the difficult task of determining which morphological indicators, which syntactic devices, which phonetic cases, which lexical units can be defined as purely Uyghur elements.

At the same time, it is necessary to determine the factors of the emergence of Uyghur elements in the language of written monuments. For example, the presence of Oghuz elements in the language of Alisher Navoi's works is related to the fact that the genius creator united all Turkic-speaking peoples "from Khito to Khorasan" under "yakkalam" (one judgment), Navoi's language was the standard for "certain Turkic nations" and other factors. The activity of some writers in the language is related to their ethnic origin. Such comments can be made about Hafiz Khorezmi from Khorezm. On the other hand, the environment and space in which the artist lived, in particular, the "language" of the ruling circles of that time and region, which dialect was represented, is also one of the factors we have in mind. For example, in Heydar Khorezmi's "Muhabbatnama" Oghuz elements and Kipchak elements are mixed, and there is a special place of qungirof begi Muhammad Khojabek's suggestion:

"Tilarmenki, bizim til birla paydo
Kitobe aylasang, bu qish qotimda" –

In this case, the Kipchak elements of "bizim til" (our language) should be understood as the primary literary language. If samples from Khorezmi's other works had arrived, this opinion would have found its clear proof. Also, one of the reasons why the language of Hafiz Khorezmi's "Divan" has Oghuz and Karluq dialect elements in common is explained by the fact that he worked for a certain period in the presence of Iskandar Sultan.

No large-scale research has been conducted on the language of Hafiz Khorezmi's "Divan", which we are going to talk about. His creative legacy of 18,632 verses allows to think broadly about the Uzbek literary language up to Alisher Navoi, especially the Oghuz elements in the language of the written monuments of the period.

If we consider the above-mentioned comments on the example of Hafiz Khorezmi's "Divan", we can see that the language of the work is a source that shows the importance of Oghuz elements in the old Uzbek language.

In linguistics, the lexicon of the Oghuz dialect of the Uzbek language has been specially studied [15]. Despite this, the study of the relation of words in this dialect to the old Uzbek language is a very complicated issue. For example, the language of Hafiz Khorezmi's "Divan" contains elements of all three dialects in some cases. For example,

Toqat etmasa ko'zum yuzungg'a *boqмага* ne tong,
Chun quyoshing *yuzina boqmog'a* imkon yo'q durur [12]. (p.24)

In this verse, we observe the elements of the Kipchak dialect in the word "*boqmag'a*", and Oghuz dialect "*yuzina*". In the word "*boqmag'a*", the suffix came in the form *-a*, but in the Oghuz dialect, it would have taken the form of "*boqmaq*". In the Oghuz dialect, even when grammatical forms beginning with a vowel are added to polysyllabic words ending with the consonant *-q*, the deep tongue back sound does not change to another (*-z*), such as *oraqini-* (lit. *o'rokini*). "*Bakmag'a*" is currently a form characteristic of the Kipchak dialect of Khorezm.

In the Oghuz dialect, the "*-na*" form of the past participle is very active. An example of such units is the word "*to'lu*". This word is used in the form of "*doli*" in Turkmen, and "*dolu*" in Turkish [20]. It is also used in the Oghuz dialect in the form of "*do'li*" [14].

Qolmag'il darband Xorazm ichra, ey Hofiz mudom,
So'zlaring ovozasidan *to'ku* chun Tabriz erur. (p.20)
Nur bila *to'lubdur jumla*-yi olam, lekin
Sham'ining oshiqi yomonlik uchun tor tilar. (p.26)

Currently, the word "*dudaq*" in the Oghuz dialect [14], "*dudak*" in Turkmen [20], and "*dudak*" in Turkish are used in the form of "*tudaq*" in the ghazal of Hafiz:

Ey savod-i chin-i zulfig soyabon-i oftob,
Vay *tudog'ing* birla xoling hasrati mushku gulob. (8-bet)

E. Fozilov notes that this word was in the form of "*dudog*" in the old Uzbek language [11].

Other examples are "*gazmak*", which means to come, to wander, to search (in the "Divan" edition, it is given in the form of "*qaz-*"); "*chummoq*" in the meaning of sinking; "*chakmak*" in the meaning of pulling:

Benishon bo'lub jahonni sarbasar *kazdim* vale,
Ganji husnin topmayin vayrona bo'ldum oqibat. (p. 10)



Ko'z yoshim daryo qilib, g'avvostak ko'nglum mani,
Ishq bahringga *chumib* durdona bo'ldim oqibat. (p.10)

So'z kelganda ushul kon-i shakartek og'zing,
Chakdi bosh noz birla mandin ushul sarki baland. (p.14)

“*Sudji*”, which means sweet, appears in Hafiz's “*Divan*” in the form of “*suchi*”. In the Oghuz dialect, there are also the words “*sujilik*” (a small wound on the head of children) and “*ujimsik*” (sweeter) [14]. For example, “halva degan bilan og'iz chuchimaydi”, which means “saying the word halva does not make one's mouth sweet”. (Proverb)

To'tiy *suchi* labing biki shakarshikan dagul,
Bo'lsa *suchi* so'zi taqi shaqardahan dagul. (ghazal 568)

Some of the words in Hafiz Khorezmi's “*Divan*” are words that have the same form in both dialects of the Khorezm oasis - Oghuz and Kipchak. For example, “*odosh*” (adash):

Zulfi savdosida boshim elga borg'ali tillar,
Bo'la bilgaymen teyu Majnun birla *odoshlar*. (p.28)

A separate group consists of words used only in the Oghuz dialect. For example, the word “*og*” is used in the form of “*ov*” in Kipchak and Karluq dialects:

Zulfi birla soidi shakli ko'zum ichra erur,
Andayin baliq ilingan bahirdakim *og* bor. (p.24)

It should be noted that the difference between words is not limited to phonetic and morphological forms, but in some cases also depends on their semantic features. For example, the verb “*qara*” is widely used in the Oghuz dialect to mean to search.

We can see this in the following example:

Olam ichra nozaninlarni qaradim ko'p, vale,
San bikin bir nozaninni ko'rmadim hargiz *qarab*. (p.8)
This is proof of our opinion that this word was bound to the object.

As an example of the Oghuz elements in Hafiz Khorezmi's “*Divan*”, we can cite the word “*isvanti*” - incense, which has been actively used in the Oghuz dialect:

Tegmasin nigoh o'shal oy yuznga ko'z tegib,
Yuzing otashi uzra ko'runur xoli *ispant*. (p.15)
Yuzi utsidagi ul dona-yi xolin sevadur,
Otashin ishq birla kuygali jonim chu *sipand*. (p.15-)

“*Ispant*” is incense “*garmala*” [8]. “*Ispant*” – اسپند is the name of a plant belonging to the family of frankincense, the seeds and stems of which make the smoke of the fire bring tears to the eyes, the seeds are small and dark brown. Also the name of the twelfth month of the Iranian lunar month (February 20 to March).

In addition, the goddess of the moon is also called by the name of “*Isfand*”. It is related to the Avestian word “*spenta*” and means holy. This word is used in the form “*espan*”, “*span-dana*” in Gilakian, “*esfand*, *espan* *span*, *harmala*” in Persian. This herb grows in several regions of Iran, and is also common in Central, Eastern, and South-Western Asia under moderate climate conditions. The scientific name of this uncultivated herb is *Harmala ruta* in Latin. The cultivated one is called *Peganum harmala*. “*Harmala*” comes under several names in Russian: *гармала*, *могильник*, *адраспан*, *рута*, *сирийская рута*, *степная рута*, *турецкая краска*; in English, two words are used to express this concept: 1) *incense - ladan*, *famimat*, which means that this word does not mean harmala, but the harmala made from it and burned in temples and religious ceremonies; 2) *harmel* - this word means exactly harmala and is used in such combinations as harmel field, harmel seller, harmel dealer [17]. This word is used in the works of Alisher Navoi in the form of “*ispand*, *sipand*” [7]:

Muhabbat tuxmidin o'zga ul o't uzra *sipand* etmas.

The aforementioned Hafiz Khorezmi can give the first impressions of the Oghuz elements in the language of “*Divan*”. In the course of research, we believe that the language of the century is an invaluable resource for studying the relationship between the old Uzbek language and its dialects.

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EFFECTIVENESS OF IMPROVING MEDICAL-SOCIAL COMPETENCE OF INTERNAL AFFAIRS BODIES EMPLOYEES AND CADETS

(In The Course of Pedagogical Experiments)

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ABSTRACT

Effectiveness of improving the medical and social competence of internal affairs bodies employees and cadets was analyzed in the course of pedagogical experimental work.

KEY WORDS: *medical and social competence, Internal Affairs Bodies employees and cadets, problem situation, case.*

Pedagogical system of guiding students of Suvorov military schools of the Ministry of Internal Affairs of Russia to the profession was investigated by A.F.Polyakov [6; 11p.], and Y.S.Ivanchenko [3] studied the pedagogical conditions for the formation of existentially significant personal characteristics of cadets of educational organizations of the Ministry of Internal Affairs of Russia in the process of interactive education, while the regional bodies of the Ministry of Internal Affairs of Russia A.A.Mitin [5] studied the issues of formation of pedagogical competences of leaders of training groups, A.B.Romanov studied the psychological and pedagogical prevention of drug addiction of the personnel of the national guard troops. The Ministry of Internal Affairs of the Republic of Uzbekistan is a public administration body, which generally manages and coordinates the activities of the system of internal affairs [1, 2].

Pedagogical pilot work was conducted on the basis of the pilot program for improving the medical and social competence of Internal Affairs Bodies employees and cadets. Pedagogical experimental work was organized and carried out at the Tashkent title-granting special training course, Samarkand and Khorezm training courses in 2023 at diagnosis and prediction, organizational-preparatory, practical and generalization stages.

The purpose of the pedagogical experiment-test is to improve the medical and social competence of Internal Affairs Bodies employees and trainees, and it was carried out in 3 stages: confirmatory (2022), determining (2023) and testing (2023).

The purpose of the confirmatory experience is to identify and study ways to improve the medical and social competence of Internal Affairs Bodies employees and cadets. The purpose of the determining experience is to organize general preparation for research, to study the forms and methods of improving the medical and social competence of Internal Affairs Bodies employees and cadets, to conduct medical and social work, and to develop interactive tasks and developments. The purpose of the pedagogical experiment is to conduct research and collect reliable data on improving the medical and social competence of Internal Affairs Bodies employees and cadets based on the obtained results. Normative documents on the organization, coordination and evaluation of pedagogical experimental work were implemented in the leading organization where the research was carried out and in the field of pedagogical experimental testing.

At the organizational-preparatory stage of the pedagogical experiment-test, the pedagogical experiment-test sites and participants, the description of the pedagogical process were defined, methodological and organizational support was developed. Pedagogical test results, questionnaire, preliminary and final tests were taken, and the results of designing and using problem situations were recorded. In order to determine the state of improvement of the medical and social competence of Internal Affairs Bodies employees and cadets, a questionnaire was conducted in the course of pedagogical experiments. 194 respondents from the special training course for awarding titles in Tashkent, 204 from the Samarkand training course, and 176 from the Khorezm training course took part in this questionnaire (see Table 1):



Tabel-1

№	Pedagogical experiment-testing grounds	Participation of Respondents in the Questionnaire Training course (vocational training course)	Participation of Respondents in the Questionnaire					
			JULY		AUGUST		SEPTEMBER	
			EG	CG	EG	CG	EG	CG
1.	Tashkent	Awarding a special professional development programme	27	27	32	32	38	38
2.	Samarkand	Professional development programme	38	38	41	41	23	23
3.	Khorezm	Professional development programme	28	28	25	25	35	35
TOTAL			93	93	98	98	96	96

A total of 574 respondents participated in the questionnaire in 2023 during the pedagogical experiment-testing. That is, 93 people in experimental groups and 93 people in control groups in the questionnaire in July; In August, 98 people in experimental groups, 98 people in control groups; In September, 96 respondents participated in experimental groups and 96 respondents in control groups (see Figure 1):

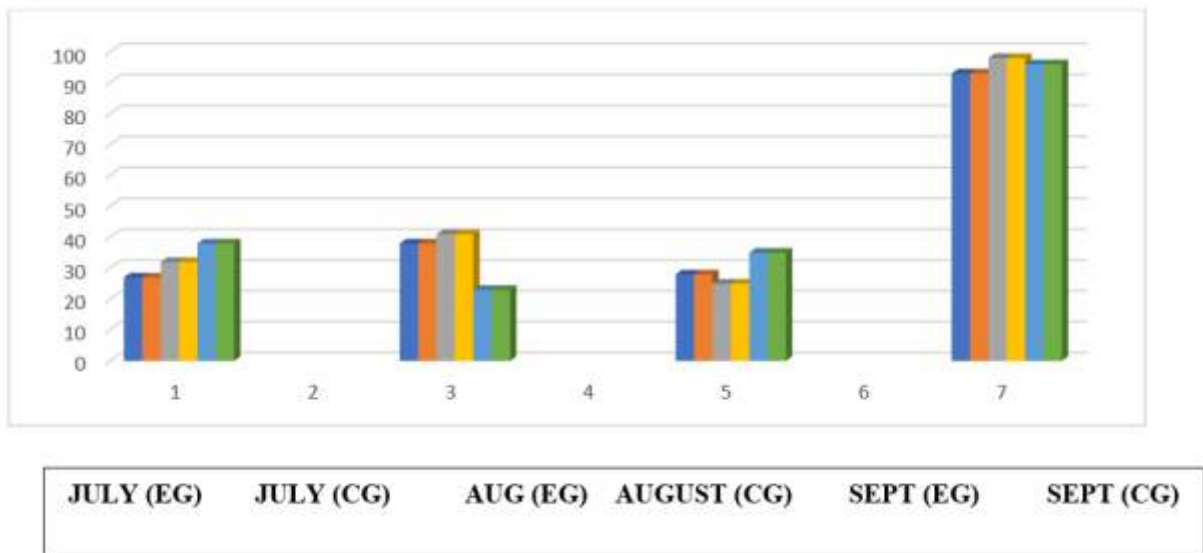


Figure 1. Respondents who participated in the questionnaire

At the end of the experiment in 2023, 97 people were in the experimental groups and 97 in the control groups at Tashkent Professional development programme for awarding titles, 102 at Samarkand Professional development programme, 102 in the experimental groups and 102 in the control groups, 88 in the experimental groups and 88 of the respondents participated in the control groups at Khorezm Professional development programme (see Table 2):



Table 2

№	Pedagogical experiment-testing field	Participation of respondents in the initial test						TOTAL	
		JULY		AUGUST		SEPTEMBER		EG	CG
		EG	CG	EG	CG	EG	CG		
1.	Tashkent	27	27	32	32	38	38	97	97
2.	Samarkand	38	38	41	41	23	23	102	102
3.	Khorezm	28	28	25	25	35	35	88	88
	Total	93	93	98	98	96	96	287	287

At the end of the experiment in 2023, 97 people were in the experimental groups and 94 were in the control groups at Tashkent Professional development programme for awarding titles, 102 were in the experimental groups and 99 were in the control groups at Samarkand Professional development programme, 87 were in the experimental groups and 85 of the respondents were participated at Khorezm Professional development programme (see Table 3):

Table 3

№	Pedagogical experiment-testing field	Participation of respondents in the final test						TOTAL	
		JULY		AUGUST		SEPTEMBER		TG	NG
		TG	NG	TG	NG	TG	NG		
1.	Tashkent	27	26	32	31	38	37	97	94
2.	Samarkand	38	37	41	40	23	22	102	99
3.	Khorezm	27	26	25	25	35	34	87	85
	Total	92	89	98	96	96	93	286	278

A total of 287 respondents in the experimental group and 287 respondents in the control group participated in the preliminary test in July-September 2023 (see Figure 2):

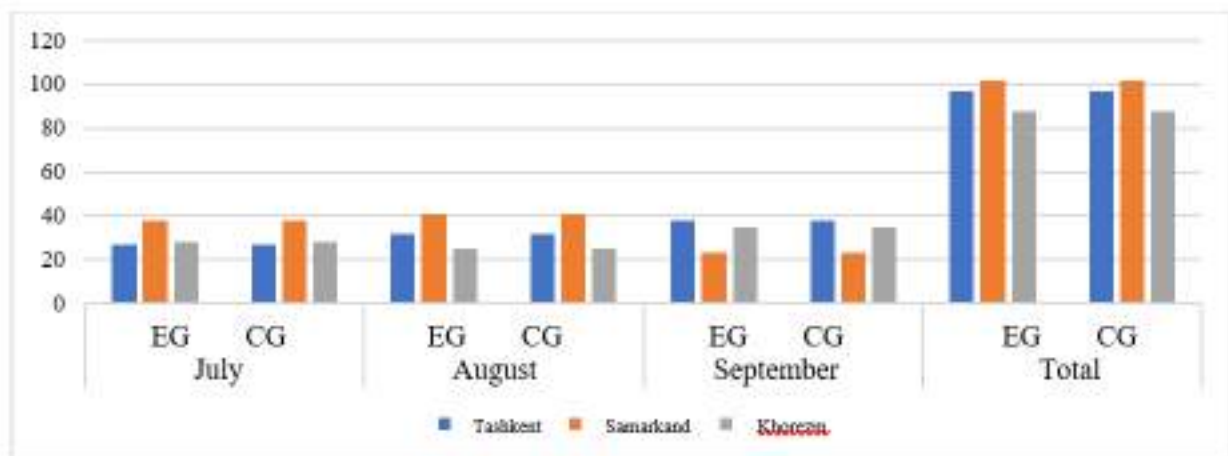


Figure 2. Respondents who participated in the initial test

A total of 286 respondents in the experimental groups and 278 respondents in the control groups participated in the final test in July-September 2023 (see Figure 3):

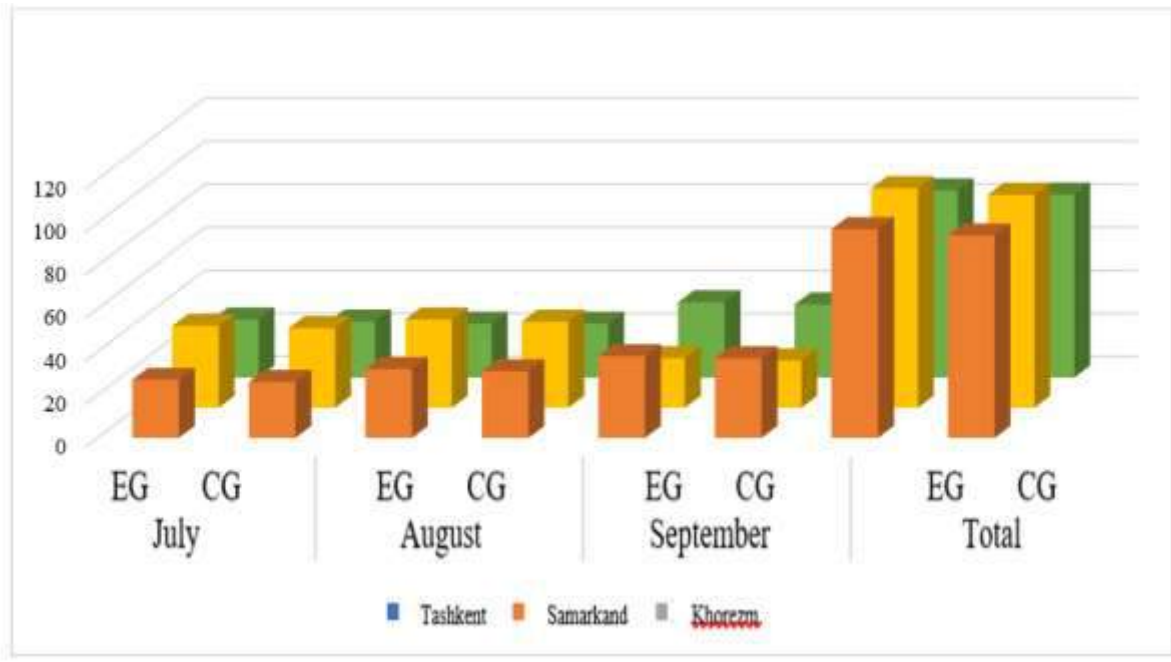


Figure 3. Respondents who participated in the final test

During the organization of the pedagogical experiment, the following measures were taken to the pedagogical process under investigation by the researcher: Conditions were created in organizations in order to improve the medical and social competence of Internal Affairs Bodies employees and cadets. In the process of pedagogical experimental work, the efficiency indicators of forms and methods of improving the medical and social competence of Internal Affairs Bodies employees and cadets were systematically identified and recorded in experimental and control groups. The processes of implementation of pedagogical events were clearly described.

The planned trial period and the amount of training material were set for 2023. In addition, the preliminary and final test in experimental groups under the program of conducting pedagogical experimental work was conducted by the researcher at the experimental site in Tashkent and by the managers of the other experimental sites. In the program of pedagogical experiment-testing, experiment-testing exercises were developed in series and the specified topics were conducted with the help of subject teachers. Methodological support for improving the medical and social competence of Internal Affairs Bodies employees and cadets was prepared in the following stages and provided in applications:

- 1) selection of materials related to increasing the medical and social competence of employees and trainees of the Ministry of Internal Affairs;
- 2) development of questionnaires and test questions;
- 3) development of didactic support for increasing the medical and social competence of employees and trainees of the Ministry of Internal Affairs;
- 4) design of problem situations and cases.

Organizational support for a pedagogical experiment-test consists of testing in practice the scientific innovation put forward in the dissertation, determining the learning conditions, the processes for discussing research work by the organization, formalizing the organization and completion of the pedagogical experiment, the testing experiment and the results obtained during the research work were based on the development of practical and methodological recommendations for implementation in the education system.

At the practical stage of the pedagogical experiment-test, it was conducted in parallel and mixed groups, emphasizing, forming and controlling the improvement of the medical and social competence of Internal Affairs Bodies employees and cadets. Pedagogical test materials were developed in order to improve the medical and social competence of Internal Affairs Bodies employees and cadets:

- questionnaire;
- initial and final test tasks;
- designing problem situations;
- design of educational cases.

Statistical analysis of the results of pedagogical experiments was studied on the basis of:

1. Initial and final results of the survey of the experimental and control groups.
2. Preliminary and final test results of the experimental and control groups.
3. Results of the work of experimental groups on the design of problem situations.
4. Results of designing educational cases of experimental groups.

It was determined according to the theoretical and practical analysis of improving the medical and social competence of Internal Affairs Bodies employees and cadets in the organization and conduct of trainings specified in the pedagogical pilot-test program. There are several statistical methods for the statistical analysis of pedagogical experiments. One of them used Fisher's statistics to analyze questionnaire questions, and Pearson's chi-square test to analyze test and case results.

According to the analysis of the obtained results, the difference between the average acquisition value in the experimental and control groups and the efficiency is 1.15-1.17 times higher, the empirical value of the used statistical criterion is greater than the critical value, led to the acceptance of the H1 hypothesis. That is, the results obtained at the end of the experiment are effective. This can also be seen in the diagrams below (see Figure 4):

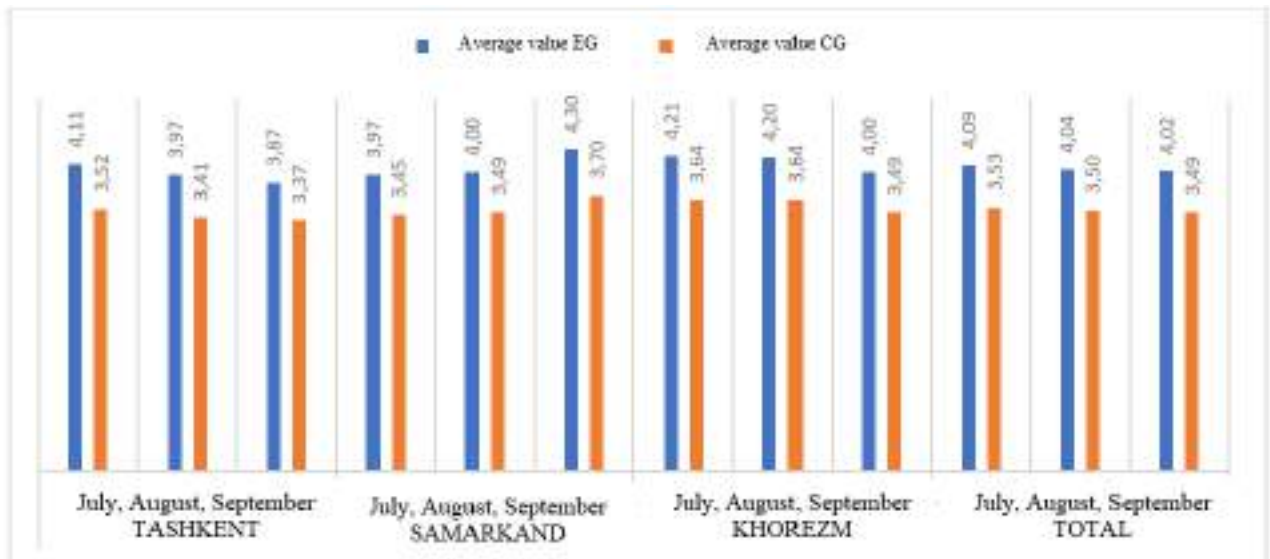


Figure 4. Average acquisition value in final test outcomes

According to the analysis of the obtained results, the average acquisition value is different in the experimental and control groups and the efficiency is 1.14-1.16 times higher, the empirical value of the used statistical criterion is greater than the critical value, which led to the acceptance of the H1 hypothesis. That is, the results obtained at the end of the experiment are effective. This can also be seen in the diagrams below (see Figures 5-6):

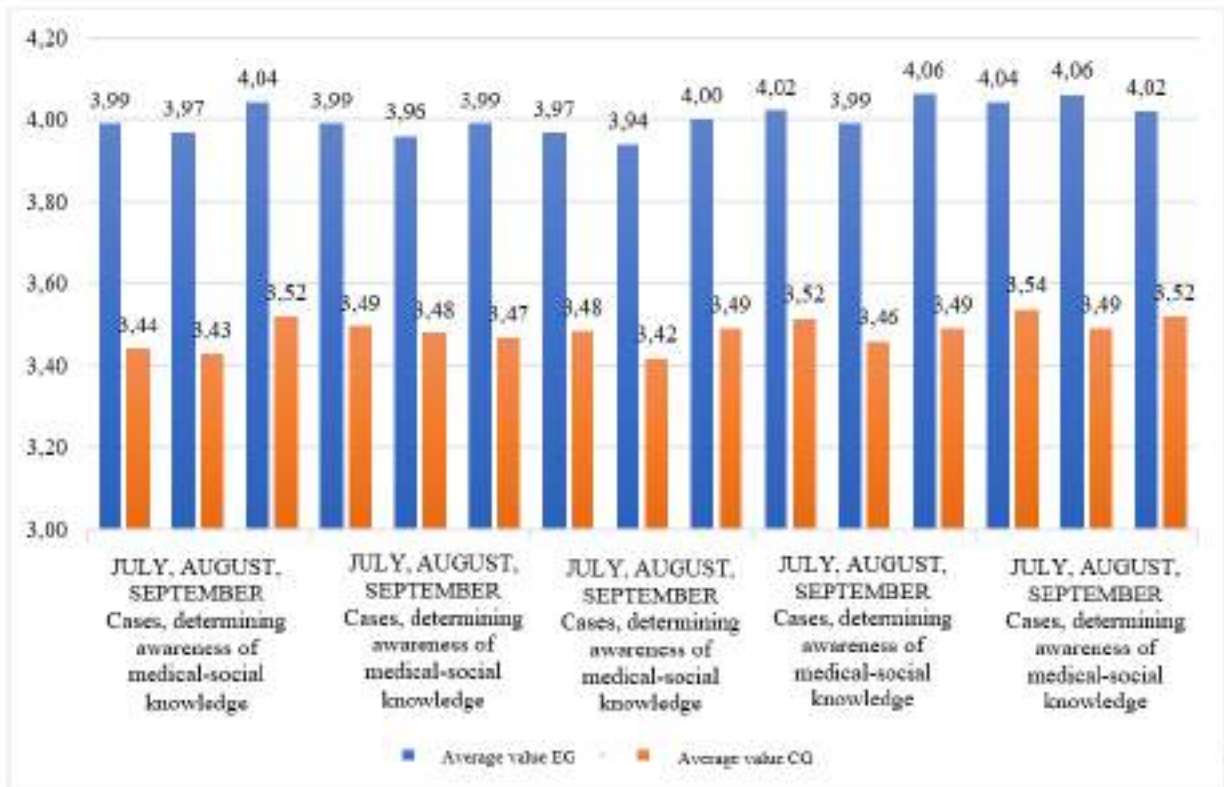


Figure 5. Average acquisition value of the outcomes of designing the final education cases

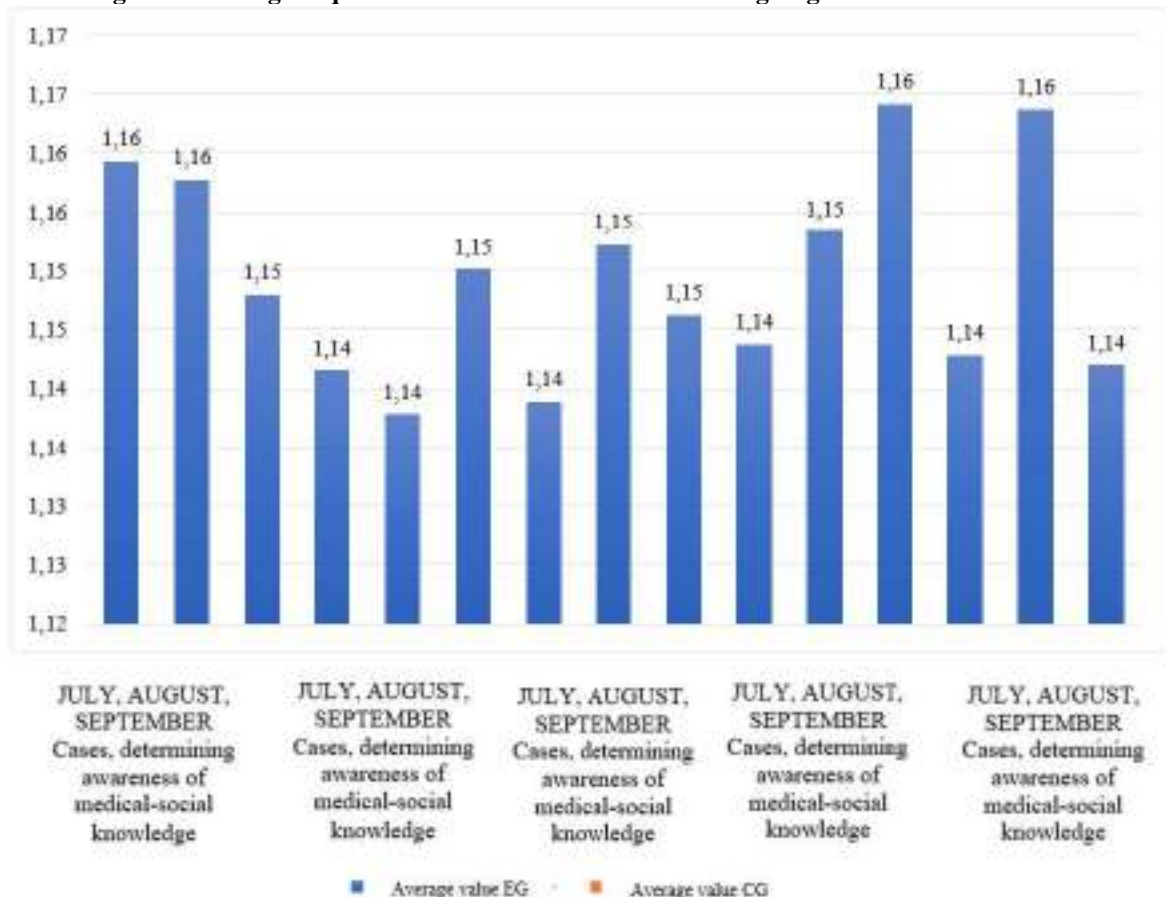


Figure 6. Efficiency indicator of the outcomes of designing final educational cases

According to the results of the conducted research, it was proved by statistical methods that it is 1.16 times higher than the test results, 1.16 times higher than the results of the design of problem situations, and 1.15 times higher than the results of the design of problem situations (see Figure 7):

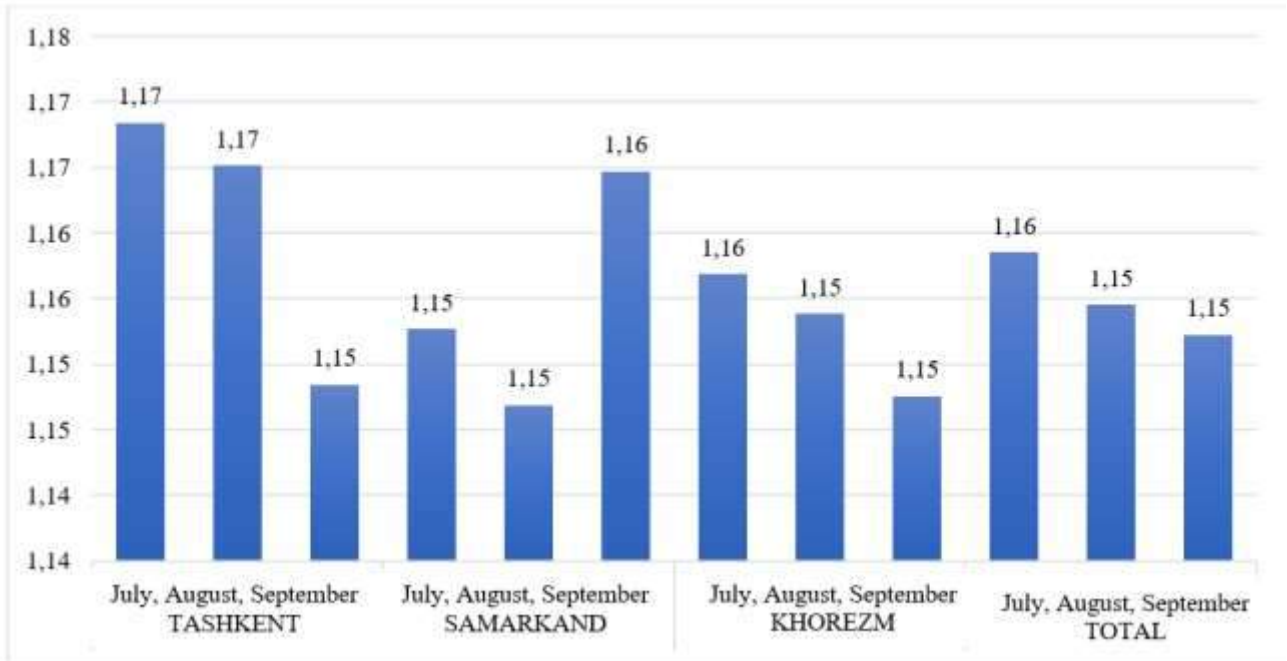


Figure 7. Performance indicator of final test outcomes

According to the analysis of the obtained results, the average acquisition value is different in the experimental and control groups and the efficiency is 1.15-1.17 times higher, the empirical value of the used statistical criterion is greater than the critical value, which led to the acceptance of the H1 hypothesis. That is, the results obtained at the end of the experiment are effective. This can also be seen in the diagrams below (see Figures 8-9):

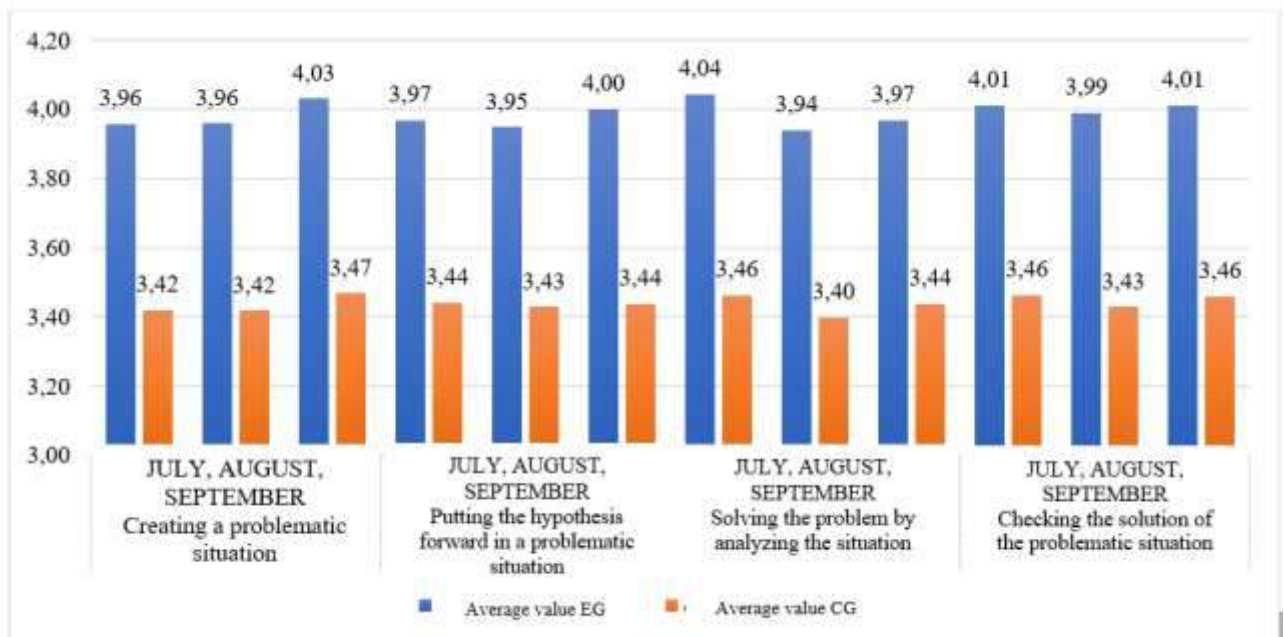


Figure 8. Average acquisition value of design outcomes for final problematic situations

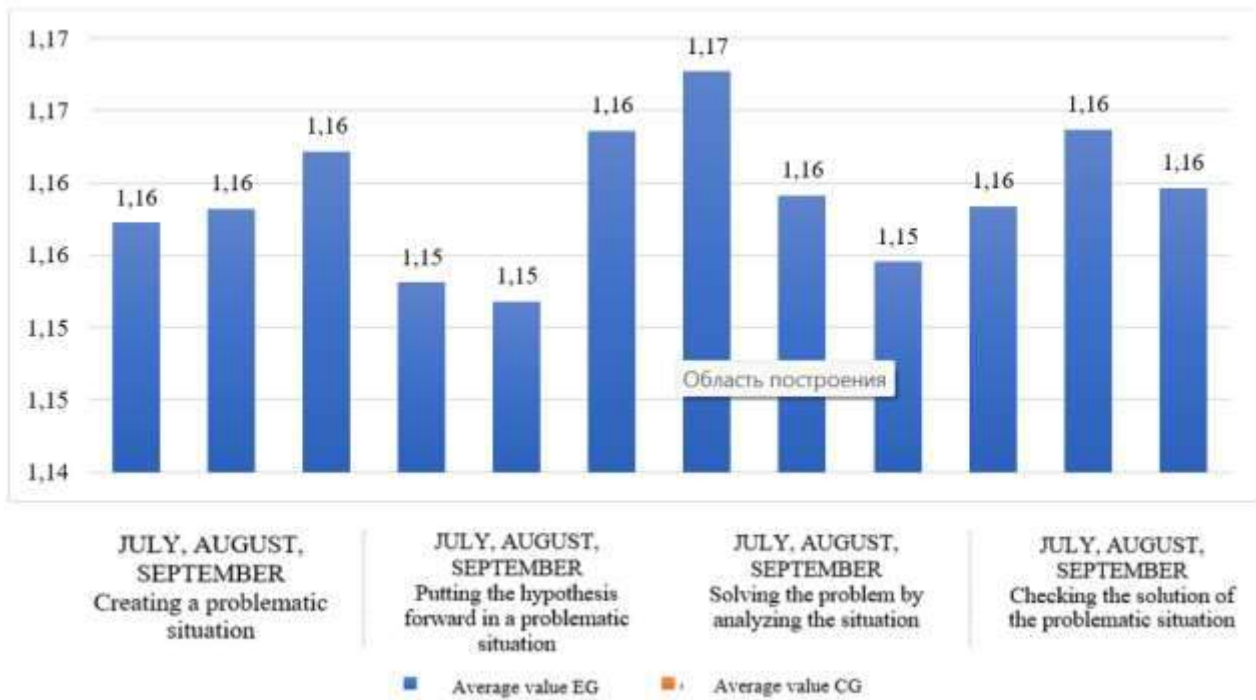


Figure 9. Performance indicator of the outcomes of designing the final problematic situations

According to the results of the conducted research, it was proved by statistical methods that it is 1.16 times higher than the test results, 1.16 times higher than the results of problematic situations design, and 1.15 times higher than the results of problematic situations design.

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KAYKOVUS AND “KABUSNAMA”: A COMPREHENSIVE ANALYSIS OF ETHICAL, PHILOSOPHICAL, AND PEDAGOGICAL VIEWS

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ABSTRACT

Kaykovus, a distinguished figure of the feudal Middle Ages, left an indelible mark through his sole written legacy, “Kabusnama.” This article provides a detailed exploration of this masterpiece, translated into various languages, serving as a gateway to understand the life, worldview, and contributions of Kaykovus. The theoretical underpinning of his religious-idealistic monism shapes his ontological, epistemological, and ethical perspectives. Through an in-depth analysis, we trace Kaykovus’s ethical categories, including general, special, and particular, shedding light on his philosophical leanings and societal ideals. His views on truthfulness, contentment, generosity, and professional ethics offer a nuanced understanding of his moral philosophy. The article also delves into Kaykovus’s examination of Javonmardi and Sufism, emphasizing their progressive and humanistic tendencies. Furthermore, it explores the intersections of Kaykovus’s ideological limitations with socio-political life, religious ideology, and the philosophy of aristocracy. As we navigate his pedagogical views rooted in religious-idealism, the article underscores the contextual relevance of Kaykovus’s teachings within the historical milieu.

KEYWORDS: *Kaykovus, Kabusnama, Ethical Views, Philosophical Perspectives, Pedagogical Concepts, Religious-Idealistic Monism, Javonmardi, Sufism, Moral Philosophy, Feudal Middle Ages.*

Kaykovus’s only written legacy is “Kabusnama”, consisting of forty-four chapters, translated and published in English, Russian, Uzbek, German, French, Turkish. It brought its author world fame and, in imitation of him, a number of didactic and edifying works were subsequently created. In “Kabusnama”, all aspects of his worldview are reflected and therefore it is the only reliable source for studying the life activity and views of Kaykovus.

The theoretical credo of Kaykovus’s worldview is set out in the framework of religious-idealistic monism, where a non-specific ideal single creator creates the physical world according to the laws of wisdom and the canons of teleology.

Kaykovus’s ontological and epistemological views, as the ideological basis of his ethical views, when considering certain issues of a theoretical and worldview nature, come close to the teachings of the Eastern Peripatetics, which differs from other philosophical schools of Arab-Pharsi language philosophy in its specific categorical-conceptual apparatus, logical coherence and rigor of presentation. Kaykovus’s epistemological views reflected the idea of the powerlessness of the human mind in the process of knowing God as an object of knowledge, since the latter is ontologically characterized as an incorporeal and infinite being [1].

Kaykovus’s ethical views are directly related to his ontological, socio-political, aesthetic and religious ideas. Therefore, their comprehensive historical and philosophical study undoubtedly sheds light, in general, on his worldview.

Kaykovus mainly presents his ethical views through the prism of three philosophical categories: general, special and particular. Therefore, considering universal human norms of behavior, he moves on to the analysis of professional ethics, and further his reflections cover the ethical properties of the teachings of Javonmardi or Sufism.

In fact, when Kaykovus sets out the ethical principles of a certain class and a select part of the population from the position of the philosophy of aristocracy, he separates himself from us and, conversely, when he writes about universal moral norms, he becomes ideologically closer to us, to our morality.

In the ethical views of Kaykovus, the problem of good, evil, goodness and nobility occupies a priority place. The thinker, comprehensively considering these issues, tries to find the material, mental, psychological, socio-political prerequisites for their emergence and change. One of the features of Kaykovus’s ethical views is that his moral ideal is closely related to the ethical



categories of good and evil. Therefore, on the one hand, he connects them with the human soul, and on the other with his spiritual and educational qualities. These categories, from the point of view of Kaykovus, also play an evaluative and axiological role in determining the ideological essence of other ethical norms and principles [5].

When analyzing ethical problems, Kaykovus, focusing on the difficulties of life situations, proposes various spiritual and material factors to solve them, which include knowledge, wisdom, wealth, skill, craft, art and religion.

The peculiarity of Kaykovus's ethical views is that they do not develop ascetic, opportunistic motives in a person, but, on the contrary, under their influence a cheerful and world-transforming mood is formed [2].

The thinker also examines in detail such ethical categories as truthfulness, contentment, generosity, magnanimity, moderation, politeness, etc. According to him, these properties constitute virtues that make a person good and perfect. On the other hand, in ethical categories that are opposite in their essence, such as cowardice, lies, duplicity, greed, stinginess, the negative properties of people are expressed.

Considering the professional ethics of townspeople, especially artisans, Kaykovus attaches great importance to the relationship between universal ethical standards and professional morality, where the particular, reflecting the general, on the other hand enriches it.

Kaykovus's reasoning traces the idea of interconnectedness and interdependence of social needs, professional necessity and moral interest reflected in professional ethics.

Along with the analysis of ethical standards, Kaykovus purposefully sets out issues of etiquette, covering the norms of human behavior in various life situations. The thinker, setting out his views, was confident that the ability to behave correctly in society is an important component of a way of life, which, in general, is included in practical philosophy. On this basis, etiquette, as a kind of science about human behavior, does not lose its practical significance in relationships between people at all times, therefore, to some extent, "Kabusnama" can be considered a guide to ethical education.

The analysis of the ethical views of Javonmardi and Sufism in "Kabusnama" occupies an important place, because Kaykovus in them, first of all, finds ideological consonance with his moral ideal. In fact, when considering the ethical views of Javonmardi and Sufism, Kaykovus deliberately draws attention to their progressive and humanistic tendencies, which educate a person on the basis of valuable achievements of morality to the level of a perfect person. Issues of Sufism in general, and its ethical views in particular, as presented by Kaykovus, acquire a cheerful and humanistic character. With such a formulation of questions, the tendencies of asceticism and pessimism are alien to him [3].

Kaykovus's ethical views also reflected his ideological limitations, which were formed under the influence of socio-political life, religious ideology, ideological orientation, philosophy of aristocracy, etc.

But, despite the variety of political teachings, ideological movements and ideological trends, cultural traditions, Kaykovus's worldview and his pedagogical views were mainly formed under the direct influence of the socio-political, philosophical and pedagogical thought of the Central Asian people, which absorbed the progressive trends and values of human culture. In the general description of Kaykovus's pedagogical views in "Kabusnama", the fundamental aspects of his worldview are analyzed, because based on the general concept of pedagogical research, it is on the basis of the basic principles of the worldview of a particular thinker that the logical foundation of his pedagogical views is constructed.

Kaykovus lived in the era of the feudal Middle Ages, therefore his pedagogical teaching in "Kabusnama" must be assessed primarily taking into account historical conditions, as well as from the point of view of the morality that influenced his worldview. In his pedagogical views, Kaykovus stands unshakably on a religious-idealistic position, which subsequently served as an ideological prerequisite for him when presenting his pedagogical views. Consequently, Kaykovus took a religious-idealistic position, believing not only in the existence of God, but also in the creation of all things. Religious Muslim morality was the starting position for him in his pedagogical views. For these purposes, before presenting his pedagogical views, he considers the problem of God, nature, and the creation of the world. This issue is explored by him when presenting pedagogical norms. The problem of educating a perfect person is considered by Kaykovus in various aspects: anthropological, epistemological, psychological, medical and pedagogical. When resolving issues of the difference between man and animal, Kaykovus does not go beyond religious idealistic requirements, i.e., he believes that this is related to the activity of the creator. The thinker resolves issues of epistemology positively, that is, he believes in the power of man. For example, Kaykovus associates the concept of the moral character of a noble person with the observance of religious rules. He revered and observed the norms of Muslim morality and his pedagogical concept was built on the



basis of the requirements of Muslim ethics, but this does not mean that he was not original and built his ideas exclusively on the basis of Muslim ethics. The appearance of “Kabusnama” is associated with the urgent need to regulate the norms of behavior of the upper strata of society.

In conclusion, the article illuminates the multi-faceted contributions of Kaykovus through a meticulous examination of “Kabusnama.” It unravels the intricacies of his ethical, philosophical, and pedagogical views, showcasing the profound influence of religious-idealistic monism and contextual factors on his worldview. Kaykovus emerges not only as a thinker deeply rooted in Central Asian traditions but also as a visionary whose teachings resonate with humanistic ideals. This comprehensive study not only enriches our understanding of Kaykovus’s legacy but also underscores the enduring relevance of his insights in the realms of ethics, philosophy, and education.

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ETHICAL CONCEPTS IN SAADI'S WORKS: A PROFOUND EXPLORATION

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ABSTRACT

This article meticulously explores the ethical concepts woven into Saadi Shirazi's seminal works, "Bustan" and "Gulistan". Delving into specific ethical concepts such as generosity, humility, justice, reflections on life's transience, and societal critique, the analysis unveils the timeless wisdom and moral teachings embedded in Saadi's literary legacy. Drawing on the perspectives of scholars like E.G. Browne, Janet Afary, and Franklin Lewis, this exploration offers a comprehensive understanding of Saadi's enduring impact on Persian literature and philosophy. Saadi's affiliation with Sufism and the universality of his ethical values are also examined, providing insights into the profound spiritual resonance and humanistic principles present in his works.

KEY WORDS: *Saadi Shirazi, ethical concepts, Persian literature, "Bustan," "Gulistan," generosity, humility, justice, life's transience, societal critique, Sufism.*

Saadi's affiliation with Sufism, as noted by Ritter [2], profoundly influenced his ethical philosophy. The mystical dimensions in his works reveal a deep spiritual resonance, echoing Sufi ideals of inner purification and divine love. Saadi's Sufi-inspired ethical teachings offer a unique blend of mysticism and practical wisdom.

The universality of Saadi's ethical values has been eloquently expounded by Nasr [3;4]. Saadi transcends cultural boundaries, articulating principles of compassion, justice, and humility that resonate across civilizations. His ethical teachings, rooted in humanistic values, have enduring relevance in fostering a harmonious global society.

Saadi Shirazi, a luminary of Persian literature, intricately entwines ethical concepts into his narratives. The ethical richness of his works, "Bustan" and "Gulistan," transcends temporal and cultural boundaries, resonating with readers across centuries. This article aims to unravel the specific ethical concepts present in Saadi's writings, supported by analyses from renowned scholars who have explored the depth and nuances of his ethical philosophy.

1. Generosity and Kindness:

Central to Saadi's ethical framework is the virtue of generosity. In "Bustan," Saadi extols the positive impact of acts of kindness and benevolence on individuals and society. E.G. Browne, a Persian literature scholar, highlights Saadi's emphasis on the reciprocal benefits of generosity, providing readers with enduring lessons on virtuous living [5]. An example of this concept is illustrated in the allegorical tale of a generous king in "Gulistan".

2. Humility and Gratitude:

Saadi's ethical teachings delve into the virtue of humility, emphasizing its transformative power. In "Gulistan," Saadi employs the allegory of a humble ant advising an arrogant elephant, showcasing the wisdom embedded in humility. Scholars like Janet Afary contribute to the academic discourse surrounding Saadi, shedding light on the cultural and philosophical dimensions embedded in his works [6].

3. Justice and Fairness:

The ethical concept of justice is woven into the fabric of Saadi's narratives. His tales often explore the consequences of ethical and unethical conduct. Scholars like Franklin Lewis delve into the spiritual dimensions of Saadi's poetry, uncovering the symbiotic relationship between his works and the spiritual ethos of Sufi traditions [7]. An instance of justice is depicted in the moral reflections of "Bustan," where Saadi contemplates the consequences of one's actions.

4. Reflection on Life's Transience:

Saadi's contemplation of life's transient nature constitutes a profound ethical concept in his works. The metaphor of a drop of water in the sea is used to illustrate the ephemeral quality of material wealth. This reflection on the impermanence of worldly



pursuits encourages readers to reflect on their purpose. The work of Browne emphasizes Saadi's observations on the transient nature of life [5].

5. Satire and Societal Critique:

In "Gulistan," Saadi employs humor and satire to critique societal norms and human folly. Through witty anecdotes, he exposes the hypocrisy of individuals who outwardly display piety but lack sincerity. This ethical concept prompts readers to reflect on the authenticity of their actions. Saadi's societal critique has transcended cultural and linguistic boundaries, earning him recognition as a literary luminary.

Saadi's writings serve as a timeless guide to virtuous living. His exploration of ethical concepts such as generosity, humility, justice, and gratitude provides a moral compass that transcends cultural and temporal boundaries. Learning from Saadi allows individuals to imbibe these virtues and apply them to contemporary challenges, fostering a more compassionate and just society.

Studying Saadi's ethical views is an endeavor to preserve and appreciate Persian cultural heritage. Saadi's works are not only literary masterpieces but also windows into the socio-cultural milieu of medieval Persia. Learning his ethical philosophy enables individuals to connect with the rich tapestry of Persian thought, contributing to the preservation of cultural identity and heritage.

Saadi's ethical teachings, rooted in humanistic values, possess universal relevance. Regardless of one's background or beliefs, Saadi's insights on compassion, justice, and the transient nature of life resonate with the shared human experience. Learning from Saadi fosters a cross-cultural understanding that transcends linguistic and geographical boundaries.

Saadi's affiliation with Sufism infuses a profound spiritual undertone into his ethical views. Learning from Saadi provides an opportunity for spiritual enrichment, allowing individuals to explore the depths of mysticism and inner purification. His teachings on divine love and spiritual awakening offer a pathway to a more profound connection with the spiritual dimensions of life.

Saadi's narratives are not mere stories; they are wellsprings of wisdom. Learning from Saadi imparts lessons on resilience, self-reflection, and the pursuit of inner wisdom. Individuals can draw on Saadi's teachings to navigate life's complexities, making informed and ethical choices that contribute to personal growth and fulfillment.

For leaders and those in positions of influence, Saadi's ethical views provide a blueprint for inspirational leadership. His emphasis on justice, humility, and generosity serves as a model for leaders seeking to create positive change in their communities. Learning from Saadi equips leaders with the ethical principles necessary to foster inclusive and ethical leadership.

In conclusion, Saadi Shirazi's works stand as a testament to the profound ethical concepts embedded in Persian literature. The exploration of generosity, humility, justice, reflections on life's transience, and societal critique in Saadi's narratives reveals the depth of his ethical philosophy. Scholars like E.G.Browne, Janet Afary, and Franklin Lewis contribute to our understanding of Saadi's enduring impact, emphasizing the cultural and philosophical dimensions within his ethical concepts. As readers navigate the garden of Saadi's ethical marvels, the fragrance of wisdom lingers, offering timeless lessons for generations to come. Saadi's works abound with ethical concepts that extend beyond the conventional moral teachings. Scholars like Arberry [1] emphasize Saadi's nuanced exploration of virtue, justice, and human behavior. Saadi's ethical discourse, intricately woven into his poetry, serves as a timeless guide to righteous living, appealing to both the spiritual and secular realms.

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THE CONCEPT OF BEAUTY EDUCATION AND MODERN PEDAGOGY

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ABSTRACT

This article explores the integral role of art in shaping a creative personality through the lens of beauty education, emphasizing its impact on spiritual maturity, ideals, and moral standards. Focusing on the context of Uzbekistan within Central Asia, the article delves into the family as a primary source of moral and spiritual education, highlighting the gradual acquisition of skills and knowledge in decorative arts. The concept of beauty education is examined in the broader context of pedagogy, aiming to enhance individuals' understanding, appreciation, and creation of beauty in various aspects of life and art. The article emphasizes the significance of recognizing beauty in nature, visual arts, and cultural elements, and discusses how the appreciation of beauty contributes to the development of a well-rounded individual. It also explores the psychological aspects of art, emphasizing the role of emotions in the perception of beauty. The article concludes by discussing the importance of intellectual and emotional development in the formation of moral qualities, advocating for a balanced approach to beauty education that considers students' interests and allows for the development of creative abilities.

KEYWORDS: *Art, Beauty Education, Creative Personality, Aesthetic Feeling, Cultural Monuments, Decorative Arts, Emotional Development, Intellectual Development, Moral Standards, Spiritual Maturity, Uzbekistan, Central Asia, Family, Visual Arts, Psychological Aspects of Art, Cultural Heritage, Creative Thinking, Aesthetic Qualities.*

The formation of a creative personality is the task of educating beauty, and its solution is impossible without the participation of art, which is a factor in the formation of a person's spiritual maturity, his ideals and moral standards. It affects both intellectual and emotional aspects of a person. Creative thinking and the ability to work behind the school desk are cultivated. Enrichment of the human psyche, development of creative ability - the beginning of beauty education takes place at school, acquires the skills of aesthetic feeling, understanding and appreciation of works of art throughout life, getting acquainted with creativity. Art helps to choose the right life ideals, shows a role model, and most importantly, deepens a person's perception of the world, the Motherland, and the art of different peoples.

As in the whole of Central Asia, in Uzbekistan, the family is the source of moral and spiritual education of students. People always strive for a happy family. Gradually throughout life, the child acquires certain skills, abilities and knowledge. Depending on his ability, he participates in the process of preparing one or another part of the product. Often this situation occurs with the gradual complexity of the work in decorative arts and the acquisition of professional skills. At the same time, the child develops creative abilities, moral and aesthetic qualities.

Under the concept of beauty education, in modern pedagogy and beauty science, a system of activities aimed at educating and improving a person's ability to correctly understand, appreciate and create beauty and great phenomena in life and art is understood. Beauty education includes the formation of beauty requirements, feelings, and taste. The goal of beauty education is to help develop.

Beauty imbalance is one of the most important human qualities. It creates different forms of feeling of beauty in a person. The source of beauty is nature, all kinds of photographs, paintings, sculptures, artworks, paintings, structures, stage works, songs and music, clothes, historical and cultural monuments, household items, etc., which create feelings. Therefore, it is necessary to divide the general concept of beauty into its components in order to find out exactly what the aesthetic qualities of an object are. "Since beauty is thought of according to the external form of an object, it is necessary to know first of all the signs of the external form. Only after that, it is possible to talk about what qualities a certain thing should have, what laws it should be created on the basis of to be entitled to be called beautiful. Only then will our assessment be proven" [1].

Recognition of beauty inspires a person, encourages him, walks in the world of beauty. Understanding beauty allows a citizen to enrich his moral, spiritual and cognitive wealth, to organize a beautiful life. A. Fitrat several years ago said that "The difference between a person and an animal is that a person thinks about what he wants to do with his mind in every way, thinks and considers



the consequences. Animals are excluded. Now, if you do not think about the harm or benefit of a custom and picture, and introduce it as a custom, how will you be different from an animal?", he said [2].

V.K.Skatershikov writes that "the ultimate goal of beauty education is to educate a humanist person, a person rich in passions and needs, is spiritual, intelligent in the full sense, has a sense of self-respect, the goal of life is the benefit of the people and advanced humanity, is able to live, work, create, is sincere, a caring and sensitive, according to the laws of beauty, a person who is capable of creative activity in any sphere of life is capable[3]".

Other researchers, such as nature and social reality, consider it an important factor in the education of beauty and artistic taste. The influence of art on the formation of perfect ideas, the correct view depends on life, society and art, and on the extent to which the person who perceives the work of art is ready to "copy" the artistic evidence in the world of his intellectual and spiritual life.

Works of art have a strong effect of beauty on a person, reveal his emotional sensitivity. Psychologist L.S.Vygotsky wrote that "... art is a completely separate sphere that regulates the psyche of a social person, his emotional sphere [4]".

Correct and multifaceted analysis of artists' work, active understanding of it helps and encourages the audience to consider its artistic features and valuable aspects. Analyzing the works of artists is always a creative process. Analyzing a work of art requires a certain empathy and participation in creativity. Therefore, "emotions give brightness and life to the content of perception of many phenomena of reality and art"[5], says the esthetician A.E.Luk. In this way, they determine one or another direction of perception, they lay the foundation for the emotional tone of the perception of beauty. Feelings, which are one of the forms of reflection of reality, are manifested not only in observational actions, but also in all types of human activity, they stimulate and activate this process.

Researcher-artist, well-known theoretician and practitioner in the field of beauty education A.V.Bakushinsky opposed the visual approach to viewing the work of art and emphasized the need for sensitivity in the process of understanding. "This is where the deep social value and importance of art, creative impressions come from".

The mind of the student is formed in harmony with emotional impressions. Positive and negative emotions are understood and evaluated, which stabilizes or rejects the initial emotional perception. Real life, bright impressions, unique works of practical decorative art awaken and fill the child's imagination.

Students' interest in visual arts largely depends on their success in drawing. Monotony of visual activity, lack of connection with life, incomplete understanding of the role of art leads to inactivity and apathy. The educational method that activates independent research serves to increase the confidence of each child in himself, his abilities and possibilities. A sense of confidence in the ability of visual activity is necessary during adolescence and is very important in the development of artistic and creative abilities of school students. About this age, B.I.Ignatev writes that "Children often give up painting due to the increased demand for their drawings, insufficient knowledge and skills in the field of drawing techniques, they face many problems" [6]. Psychological ability is the established rule that mental quality is necessary for human activity and is formed in this activity [7]. The famous psychologist L.S.Vygotsky wrote that "We know that the experience of a child is several times worse than that of an adult. In addition, we know that his interests and passions are simpler and less, finally, his relationship with the environment does not have the complexity and variety that characterize human behavior. However, these are the most important factors that determine the work of the imagination. From this it can be seen that the imagination of a child is richer than that of an adult neither poor [8]".

Psychologist B.M.Teplov emphasizes the task of fine art "Drawing requires a serious understanding, a real feeling of things. Solving the problem of describing what he sees, it is inevitable that the child will learn to see things in a new, faster and more accurate way [9]". Elsewhere, B.M.Teplov writes that the ability does not exist without specific, relevant human activity. Any ability appears and develops in the process of such activity, without which it cannot be realized.

Fine art is always considered to be a reflection of the culture of the people, and it plays an important role in the society, in educating the love of beauty in people. One of the main tasks of studying fine arts is to develop the level of knowledge and prepare students for beauty. Famous scientist N.N.Rostovtsev explains that "the only one thing is required from the artist in the future: the practice of performing black images. The main condition of educational images is that we are always creatively engaged in the recommended way. At that time we can do independent work [10]".

"During adolescence, intellectual activity becomes more and more active", - B.N. Stolyarov notes, "- independence, ability to analyze, "artistic and cognitive moment" increase in the assessment of beauty. More precisely, the inability to appreciate the beauty of music, works of art, and architectural monuments can lead to the loss of accumulated spiritual values [11]". Active use of



psychological-pedagogical methods and tools of beauty education in the process of personality development helps to develop beauty and moral impressions in students, to form a unique emotional thinking.

People's taste, ideals, views on beauty have always corresponded to the laws of beauty, and they are the basis of the great work of artistic education of the young generation. The feeling of beauty is the highest spiritual pleasure related to a person's perception and appreciation of beauty in works of art, nature, and social life.

Beauty taste is the ability to evaluate things, events, situations in terms of beauty qualities. Those general principles, ideals art embodies human ideas. The taste of beauty can have different shades depending on a person's ability to understand traditions and rituals. It is important to form a taste for beauty under the influence of works of art that are rich in humanitarian ideas and express the noble aspirations of mankind.

The need for beauty arises from the spiritual needs of a person, such as to analyze the essence of a work of art, to understand its apparent content, to evaluate its artistic value, to form the ability to transfer knowledge about beauty to the idea of beauty, ideas about behavior, a certain action, and acceptance. It is necessary to reveal the valuable aspects of art objects and events and connect them with the spiritual world. It is important to pay special attention to the issues of intellectual and emotional development in the formation of moral qualities of school students. It is necessary to affect the emotional aspect of the person through the means of art. Despite the importance of beauty education, the child should not be overloaded with emotional impressions.

It is necessary to take into account, understand and protect the interests and desires of students, to give time for the development of creative activity of students, to develop in them the ability to think about life, people, as well as to evaluate them. "Through works of art, children not only get acquainted with the events of life, but also get an idea of beauty, harmony, appropriateness, impact and meaning, that is, they learn to perceive life from the point of view of uniqueness, looking at beauty", wrote T.S.Komarova[12].

In the next edition of the book "Painting Activities in Kindergarten", the author continues his thoughts: "During the training, it is necessary to always keep in mind the specialization of pictorial activity, which has a clear figurative and creative character, and its task is to reflect. Therefore, the beauty of visual perception and imagination, to ensure the development of feelings, the task of beautiful worship and sensitive emotional image is very important [12]".

Applied folk art takes an active part in the formation of personal beauty culture, it is important to deeply understand its essence when developing a method of educating beauty. A number of specific fundamental research, ethical and aesthetic options are considered in the specialization of folk art. Until now, T.Y.Shpikalova conducted a research on a system of literary-artistic education and beauty education of students in a general secondary educational institution with decorative-practical folk art tools and tested it from a scientific point of view and through experiments.

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EVOLUTION OF PEDAGOGY IN XX CENTURY: SADRIDDIN AINI'S REFORM OF EDUCATIONAL PRACTICES

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ABSTRACT

This article delves into the historical context of Jadidism, an independent movement that emerged after the 1905 revolution, seeking to lead the national movement in Central Asia. However, its failure to resonate with the working class led to a distinct trajectory. Focusing on the Jadidism, the article explores its influence on educational reform, particularly through the establishment of new method schools in Samarkand, Tashkent, and Bukhara. The paper then shifts to Sadriiddin Aini, a prominent figure in the democratic direction, who vehemently criticized the traditional pedagogical methods prevalent in Bukhara madrasahs. Aini's insightful critique addresses issues such as the language barrier, age-appropriate content, and the disconnect between education and students' lives. The article concludes by highlighting Aini's role not only as a theorist but as a dedicated educator who championed a comprehensive approach to teacher training, emphasizing cultural, scientific, and pedagogical knowledge.

KEYWORDS: *Jadidism, Sadriiddin Aini, Central Asia, educational reform, new method schools, pedagogical critique, pre-revolutionary Bukhara, teacher training, democratic direction, cultural education.*

Jadidism took shape after the revolution of 1905 as an independent movement and wanted to take over the entire leadership of the national movement, but the people did not follow it, since Jadidism did not express the interests of the working people. The formation and development of Jadidism was influenced by the more developed Tatar bourgeoisie, using its nationalist newspapers, which were then distributed in Turkestan and Eastern Bukhara. The Jadids directed their first steps towards school reform as the most powerful factor for introducing their ideas to the Muslim masses, organizing a wide network of so-called new method schools. Such schools were opened in Samarkand, Tashkent and Bukhara. As a result, in the history of the development of social and pedagogical thought of the Uzbek people at the end of the 19th and beginning of the 20th centuries, the following directions was established:

1. Feudal-clerical direction led by the clergy.
2. National-bourgeois direction - Jadidism led by Behbudi, Munawar Kori and others.
3. Democratic direction, prominent representatives of which were Asiri, Adzhi, Hamza and Sadriiddin Aini [1].

Sadriiddin Aini, firmly taking the position of the democratic direction, fought against the illiteracy of Uzbek people at that time. In the pedagogical views of Sadriiddin Aini, a large place is occupied by criticism of the material base, student population, goals and objectives, content, forms and methods of teaching in madrasahs. As an eyewitness, in his works he correctly criticizes Bukhara madrasahs as a center for training statesmen and religious leaders [2]. In S.Aini's pedagogical views, the teaching methods of the old school, which was based on rote learning, were strongly criticized. S.Aini correctly understood that the teaching methods in old schools did not give students the opportunity to comprehend what they had learned, did not develop students' thinking, and gave rise to formalism in students' knowledge.

In Bukhara madrasahs, students worked individually and in groups. A student was allowed, while living in one madrasah, to study with a teacher at another madrasah. Therefore, students studied with different teachers at different times. There were no classrooms for classes; students studied in cells or at home with teachers, so-called mudarris. Some large mudarris had a separate room for classes. If the teacher's conditions allowed, he worked with a group of students; if not, he worked with each student individually. Typically, the teachers of Bukhara madrasahs could take on from eight to twelve lessons a day and assigned a separate time for each group. A student could attend three or four lessons daily. The teachers sat in their rooms, and the students went to them. If they were busy, then the students often had to wait for them. Therefore, students spent a lot of time waiting for the teacher. The main method of teaching in the madrasah was scholastic debate [3].

Sadriiddin Aini, criticizing the content and methods of classes in madrasahs, gives a typical example that reveals the essence of the entire system of training and education of the younger generation within the walls of Bukhara madrasahs. Sadriiddin Aini wrote: "It was believed that we studied logic, but in madrasahs all this science remained in one name. For a whole year, the students studied "Hoshiyai Qutba" - an interpretation of the book on logic "Shamsia". Revealing the depravity of the system of teaching children in



old schools, S.Aini demanded that students consciously acquire knowledge, so that they think independently and do not blindly imitate others [4].

S.Aini considered the main reasons for the inaccessibility of knowledge to students to be education in Arabic, the discrepancy between the content and volume of knowledge and the age of the children, and the gap between school education and the lives of students. He demanded education in the native language, bringing the content of education closer to life. The above facts indicate that Sadriiddin Aini was a leading historian of pedagogy. His works enriched the fund of the history of pedagogy, which is still available today [5].

S.Aini considered the sound method to be the main method of initial teaching of literacy and he himself applied it in practice. S.Aini attached great importance to conversation as a method of activating children's thoughts, developing their role and improving their attention and memory. S.Aini highly appreciated the role of exercises and repetitions as methods of consolidating the knowledge and skills of students. He understood exercises and repetitions not as cramming and teaching, but as the main ways of conscious and lasting assimilation of knowledge.

S.Aini paid special attention to teaching children before the primer period; he demanded visual teaching from the teacher. He described teaching methods absolutely correctly, pointing out that they changed without taking into account the factors and individual characteristics of students. This method was used throughout the entire training process and was acceptable for all ages of students, despite their individual characteristics. By this he wants to emphasize that the teaching methods of the old school were distorted to the point that the students could not separate the topic of the lesson.

Sadriiddin Aini correctly understood the reasons for the inaccessibility of knowledge to students. He believed that one of the main reasons for the inaccessibility of education for children is the teaching in Arabic. The dominance of the Arabic language in the schools of Central Asia made education inaccessible to children. Learning Arabic for five- and six-year-old children was not only difficult, but also completely unbearable, because... the working people never spoke Arabic. This language was a foreign language to them.

The second reason for the inaccessibility of training was the discrepancy between the content and volume of knowledge and the age characteristics of the people. Although the students at some points read in native language, they did not understand anything, for example, the works of Hafiz, Jami, Bedil.

Sadriiddin Aini paid special attention to the leading and decisive role of the teacher in the matter of education and training the younger generation. The teacher ensures the formation of a scientific worldview and moral qualities in students. S. Aini considered the teacher a social activist and disseminator of culture among the people. Showing the high and noble role of the people's teacher in society, Sadriiddin Aini sharply criticizes in his works teachers of the old school, who, in their outlook and preparedness, did not at all meet the minimum requirements for the status of a teacher. Criticizing the teachers of the old schools, Sadriiddin Aini always thought about new teachers who could educate well and better teach the younger generation.

The teaching ideal of Sadriiddin Aini is a widely educated, highly cultured and humane person. To successfully carry out the tasks of raising and teaching children, according to Sadriiddin Aini, a new teacher, in addition to religion, must have a good knowledge of the Tajik language, arithmetic, geography, natural science, pedagogy, hygiene, as well as agricultural sciences. Sadriiddin Aini absolutely correctly believed that a teacher, first of all, should know his native language well. This enhances his general culture and broadens his horizons. A teacher needs special education. Receiving pedagogical education and knowledge of hygiene equips teachers with scientific knowledge about the content in the methods of educating and training the younger generation. This idea of special training for teachers was professional in the conditions of pre-revolutionary Bukhara.

It was put forward in contrast to the old schools, in which teachers did not even have an idea of the existence of pedagogical sciences. Sadriiddin Aini is not only a theorist and historian of pedagogy, he himself worked as a teacher and applied his pedagogical thoughts in the practice of educational work. He was a talented teacher, a master of pedagogy. He loved literature, history and his native language. He knew a lot about these branches of science. This enabled him to impart solid scientific knowledge to his students. As an exemplary teacher, he carefully checked the students' homework and carefully analyzed the mistakes made together with the students. Sadriiddin Aini was a skillful and great organizer of the children's group at school. He led an amateur art group. Thus, Sadriiddin Aini was not only a teacher, but he was a wise educator.

In the pedagogical views of Sadriiddin Aini, issues of family and family education occupy an important place, since their parents are responsible for the development and formation of children. Therefore, Sadriiddin Aini paid special attention to the structure of the family, the rights and responsibilities of its members. In his works, Sadriiddin Aini sharply criticized polygamy, where women's



hatred of each other, enmity between them, hypocrisy dominated, and facts of debauchery among the wives of the wealthy men were often encountered. Women fought each other for the same husband. Sadriddin Aini criticized the family and family education of the exploiting classes, whose power was based on private property. The more the interests of private property come first, the more the natural basis of the family - love - is suppressed.

As Sadriddin Aini points out, the old society instilled in people an attitude towards children as future heirs of the wealth accumulated by their father, and instilled a view of children as a being wholly and completely dependent on their father, who gives them material and property power, a name, and a position in society. According to Sadriddin Aini, the personal dignity and moral interests of children, especially girls, were not taken into account in this society. Sadriddin Aini's statements on issues of family and family education completely coincide with his own life. His family was strong, friendly and hardworking. He respected his family and his wife. He was a caring and demanding father. Famous scientists grew up in his family: Kamol Aini and Kholida Aini, one of them is a Doctor of Science. His family is the best example for our young people.

In conclusion, in examining the multifaceted landscape of educational ideologies in pre-revolutionary periods, this article underscores the transformative impact of Jadidism on the national movement and, conversely, the resilient democratic direction led by Sadriddin Aini. Aini's insightful critique of traditional pedagogical methods, coupled with his emphasis on comprehensive teacher training, positions him as a pioneer in the evolution of education in Central Asia. The legacy of Aini's family life serves as a testament to his convictions, offering a compelling model for future generations. This exploration contributes to a nuanced understanding of the historical nuances that shaped pedagogy in the region, paving the way for ongoing discourse on education, culture, and societal transformation.

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DEVELOPMENT OF QUALITY ASSURANCE MONITORING INSTRUMENTS TO MAINTAIN HIGHER EDUCATION QUALITY

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ABSTRACT

The purpose of this research is to assess the reliability of the quality assurance monitoring instrument in order to improve the presentation of supporting data for study program accreditation. A case study was chosen as the research method. Internal quality assurance measures at UNSOED's Faculty of Economics and Business are the focus of this study. According to the findings of this study, the Faculty of Economics and Business's quality assurance monitoring tool is valid and effective. This instrument can be used as a reference to complete the data tabulation required for the study program accreditation procedure.

KEYWORDS: quality assurance, monitoring instrument, study program accreditation

INTRODUCTION

Determination of Quality Assurance (Quality Assurance) for all Higher Education through the Higher Education Quality Assurance System (SPM-Dikti) has been established based on the Law of the Republic of Indonesia No. 12 of 2012. The quality of higher education is the achievement of educational goals and graduate competencies that have been determined by the institution higher education in its strategic plan or conformity with established standards. Quality assurance is all activities in various parts of the system to ensure that the quality of the product or service produced is always consistent as planned / promised. In quality assurance, there is a process of determining and fulfilling quality standards of education management in a consistent and sustainable manner, so that all stakeholders get satisfaction.

The Minister of Research, Technology and Higher Education of the Republic of Indonesia (2016) explained; "The quality of higher education is the level of conformity between the implementation of higher education and the Higher Education Standards consisting of the National Higher Education Standards and the Higher Education Standards set by Higher Education".

The large number of universities in Indonesia is not necessarily correlated with improving the quality of Indonesian human resources. Because most of these universities do not have good quality. Therefore, higher education institutions need to make improvements to continue to improve their quality. Quoting the Minister of Research, Technology, and Higher Education of the Republic of Indonesia, it is concluded that the conformity of the instrument with the characteristics of higher education with national standards is needed to coordinate and make internal and external quality assurance more qualified.

In this case, Jenderal Soedirman State University located in Purwokerto with a vision that is "to be recognized by the world as a center for developing rural resources and local wisdom", especially the Faculty of Economics and Business as a national university to participate in following the established policies. The elements of the instruments are very helpful in passing the quality assurance target limits. The instruments available at UNSOED are adequate, however, the instruments they have are seen as not following the dynamic character of the UNSOED Faculty of Economics and Business considering the growth of higher education and the increasing number of students in line with the demands to maintain and improve the quality of higher education which is also getting bigger.

Therefore, special aspects are needed as well as new instruments that are in accordance with the characteristics of the Unsoed Faculty of Economics and Business in the context of establishing a quality assurance system that is able to effectively maintain internal and external quality assurance. Conducting research on this matter is expected to be able to determine the instruments needed, appropriate and able to accommodate the object of evaluation of this program. In addition, it is also hoped that the determination of these instruments and systems can be an effective quality assurance investment and can relatively improve the quality of universities, especially the Faculty of Economics and Business.



The importance of research is because the level of quality standards of universities and students continues to rise and because of the incompatibility of currently available instruments. This research activity was also carried out to see how big the influence of the new instruments for the Faculty of Economics and Business UNSOED amidst the ever-increasing rate of higher education and students.

Quality Insurance

Every educational institution, including tertiary institutions, is required to implement national education standards (SPN) as stipulated in Government Regulation Number 19 of 2005 [4]. In order to carry out With the SPN, universities are required to implement an internal quality assurance system (SPMI). SPMI is a systemic activity of quality assurance of higher education by universities (internally driven), to supervise the implementation of higher education by universities on a continuous basis (continuous improvement), as regulated in Article 50 paragraph (6) of the National Education System Law jucto Article 91 of PP No. 19 of 2005. SPMI aims to ensure the quality of higher education held by each university higher education institutions, through the implementation of the Tridharma of Higher Education, in order to realize the vision and meet the needs of the university's internal and external stakeholders. College quality Higher education is the conformity between the implementation of higher education with the National Education Standards, as well as standards set by the university itself based on the vision and needs of the stakeholders. In general, it can be stated that what is meant by quality assurance is the planning, implementation, control, and development of higher education quality standards consistently and continuously (continuous improvement/kaizen), so that stakeholders, both internal and external, obtain satisfaction.

Quality assurance is all efforts to maintain and improve the quality of the academic community carried out by educational institutions continuously and continuously. This activity must be carried out by educational institutions in a structured and well-planned manner and in accordance with the "Wheel of Deming" which consists of planning (plan), Implementation / Implementation (do), Evaluation (check) and Improvement / Improvement (action). In general, what is meant by quality assurance is the process of determining and fulfilling management quality standards in a consistent and sustainable manner, so that consumers, producers, and other interested parties obtain satisfaction.

The Faculty of Economics and Business in accordance with the Faculty Statutes has a Quality Assurance Group at the Faculty level. The Faculty Quality Assurance Cluster is a supporting unit of the Faculty which is responsible to the Dean in terms of standard control and quality assurance of Faculty Institutions. In carrying out its duties, it refers to the Implementation Guidelines from the University LP3M. The Faculty's Quality Assurance Cluster is tasked with: 1) Disseminating the Quality Assurance System (SPM) to the academic community at the faculty level; 2) Facilitating the preparation of faculty quality documents, 3) Carrying out monitoring and evaluation of the implementation of higher education within the faculty in the academic field, 4) Carrying out monitoring of the follow-up to the results of internal quality audits within the faculty, 5) Carrying out assistance in preparation for accreditation of study programs within the faculty, and 6) Coordinate with LP3M University.

The resources needed in the implementation of higher education quality assurance policies include human resources and resources that are mobilized. The number of human resources who have the ability to manage quality assurance, both PD Dikti, SPMI, SPME will determine the success of implementing higher education quality assurance policies. In carrying out the duties and main functions of the Faculty Quality Assurance Group, of course, there is still a need for a lot of evaluation, because not all tasks can be carried out properly and continuously. So that through this research, it is hoped that the Faculty Quality Assurance Cluster will be able to improve its performance and carry out all its duties properly.

Discuss the relevant related literature, but do not feel compelled to include an exhaustive historical account. Assume that the reader is knowledgeable about the basic problem and does not require a complete accounting of its history. A scholarly description of earlier work in the introduction provides a summary of the most recent directly related work and recognizes the priority of the work of others. Citation of and specific credit to relevant earlier works are signs of scientific and scholarly responsibility and are essential for the growth of a cumulative science. In the description of relevant scholarship, also inform readers whether other aspects of this study have been reported on previously and how the current use of the evidence differs from earlier uses. At the same time, cite and reference only works pertinent to the specific issue and not those that are of only tangential or general significance. When summarizing earlier works, avoid nonessential details; instead, emphasize pertinent findings, relevant methodological issues, and major conclusions. Refer the reader to general surveys or research syntheses of the topic if they are available. Demonstrate the logical continuity between previous and present work. Develop the problem with enough breadth and clarity to make it generally understood by as wide a professional audience as possible (Beck & Sales, 2001). Do not let the goal of brevity lead you to write a statement intelligible only to the specialist.



METHOD

The research method used is the Research & Development method by adapting the Gall and Borg model [9] with the object of development being an internal quality assurance instrument within the Faculty of Economics and Business UNSOED. The initial investigation method will be carried out to find out the real condition of the quality evaluation tool at the Faculty of Economics and Business that is currently being used, whether the completeness of its elements has met in terms of structure, composition and content (content) and evaluation indicators so that it is feasible to use.

The next stage is the design of evaluation tools. Once designed, the device will be validated by experts to determine its feasibility before being implemented. The type of instrument that is the focus of the assessment and feasibility is in terms of structure, indicators, form and use of language. Each component is assessed by an expert as a validator using the indicators that have been developed.

RESULT AND DISCUSSION

Based on the results of FGDs that have been carried out with managers at the institutional, department and study program levels, quality assurance institutions at the faculty level, the resulting Academic Quality Achievement Assessment Matrix is as follows:

Table 1. Matrix of Academic Quality Achievement Assessment

No	Information	Conclusion Value 4	Indicator
1	Table 1 Tridharma Cooperation .	Amount cooperation in each field worth maximum determined from the number of DTPs .	Collaboration with universities in the fields of education , research and PkM in the last 3 years
		International Cooperation a minimum of 2.	Relevant international , national , regional / local level cooperation with study programs and managed by UPPS in 3 years last .
2	Table 2.a Selection Student	Ratio amount candidate participating students _ selection and those who passed the selection must more from 5.	Ratio amount registrant against the number of applicants who passed the selection in the main program.
3	Table 2.b Students foreign .	Score = ((2 x A) + B) / 3.	Percentage number of students foreign to amount all students.
4	Table 3.a.1) Lecturer Permanent Assigned College _ as support eye college.	Amount lecturer still assigned _ as support eye studying with field appropriate expertise _ with core competencies of accredited study programs of at least 12.	Adequacy the number of DTPs.
		Percentage comparison Among number of educated DTPS highest Doctor / Doctor Minimum Applied / Subspecialist with Amount lecturer still assigned _ as support eye studying with field appropriate expertise _ with minimum core competency of 50%.	Qualification DTPS Academic.
		Percentage number of DTPS that have position academic Professor , Lector _ Head , Lector compared with Amount lecturer still assigned _	Position DTPS Academic .



		as support eye studying with field appropriate expertise _ with core competencies of accredited study programs have minimum value of 70%.	
		Percentage amount lecturer who has certificate of competency, profession , and/ or industry against amount all lecturers permanent minimum 50%.	Certification of competence / profession / industry of DTPS
		Ratio amount study program students to the minimum amount of DTPS is 25%.	Ratio amount study program students to the number of DTPS.
		Average amount guidance as mentor major in all programs/ semester maximum 6.	Assignment of DTPS as mentor main Duty end student
5	Table 3.a.2) Equivalence of Teaching Time Full (EWMP) Lecturer Permanent College .	EWMP values range from 12 to with 16.	Teaching Time Equivalence Full DTPS.
6	Table 3.a.3) Lecturer Not Stay assigned _ as support eye college .	maximum PDTT value is 10%.	Lecturer no stay .
8	Table 3.a.5) Lecturer Industry / Practitioner .	Percentage amount eye studying competence taught by the lecturer industry / practitioner with amount eye studying competence minimum 20%.	Involvement industry lecturer / practitioner .
9	Table 3.b.1) Acknowledgment / Recognition Lecturer .	Comparison amount confession on relevant DTPS achievements / performance with field skill in 3 years final with amount lecturer permanent assigned as support eye studying with field appropriate expertise _ with core competencies of accredited study programs of at least 0.5.	Recognition / recognition of DTPS expertise / achievements / performance
10	Table 3.b.2) Research on DTPS	Amount study with source financing abroad in 3 years _ final divided by 3 divided by NDTPS totaling at least 0.05	Activity relevant DTPS research _ field of study program in the last 3 years
11	Table 3.b.3) PkM DTPS.	Amount PkM with source financing abroad in 3 years _ final divided by 3 divided by NDTPS totaling at least 0.05.	Activity Relevant PkM DTPS _ with the field of study program in 3 years last .
12	Table 3.b.4) Performances / Exhibitions / Presentations / Publications DTPS Scientific .	Comparison amount publication in a journal international reputation , amount publications in international seminars , total presentation in forum on the level international with an NDTPS of at least 0.1.	Publication scientific with a relevant theme _ field of study programs produced by DTPS in the last 3 years
13	Table 3.b.5) Outcome Research / PkM Others - IPR (Patent, Simple Patent) .	Comparison amount external study with an NDTPS of at least 1.	external research and PkM produced by DTPS in the last 3 years



14	Table 3.b.5) Outcome Research / PkM Others – IPR (Right Copyright , Product Design Industry , etc.)		
15	Table 3.b.5) Outcome Research / PkM Others - Technology Appropriate , Product , Work Arts , Social Engineering .		
16	Table 3.b.5) Outcome Research / PkM Others - Books with ISBN , Book Chapter .		
17	Table 3.b.6) Works Cited Scientific DTSPS .	Comparison amount cited article _ with the number of NDTPS is at least 0.5.	Work article DTSPS cited within 3 years _ last .
18	Table 3.b.7) DTSPS Products /Services Adopted by Industry /Society.	Comparison product / service DTSPS work	Products / services DTSPS work adopted by industry / society in 3 years last .
19	Table 6.a Involving DTSPS Research Student .	Percentage comparison Amount title deep DTSPS research implementation involve study program students in 3 years final with title DTSPS research in 3 years last is a minimum of 25%.	Deep DTSPS research implementation involve study program students in 3 years last.
20	Table 7 Involving DTSPS PkM Student .	Percentage comparison Amount title deep DTSPS devotion implementation involve study program students in 3 years final with title DTSPS research in 3 years last is a minimum of 25%.	PkM DTSPS which in its implementation involves study program in 3 years last.
21	Table 8.a GPA of Graduates .	Average GPA of graduates in the last 3 years at least 3.25.	Graduate GPA . RIPK = Average GPA of graduates in the last 3 years
22	Table 8.b.1) Achievement Academic Student .	Comparison performance student in the field academic in 3 years final in scale international compared amount students at the time of TS is a minimum of 0.1%.	Performance student in the field academic in 3 years last .
23	Table 8.b.2) Non - academic Achievements Student .	Comparison performance students in non- academic fields in 3 years final in scale international compared amount students at the time of TS is a minimum of 0.2%.	
24	Table 8.c Study Period Graduate.	Average study period between 3.5 to 4.5 years .	study period .



25	Table 8.d.1) Waiting Time Graduate .	waiting time graduate of not enough from 3 months .	waiting time . WT = time wait for graduates to get first job in 3 years, from TS-4 to TS -2.
26	Table 8.d.2) Conformity Field Work Graduate .	Field suitability work current graduate get a job first in 3 years , from TS-4 to TS -2 at least 60%.	<p>suitability field of work</p> <p>PBS = Field suitability work current graduate get a job first in 3 years, from TS-4 to TS -2.</p>
27	Table 8.e.1) Place Work Graduate .	Comparison Amount graduates working in business entities multinational / international level _ with amount minimum 5% graduate .	Place level and size work graduates .
28	Table 8.e.2) Satisfaction User Graduate .	Score = $STKi / 7$.	User satisfaction level graduates .
29	Table 8.f.1) Performances / Exhibitions / Presentations / Publications Scientific Student .	$RI = ((NA4 + NB3 + NC3) / NM) \times 100\%$ minimum 1%.	Performances / exhibitions / presentations / publications scientific student , which is generated independently _ or with DTPS, with relevant title _ with the field of study program in 3 years last
30	Table 8.f.3) Student Products / Services Adopted by Industry /Society.	Amount product / service creation students adopted by industry / society _ in 3 years Last at least 2.	Products / services student work , produced independently _ or Together with DTPS, which is adopted by industry / community within 3 years last .
31	Table 8.f.4) Outcome Resulting Research _ Student - HKI (Patent, Simple Patent).		
32	Table 8.f.4) Outcome Resulting Research _ Student - HKI (Right Copyright , Product Design Industry, etc.)	$NLP = 2 \times (NA + NB + NC) + ND > 1$.	external research and PkM produced by students , both independently _ or with DTPS in the last 3 years
33	Table 8.f.4) Outcome Resulting Research _ Student - Technology Appropriate , Product , Work Arts , Social Engineering .		



34 | Table 8.f.4) Outcome Resulting Research _ Student - Books with ISBN , Book Chapter.

CONCLUSION

The Faculty of Economics and Business already has special aspects and tools that are new and in accordance with the characteristics to create a quality assurance system that is able to maintain internal and external quality effectively. This research has found suitable and valid indicators to maintain the quality of quality assurance. The indicators made based on stakeholder discussions are good and suitable for improving the quality of tertiary institutions. The indicators above have also been used as a reference for accreditation at the Faculty of Economics and Business.

The next research suggestion is to make indicators according to the latest accreditation standards, namely using LAMEMBA, so that this can be aligned with quality improvement in the Faculty of Economics and Business.

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CONCEPTS OF THE DIGITAL ECONOMY IN THE KNOWLEDGE ECONOMY AND THEIR SPECIFIC ASPECTS

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ANNOTATION

This article examines the reasons for the development of a "knowledge-based economy", its specific features, forms of existence that can ensure the development of the economy in a new format. The study is based on critical analysis, synthesis, scientific synthesis, content analysis of scientific literature. The article describes the formation of the scientific concept of the "new economy" phenomenon, examines the essence and different views of authors on the definitions of the "new economy". The specific features of the "knowledge economy" are identified, distinguishing it from the preceding socio-economic models. Conclusions based on the results of the study are given.

KEY WORDS: *codified knowledge, information economy, techno-economic paradigm, knowledge economy, intellectualization of labour, new economy.*

The development of the modern world economy is directly related to the application of new knowledge, which is the basis of its successful development. The idea of the existence of a knowledge economy is being actively discussed in the scientific literature in connection with the growing role of science as a factor of production, a source of the country's economic growth and increase in labor productivity. The reason is that the transition to a knowledge-based economy remains an urgent issue for many countries on the way to the sixth technological paradigm (technical-economic paradigm, scientific-technical revolution).

From this point of view, the reasons for the development of the "new economy", its characteristics, the research of the existing forms capable of developing the economy in a new form is an urgent issue. "innovative economy", "informed economy", "knowledge-based economy" and many other terms are used.

In our opinion, the term "knowledge economy" is more suitable for reality, because it meaningfully reveals the large-scale changes taking place in the modern economy. If knowledge has always existed, why is it now being talked about in a new form of economy - "knowledge economy"? It can be considered logical.

It is not appropriate to deny the existence of knowledge in any society, in all socio-economic structures and civilizations. Knowledge has always been important and valued in product development. Even in ancient times, there was practical knowledge that was used, for example in medicine or construction. But only a limited number of people have such knowledge, and in this case it is impossible to talk about a knowledge-based economy. The role of knowledge is noticeably changing in the post-industrial society, where fundamental changes are taking place in the process of reproduction. Along with natural resources, labor and capital, knowledge is becoming the main factor of production, taking on the character of a commodity that can be produced and sold. If natural resources gradually decrease in the production process in the old format models, in the conditions of the new economy - knowledge can be endlessly formed and accumulated and spread very quickly among all participants of the exchange using modern information and communication technologies. Thus, in the new format economy, "knowledge" - it is becoming clear that it is a strategic resource of development and a source of social well-being, from which it is correct to use the term "knowledge economy".

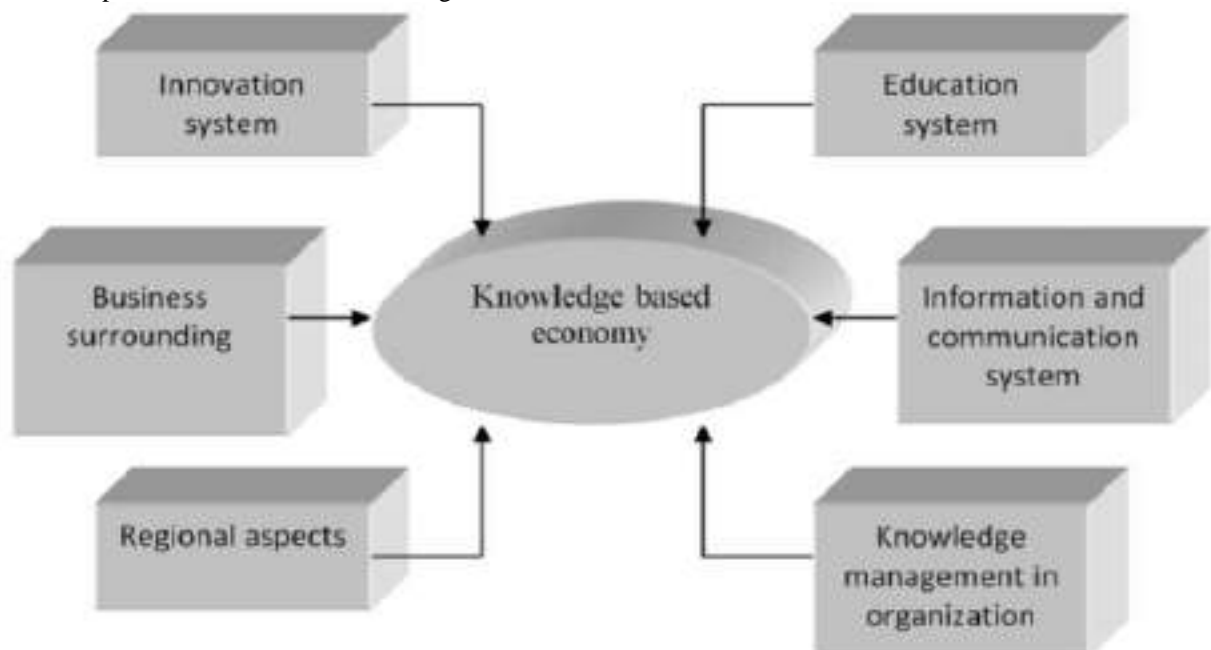
Great interest in the fundamental changes taking place in the economy has led to the emergence of various terms, as well as various ambiguous interpretations of this concept. For example, G. B. Kleiner's knowledge economy- believes that this is an economy in which knowledge is the main factor and commodity of production, while L.M. Gochberg says that "this is an economy based on the intensive and effective use of knowledge"

A number of researchers equate the "knowledge economy" with innovative activity- "this is an economy that provides the process of continuous innovation, that is, the process of continuously transforming new knowledge into new goods and products".- this is an economy in which a large part of the GDP is provided by the activities of production, processing, storage and transmission of information. object- due to the existence of the "knowledge economy", it allows to analyze them in terms of content, note the cognitive compatibility, complementarity and interdependence of different views.

The initial "information", which is a set of certain data, becomes "knowledge" (codified, structured) under the influence of certain mechanisms. In the scientific literature, there are enough different definitions of "knowledge", which is the result of cognitive activity of a person, which is considered as a subjective image of objective reality in the framework of our research, in the form of acquired ideas, concepts, thoughts, theories of principles.

In the economic sphere, the availability of knowledge appears in different forms: codified (or formalized), materialized (products and services), and personal. With the help of texts, tables, images, easily reproduced - codified knowledge is used to create new knowledge, innovative ideas and materialize them in the form of goods and services. Any information flow contains a certain body of knowledge. The information age, which began in the 70s of the last century, led to the wide spread of modern information and communication technologies and the formation of an information society.

In its turn, the informatization of the society made it possible to create a basis for building network interactions covering all spheres of human activity. Special knowledge (new scientific developments, technologies, etc.) codified with the help of information and communication technologies spreads quickly even over long distances and is open to the whole society, regardless of the level of socio-economic development and the level of technological structures



1-Picture. Knowledge Economy, Its Formation, Characteristics and Measurement

Thus, the creation of knowledge from codified information, which later turns into innovative ideas that form innovative technologies, forms a technological chain of production and use of knowledge in the "knowledge economy". Taking into account the above, the main factor of the economy of knowledge economy is the creation of codified knowledge, their generalization using information and communication technologies and can be defined as distribution to all spheres of activity of the socio-economic system.

One of the important aspects that should be considered during the research is to determine the characteristics of the economy of knowledge that are different from previous socio-economic models. Summarizing the results of a number of studies on the economy of knowledge, it is possible to distinguish the following characteristics:

- The importance and importance of education as a platform that forms highly qualified and intellectual specialists, which is the basis of the knowledge economy. Education is becoming a key element of economic and social success for any society. Scientific and educational superiority leads not only to the increase of scientific and educational potential, but also to the development of fundamental and applied research, the system of professional education, and the training of the intellectual elite. Specialists working in an intellectual society have an increasing need for knowledge, updating it, and constantly improving their personal and professional qualities. This allows them to quickly adapt to changes in the external environment, to be competitive;
- Which is becoming a central core in the knowledge economy
- A developed scientific field. It ensures the majority of innovations in all areas of production of goods and services. At the same time, the importance of fundamental research as a generator of new ideas, knowledge, and goods, as well as multidisciplinary knowledge, is increasing. Scientific values are communicated to the whole society through information technologies;
- The symbiosis of science and education, which ensures the increase of the scientific and technical potential of mankind, allows to obtain new heuristic and synergistic results;



- High-speed updating of knowledge and information that ensures the innovative development of the economy, at the same time, knowledge becomes a factor that determines the "face" of modern production. The priority is not only to create new knowledge, but to use it in the production process;

- Intellectualization of work. Employment growth not only in the service sector, but also in the intellectual sectors of the economy. The number of workers in knowledge-producing industries grows at a faster rate than in industries that require physical labor. At the same time, the nature of workers' work changes from executive to intellectual-creative. The value of inventive, highly intellectual and creative specialists increases in society;

- The formation of collective knowledge ("collective intelligence" according to N. Moiseev) as a result of the need for people to think and act together with the help of the development of information and communication technologies, as well as increasing the importance of education in society;

- "Softening" of the economy when intangible resources become an important factor in the development of the socio-economic system. The main conditions of such an economy are the high level of spending on science, the intellectualization and innovation of production, the use of new technologies in all industries and sectors.

- Increasing importance of human capital. Human capital has become the main factor of production and enterprise success.

A person - the owner of knowledge, mind, physical strength and intellectual and creative abilities - is the driving force of all changes in enterprises. Tacit knowledge, which is inseparable from its owner, is of particular importance, which shows the peculiarities of the use of human resources in order to ensure the competitive advantage of enterprises;

- The infrastructure of the knowledge economy - expansion and rapid development of information and communication networks. The use of these technologies creates conditions for the dissemination of information for repeated invention, they simplify the systematization of codified knowledge and its transmission over large distances;

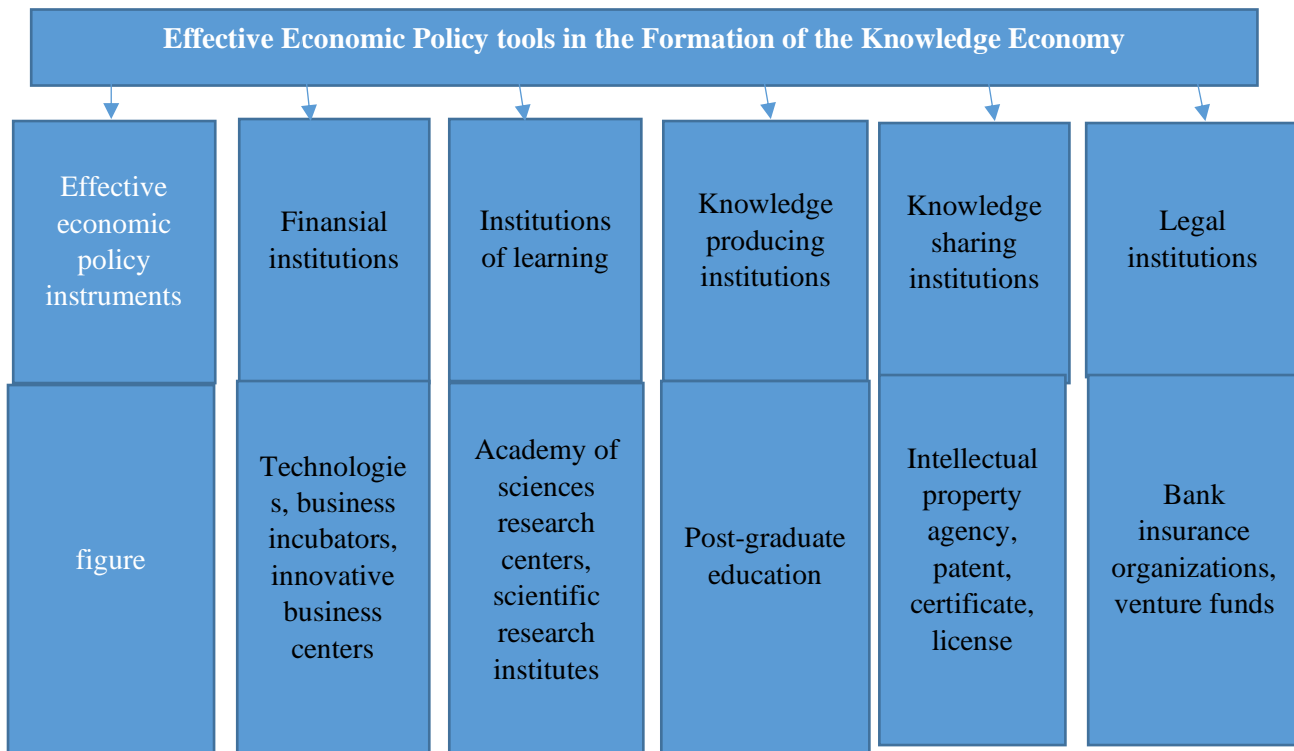
- Boundary transformation. The isolation and localization of regions will disappear, international cooperation will increase, the economy will expand internationally due to the emergence of virtual flows due to the intensive use of information and communication technologies. Time consumption is reduced, costs are changed. Production is increasingly international;

- Branching of the economy.

The rigid hierarchical structures of the past are replaced by flexible network horizontal structures, which are adapted to quickly respond to changes in the external environment (for example, business networks, clusters, outsourcing, etc.). The use of modern information and communication technologies makes it possible to quickly transfer and apply knowledge to the most promising directions of business, displacing the traditional economic relations in society. In the conditions of the rapidly developing "new economy", the transition from the fourth technological paradigm to the fifth and sixth is taking place. At the same time, the forms of combination of labor tools and factors, as well as the labor force in the production process are fundamentally changing

If during the fourth technological paradigm automotive industry, aviation industry, large "chemical" were considered nuclear production industries, then the core of the fifth technological paradigm, which emerged in the last quarter of the 20th century, is the development of electronics and microelectronics, atomic energy, television and information technologies, Internet and mobile communication. is considered to appear. Currently, the stage of formation of the market space for products of the "new economy" based on the technologies of the sixth technological paradigm, characterized by the development of bio and nano-technologies, molecular biology, genetic engineering, membrane and quantum technologies, photonics, micromechanics, fusion energy, etc., is underway.

Thus, the distinctive features of the new technological paradigm are the superiority of intellectual networks, continuous innovative development and the demand for continuous improvement of knowledge and skills of employees of many fields. Knowledge can guarantee the rapid development of the economy, the rapid transition to the sixth technological paradigm. The competitiveness of the knowledge-based economy is not only related to technological achievements, inventions, knowledge creation, but also depends on organizational changes that allow the commercialization of the results of scientific and technical developments, as well as marketing innovations. Therefore, in the conditions of rapid changes in the knowledge economy, increasing and developing the competitiveness of socio-economic systems is an effective tool. It is impossible to do this without the integration of science, education, production and business.



2-Picture. Effective Economic Policy Tools of the Knowledge Economy

We support the views of a number of authors who believe that mobile integrated network structures will be the most effective tool for the development of the knowledge economy, because the process of inventions and the promotion of technological innovations can only take place in self-organizing complexes. Such complexes can be grouped and concentrated in a single area where direct communication between subjects is established and the possibility of constant exchange of information and knowledge is created. In the modern economy, network theory is actively studied by many researchers

The most vivid expression of trends in the modern network economy are clusters. The advantage of clusters is effective cooperation that transfers fundamental knowledge of scientific and educational institutions to practical knowledge, industrial production technologies and commercialization of results. The construction of such mutual cooperation is based on science (as a source of new knowledge, creation of new business ideas, scientific and technical developments), education (as a basis for training the necessary highly qualified specialists), production (as a basis for the production of new products and technological solutions), as well as business. (as a source of commercialization of results) allows to combine. A high level of integration, cross-disciplinary communication and knowledge exchange serve as an effective cooperation platform in the cluster.

In the Republic of Uzbekistan, in recent years, the use of the cluster approach has taken one of the most important places as a strategy for the socio-economic development of certain sectors (mainly agriculture, agro-industry, pharmaceuticals, medicine).

In our opinion, it would be appropriate to study the working conditions and principles of knowledge-based clusters in the future. Thus, the conducted research allows us to draw the following conclusions:

- Currently, the economic value of applying knowledge has increased so much that it leads to systematic and qualitative changes in the working mechanisms of the economy;
- There are different approaches to understanding the ongoing changes, changes in the stages of the development of society, which leads to the use of a wide range of terms that mean them;
- The role and importance of knowledge in increasing the welfare of society has increased in connection with the progress, the use of the term "knowledge economy" seems to us to be the most acceptable and legally correct, as it reflects the nature of changes in the development of society;
- The analysis of features and trends characteristic of the knowledge economy allows to emphasize that mobile integrated network structures, in particular clusters, especially knowledge clusters (cognitive, self-learning) will be an effective tool for its development.



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CATEGORIZING EDUCATIONAL TERMS: A SYSTEMATIC REVIEW

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ABSTRACT

Education is a complex field that encompasses various concepts and terms, making it crucial to establish a comprehensive categorization system. This article presents a systematic review of existing literature to identify and categorize educational terms. The review focuses on categorization systems used to classify terms in the domains of curriculum, pedagogy, assessment, and educational technology. Findings revealed multiple approaches to categorizing educational terms, including hierarchical taxonomies, concept maps, and ontologies. The categorized terms provide a foundation for developing a standardized vocabulary across educational research and practice.

KEY WORDS: education, educational terms, categorization, systematic review, curriculum, pedagogy, assessment, educational technology, taxonomy, concept mapping, ontology, research, policy development, communication

Education is a dynamic field with numerous terminologies used to describe concepts, theoretical frameworks, and practices. Clarifying and categorizing these terms is essential for effective communication, research, and policy development in education. This article aims to review existing literature and categorize educational terms to establish a coherent framework for future reference.

A systematic review was conducted to identify relevant literature on categorizing educational terms. Databases such as ERIC, JSTOR, and Scopus were searched using keywords related to educational terms and their categorization. Articles were selected based on inclusion and exclusion criteria to ensure research quality. Data extraction involved identifying categorization methods and analyzing the terms within each category.

The systematic review identified various approaches to categorizing educational terms. Hierarchical taxonomies¹ were commonly employed, where terms were categorized based on their broader and narrower conceptual relationships. For example, terms related to instructional strategies could be categorized under the broader categories of active learning, collaborative learning, and direct instruction. Other categorization methods included concept mapping and ontologies², which represented relationships between terms using visual representations or semantic frameworks.

To provide further information on the systematic review, it is important to understand the purpose and methodology of the study. The systematic review aimed to identify and analyze the terminology used in educational research literature. This involved conducting a comprehensive search of various databases and selecting relevant articles based on specific inclusion criteria.

The selected articles were then analyzed to extract educational terms used within the literature. These terms were then classified into four broad domains: curriculum, pedagogy, assessment, and educational technology. Each domain had multiple subcategories to capture the diverse range of terms used in the literature.

1. Curriculum: This domain focuses on terms related to the design, development, and implementation of educational content. Subcategories within this domain could include curriculum design, curriculum development, curriculum evaluation, curriculum alignment, and curriculum mapping.

¹ Becker, K., & Parks, S. (2016). Taxonomy usage in K-12 educational technology research from 2000 to 2014. *Journal of Research on Technology in Education*, 48(3), 194-213.

² Ekici, D. (2018). Ontology development for e-learning: A systematic review. *The International Review of Research in Open and Distributed Learning*, 19(1), 37-60.



2. Pedagogy: This domain encompasses terms related to teaching methods, strategies³, and approaches⁴ used in education. Subcategories within this domain could include instructional methods, student-centered learning, inquiry-based learning, problem-based learning, and cooperative learning.

3. Assessment: This domain includes terms related to evaluating and measuring student learning outcomes. Subcategories within this domain could include formative assessment, summative assessment, standardized testing, rubrics, and feedback.

4. Educational technology: This domain includes terms related to the use of technology in education. Subcategories within this domain could include instructional technology, e-learning, blended learning, educational apps, and virtual reality.

By categorizing the educational terms into these domains and subcategories, the systematic review⁵ provides a comprehensive overview of the terminology used in educational research. This categorization can help researchers, educators, and policymakers better understand and communicate ideas in the field of education.

The categorization of educational terms presented in this article provides a foundation for standardizing vocabulary within the field of education. Establishing a common framework will facilitate effective communication, research synthesis, and policy development. Additionally, future research could focus on updating and expanding the categorization system⁶, incorporating emerging terms related to educational trends such as personalized learning, online education, and inclusive practices.

This systematic review has contributed to the field of education by identifying and categorizing educational terms within the domains of curriculum, pedagogy, assessment, and educational technology. The comprehensive categorization system presented in this article will aid researchers, practitioners, and policymakers in developing a standardized vocabulary, thus enhancing communication and promoting collaboration within the education community.

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EXPLORING STYLISTIC DEVICES IN “THE KITE RUNNER”: UNVEILING SYMBOLISM AND METAPHORS

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ABSTRACT

This research article explores the use of stylistic devices in the book “The Kite Runner” to convey deep emotions and themes. Through metaphors and symbolism, the author effectively communicates the enduring impact of the past, the power of relationships, and the complexities of characters. The study analyzes specific passages from the book to highlight the significance of these stylistic devices in shaping the narrative. The findings contribute to a deeper understanding of the book’s themes and the author’s storytelling techniques.

KEY WORDS: *metaphor, symbolism, emotions, guilt, redemption, protagonist, relationships, novel*

INTRODUCTION

The purpose of this research article is to examine the stylistic devices employed in the book “The Kite Runner” and their impact on the story. The author uses metaphors and symbolism to convey emotions, represent characters, and explore important themes. By analyzing specific passages, this study aims to reflect on the author’s effective use of these stylistic devices. Understanding the significance of these devices will enhance our appreciation and interpretation of the book.

METHODS

This research article employs a qualitative approach based on functional-interpretation and psychoanalytical methods to analyze the stylistic devices in “The Kite Runner”. A close reading of selected passages from the book is conducted to identify and interpret the metaphors and symbolism employed by the author. These passages are examined in the context of the overall narrative to determine their thematic significance. The analysis is based on the researcher’s interpretation and understanding of the text.

RESULT

The analysis of stylistic devices in “The Kite Runner” reveals their profound impact on the narrative. Metaphors such as “crumbling mud wall,” “frozen creek,” and “burying the past” effectively convey themes of decay, stagnation, and the persistence of memories. Symbolism, such as the kites representing friendship and the haunting presence of the past, adds emotional depth to the story. These stylistic devices contribute to the book’s exploration of guilt, redemption, and the enduring influence of the past on the characters’ lives.

DISCUSSION

From the first lines of the book writer uses a lot of stylistic devices with the purpose of informing readers of what to expect from the book.

“I became what I am today at the age of twelve, on a frigid overcast day in the winter of 1975. I remember the precise moment, crouching behind a crumbling mud wall, peeking into the alley near the frozen creek. That was a long time ago, but it’s wrong what they say about the past, I’ve learned, about how you can bury it. Because the past claws its way out. Looking back now, I realize I have been peeking into that deserted alley for the last twenty-six years” [1,3]

For example, in the expression “*Crumbling mud wall*” a barrier or obstacle in Amir’s life is represented. It suggests that something has deteriorated or fallen apart, representing a sense of decay or vulnerability.

“*Peeking into the alley*” is a representation of his act of observing or reflecting on a specific memory or aspect of the past. It implies a sense of caution or secrecy, as if he is hesitant to fully confront or engage with his past memories.

“*Frozen creek*” represents a stagnant or unchanging state. It shows that the flow of his time or his life has halted, which suggests a lack of progress or development.



“*Burying the past*” is used by the author to imply the act of trying to forget or suppress his past experiences or memories. By this it can be understood that the past cannot be completely erased or hidden, as it has a way of resurfacing or demanding attention.

“*The past claws its way out*” describes the persistent and intrusive nature of the past. By reading this expression it can be concluded that memories and experiences from the past can emerge forcefully and unexpectedly, as if driven by a powerful force.

These metaphors were used by the author for conveying the idea that the past holds a significant influence over Amir’s life, regardless of his attempts to forget or move on from it. By using them author emphasizes the enduring impact of memories and the difficulty of escaping their grasp.

“*One day last summer, my friend Rahim Khan called from Pakistan. He asked me to come see him. Standing in the kitchen with the receiver to my ear, I knew it wasn’t just Rahim Khan on the line. It was my past of unatoned sins. After I hung up, I went for a walk along Spreckels Lake on the northern edge of Golden Gate Park. The early-afternoon sun sparkled on the water where dozens of miniature boats sailed, propelled by a crisp breeze. Then I glanced up and saw a pair of kites, red with long blue tails, soaring in the sky. They danced high above the trees on the west end of the park, over the windmills, floating side by side like a pair of eyes looking down on San Francisco, the city I now call home. And suddenly Hassan’s voice whispered in my head: For you, a thousand times over. Hassan the harellipped kite runner.*” [1,3]

In the following passage the expression “*It wasn’t just Rahim Khan on the line. It was my past of unatoned sins.*” suggests that the phone call from Rahim Khan represents more than just a conversation with a friend. It symbolizes the narrator's unresolved guilt and regrets from the past. The past sins are illustrated as a presence that lingers and haunts Amir.

“*A pair of kites, red with long blue tails, soaring in the sky. They danced high above the trees on the west end of the park, over the windmills...*”: The kites in this sentence symbolize the relationship between Amir and Hassan, his childhood friend. The red kites with long blue tails represent the connection and bond between them. The kites soaring high in the sky and dancing symbolize the freedom, joy, and innocence of their friendship.

“*They floated side by side like a pair of eyes looking down on San Francisco, the city I now call home.*” In this piece floating kites are compared to a pair of eyes observing San Francisco from above. It suggests that the presence and memory of Hassan are still watching over Amir, even in his new home.

These metaphors enhance the emotional depth of the story, conveying the weight of the narrator's past, the potential for redemption, and the enduring impact of significant relationships.

“*People say that eyes are windows to the soul. Never was that more true than with Ali, who could only reveal himself through his eyes.*” [1,7] This metaphor suggests that a person’s eyes can provide insight into their inner emotions and thoughts. Ali’s slanted brown eyes, which glint with a smile or well with sorrow, symbolize his only means of expressing himself and revealing his true emotions to others.

“*It was Rahim Khan who first referred to him as what eventually became Baba’s famous nickname, Toophan agha, or “Mr. Hurricane.” It was an apt enough nickname. My father was a force of nature, a towering Pashtun specimen with a thick beard, a wayward crop of curly brown hair as unruly as the man himself, hands that looked capable of uprooting a willow tree, and a black glare that would “drop the devil to his knees begging for mercy,” as Rahim Khan used to say.*” [1,10]

“*A force of nature*” here Baba is compared to the power and unpredictability of natural forces, highlighting his strength and influence.

“*A towering Pashtun specimen*”, “*Hands that looked capable of uprooting a willow tree*” These metaphors present Baba as a physically imposing figure, emphasizing his Pashtun heritage and suggesting his strength and dominance.

“*A black glare that would drop the devil to his knees begging for mercy*”: This metaphor describes Baba’s intense and intimidating gaze, symbolizing his ability to command authority and instill fear.

These metaphors collectively create a vivid and evocative description of Baba’s physicality, personality, and commanding presence. They enhance the reader’s understanding of his larger-than-life character and the impact he has on others.

“*Never mind that to me, the face of Afghanistan is that of a boy with a thin-boned frame, a shaved head, and low-set ears, a boy with a Chinese doll face perpetually lit by a harellipped smile.*” [1,18]



In this sentence, Hassan's face is compared to that of a Chinese doll. The comparison emphasizes his delicate and finely crafted features, creating a vivid image in the reader's mind. The mention of the "hare-lipped smile" adds a touch of uniqueness and charm to the metaphor, portraying the Hassan's distinctive smile as something endearing and memorable.

"To him, the words on the page were a scramble of codes, indecipherable, mysterious. Words were secret doorways and I held all the keys. After, I started to ask him if he'd liked the story, a giggle rising in my throat, when Hassan began to clap." [1,21]

"To him, the words on the page were a scramble of codes, indecipherable, mysterious." In this piece, the words on the page are compared to a scramble of codes. The comparison shows that the words hold a hidden meaning or message and that is difficult for Hassan to understand. This metaphor emphasizes the sense of mystery and complexity associated with reading for Hassan, as he perceives the words as difficult puzzles waiting to be deciphered.

"Words were secret doorways and I held all the keys." Here words are compared to secret doorways, and in Hassan's imagination Amir is portrayed as holding the keys to these doorways. It highlights Amir's role as a guide or mentor to Hassan, offering him access to a world of knowledge and understanding through the power of language.

CONCLUSION

The findings of this research article demonstrate the powerful role of stylistic devices in "The Kite Runner". The author's use of metaphors and symbolism enriches the narrative, allowing for a deeper understanding of the book's themes and characters. The metaphors effectively convey emotions, while the symbolism adds layers of meaning to the story. By analyzing these stylistic devices, this study enhances our appreciation of the book's literary techniques and their impact on the reader's interpretation. Overall, this research contributes to a comprehensive understanding of the stylistic qualities of "The Kite Runner" and its enduring appeal.

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REVIEW ON BIOACTIVE HETEROCYCLIC COMPOUNDS

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ABSTRACT

Heterocyclic compounds, characterized by rings containing atoms beyond carbon, play a pivotal role in drug discovery due to their diverse structural configurations and significant biological activities. This review encompasses an extensive exploration of these compounds, focusing on their synthesis methods, structural diversity, biological activities, mechanisms of action, case studies, and prospects. The methods section outlines conventional chemical synthesis approaches alongside environmentally friendly and computationally guided methods. It highlights the importance of sustainable synthesis and computational design in the creation of diverse heterocyclic structures. Structural diversity is examined by showcasing common heterocyclic rings, while also delving into unique and atypical structures. Special emphasis is placed on the role of aromaticity in influencing bioactivity, shedding light on its significance in drug development.

The review elaborates on the broad spectrum of biological activities exhibited by bioactive heterocycles, including their role in anticancer, antibacterial, antifungal, neuropharmacological, and antiviral applications. Mechanisms of action, such as target identification, cellular signaling pathways, pharmacokinetics, and pharmacodynamics, are elucidated to underline the intricate ways heterocyclic compounds interact within biological systems. Furthermore, the review presents case studies and recent discoveries that underscore the significance of heterocyclic compounds in drug development. Key studies and promising compounds in clinical trials are highlighted to showcase the potential and advancements in this field. Lastly, the challenges in drug development, emerging trends, and the potential for personalized medicine are discussed in the context of heterocyclic compounds. The review concludes by addressing future directions and the transformative role of emerging technologies in shaping the landscape of bioactive heterocycles for personalized therapeutic interventions.

KEYWORDS : *Heterocyclic Compounds, synthesis, biological application, various developments.*

1. INTRODUCTION

1.1 OVERVIEW OF HETEROCYCLIC COMPOUNDS

Heterocyclic chemistry stands as a crucial branch within organic chemistry, focusing on the synthesis, properties, and uses of heterocycles. The term "heterocyclic" originates from the Greek word "heteros," denoting "different." Essentially, these compounds are organic cyclic structures that incorporate at least one heteroatom. Nitrogen, oxygen, and sulfur are among the common heteroatoms, while other elements like Se, P, Si, and B also contribute to heterocyclic compounds. Heteroatoms are integral components of these structures and are well-recognized within this field of study. The most prevalent heterocycles consist of five- or six-membered rings, incorporating nitrogen (N), oxygen (O), or sulfur (S) as heteroatoms. Pyridine, pyrrole, furan, and thiophene are some well-known simple heterocyclic compounds. Pyridine comprises a six-atom ring, five of which are carbon atoms and one nitrogen atom. Pyrrole, furan, and thiophene each possess five-membered rings consisting of four carbon atoms and one nitrogen, oxygen, or sulfur atom, respectively. Most drugs belong to the category of heterocyclic compounds.

Heterocyclic compounds hold significant importance in the metabolism of living cells, with a majority being five- or six-membered structures containing one to three heteroatoms within their nucleus. These compounds serve as the foundational structures for pyrimidine and purine, which form the genetic material DNA. These heterocyclic compounds exist in both isolated and fused forms within biological systems. Several common heterocyclic compounds find application in medicinal contexts, including amino acids like proline, histidine,



and tryptophan, as well as precursor molecules for vitamins and coenzymes such as thiamine, riboflavin, pyridoxine, folic acid, biotin, B12, and the vitamin E family. A wide array of pharmacologically active heterocyclic compounds, many of which are regularly utilized in clinical settings, further underscores their significance in drug development and therapy.

1.2 SIGNIFICANCE OF BIOACTIVE HETEROCYCLES IN DRUG DISCOVERY

Bioactive heterocycles have garnered substantial interest in pharmaceutical and agrochemical sectors owing to their abundance in nature and potent biological effects. Numerous natural compounds, such as alkaloids, vitamins, and antibiotics, contain these heterocyclic structures, showcasing robust pharmacological or pesticidal properties that are invaluable in drug discovery and crop protection. More than 90% of newly developed drugs feature heterocyclic motifs, underscoring their pivotal role in medicinal chemistry. These compounds exhibit diverse biological potentials, showcasing activities like antifungal and anti-inflammatory effects, and serve as valuable tools for studying biological processes and devising therapeutic interventions.

Several widely used medicinal compounds, including amino acids like proline, histidine, and tryptophan, as well as vitamins and coenzymes such as thiamine, riboflavin, pyridoxine, folic acid, biotin, B12, and the vitamin E family, are prominent examples of bioactive heterocyclic compounds utilized in pharmaceuticals. For instance, indole-based drugs display potent anti-inflammatory effects, while imidazole derivatives demonstrate efficacy against fungal infections. These compounds interact with biological targets, modulating their functions, and contribute significantly to understanding biology and crafting therapeutic solutions.

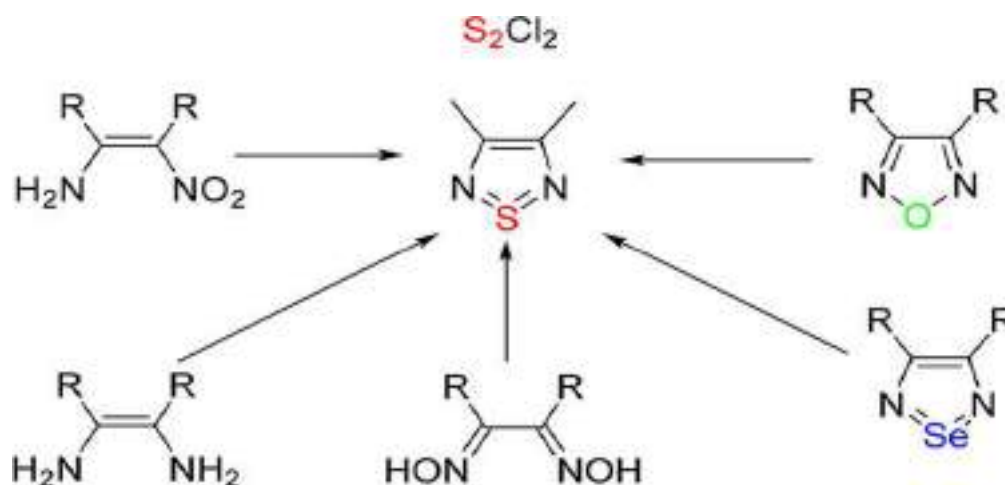
Moreover, pyrimidines and their derivatives play a crucial role in various biological properties. Compounds like 2-Sulphanilamide Pyrimidines (e.g., Sulphadiazine, Sulphamethoxydiazine, and Sulphadiazine) are well-recognized antibacterial agents. Similarly, substituted 1,3,4-oxadiazoles exhibit diverse biological activities, with examples like 2-Acetamide-5-phenyl-1,3,4-oxadiazole showing antimetabolic, analgesic, diuretic, and antiemetic properties, among others. Additionally, non-steroidal anti-inflammatory drugs (NSAIDs) like aspirin, ibuprofen, and naproxen manifest anti-inflammatory effects and are part of the repertoire of bioactive heterocyclic compounds used in medicine.

2. METHODS OF SYNTHESIS

2.1 CHEMICAL SYNTHESIS OF HETEROCYCLIC COMPOUNDS

2.1.1 SYNTHESIS OF 5-MEMBERED HETEROCYCLIC COMPOUNDS

Many recent syntheses of 1,2,5-thiadiazoles have been developed based on the previously undisclosed reactivity of sulfur monochloride (S_2Cl_2). This reagent enables the transformation of various compounds, such as 1,2-diamines and their synthetic counterparts, including 1,2,5-oxa/Selena diazoles, 1,2-nitrosamines, and 1,2-dioximes, into 1,2,5-thiadiazoles. Particularly with 1,2,5-oxa/Selena diazoles, the reaction involves chalcogen exchange, highlighting the growing significance of this process within chalcogen-nitrogen heterocyclic chemistry.





The synthesis of 1,2,5-thiadiazoles from 1,2-diamines and related synthetic compounds, such as 1,2,5-oxa/Selena diazoles, 1,2-nitrosamines, and 1,2-dioximes, shows a strong dependency on reaction conditions. For instance, when treating dioximes with S_2Cl_2 in MeCN, the reaction at $5^\circ C$ results in 2-oxides of the desired thiadiazoles, whereas conducting the reaction at room temperature yields the thiadiazoles directly. Subsequent treatment of the oxides with S_2Cl_2 and pyridine in MeCN at room temperature leads to the formation of thiadiazoles.

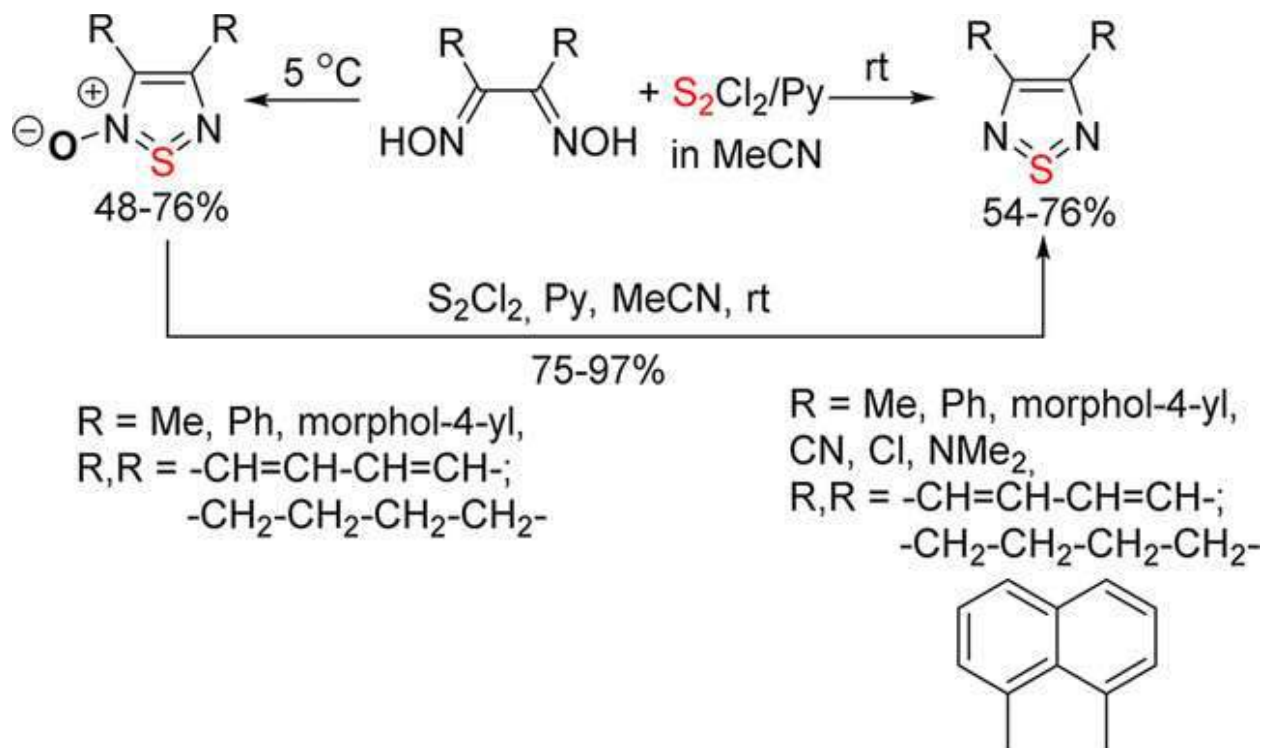


Fig.2 Synthesis of 1,2,5-Thiadiazoles

2.1.2 SYNTHESIS OF PYRAZOLE FUSED WITHIN BICYCLIC SYSTEM

Pyrazoles, recognized aromatic heterocycles containing two nitrogen atoms within their five-membered rings, are widely acknowledged. The fused [5-5] system featuring three heteroatoms, known as Pyrrolo[2,3-c] pyrazole, can be obtained by heating 3-aryl-1-phenyl-1H-pyrazol-4-carbaldehydes with ethyl azido acetate in ethanol, followed by further heating in toluene at reflux, yielding derivatives of pyrrolo[2,3-c]pyrazole.

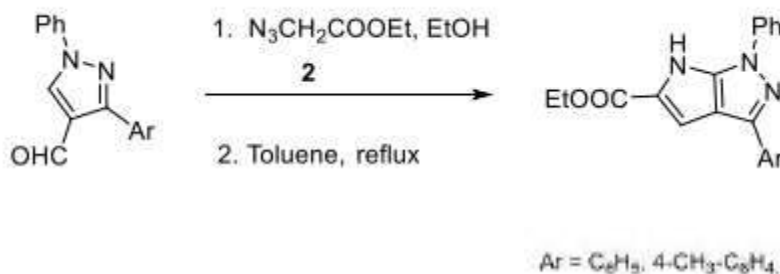


Fig.3 Synthesis of pyrrolo[2,3-c] pyrazole



2.2 GREEN AND SUSTAINABLE APPROACHES

2.2.1 GREEN CHEMISTRY

The primary objectives of sustainable development involve minimizing the negative impacts of substances utilized and produced while ensuring the advancement of more sustainable chemicals, materials, and energy sources for future generations. Chemistry plays a pivotal role in achieving this goal by focusing on developing new approaches that are more environmentally friendly than current practices. Addressing the global demand for eco-conscious chemical processes and products necessitates innovative and cost-effective methods for preventing pollution.

Green Chemistry emerges as a highly appealing concept within this framework, employing a set of principles aimed at reducing or eliminating hazardous substances in the design, production, and application of chemical products. The rapid growth of Green Chemistry stems from the understanding that environmentally friendly products and processes hold long-term economic viability. Heterocycles represent commonly used frameworks in drugs and pharmaceutically significant substances. Due to their drug-like properties and extensive structural variability, diverse collections of heterocycles are routinely employed in early-stage drug discovery programs using high-throughput screening. Many heterocyclic compounds are synthesized using green chemistry principles, prioritizing eco-friendliness and diverse structural orientations.

2.2.2 HETEROCYCLIC COMPOUNDS WHICH ARE SYNTHESIZED UNDER GREEN CHEMISTRY

- 1) N, N-containing heterocyclic compounds
Example: 1,2,4-Triazoles, Triazines, Benzimidazoles and imidazole
- 2) N, O-containing heterocyclic compounds
Example: Benzoxazoles, 1,3,4-Oxadiazoles and 1,2,4-Oxadiazoles
- 3) N, S-containing heterocyclic compounds
Examples: Benzothiazoles

1) N, N-CONTAINING HETEROCYCLIC COMPOUNDS

1,2,4-TRIAZOLES:

4,5-Disubstituted-1,2,4-triazole-3-thiones have been synthesized in a single step by reacting acid hydrazide with alkyl or aryl isothiocyanate using a KOH (10%) solution on silica gel or montmorillonite K10 surfaces, employing microwave irradiation. These triazoles have also been produced by reacting 4-substituted-1-aryloxy thiosemicarbazides with a KOH (10%) solution on silica gel surfaces using microwave irradiation. Additionally, a new method was introduced for the one-step synthesis of thiazolo-[3,2-b]-1,2,4-triazoles from the reaction between chalcones and bis-(1,2,4-triazoly)-sulfoxide.

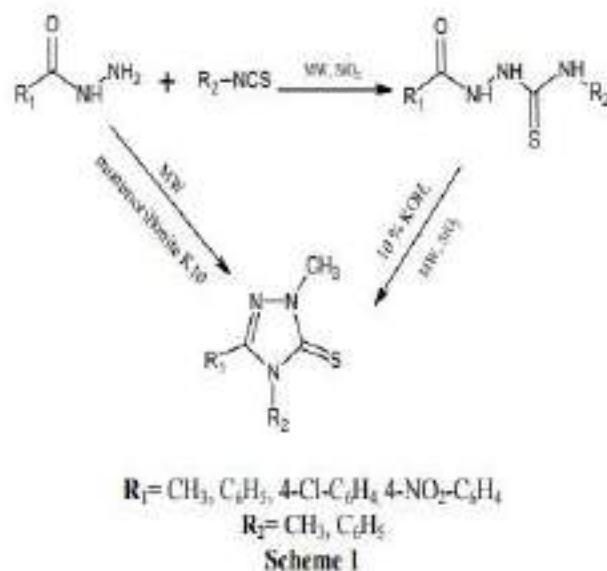


Fig.4.Preparation of 4,5-Disubstituted-1,2,4-triazole-3-thiones

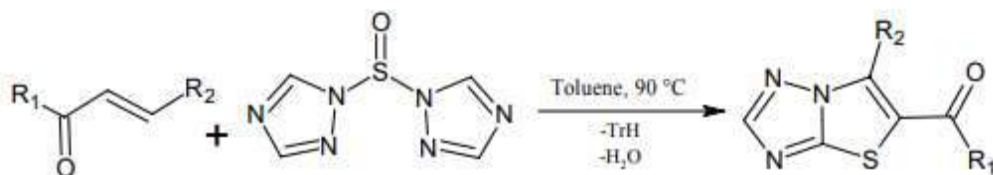


Fig.5.Synthesis of thiazolo-[3,2-b]-1,2,4-triazoles

TRIAZINES

The utilization of microwave technology has expanded the synthesis possibilities of 1,2,4-triazines, allowing for the rapid creation of diverse 3,5,6-trisubstituted 1,2,4-triazines with high yields and purity. This method has enabled the production of numerous previously undiscovered 3-heterocyclic-1,2,4-triazines. The synthesis of 1,2,4-triazines involved the condensation of thiosemicarbazide with diketones (RCOCOR, where R can be H, Ph, or CH₃) under microwave irradiation in a solvent-free system. Additionally, the one-pot condensation and cyclization of 4-amino- [1,2,4] triazine-3-thione-5-ones with various aromatic carboxylic acids, facilitated by silica-gel/sulfuric acid in a solvent-free condition, led to the synthesis of [1,3,4]-thiadiazolo[2,3-c] [1,2,4]-triazin-4-ones.

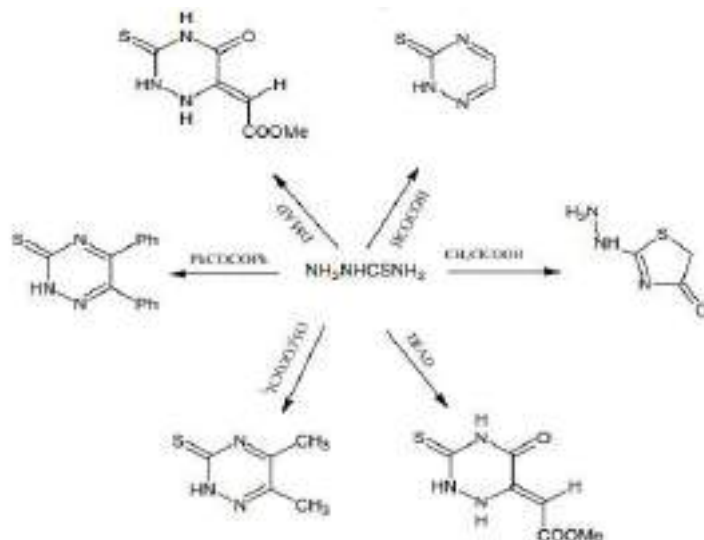
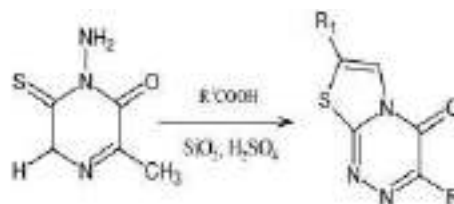


Fig.6. Synthesis of 1,2,4-triazines



R₁=C₆H₅, CH₂-C₆H₅, 4-CH₃-C₆H₄, 3-Cl-C₆H₄

Fig.7. Synthesis of [1,3,4]-thiadiazolo[2,3-c] [1,2,4]-triazin-4-ones

BENZIMIDAZOLES AND IMIDAZOLES

The effectiveness of a strategy involving Ugi/de-Boc/cyclization for creating heterocyclic compounds has been enhanced by integrating microwave and fluorous technologies. To synthesize substituted quinoxalinones and benzimidazoles, a fluorous-Boc protected diamine is used in the Ugi reactions. Both the Ugi reaction and subsequent post-condensation occur rapidly under microwave irradiation, and the resulting reaction mixtures are purified using solid-phase extraction (SPE) with Fluoro Flash cartridges. A method employing microwave assistance for synthesizing 2-substituted benzimidazoles in the presence of alumina-methane sulfonic acid (AMA) has also been reported³⁴. Furthermore, this method describes the formation of new bis benzimidazoles through the direct reaction of phenylenediamine and dicarboxylic acid under microwave irradiation, yielding good to excellent yields.

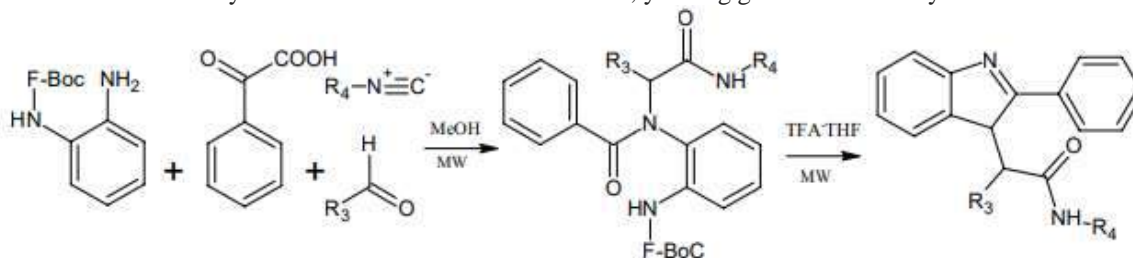


Fig.8. Synthesis of substituted quinoxalinones and benzimidazoles

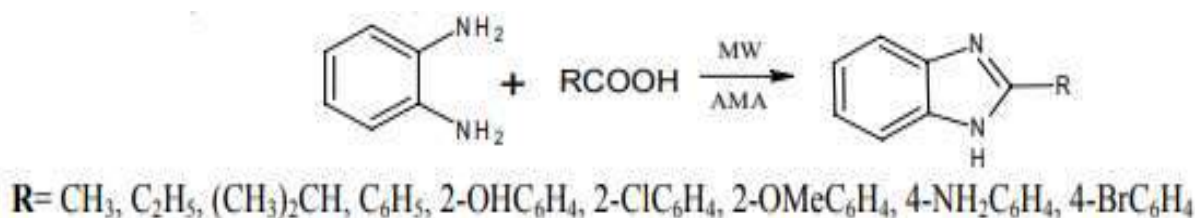


Fig.9. Synthesis of 2-substituted benzimidazoles

2) N, O-CONTAINING HETEROCYCLIC COMPOUNDS

BENZOXAZOLES

Benzoxazoles are commonly synthesized using a two-step process involving the base-catalyzed bisacylation of ortho-aminophenols followed by a cyclization-dehydration reaction assisted by a Lewis acid, typically under microwave (MW) conditions. A new method has been developed where benzoxazoles are obtained through a one-pot process by microwave flash heating acid chlorides and ortho-aminophenols in sealed reaction vessels. This method does not require the use of additional agents like bases or Lewis's acids.

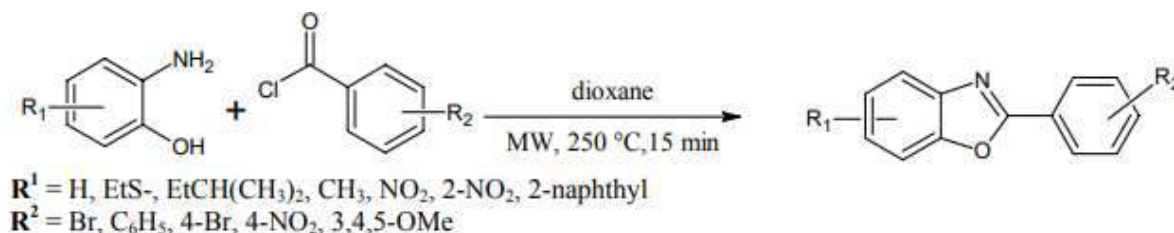


Fig.9. Synthesis of Benzoxazoles



A recent report describes the preparation of 2-substituted benzoxazoles through the condensation of 2-aminophenol with different aromatic aldehydes. This reaction utilizes molecular iodine as a catalyst and occurs under solvent-free conditions, with the option of employing microwave irradiation or without it.

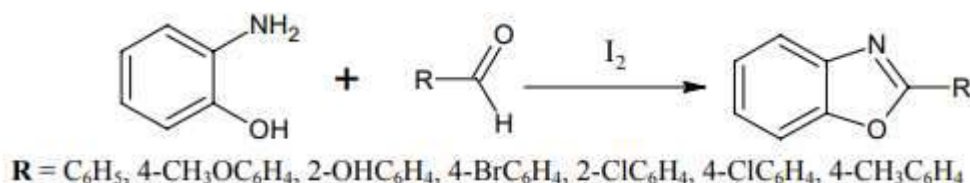


Fig.9. Synthesis of 2-substituted benzoxazoles

1,3,4-OXADIAZOLES AND 1,2,4-OXADIAZOLES

The synthesis of 4-[3-(aryl)-1,2,4-oxadiazol-5-yl]-butan-2-ones from methyl levulinate and aryl amidoximes occurred in a microwave oven, devoid of any solvent. This method led to significantly reduced reaction times and yielded results comparable to those obtained through conventional heating.

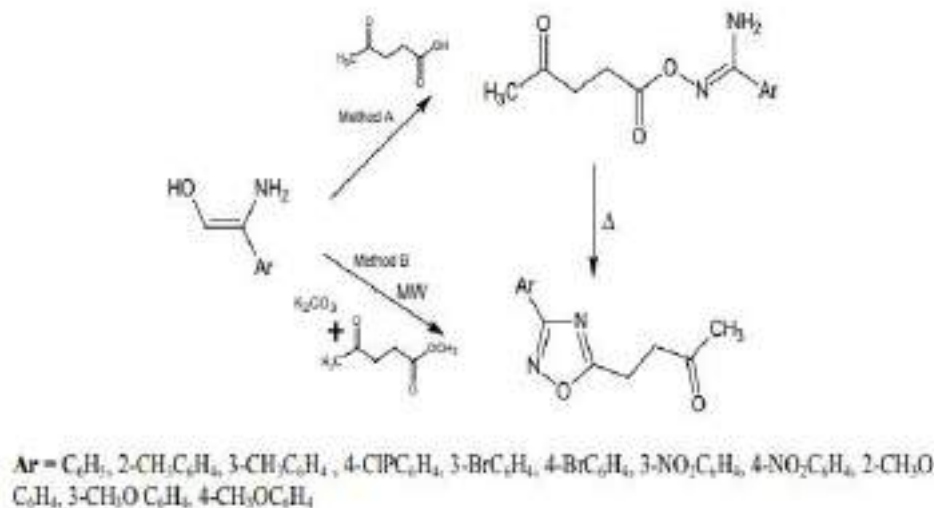


Fig.10. Synthesis of 4-[3-(aryl)-1,2,4-oxadiazol-5-yl]-butan-2-ones

The microwave-assisted synthesis of substituted-1,2,4-oxadiazoles was conducted in a one-pot process, both with solvent and in solvent-free conditions, examining the significance of certain coupling reagents. The methods emphasized achieving good yields and shorter reaction times as their primary features.

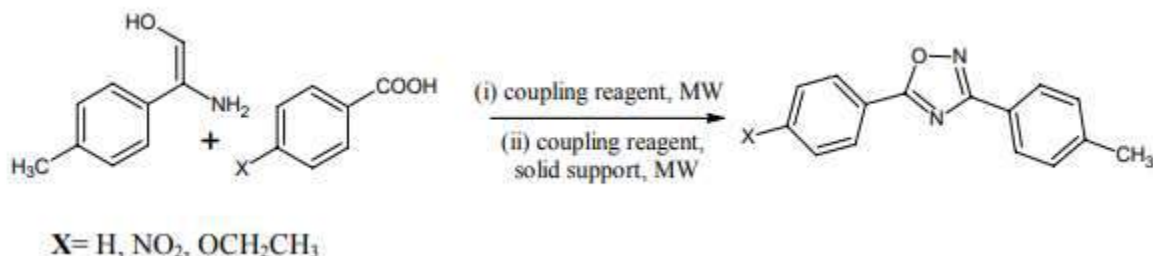


Fig.11. Synthesis of substituted-1,2,4-oxadiazoles



3) N, S-CONTAINING HETEROCYCLIC COMPOUNDS

BENZOTHAZOLES

The accessibility of 2-substituted benzothiazoles relies on the synthetic routes that involve constructing the fused thiazole ring from acyclic reactants. Various synthetic strategies illustrate the potential methods for creating the benzothiazole moiety. Some of these approaches entail direct cyclocondensation of 2-aminothiophenol with diverse carboxylic acids without the use of a catalyst or dehydrating agent. However, some of these techniques exhibit drawbacks, such as requiring high thermal conditions, extended reaction times, excessive reagent usage, and the use of toxic metallic compounds leading to waste generation.

Although direct comparisons with conventional thermal conditions were not explicitly made, existing literature examples often involve oil-bath heating of amino thiophenol with carboxylic acid at 220°C for 4 hours, typically in the presence of polyphosphoric acid or P2O5 – MeSO3H (at 70°C for 10 hours). Consequently, microwave-assisted methodologies offer distinct advantages in terms of both reaction speed and milder reaction conditions. One of the documented microwave-assisted syntheses of benzothiazoles involves the condensation of a dinucleophile, such as 2-aminothiophenol, with an ortho-ester in the presence of KSF clay within a monomode microwave reactor operating at 60W under a nitrogen atmosphere.

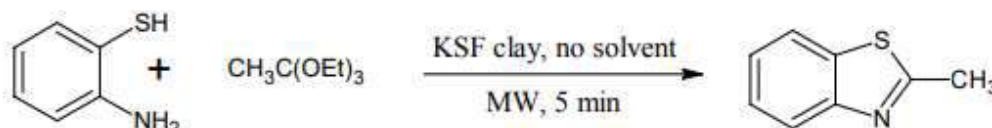
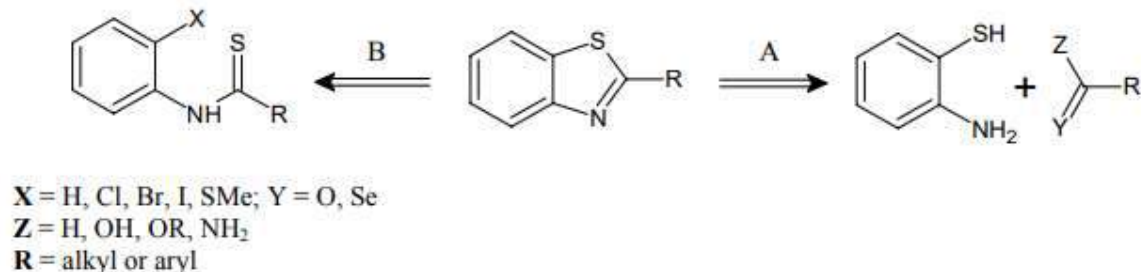


Fig.12. Synthesis of benzothiazoles

2.3 COMPUTATIONAL METHODS IN DESIGNING HETEROCYCLES

2.3.1 COMPUTATIONAL STUDIES

The Gaussian 09W Package was utilized for all computational and theoretical calculations. Initially, 3D structures of the compounds were created using Guess view, and an initial conformational analysis was conducted. Geometric optimization was performed without symmetry constraints using DFT theory with B3LYP and a 6-31G (d, p) basis set. The energy gaps between the Highest Occupied Molecular Orbital (HOMO) and Lowest Unoccupied Molecular Orbital (LUMO) were determined based on this computational model. To simulate experimental conditions, all calculations were carried out employing the IEF PCM solvation model with dimethyl sulfoxide (DMSO) as the solvent, reflecting its use in the experimental studies.

2.3.2 FRONTIER MOLECULAR ORBITALS (FMOS), ABSORPTION AND ELECTRONIC AND OTHER GEOMETRIC PROPERTIES

The electronic properties such as Highest Occupied Molecular Orbital (HOMO), Lowest Unoccupied Molecular Orbital (LUMO), band gap, and absorption characteristics are closely related to the excited states of molecules. Following the optimization process by Density Functional Theory (DFT), structures with lower internal energy were obtained. Calculations were performed at stationary points. The energy of the optimized structures was considered as the system's internal energy. Output files obtained were utilized to generate visual representations of Kohn-Sham orbitals, applied to lower-energy excited states of chemical species based on triazine. Computational studies included analysis of optimized structure, electronic energy, UV/Visible spectrum, Fermi level (FL), chemical hardness, softness, molecular chemical potential, electrophilicity, and various other molecular properties.



2.3.3 DISC DIFFUSION METHOD

The antimicrobial activity assessment was conducted using the disc diffusion method. Whatman filter paper discs (6mm diameter) were autoclaved and placed in sterile Petri plates. In a sterile environment, the synthesized compounds were dissolved in DMSO (20 mg/mL) to achieve minimum concentrations, and these solutions were applied onto the paper discs using a micropipette. Similar discs were prepared with standard antibacterial drug Streptomycin, antifungal drug Fluconazole, and precursor drugs Sulfanilamide and Sulfadiazine. Microbial strains were suspended in nutrient broth and incubated for 24 hours. The resulting suspensions were spread onto respective agar media plates. The discs loaded with compounds and standards were then placed onto the appropriate microorganism plates, followed by incubation at 37°C for 24 hours. Antifungal and antibacterial activities were evaluated by measuring the zones of inhibition around the discs. For determining the minimum inhibitory concentration (MIC), solutions of the synthesized compounds were diluted to varying concentrations ranging from 50 to 1000 µg/mL (50 µg/mL, 100 µg/mL, 150 µg/mL, 250 µg/mL, 500 µg/mL, and 1000 µg/mL). Streptomycin and Fluconazole were used as standards to determine the minimum bactericidal concentration (MBC) and minimum fungicidal concentration (MFC), respectively.

2.3.4 CYTOTOXIC STUDY

The Hemolytic assay involved several steps: Initially, 3 mL of healthy human blood, treated with EDTA to prevent clotting, was carefully placed into sterilized 15 mL falcon tubes. These blood samples underwent centrifugation three times with 5 mL of chilled PBS (phosphate-buffered saline) for 5 minutes each to wash the blood cells. Afterward, 180 µL of the red blood cell suspension was mixed with 20 µL of each compound solution (100 µg/mL) in a 2 mL Eppendorf tube. The mixtures were then centrifuged for 5 minutes in the tubes, and 100 µL of the supernatants were extracted and diluted by adding 900 µL of chilled PBS. As controls, 0.1% Triton X-100 was used as the positive control and PBS as the negative control. The absorbance was subsequently measured at 576nm using an ELISA plate reader.

2.3.5 ATOMS IN MOLECULES (AIM) METHOD

Recent studies investigating weak interactions, particularly hydrogen bonding, have gained attention by employing the theory of atoms in molecules (AIM). These investigations combine both theoretical and experimental electron densities to understand various types of hydrogen bonding and weak interactions. The focus lies on analyzing the topological properties of electron density distribution in molecular systems, relying on the gradient vector field of electron density ($r(r)$) and the Laplacian distribution of electron density $\nabla^2 r(r)$. Within the AIM framework, critical points (CPs) of rank 3 have been identified in both theoretical and experimental electron densities, including bond critical points (BCPs), ring critical points (RCPs), and cage critical points (CCPs). The presence of a BCP between two atoms in a molecule's equilibrium geometry is crucial for establishing a bond between them. Gradient paths originating at a BCP and reaching neighboring nuclei define a line along which electron distribution, $r(r)$, is maximized concerning lateral displacement. In this study, BCP properties were obtained using software like AIMPAC and AIM98PC, while molecular graphs were created using AIM2000. To yield meaningful data from AIM calculations, utilizing all-electron wavefunctions is essential, necessitating the use of computationally intensive DZVP basis sets instead of more computationally efficient effective core potential calculations (ECP).

3. STRUCTURAL DIVERSITY OF BIOACTIVE HETEROCYCLES

Heterocyclic compounds, featuring rings with two hetero atoms, are termed as such due to the presence of these hetero atoms within the ring structure. These rings themselves are referred to as heterocycles. These compounds are categorized based on the number of atoms forming the ring, with five- and six-membered heterocycles being the most significant, although larger-membered rings also exist without an upper limit.

Classification of heterocyclic compounds is further based on their structural and electronic arrangements, broadly divided into two categories: aliphatic and aromatic heterocyclic compounds. Aliphatic heterocyclic compounds encompass cyclic amines, cyclic amides, cyclic ethers, and cyclic thioethers. Those aliphatic heterocycles lacking double bonds are termed saturated heterocycles, with their properties primarily influenced by ring strain.

Conversely, aromatic heterocyclic compounds share similarities with benzene in their structure and behavior. These compounds adhere to Huckel's rule, requiring them to exhibit cyclic nature, planar geometry due to conjugated double bonds, and possess a total of $(4n+2)$ π electrons to be considered aromatic.

**Examples of Heterocyclic Compounds:**

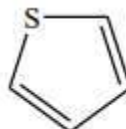
Five membered, six membered and fused heterocycles



Furan



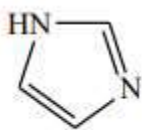
Pyrrole



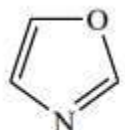
Thiophene



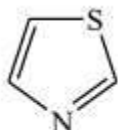
Pyrazole



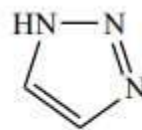
Imidazole



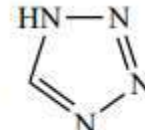
Oxazole



Thiazole



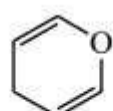
Traizole



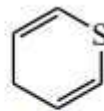
Tetrazole



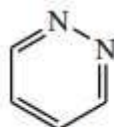
pyridine



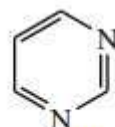
4H-pyran



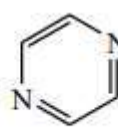
4H-thiopyran



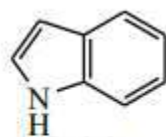
pyridazine



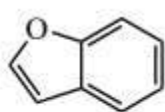
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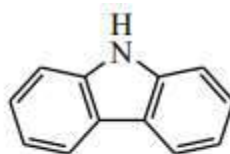
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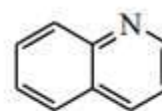
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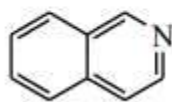
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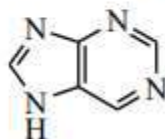
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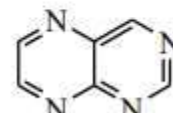
Quinoline



Isoquinoline



Purine



Pteridine



4. ROLE OF AROMATICITY IN BIOACTIVITY

The role of aromaticity in the bioactivity of heterocyclic compounds is a significant area of study in drug discovery and medicinal chemistry. Aromaticity, a fundamental concept in organic chemistry, refers to the stabilization and unique electronic properties of cyclic compounds with conjugated π -electron systems.

In heterocyclic compounds, aromaticity profoundly influences their biological activities. The presence of aromatic rings within these compounds often contributes to their enhanced stability, reactivity, and affinity towards biological targets. Aromatic systems can interact with specific biomolecular targets such as enzymes, receptors, or DNA due to π - π stacking interactions, hydrogen bonding, or hydrophobic interactions.

Additionally, aromaticity in heterocyclic compounds can influence their physicochemical properties, affecting solubility, lipophilicity, and membrane permeability. These characteristics are crucial for the compound's ability to penetrate cellular membranes and reach the target site within the body.

Furthermore, aromatic heterocycles frequently exhibit potent biological activities, including anticancer, antibacterial, antifungal, anti-inflammatory, and antioxidant properties. The aromatic nature of these compounds often contributes to their ability to modulate biological pathways and interact with specific molecular targets, making them promising candidates for therapeutic interventions.

5. BIOLOGICAL ACTIVITIES AND APPLICATIONS

Heterocycles play a pivotal structural role in medicinal chemistry and are prevalent in numerous biomolecules, including enzymes, vitamins, and various biologically active compounds. These compounds encompass a wide array of functionalities such as antifungal, anti-inflammatory, antibacterial, antioxidant, anticonvulsant, antiallergic, enzyme inhibition, herbicidal, anti-HIV, antidiabetic, anticancer, and insecticidal activities.

5.1 Anticancer Properties of Heterocyclic Compounds

Heterocyclic compounds have garnered significant attention in the realm of anticancer research due to their promising properties and diverse structures. These compounds exhibit potent anticancer activities by interfering with crucial cellular processes and pathways within cancer cells. They often act by targeting specific molecular targets, such as enzymes or receptors involved in cell proliferation, apoptosis (programmed cell death), angiogenesis (formation of blood vessels that support tumor growth), and DNA replication.

Various classes of heterocyclic compounds have demonstrated notable anticancer properties. For instance, compounds containing pyrimidine, purine, imidazole, indole, benzimidazole, quinoline, and pyrazole rings have shown promising anticancer effects. These compounds are known to interfere with key cellular mechanisms, including inhibition of cell division, induction of apoptosis, disruption of signaling pathways, and inhibition of DNA synthesis.

5.2 Antibacterial and Antifungal Activities of Heterocyclic Compounds

Bacteria represent the simplest and smallest unicellular organisms, existing either individually or in clusters. The availability of numerous highly efficient and relatively safe drugs for treating bacterial infections has posed a challenging landscape for medicinal chemists endeavoring to create novel antibacterial agents.

On the other hand, fungi are organisms that can exist as single-celled or multicellular entities, commonly found in various habitats, particularly in plant residues or terrestrial environments. While most fungi do not cause diseases in mammals, a select few have the potential to induce illnesses. Both molds and yeasts are classified as fungi; molds are composed of elongated cell units and reproduce through budding and the generation of cell branches in agar medium, while yeasts can form colonies that are round, oval, or mucoid in nature.

Antifungal treatments aim to disrupt fungal cells by altering the cell membrane, resulting in the leakage of cell contents and subsequent cell death. Novel derivatives of thiazole [4,5-d] pyrimidines, in conjunction with (1H-1,2,4)-triazol, were synthesized and examined for their antifungal properties in vitro against various cultures. Fluconazole was utilized as the positive control in the investigation.

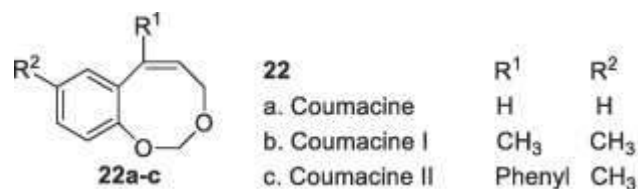


Fig.

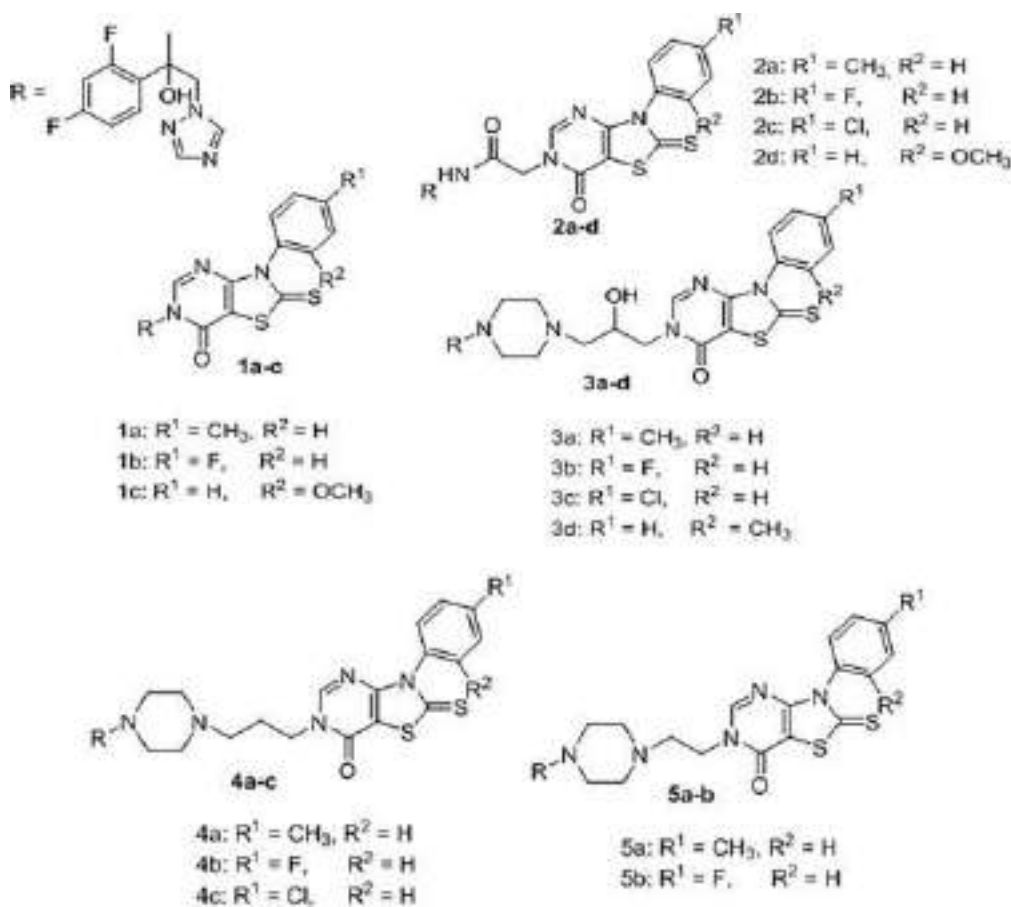


Fig. Structures of thiazole [4,5-d] pyrimidines derivatives with (1H-1,2,4)-triazol

5.3 Heterocycles in Neuropharmacology

Epilepsy, a chronic neurological condition, is characterized by recurrent seizure episodes, affecting approximately 1% of the global population. It ranks as the fourth most prevalent neurological disorder, following headaches, stroke, and Alzheimer's disease. The precise and intricate pathophysiology underlying epilepsy remains largely unknown, making the condition complex to understand and manage. Most clinically effective anticonvulsant medications feature a nitrogen heterocyclic ring system that includes a carbonyl group within an aromatic or hetero-aromatic structure.



Alzheimer's disease, a prevalent degenerative brain disorder, manifests as cognitive impairment, particularly affecting the formation of new memories, significantly impacting individuals' lives. The ongoing development of new drugs in this area is a rapidly evolving field.

Novel thiazole-piperazine derivatives (64 and 65) were synthesized with notable IC₅₀ values of 0.0496±0.002μM, 0.0317±0.001μM, and 0.2158±0.010 μM, respectively, targeting Alzheimer's disease. These compounds exhibited significant inhibition of the acetylcholinesterase (AChE) enzyme. However, they did not display significant inhibition of the butyrylcholinesterase (BChE) enzyme.

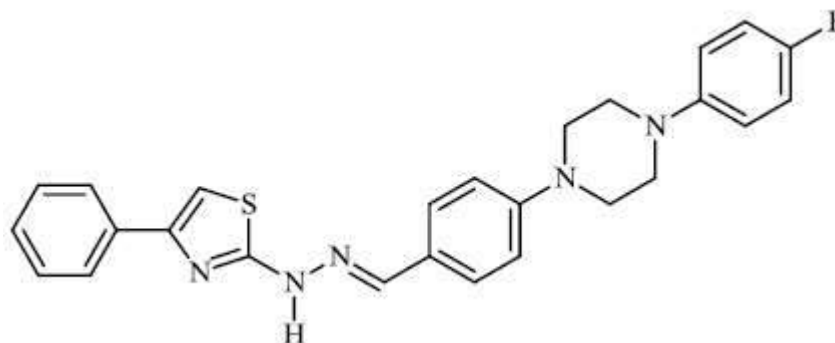


Fig. Structure of (E)-2-(2-(4-(4-(4-fluorophenyl)piperazin-1-yl) benzylidene)hydrazinyl)-4-phenylthiazole.

5.4 Heterocycles as Antiviral Agents

Viruses have the simplest biological structure, consisting of various RNA or DNA strings and an outer protein layer that can be enveloped by a lipid coating. Viruses can cause an immunological response in the human host, which can regulate the infection in some situations, resulting in pathological symptoms and even death. Antiviral medications are a type of drug that is used to treat viral infections. Synthesis of pyridazinones and tested antiviral activity of the prepared compounds against rotavirus and adenovirus.

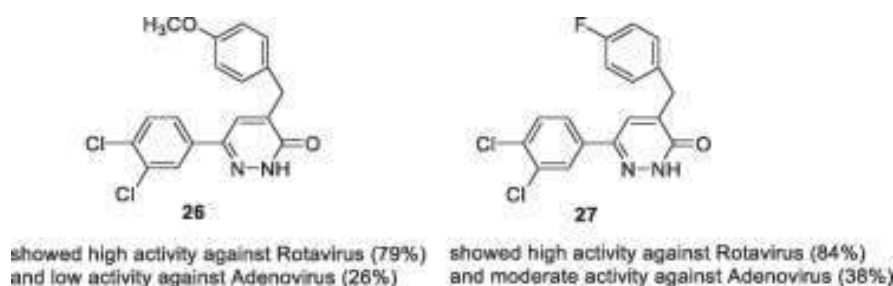


Fig. Structures of Pyridazinones

6. CHALLENGES AND FUTURE DIRECTIONS

6.1 DRUG DEVELOPMENT CHALLENGES

The development process of a drug is an extensive and time-consuming endeavor that typically involves years of dedicated research. This intricate and costly drug development pipeline, known for its low success rates, encompasses several stages, including target identification, hit generation, hit-to-lead optimization, and preclinical/clinical evaluation. However, assessing preclinical safety and potential efficacy during clinical trials remains a significant challenge, often causing many candidates to falter before reaching the market due to pharmacokinetic (PK) issues.



Heteroatomic fragments and heterocyclic frameworks are prevalent in molecules with therapeutic attributes, aiding in modifying physicochemical properties and achieving optimal ADME/Tox (absorption, distribution, metabolism, excretion, and toxicity) outcomes for potential drug candidates. Heterocycles are frequently utilized to enhance potency and selectivity by substituting various functional groups bioisosterically. Notably, more than 75% of current heterocyclic derivatives in clinical use feature at least two heteroatoms. Recent analyses show that nearly 50% of the newly approved chemical entities (NCEs) by the US Food and Drug Administration (FDA) in 2021 are aromatic nitrogen heterocycles. From April 2020 to February 2022, triazoles, tetrazoles, imidazoles/benzimidazoles, pyrimidines, and quinolines were among the most utilized building blocks in medicinal chemistry programs. Additionally, statistical data indicate that more than 85% of bioactive compounds contain at least one nitrogen atom in their structure.

In the 21st century, natural sources such as plants, microorganisms, and animals continue to inspire drug discovery. Around a quarter of FDA-approved drugs originate from plants, including morphine, a potent pain medication. Moreover, approximately one-third of FDA-approved drugs in the past two decades are either natural products or their derivatives, encompassing antibiotics like tetracycline, artemisinin for malaria treatment, doxorubicin for cancer therapy, cyclosporine for immunosuppression, among others.

6.2 EMERGING TRENDS AND TECHNOLOGIES

Multiparametric Approach in Drug Discovery

The drug discovery process faces challenges, particularly the high failure rate in clinical trials due to issues such as poor pharmacokinetics, efficacy, and toxicity. To address this, a multiparametric approach has gained prominence. This method involves assessing activity, selectivity, pharmacokinetic, and toxicity properties early in the discovery phase. This enables the early identification of compounds with favorable overall drug-like profiles, mitigating failures in later stages.

Revolutionizing Chemical Technologies in Organic Synthesis

Recent advancements in organic synthesis have driven a substantial transformation in chemical technologies. Techniques such as Polymer-Assisted Solution-Phase Synthesis (PASPS), Microwave-Assisted Organic Synthesis (MAOS), and Continuous-Flow Processes have made significant strides in modern organic synthesis.

Polymer-Assisted Solution-Phase Synthesis (PASPS)

PASPS involves solid-supported reagents and scavengers that simplify synthetic procedures and purification steps, avoiding the limitations of solid-phase synthesis. PASPS simplifies work-up operations, utilizes excess reagents without additional purification, and enhances safety by immobilizing hazardous by-products.

Microwave-Assisted Organic Synthesis (MAOS)

MAOS utilizes microwave dielectric heating for rapid reaction optimization and exploring new chemical reactivity. It has facilitated various reactions, providing efficient heating, simplifying work-up procedures, and improving safety.

Flow Chemistry

Flow chemistry executes reactions continuously in interconnected tubes, ensuring constant mixture composition, improved temperature control, and reduced side reactions. While offering advantages, flow systems require solubility of reagents and products in the solvent flow.

Combined Technologies

Combining these techniques enhances their efficacy. For instance, combining supported catalysts in flow systems with microwave heating results in higher purities and versatile reactions suitable for compound arrays or large-scale production.

Multicomponent Reactions (MCRs):

MCRs are convergent reactions involving three or more starting materials, producing diverse compounds in a single event. They offer rapid and high-throughput synthesis, aiding hit generation and lead optimization in drug discovery, simplifying scale-up operations, and exploration of chemical space.

Ring-Closing Metathesis:

Ring-Closing Metathesis (RCM) enables cyclization of terminal olefins to form a C-C double bond, yielding small rings or macrocycles. This process involves metallocarbene catalysts (molybdenum, ruthenium, and tungsten), which form metallacyclobutane intermediates, evolving into the desired cyclic product.

CONCLUSION

In summary, heterocyclic compounds represent a cornerstone in organic chemistry, showcasing versatile structures containing essential heteroatoms like nitrogen, oxygen, and sulfur. These compounds, prevalent in nature and pivotal in drug discovery, form the core structures of DNA, vitamins, and numerous bioactive molecules, contributing significantly to medicinal advancements. The synthesis of heterocycles has evolved through innovative methods, including novel chemical pathways and sustainable green chemistry



approaches, showcasing remarkable advancements in the field. Computational methods play a crucial role in understanding their properties and designing novel heterocyclic compounds with targeted biological activities. Aromaticity within heterocycles influences their bioactivity, enhancing stability and interaction with biological targets. These compounds exhibit diverse biological activities, from anticancer and antibacterial properties to neuropharmacological and antiviral effects. Recent discoveries highlight the potential of specific heterocyclic compounds in clinical trials, indicating their promise in various therapeutic applications. However, challenges persist in drug development, while emerging technologies such as multiparametric approaches, advanced synthesis techniques, and multicomponent reactions pave the way for future advancements in drug discovery and the exploration of chemical space.

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IMPACTS OF SKILL BASED SPECIFIC TRAINING WITH YOGIC PRACTICE ON PSYCHOLOGICAL VARIABLES AMONG BADMINTON PLAYERS

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ABSTRACT

The primary objective of this study was to investigate the factors influencing the psychological variables responses to skill based specific training with yogic practice among badminton players. To attain this objective, a cohort of thirty badminton players at the college level was selected from PSNA Engineering College in Dindigul, encompassing individuals aged between 19 to 21 years. This participant group was divided evenly into two distinct groups, each comprising fifteen players. It is noteworthy that no deliberate efforts were made to equalize the two groups.

The first group, designated as the Experimental Group (Group I), underwent an eight weeks training regimen that focused on skill based specific training with yogic practice (SBSTWYP). In contrast, the second group, identified as the Control Group (Group II), did not participate in any additional training beyond their routine activities, serving as a comparative baseline. The evaluation of anxiety was carried out through the Sports Competition Anxiety Questionnaire (SCAT), concentration was measured using the Harris, D. V. 1984. Questionnaire.

The data collected from the participants underwent statistical analysis, employing the 't' ratio, to discern any statistically significant improvements at a confidence level of 0.05. The outcomes unveiled substantial enhancements in both anxiety and concentration among participants who underwent skill based specific training with yogic practice. These improvements were observed despite potential limitations stemming from factors such as diet, climate, lifestyle, and prior training experiences. Encouragingly, the results of this study aligned with findings from investigations conducted by other experts in the domain of sports sciences. Collectively, the evidence suggested that skill-based specific training with yogic practice exerted a noteworthy positive impact on the anxiety and concentration of badminton players at the college level.

KEYWORDS: Skill Based Specific Training, Yogic Practice, Badminton, Anxiety and Concentration.

INTRODUCTION

In the dynamic realm of competitive sports, the pursuit of excellence extends beyond mere physical prowess, encompassing the intricate interplay between the body and mind. Badminton, a sport demanding agility, precision, and mental acuity, serves as an ideal canvas to explore the potential synergies between skill-based specific training and yogic practices. The amalgamation of these two distinct yet complementary approaches offers a promising avenue for enhancing the psychological variables that contribute significantly to an athlete's overall performance.

The modern athlete faces multifaceted challenges, both on and off the court, requiring a holistic approach to training that extends beyond the conventional boundaries of physical conditioning. Skill-based specific training, tailored to the demands of badminton, hones the technical aspects of the game, refining techniques, and fostering strategic thinking. Concurrently, the incorporation of yogic practices introduces a mindful dimension, addressing the intricate relationship between the body and the psyche.

METHODS

Experimental Approach to the Problem

To test the conjecture posited in this study, a sample of thirty badminton players at the collegiate level was recruited. Their ages spanned from 19 to 21 years. This cohort was subdivided into two equivalent groups, each comprising 15 participants. It's essential to note that no endeavors were undertaken to equalize these groups. The first group, denoted as Experimental Group I (n = 15), participated in an 8 weeks skill based specific training with yogic practice regimen. Conversely, Group II (n = 15) served as the control group (CG), with members of this group not engaging in any training program beyond their routine commitments.



Design

The evaluated parameters were anxiety was measured using the Sports Competition Anxiety Questionnaire (SCAT), concentration was measured using the Harris, D.V. 1984. Questionnaire. The parameters were measured at baseline after 8 weeks of SBSTWYP and the effects of the training were examined.

Training Protocol

In each training session the training was imparted for a period 60 minutes. The skill based specific training with yogic practice, which included warming up and relaxation procedure after training programme for three days per week for a period of 8 weeks.

Statistical Analysis

The collected data were analyzed with application of ‘t’ test to find out the individual effect from base line to post-test if any. 0.05 level of confidence was fixed to test the level of significance.

RESULTS

Table-I

Relationship of Mean, SD and ‘t’-Values of the Anxiety between Pre & Post Test of the Skill Based Specific Training with yogic practice (SBSTWYP) and Control Group (CG) of Badminton Players

Anxiety	Groups	Test	Mean	S.D	‘t’ Values
	CG	Pre Test	20.20	1.32	0.56
		Post Test	20.25	1.37	
	SBSTWYP	Pre Test	20.35	1.42	15.98*
		Post Test	21.45	1.35	

*Significant at 0.05 level of confidence

Table I illustrates the mean values obtained from the control group's pre-test and post-test measurements of anxiety, which stood at 20.20 and 20.25, respectively. The corresponding calculated t ratio was 0.56. Comparatively, the critical tabulated t value at a confidence level of 0.05 and with 14 degrees of freedom was 2.14. Upon comparison, it was determined that the calculated t ratio fell below the tabulated value. This indicated an insignificant alteration in the anxiety of the badminton players within the control group. In contrast, the mean and standard deviation values derived from the pre-test and post-test scores of the skill-based specific training with yogic practice group were 20.35 and 21.45, respectively. The resultant t ratio for this group was computed as 15.98. When referenced against the required tabulated value of 2.14 at a confidence level of 0.05, with 14 degrees of freedom, the calculated t ratio surpassed the tabulated value. This outcome signalled a substantial and noteworthy transformation in the anxiety of the badminton players who underwent skill-based specific training with yogic practice.

Table-II

Relationship of Mean, SD and ‘t’-Values of the Concentration between Pre & Post Test of the Skill Based Specific Training with yogic practice (SBSTWYP) and Control Group (CG) of Badminton Players

Concentration	Groups	Test	Mean	S.D	‘t’ Values
	CG	Pre Test	51.75	4.33	1.00
		Post Test	51.85	4.24	
	SBSTWYP	Pre Test	52.80	4.11	8.75*
		Post Test	56.25	3.97	

*Significant at 0.05 level of confidence

Table II depicts the mean values derived from the control group's pre-test and post-test assessments of concentration, registering at 51.75 and 51.85, respectively. The corresponding calculated t ratio was 1.00. In contrast, the critical tabulated t value for a confidence level of 0.05 and with 14 degrees of freedom was 2.14. Upon comparison, it was evident that the calculated t ratio was lower than the tabulated value. This finding pointed to an insignificant alteration in the concentration of the badminton players within the control group. Conversely, the mean and standard deviation values obtained from the pre-test and post-test scores of the skill-based specific training with yogic practice group were 52.80 and 56.25, respectively. The resultant t ratio for this group computed to 8.75. In comparison to the required tabulated value of 2.14 at a confidence level of 0.05, with 14 degrees of freedom, the calculated t ratio exceeded the tabulated value. This outcome indicated a noteworthy and meaningful transformation in the concentration of the badminton players who participated in skill-based specific training with yogic practice.

DISCUSSION ON FINDINGS

Skill based specific training with yogic practice has emerged as an exceptional approach that demonstrates substantial benefits for badminton players. In order to scrutinize its effects on the anxiety and concentration of college-level badminton players, this study



examined the disparities between a skill-based specific training with yogic practice group and a control group. The skill-based specific training with yogic practice focused on enhancing both anxiety and concentration.

The obtained outcomes unmistakably established the efficacy of skill-based specific training with yogic practice, showcasing a significant improvement within the group subjected to it. This study's findings resoundingly affirm that skill-based specific training with yogic practice yields a substantial enhancement in both anxiety and concentration among badminton players.

Remarkably, these outcomes align harmoniously with prior research conducted by **Abdul Halik et al. (2021)**, **S. Senthil Kumaran (2018)**, and **Mehmet Fatih Yuksel and Latif Aydos (2017)**. Parallel to these studies, our investigation accentuated the undeniable positive impact of skill-based specific training with yogic practice on the anxiety and concentration of badminton players. Conversely, the control group did not exhibit noteworthy enhancements in anxiety and concentration among college-level badminton players, as discerned from this study's results.

CONCLUSION

Drawing from the findings and taking into account the study's inherent constraints, it becomes evident that the incorporation of skill-based specific training with yogic practice has a discernible positive impact on enhancing the anxiety and concentration of college-level badminton players. Moreover, a progressive advancement was observed within the chosen parameters of the skill-based specific training with yogic practice group, manifested after an eight-week duration of the specialized training program. This substantiates the notion that the said training regimen is efficacious in ameliorating both anxiety and concentration.

1. It is deduced that individualized implementation of skill-based specific training with yogic practice evinced statistically significant and positive effects throughout the intervention period, fostering the enhancement of anxiety and concentration in college-level badminton players.
2. It is inferred that the individualized influences exerted by the control group, though displaying a positive trend, were statistically insignificant over the given timeframe. This pertains to the anxiety and concentration of badminton players at the college level.
3. Upon comparison, the comparative outcomes lead to the conclusion that the skill-based specific training with yogic practice group exhibited considerably more pronounced advancements in both anxiety and concentration when juxtaposed with the performance of the control group. This disparity underscores the superior impact of the specialized training on the anxiety and concentration of college-level badminton players.

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DISTRIBUTION AND PROSPECTIVE PLANNING OF TRAINING CLASSES OF TRAINING GROUP TRAINERS

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ANNOTATION

The article explores the experiences of leading scholars in the distribution and planning of training group apprentices. Model indicators for effective planning of annual training of short-distance runners have been developed. When planning training processes, plans for training are developed, taking into account the seasons of the year. The periodization specified in the training processes is given important information based on the seasons of the year, the calendar of the competition, the preparatory tasks and the time required for this. When planning training, targeted recommendations for the organization of training in the Autumn-Winter and Spring-Summer preparatory stages are given.

KEYWORDS: *loading, planning, microcycle, mesocycle, preparation, practice, sprinter, start, method, tool, technique, sports training, transition period, result, competition, modeling.*

Relevance of the topic. Currently, in the world's leading countries, a number of scientific research works are being carried out on the training of short-distance runners, sorting them into a short-distance running type, directing them to a narrow specialization, planning and managing annual and multi-year preparatory classes organized with them. World sports practice shows that today in the system of training athletes, one of the first things to do in the 60-100-200-400 meter run, especially in short-distance runners, is a number of scientific research works on the issues of directing athletes to multi-year preparatory stages by selecting and qualifying them for a narrow specialty. In addition, a number of scientific studies are being carried out in the activities organized with them, the use of tools and methods aimed at the development of physical fitness, tactical methods for qualifying technical and tactical training, and improving the psycho functional state. Especially the fact that representatives of the American continent, Jamaica, The United States, who today lead in short-distance running, today do not miss the leadership between women and men in the world in short-distance running tours, testifies to the excellent implementation of scientific research work in them. But if so, today it is that the issues of reserve training for highly qualified athletes are distinguished from the urgent tasks facing scientists from all over the world.

Results and discussion. The training group requires the trainers to work hard because the distribution of the training of the apprentices is related to the results. Leading scholars of the distribution of annual loadings have given different opinions. According to N.G. Ozolin, it is important to consider individual possibilities in determining the distribution of loads, the duration of the rest interval, the pedagogical impact on training loads. During sports training, he put forward the idea that athletes, paying attention to their individual capabilities, will have to control the processes taking place in them.

The athletics training group planning the annual preparatory training process of short-distance runner trainers will have the following feature these are justified as follows;

1. Training group short-distance runners should plan their training in such a way that their best results should fall on the beginning of February-March (winter competition) and June-August (summer competition). This planning leads short-distance runners to the result.

2. It is necessary that short-distance runners are mainly provided for the phase nature of the development of organism systems and heterochrony, consistent development of physical qualities.

Introduction microcycle. The main tasks were: to restore the functional capabilities of short-distance runners; general physical fitness; stated that it should be aimed at strengthening the musculoskeletal apparatus.

In this, the main tools and tasks are solved, general physical training exercises performed by short-distance runners using circular training methods; special running and jumping exercises; variable running in the training process; the use of sports games, as well as tools aimed at developing functional training.

The fall-winter and Spring-Summer base stages of sports training are 6-10 weeks. In it, its main functions are the following:

- increase the functional training of short-distance runners;



- improving the techniques of running in the lower start, quick exit from the start and running along the distance during the training process;
- development of speed-strength training of sprinters; development of special endurance.

The special autumn-winter and Spring-Summer preparatory stages of sports training will consist of 4-6 weeks. The main tasks in this are: improving speed qualities; improving the techniques of running in the lower start, speeding out of the start and running along the distance; believes that the development of endurance of short-distance runners is envisaged[1].

In the next stage, the winter and summer competition stages are 10-12 weeks. Achieving planned results in competitions; maintaining a high level of training; improving the model of pre-competition training; having high psychological training in competitions is considered.

The transitional stage lasts 3-4 weeks, and the main tasks will be the following: to organize active rest by changing training times; to treat injuries in the training process (if necessary), physiotherapy and massages, arguing that it is advisable if they are organized on time. Experts in this regard have given the following points. According to V.G.Nikitushkin, a quick preparation plan is the main work document. Its tasks include: it is considered necessary to determine all training tools and methods, to control the volume of loads, recovery tools and functional states of athletes.

Because, taking into account all possible means of interaction, it is believed that it is advisable that specific preparatory training plans be developed for a period of 3 to 6 weeks.

When performing large-scale microcycles during training, the intensity of performing certain exercises reaches the load volume and the intensity of training, they believe that the training load in 90-100% during the training process can be carried out up to 2-3 times a day[2].

A fierce microcycle in sports training is used at a special preparatory stage of training. Exercises in certain classes are performed with maximum intensity on a medium or smaller scale. During the microcycle, recovery tools are actively used, and the physical condition of the athlete is controlled. From the point of view of the preparation of short-distance runners, V.V.Petrovsky indicated that during the transition period of preparation, it is possible to restore the required volume and use the means of treatment.

Compilation of training loads during the annual training phase and periods of short-distance runners (V.V.Petrovskiy) (1).

№	Training tools	Months											Total
		10	11	12	1	2	3	4	5	6	7	8	
1.	Competition	-	-	-	1	3	1	-	1	3	1	1	11
2.	Training	11	18	13	21	18	14	20	20	22	23	21	201
3.	Running 800-1500 m (km)	-	5,2	5,6	3,7	0,8	3,4	3,2	1,5	3,0	0,95	-	27,4
4.	Running 30-100 m (km)	-	7,0	5,7	9,5	9,0	5,8	10,3	10,6	8,2	8,4	10,9	85,4
5.	Running from the bottom start (circle)	10	80	80	145	83	58	128	101	58	95	116	954
6.	Special exercises (km)	2,7	2,0	2,0	0,9	1,8	1,9	0,9	1,0	0,3	0,6	-	14,1
7.	Exercises with a barbell (t)	1	8	7	-	-	-	-	2,5	-	-	-	18,5

The approach microcycle is applied during preparation for competitions. It is organized based on the individual characteristics of athletes. In annual preparation sessions, the lightening microcycle is applied after 2-5 large-scale squamous microcycles throughout the year. The volume of sports training (up to 50%), the intensity of which can be changed. Sports exercises and training areas will also be able to change depending on the situation. During the transition period of preparation, it is indicated that the necessary volume of recovery exercises as well as the use of treatment tools[3].

Several scientists offer a training mesocycle lasting 4-6 weeks to prepare for the main competitions of the season, in order to create a favorable basis for achieving a high level of special work skills using tools and preparation methods, attaching importance to specific tools. Before the start of the main sports competitions, it will be necessary to give loads that serve to grow their physical qualities of greater speed and endurance, taking into serious control the loads of sports training.



The most important competitions of the year should be held on a special cycle of the competition period (stage of preparation for the competition). Errors and shortcomings in the construction of this stage lead to a slowdown, or deterioration in the growth of sports results. This means that training loadings directly before important competitions are insisted that it is desirable to be structured in accordance with the individual state of the athlete, and not placed in one mold[4].

Such management of an athlete in a race-ready state is always associated with the number of starts that are beneficial to the athlete, the use of the athlete's own capabilities at a higher level, limiting the number of starts to the competition period and considering that intermediate training mesocycles are included.

According to the data, the athlete's training should be updated on a long regular basis and develop according to its specific laws. Therefore, successful performances in prestigious competitions are scheduled in accordance with the participation of athletes in various commercial starts and their number.

It is proposed to carry out the distribution of training loadings in the annual period of preparation as follows, in which the "accumulation" of more volume with a low intensity of loads as much as possible during the preparatory period will give the faith to participate in competitions at the expense of reducing the volume of loadings and increasing the intensity during the competition period.

They distribute training loadings throughout the entire speed range. Here, the training team is used as the primary tool load for short-distance runner trainers. Here it is stated that the distribution of the load depends on the level of qualification of the runner. The main focus in the training of highly qualified short-distance runners is on the speed-force base, on the basis of which the anaerobic and aerobic productivity of the body is increased. For the other remaining runners, it will be advisable to grow aerobic capacity in the first stages of the training period. It offers the following in the development of the system and functions of the body when planning training loads at different periods of training, maintaining its uniqueness, that is, ensuring sports results:

1. Most specialist scientists associate the distribution of sports training loadings with the periods of preparation, however, since the views on the periodization are different, they report that the views on the distribution of training loadings are also different;
2. The theory of periodization, which allows the distribution of annual training loadings, is given very beautifully, but its effect did not find its confirmation even in practice, without experience.

In training group short-distance runner trainers, especially in training athletes aged 18-25, the main indicators of training loads are their size and intensity[5].

Many of the opinions given by the authors are not focused in exactly one direction, emphasizing the consideration of a huge number of mistakes and shortcomings. Including the distribution of the volume of training loadings, which develop the technique of short-distance runners, in accordance with the volume of annual loadings.

CONCLUSION

The opinions and opinions of leading scientists on the distribution and prospective planning of training group trainers are studied and the basis for such a conclusion. When planning training processes, of course, it will be necessary to take into account the seasons of the year. The period shown in the training processes is based on the seasons of the year, the calendar of the competition, the preparatory tasks and the time required for this. Summer is considered a more favorable time for athletics training and for achieving high sports results. The sports competition calendar is scheduled accordingly. Annual training plans for athletes with mass discharge and high qualifications participating in international competitions should be the same, regardless of the conditions of the place in which they train. Such track and field athletes are generally required to be in uniform from June to September-October, the highest possible performance. When planning training, it will be advisable to study the technique at the autumn-winter preparatory stage and devote more time to its improvement. In the development of training plans during the winter-summer competitive stage, attention to the following will serve to grow results:

- Development of training loadings aimed at improving comprehensive physical development.
- Giving exercises that further develop strength, agility, flexibility and agility, depending on the type chosen.
- Development of training loadings aimed at improving the technique.
- To give more exercises aimed at training volitional qualities.
- Verification (competitions) and promotion of achievements in physical fitness and special training.

When developing more training plans in the spring preparation phase, it is usually advisable to focus on the good development of the overall endurance physical qualities of short-distance runners through the organization of training in natural conditions (cross country, throwing, exercise with sand-filled balls, etc.



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OUT-OF-POCKET EXPENDITURE ON OUT-PATIENT CARE IN EAG STATES: AN ANALYSIS BASED ON NSSO 75TH ROUND DATA

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ABSTRACT

Regardless of their socio-economic status, everyone has the human right to receive healthcare. Since the Indian government spends so little on health care, healthcare spending has been a major source of concern. However, most of the literature in India on determinants of health spending has focused on hospitalization, and there are relatively fewer separate studies on health-seeking behaviour and expenditure in outpatient departments. The purpose of this study was to determine the patterns of health-care-seeking behaviour and the pattern of expenditure incurred by households during outpatient care in Empowered Action Group (EAG) States. The present study used secondary data from the latest 75th round of National Sample Survey (NSS) conducted from July 2017 to July 2018 on the key indicators of social consumption in India: Health. The finding suggest that the seeking behaviour of ailing persons as outpatients, across EAG states only limited population access to public sources of healthcare (36.8% in rural and 27.3% in urban). Rajasthan (46.7%), Madhya Pradesh (41.5%), Bihar (32.9% rural), and Uttar Pradesh (31.3%) have the highest percentage of outpatient who expressed dissatisfaction with the standard of public health services in rural areas. Among EAG states of urban areas, Uttar Pradesh (42.6%) have the highest percentage of not satisfied with the quality of care by government sources. Among EAG states, Significant inter-state variation was observed, with Rajasthan (Rs. 886) reporting the highest expenditure for outpatient treatment and Chhattisgarh (Rs. 350) reporting the lowest in rural areas. However, Uttar Pradesh (Rs. 1194) reported the highest and Odisha (Rs. 508) reported the lowest expenditure incurred on outpatient care by ailing persons in urban areas. The amount that each state spends on healthcare varies greatly, which causes inter-state differences in the cost of outpatient treatment in EAG states. As a result, the government needs to control the cost of medications and diagnostic tests and ensure that plans for outpatient care include coverage.

KEYWORDS: Outpatient care, out-of-pocket expenditure, EAG states,

INTRODUCTION

Universal Health Coverage (UHC), the centerpiece of the United Nations' sustainable development goals on health (SDG-3), aims to ensure that everyone has access to quality healthcare without facing financial hardships (WHO, 2021a). Regardless of their socio-economic status, everyone has the human right to receive healthcare. However, in a developing country like India, health is a privilege for a large section of its population where the high cost of healthcare is one of the many barriers to accessing quality and sufficient medical care. Since the Indian government spends so little on health care, healthcare spending has been a major source of concern. National Health Accounts (NHA) 2019-20 estimated India's government health expenditure at 1.35% of Gross Domestic Product (GDP). Because of India's low public health spending, the country has a high out-of-pocket expenditure rate (47.07% of Total Health Expenditure). As a result, a household's savings and income are major payment sources for illness.

Though hospitalisation entails higher treatment costs than non-hospitalised morbidity, the latter is generally the more prevalent form of indisposition (Chowdhary, 2011). Most of the literature in India on determinants of health spending has focused on hospitalization, and there are relatively fewer separate studies on health-seeking behaviour and expenditure on outpatient departments (OPD) (Gupta et al. 2016). According to Shehrawat and Rao (2012), 3.5 percent of people were below the poverty line due to out-of-pocket expenses (OOPS). However, if outpatient care payments from OOP are taken out of the equation, this percentage drops to 0.5 percent. According to Mukhopadhyay et.al, reveals that on an average (mean), about 5.5% of Household Consumption Expenditure is spent on health- out of which 2.9% is on outpatient care and 2.7% in hospitalisation. In rural areas, around 5.8% is spent on health and 3% and 2.7% respectively on outpatient and hospitalisation care. In urban areas, the share of Healthcare Expenditure is 5%-slightly lower than in rural areas. Around 2.6% is spent on outpatient care and 2.5% on inpatient care. Thus, outpatient care remains the bigger part of healthcare expenditure compared to hospitalisation care.



These findings have implications for the need for comprehensive coverage plans that cover prescription drugs and outpatient care in general. Hence, the cost of household Out-of-Pocket expenditure on outpatient care must be the primary concern as India progresses toward Universal Health Coverage. Because the lack of financial protection for outpatient care pushes millions into poverty.

Thus, the purpose of this study was to determine the patterns of health-care seeking behaviour and the pattern of expenditure incurred by households during outpatient care in Empowered Action Group (EAG) States. We are interested in the EAG states for two reasons. Firstly, the combined population of these states is approximately 46% of India. Secondly, in comparison to other States, these States have been affected by the high rate of poverty, malnutrition, and infant and maternal mortality. Thus, health outcomes are the worst in the EAG states.

METHODOLOGY

The present study used secondary data from the latest 75th round of National Sample Survey (NSS) conducted from July 2017 to July 2018 on the key indicators of social consumption in India: Health. The survey gathers basic information on health sector like morbidity, profile of ailments including their treatment, role of government and private facilities in providing healthcare, expenditure on medicines, medical consultation, investigation, hospitalisation and expenditure thereon, maternity and childbirth, the condition of the aged, etc. (NSS, 2018). In this round total number of 1,13,823 households were surveyed in India.

We especially covered periods of illness treated under medical guidance, the level of care, the percentage of illnesses treated by non-governmental sources and the underlying reasons behind it, and the medical and non-medical costs associated with EAG states' outpatient care in both rural and urban areas.

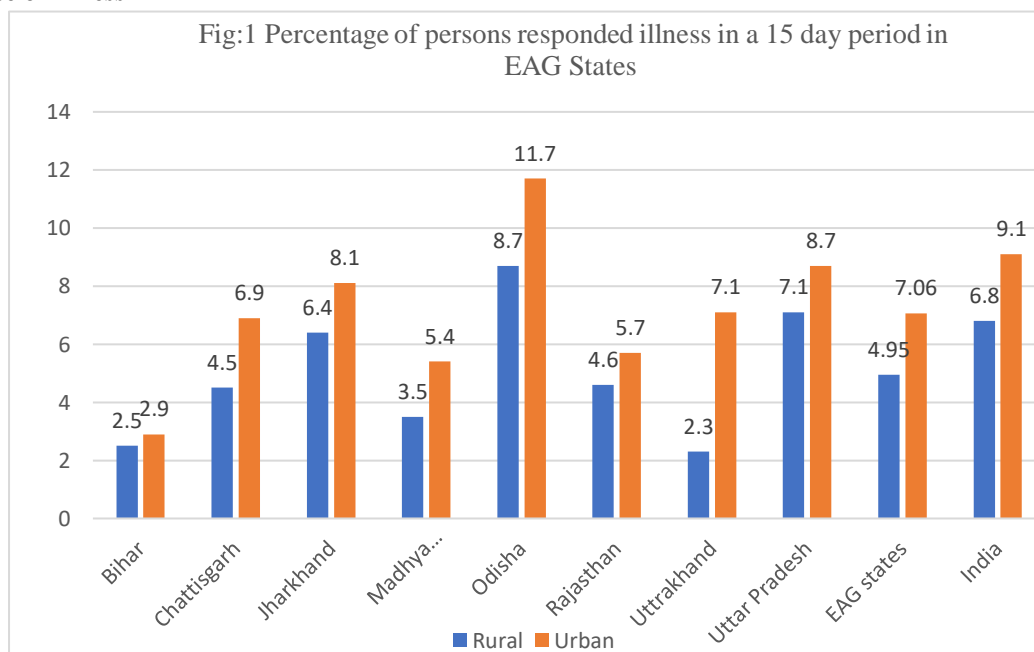
Description of sample households across EAG states.

Area	Bihar	Chhattisgarh	Jharkhand	Madhya Pradesh	Odisha	Rajasthan	Uttarakhand	Uttar Pradesh	Total
Rural	3520	1823	1952	3136	3120	3107	1016	6318	23992
Urban	1757	1120	1134	2455	1144	1938	736	4613	14897
Total	5277	2943	3086	5591	4264	5045	1752	10931	38889

The ailing persons surveyed among the EAG states in the 75th round was 38889 (23992 in rural and 14897 in urban areas). Among the EAG states, around 28.11% of the sample was contributed by Uttar Pradesh, followed by Madhya Pradesh (14.38%), Bihar (13.57%), and Rajasthan (12.97%), Odisha (10.96%). The remaining two states (Jharkhand and Chhattisgarh) shared <10% of the sample households.

RESULTS

Prevalence of Illness





In Figure 1, graphs show that the proportion of persons who responded as ailing persons in the 15 days across EAG states is 6% (4.95% rural and 7.06% urban). The ailing persons varied across EAG states, Uttarakhand, Bihar, and Madhya Pradesh responded less than 4% as ailing persons in Rural areas, whereas Chhattisgarh, Rajasthan, and Jharkhand reported from 4% to 6.5% cases of illness. The highest proportion of persons who responded as ailing person was from Odisha (8.7% rural), followed by Uttar Pradesh (7.1% rural) among EAG states. In Urban areas, 11.7% have illness in Odisha, followed by Uttar Pradesh (8.7%), Jharkhand (8.1%), Uttarakhand (7.1%) while the other three states, Chhattisgarh, Rajasthan, Madhya Pradesh is having 5% to 7% illness. Bihar shows the lowest percentage of illness (2.9%).

Healthcare seeking Behaviour

While examining the seeking behaviour of ailing persons as outpatients, table 1 shows that across EAG states only limited population access to public sources of healthcare (36.8% in rural and 27.3% in urban). Among EAG states, over 50% of the population in Odisha (55.2% in rural and 62.3% in urban areas) has access to public outpatient healthcare services. In addition, outpatients of rural areas of Uttarakhand (52.1%), Chhattisgarh (48.9%), and Rajasthan (42.8%) depended on public sources of healthcare. Similarly, around 30% of outpatients from Madhya Pradesh (33.7%) and Jharkhand (30.7%) in rural areas receive treatment from public sources of healthcare. However, Bihar (17.8% rural and 22.6% urban) and Uttar Pradesh (14.1% rural and 14% urban) are the lowest among EAG states to provide access to public sources of healthcare to outpatients.

Across EAG states, 68% of urban and 54.5% of rural areas rely on private healthcare services for outpatient treatment. Among the EAG states, the outpatient who reside in Uttar Pradesh (79.2% rural and 83% urban) and Bihar (70.3% rural and 70.9% urban) show extreme dependency on private sources of healthcare, followed by Jharkhand (59.4% rural and 81.2% urban) and Madhya Pradesh (59.5% rural and 69.8% urban). Besides that, nearly half of outpatients in Chhattisgarh (48.2%) and Rajasthan (46.9%) rural areas drew their medical care from private providers. Similarly, around 70% of outpatient in Chhattisgarh (68.7%), Rajasthan (66.6%) and Uttarakhand (65.3%) urban areas relied their medical treatment from private sectors. However, outpatients residing in rural (38.6%) and urban (37.5%) areas of Odisha and rural (33.9%) of Uttarakhand are seen to be less dependent on private health facilities in comparison to the other EAG states. Other important finding from table 1 is Bihar (11.7%), Rajasthan (10.1%) and Jharkhand (9.2%) of rural areas access outpatient treatment from Informal healthcare sectors.

Table: 1 Percentage distribution of spells of ailment with treatment taken on medical advice over levels of care across EAG States in last 15 days (outpatient)

States	Govt./public hospital		Charitable/ Trust/NGO		Private Doctor/clinic		Private hospital		Informal Healthcare	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
BIHAR	17.8	22.6	0.2	0.1	64.7	63.3	5.6	8.6	11.7	5.5
CHHATTISGARH	48.3	24.8	2.2	0.4	38.1	36.2	10.2	32.5	1.1	6.1
JHARKHAND	30.7	14.7	0.7	0	45.8	65.3	13.6	16	9.2	3.9
MADHYA PRADESH	33.7	26.3	3	1.3	38.4	50.5	21.1	19.3	3.8	2.7
ODISHA	55.2	62.3	0.2	0	33.6	24.9	5	12.6	6	0.2
RAJASTHAN	42.8	32.2	0.2	0.4	20.3	34	26.6	32.6	10.1	0.8
UTTARAKHAND	52.1	21.7	12.5	9.6	19	46.8	14.9	18.5	1.5	3.5
UTTAR PRADESH	14.1	14	0.2	0.7	65.3	60.9	13.9	22.1	6.4	2.3
EAG States	36.8	27.3	2.4	1.6	40.6	47.7	13.9	20.3	6.2	3.1
INDIA	32.5	26.2	0.9	1.3	41.4	44.3	20.8	27.3	4.3	0.9

Source: NSS 75th round (2018)

Factors affecting to access Public Healthcare Services

In table 2, We discovered that the largest obstacle still facing EAG state outpatient is inadequate service quality. Due to the low quality of services offered in their areas, about 29% of rural in the EAG states do not access public sources of healthcare. Rajasthan (46.7%), Madhya Pradesh (41.5%), Bihar (32.9% rural), and Uttar Pradesh (31.3%) have the highest percentage of outpatient who expressed dissatisfaction with the standard of public health services in rural areas in their respective states. Nonetheless, Odisha public health system provides higher-quality medical care than that of the other EAG states.

Our findings demonstrate that the EAG states have not been successful in providing universal access to health care. A significant fraction of outpatients in the EAG states—8.4% Rural were unable to access public sector healthcare facilities due to the lack of necessary facilities in their locality. Bihar (12.8%), Jharkhand (10.4%) and Rajasthan (10.4%) with the majority reporting that public health services were unavailable.



We discovered that the remote location of healthcare facilities prevented 15.4% of outpatients in rural and 10% in urban areas of the EAG states from accessing public sources of healthcare. Similarly, many outpatients in rural Uttar Pradesh (26.5%), Odisha (23.8%), Uttarakhand (18.6%), and Chhattisgarh (13.4%) were unable to access public health facilities when they needed care due to their remote locations. As a result, they visited adjacent private healthcare facilities. Remarkably, among the EAG states of India, financial limitations were not mentioned as a primary barrier to receiving public health services.

Similarly, around 28% of outpatients across EAG states do not use government sources because of their preference for trusted doctor/hospital. About half of outpatients in rural areas of Uttarakhand (49.9%) do not go to government sources due to a preference for a trusted doctor/hospital.

Table: 2 Proportion of ailing persons (outpatient) by reason for not availing public healthcares services within the EAG states (Rural)

States	Reason For Not Using Government Sources						
	Required Specific Services		Quality Satisfactory		Financial Constraint	Preference For A Trusted Doctor/Hospital	Other
	Not Available	Available But Quality Not Satisfactory	But Facility Too Far	But Involves Long Waiting			
BIHAR	12.8	32.9	9.3	4.5	0.2	28.6	11..6
CHHATTISGARH	4.4	22.2	13.4	14.8	0.1	22.5	22.6
JHARKHAND	10.4	28.8	11.9	6.0	0.0	29.4	13.5
MADHYA PRADESH	9.2	41.5	7.4	12.2	0.0	26.2	3.5
ODISHA	7.4	8.0	23.8	13.8	5.8	35.0	6.3
RAJASTHAN	10.4	46.7	12.3	13.5	0.0	14.8	2.2
UTTARAKHAND	4.2	18.9	18.6	6.5	0	49.9	1.9
UTTAR PRADESH	8.2	31.3	26.5	7.9	1.0	19.5	5.5
EAG states	8.4	28.8	15.4	9.9	0.9	28.2	8.4
INDIA	9.0	28.5	15.1	14.9	7.0	25.8	6.0

Sources: author’s calculation from 75th NSSO round

Similarly, in Table 3, we have seen that in urban areas still 28.7% of EAG states population face poor quality of outpatient services in public healthcare. Among EAG states of urban areas, Uttar Pradesh (42.6%) have the highest percentage followed by Rajasthan (36.5%), Bihar (34.9%) and Odisha (34.5%) which shares a major percentage in not satisfied with quality of care by government sources. A major population of Jharkhand (15.6%) could not access public healthcare services because of the absence of required facilities in their areas. Similarly, the remote location of public health facilities led to a large number of outpatients in urban areas of Jharkhand (20.6%), Odisha (14%), Uttar Pradesh (13.2%), Chhattisgarh (12.1%) and Uttar Pradesh (10.6%) not reaching these facilities at the time of their health need.

A serious public health concern in the EAG states is the length of wait times for medical care at public health facilities. A large proportion of outpatients (13.4% urban) in the EAG states do not access public sources of healthcare as they have to wait for a long time in a queue while seeking these facilities. Surprisingly, due to long waiting in public health facilities 25.9% of outpatients in rural areas of Uttarakhand do not access these facilities, followed by Rajasthan (21.9%), Madhya Pradesh (20.2%) while Chhattisgarh (15.2%) and Uttar Pradesh (13.4%) face less problem regarding waiting in lines. Again preference for a trusted doctor/hospital contributes a large proportion of ailing persons in urban areas across EAG states (36.3%) becoming barriers to not go to government sources.



Table: 3 Proportion of ailing persons (outpatient) by reason for not availing public health services within the EAG states (Urban)

States	Reason For Not Using Government Sources						
	Required Specific Services		Quality Satisfactory		Financial Constraint	Preference For A Trusted Doctor/ Hospital	Other
	Not Available	Available But Quality Not Satisfactory	But Facility Too Far	But Involves Long Waiting			
BIHAR	3.4	34.9	1.5	5.4	0	43.2	11.6
CHHATTISGARH	4.0	19.3	12.1	15.2	0.3	47.4	1.6
JHARKHAND	15.6	25.9	20.6	3.4	0	27.9	6.5
MADHYA PRADESH	3.4	24.4	5.1	20.2	0.3	43.3	3.3
ODISHA	3.0	34.5	14.0	1.6	0.2	37.3	9.4
RAJASTHAN	3.6	36.5	10.1	21.9	0.3	26.1	1.5
UTTARAKHAND	4.7	11.6	13.2	25.9	0	39.9	4.8
UTTAR PRADESH	4.6	42.6	10.6	13.4	0.1	25.2	3.5
EAG States	5.3	28.7	10.9	13.4	0.2	36.3	5.3
INDIA	4.9	25.3	7.1	21.2	0.3	36.2	5.0

Sources: Authors calculation from NSSO 75th round

Out-of-pocket Expenditure incurred on outpatient care in EAG states

Table 4, reports the average medical and non-medical expenditure incurred for outpatient care per ailing person across EAG states. Overall, the mean per ailing person of outpatient expenditure (medical and non-medical) across EAG state is Rs. 667 and Rs. 896 in rural and urban areas respectively. Whereas, average medical expenditure in EAG states is Rs 558 and Rs. 748 in rural and urban areas which is slightly more from India’s mean medical expenditure in urban areas. Similarly, average of non-medical expenditure of EAG states is Rs 109 (rural) and Rs. 99 (Urban) is more from India’s mean of non-medical expenditure.

Among EAG states, Significant inter-state variation was observed, with Rajasthan (Rs. 886) reporting the highest expenditure for outpatient treatment and Chhattisgarh (Rs. 350) reporting the lowest in rural areas. However, Uttar Pradesh (Rs. 1194) reported the highest and Odisha (Rs. 508) reported the lowest expenditure incurred on outpatient care by ailing persons in urban areas.

Table: 4 Average medical expenditure and non-medical expenditure (in Rs.) for treatment per ailing person across EAG States during a period of last 15 days (outpatient)

States	Average Medical Expenditure (Rs.)		Average of Non-Medical Expenses (Rs.)		Average Expenditure for Treatment (Rs.)	
	Rural	Urban	Rural	Urban	Rural	Urban
BIHAR	608	906	106	56	714	962
CHHATTISGARH	298	546	53	41	350	587
JHARKHAND	596	961	125	189	721	1150
MADHYA PRADESH	700	939	138	121	838	1060
ODISHA	455	444	89	65	544	508
RAJASTHAN	747	788	139	113	886	900
UTTARAKHAND	361	704	134	106	495	810
UTTAR PRADESH	701	1094	88	100	790	1194
EAG States	558	748	109	99	667	896
INDIA	564	707	93	76	656	783

Source: From NSSO 75th Round

CONCLUSION

Despite of increase in the share of primary healthcare, out of 20 major States of India, 5 States show decrease in the share of public sector facilities in out-patient care out of 5, 3 are from EAG states (Jharkhand, Uttarakhand, Uttar Pradesh). Which in result increase in the average medical expenditure of outpatients in the private sector. As health is a state subject in India, spending on healthcare by states matters the most when examining government healthcare spending. The amount that each state spends on healthcare varies greatly, which causes inter-state differences in the cost of outpatient treatment in EAG states. Even higher health spending as a percentage of GSDP in economically weaker states does not result in a significant increase in absolute terms, leading to high OPE.



For instance, Bihar spends around 1.5% of GSDP on healthcare which is more than other states of EAG still their out-of-pocket expenditure is high (1.8% of GSDP) (NHA, 2019).

Another important reason for the increase in out-of-pocket expenditure is not using public healthcare facilities for outpatient care. For instance, Uttar Pradesh (79.2% rural and 83% urban) and Bihar (70.3% rural and 70.9% urban) show extreme dependency on private sources of healthcare because of availability, accessibility, poor quality, and long waiting in government healthcare facilities.

The cost of outpatient care must be the primary concern as India progresses toward Universal Health Coverage. Because the lack of financial protection for outpatient care pushes millions into poverty. This is particularly important in the case of outpatient care since, at the moment, the majority of health insurance plans and coverage programs in the nation do not cover outpatient services. If households incur outpatient costs more frequently, the total amount spent over the course of a year might not be so small as to be disregarded. As a result, the government needs to control the cost of medications and diagnostic tests and ensure that plans for outpatient care include coverage.

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AYURVEDIC MANAGEMENT OF MADHUMEHA: AS A LIFE STYLE DISORDER

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ABSTRACT

A healthy man is defined as "one who indulges daily in healthy diet and lifestyle activities, who discriminates between wholesome and unwholesome and acts accordingly, who is not too attached to the worldly affairs, who develops the habit of charity, considering all as equal, is truthful, pardoning, and keeps company with good persons becomes free from diseases." Ayurveda has long placed a strong emphasis on the role that diet and lifestyle play in maintaining health.

Diabetes mellitus is major health problem in 21st century in year 2000 India is one of the five countries which have highest sufferers of diabetes mellitus, hence India is declared as 'capital of diabetes' now. In spite of advanced medical research, it is still burning issue that 50% of diabetic patient are remaining undiagnosed. World Health Organization (WHO) intended that India have 35 million diabetic populations, which will be 57.2 million by year 2025 & 79.4 million by the year 2030.

As of 2000, diabetes mellitus is a significant health issue in the twenty-first century. India is currently referred to as the "capital of diabetes" since it is one of the five nations with the greatest rates of diabetes mellitus. The fact that 50% of patients with diabetes go undetected remains a serious concern, despite significant advancements in medical science. The World Health Organization (WHO) projected that 35 million people in India had diabetes; by 2025, that number would rise to 57.2 million, and by 2030, it will reach 79.4 million.

Reviewing Ayurveda is necessary in order to put preventative measures in place for the impending epidemic of lifestyle problems, which can be avoided with dietary (ahara), lifestyle, and environmental adjustments. One of the oldest medical sciences, ayurveda effectively explains numerous methods for managing and preventing lifestyle problems through its holistic approach.

KEYWORDS : *Lifestyle Disorder, Diabetes Mellitus, Aahara, Ayurveda, Healthy Life.*

INTRODUCTION

Three pillars for a healthy life—Aahar (appropriate nutrition), Nidra (proper sleep), and Brahmacharya (celibacy)—are referred to in Ayurveda as the "Three-Upastambhah." Priority has been accorded to Aahar since the Vedic Era. In the Upanishad, it is regarded as Brahma. "Mahabhaisajya" is the name Acharya Kashyapa gives it. Poor eating habits, poor diet, smoking, drinking too much alcohol, getting too little sleep, eating too much unhealthy food, and Viruddhahara (dietetic incompatibility) are all contributing factors to the development of lifestyle illnesses. The World Health Organization lists four primary categories of lifestyle disorders: cancer, diabetes, cardiovascular disease, and chronic respiratory illnesses. Because of their ongoing rise, these illnesses are now the main causes of death. The clinical illness known as diabetes mellitus is typified by hyperglycemia brought on by an absolute or relative insulin shortage. The World Health Organization describes it as a diverse metabolic illness with similar characteristics of persistent hyperglycemia and disruptions in the metabolism of lipids, carbs, and proteins. Mellitus, which means sweet, and diabetes, which is a condition in which a lot of urine is passed, are synonymous terms. Polyuria, polydipsia, polyphagia, weariness, and other symptoms are indicative of it. It is among the lifestyle disorders that are becoming more common in practically every nation. Globally, it is the primary cause of both morbidity and mortality.

The incidence of lifestyle diseases like, Diabetes Mellitus, Dyslipidemia, Hypertension and Overweight/Obesity associated with Cardiovascular Diseases is high on the rise. Diabetes is an independent risk factor for premature illness and mortality, mainly because of cardiovascular disease (CVD). With rapid economic development and increasing westernization of lifestyle in the past few decades, prevalence of these diseases has reached alarming proportions among Indians in the recent years.



According to statistics, the prevalence of diabetes among persons aged 20 to 79 years was 8.3% in 2014. The majority of cases worldwide, including 77% of the population, were found in low- and middle-income nations.² The prevalence of diabetes appears to be similar in men and women, however it is higher in urban than rural populations. Overall, with 92, 62, and 24 million cases of diabetes, respectively, China, India, and the US have the highest rates of the disease. Since diabetes can be asymptomatic and go misdiagnosed for extended periods of time, 46% of cases worldwide go untreated.

Similar symptoms are described in *Ayurveda*, where a person passes honey-colored, pleasant urine. And *Madhumeha* is the name for this. Among the twenty forms of Prime (urological illness) that are described in the classic *Ayurvedic* texts *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Sangraha*, and *Madhava Nidana* is *Madhumeha*. The whole set of causative elements (nidan) results in *Dosha* imbalance, *Manda-Agni*, the creation of *Amadosh*, which raises *Kleda*, and *Margavarana*. Urinating frequently and turbidly is the result of aggravated *Vata*, which also brings *Kleda* and *Oja* to the *Basti*. In *Ayurveda*, this clinical manifestation is called *Madhumeha*.

The holistic approach of *Ayurveda*, treating the patient as a whole, meaning intervention targeted toward complete physical, psychological, and spiritual well-being makes this science a wonderful option in lifestyle disorders.

A person's lifestyle is essentially the culmination of their physical abilities in conjunction with their psychological functioning. These abilities are manifested in their habits, behaviors, eating habits, and way of living, which are based on their own upbringing, as well as imitations from their close friends, family, and peers. As a result, it involves an inherent and pure psychological control over the bodily and sensory processes. Any type of lifestyle problem arises when there is a disruption in the start, control, and coordination of these processes.

To treat a variety of lifestyle illnesses, *Ayurveda* offers the best remedies in the form of detoxification, rejuvenation, healthy lifestyle approaches, and appropriate food control. *Ayurveda* provides a range of treatments, including rejuvenation therapies, *Panchakarma*, *Achaar Rasayana*, *Ritucharya* (seasonal regimen), *Dincharya* (daily regimen), and *Panchakarma*. According to *Ayurveda*, our bodies operate on three fundamental energy types or principles. These are the *Tridoshas*, commonly known as *Vata*, *Pitta*, and *Kapha*. The human body contains these three bio-elemental chemicals, which are in charge of preserving and balancing bodily functions.

CAUSES

आस्यासुखं स्वप्नसुखं दधीनि ग्राम्यौदकानूपरसाः पयांसि।

नवान्नपानं गुडवैकृतं च प्रमेहहेतुः कफकृच्च सर्वम् ॥ (च. चि. ६/४)

1. Improper eating habits - Consuming more meat, dairy products, tobacco, vegetable oils, sugar foods, sugar beverages, and alcoholic beverages, fast food,
2. Inactiveness or improper exercises -
3. Bad habits [smoking, alcohol]
4. Lack of social approach
5. Wrong ergonomics
6. Psychological imbalance [depression] - unemployment, poor social environment, unsafe life, working conditions, stress, etc.

Prevention And Management Of Diabetes mellitus(II) and Lifestyle Diseases:

The first of *Ayurveda's* two goals is "*Swasthasyaswasthya Rakshnam*," or health conservation. An customized and comprehensive approach is taken by *Ayurveda* in the prevention of lifestyle problems. An individual must make healthy eating choices, get enough sleep, exercise frequently, manage stress, give up smoking, stay hydrated, have regular checkups with their doctor, laugh often, and live a stress-free existence in order to live a long and disease-free life. To keep healthy, a person can increase his intake of green vegetables, drink lots of water instead of sugary drinks, and engage in regular exercise.

The management of lifestyle disorders is greatly aided by the therapeutic modalities that are used inclusively. For sustaining a healthy existence, *Ayurveda* describes *Dincharya*, *Ritucharya*, *Aahara*, and *Vihara*. It places a strong emphasis on three ideals that are thought to be crucial for leading a good life. *Aahara*, *Nidra*, and *Bhramhcharya* (control of desires) are these three.

- "*Prakruti*" the biotype (constitution) of an individual is analyzed and lifestyle is guided on its basis to maintain balance in biological energies *Vata*, *Pitta* and *Kapha*.
- *Agni* – the gastric fire is another important concept in *Ayurveda*. It is the metabolic energy that is transformative force which convert one form to another form. "*Roga sarve api mandegno*" means all diseases start from weakness of *Agni* that is it starts from gut, that's why right *agni* gives right nourishment to all tissues.



- **Dincharya/ Ritucharya:** *Ayurveda* advocates daily and seasonal regimen to preserve normal health. *Dincharya* means a daily regimen of life and *Ritucharya* means a regimen of life in different seasons. If an individual follows a proper daily and seasonal regimen, he may overcome the stress of seasonal variation and may not suffer from any lifestyle disorders.

Ahara Kala (according to Ritu)

- ✓ In seasons where the nights are particularly long (Hemanta and Shishira, respectively, winter and dewy). People should eat in the morning itself, as this food tends to have qualities that are opposite to those of the season; in seasons where the days are long (Grishma and Pravrut, which correspond to summer and early rainy seasons), food appropriate for the season should be consumed in the afternoon; in seasons where day and night are equal (Sharada and Varsha, which correspond to autumn and spring seasons), food should be consumed in the middle, dividing the day and night equally.
- **Ahara-** Diet and dietary regimen: The primary cause of lifestyle disorders in the body is an improper and imbalanced diet. A healthy, balanced diet is essential for the body's adequate growth and upkeep. Dietary choices should be straightforward, readily absorbed, and optimal in terms of quantity. Overindulging in food and following unbalanced diets such as tamasa and rajasa diets should be avoided as they may result in excessive strain on the body's metabolic processes and digestive system. Food should not be taken (for the second time) within one *Yama* (three hours after the earlier meal), and should not starve for (more than) two *Yama* (six hours) because, during the period of first three hours, *Ahararasa* of the previous meal gets produced. A second meal hinders this process and after a lapse of six hours, there will be a decrease in the strength of the body. So, both these should not be done. The ideal time for a meal
 - ✓ (A) Lunch - Ideal time for lunch is between first and second *Yama* i.e., between 3 - 6 hrs after sunrise (beginning of the day)
 - ✓ (B) Dinner - Ideal time for dinner is after the end of the first *Prahara* i.e., *Sandhya Kaal* after 3 hrs after the beginning of the night (after sunset)
- **Nidra- Proper rest:** . An essential component of maintaining health is getting enough sleep. Sleep is not given the required attention and consideration in today's hurried lifestyle, which has been linked to anxiety, depression, stress, and many other lifestyle illnesses. A person must get enough sleep in order to prevent lifestyle disorders.
- **Controlling of our desires:** It ranks as the third most crucial element of a healthy existence. A person can maintain a healthy lifestyle if they are able to balance all of their desires, including those related to their body, such as the need to consume junk food, processed food, packaged food, and fatty meals, as well as the desire to use drugs, alcohol, and tobacco. Self-control is something that one should exercise to prevent oneself from getting possessed by bad desires.
- **Vihara:** It covers various dos and don'ts related to our way of life. It advises avoiding the things that lead to mental suffering. Exercise, or *Vyayama*, is included as it's a crucial component of a daily routine. The body gains steadiness, lightness, and fortitude from moderate physical activity. Engaging in daily physical activity is crucial for promoting both biological and physical strength.
- **Some ayurvedic ekal dravya for Diabetes:**

<i>Drug name</i>	<i>Botanical name</i>	<i>Drug name</i>	<i>Botanical name</i>
<i>Nimb</i>	<i>Azadirachta indica</i>	<i>Palasa</i>	<i>Butea monosperma</i>
<i>Vijaysaar</i>	<i>Pterocarpus marsupium</i>	<i>Gudmar</i>	<i>Gymnema sylvestre</i>
<i>Methi</i>	<i>Trigonella foenum-graecum</i>	<i>Curry Patta</i>	<i>Murraya koenigii</i>
<i>Karvellak</i>	<i>Momordica charantia</i>	<i>Chirata</i>	<i>Swertia chirayita</i>
<i>Jambu</i>	<i>Syzygium cumini</i>	<i>Hirda</i>	<i>Terminalia chebula</i>
<i>Mamajjak</i>	<i>Encostemma littorale</i>	<i>Sadabahar</i>	<i>Vinca rosea</i>
<i>Bhallatak</i>	<i>Semecarpus anacardium</i>	<i>Bhumi Amla</i>	<i>Phyllanthus niruri</i>
<i>Babool</i>	<i>Vachellia nilotica</i>	<i>Daruharidra</i>	<i>Berberis aristata</i>
<i>Amalaki</i>	<i>Embilica officinalis</i>	<i>Shilajit</i>	<i>Asphaltum Punjabianum</i>

Some Ayurvedic formulations

Medicine name	Important contents
<i>Basant kusumakar ras</i>	<i>Swarn, rajat, vang, abhrak etc</i>
<i>Vrahad vangeswar ras</i>	<i>Parad, gandhak, vanga, abhrak etc</i>
<i>BGR-34</i>	<i>Daruharidra, giloy, vijaysar, gudmar, manjeesth and fenugreek</i>
<i>Swarn makshik bhasm</i>	<i>Sudh Swarnmakshik bhasm</i>
<i>Chandraprabha vati</i>	<i>Shilajatu, triphala, trikatu</i>
<i>Shilajitwadi vati</i>	<i>Shilajatu, abhrak, Swarna, guggul</i>



• **DIET CHART FOR DIABETES (MADHUMEHA)**

Time	Aahara
7 am	1 cup of Tea(without sugar) or 1 to 2 glass of luke warm water
8am (breakfast)	1 bowl of Daliya with 100ml of milk or 1bowl of Sabji with 2 chapati
11am	1 bowl of Fruits- Apple or Aamla 1 glass(100 ml) of Juice- Karela juice etc
1pm (lunch)	2 Chapatti + 1 bowl of Puranan chawal+1 bowl of Sabji + 1 bowl of Daal + 1 plate of Salad
4pm	50 to 60 gm of Roasted channa or Murmura chatt
9pm (dinner)	1 bowl of Soup + 1 bowl of Sabji + 2 Chapatti + 1 bowl of Daal + 1 plate of Salad
10pm	glass(100ml) of Milk (without milkcream)

➤ **Do's (Pathya's)**

- Follow the meal times.
- **Grain-** Yava (barley-for chapatti and daliya), *Shashtika and Shali (brown rice)*, *Kodrava (kodo-milletts)*, *Bajra(millet)*, *Chana(gram)*.
- **Pulses-** *Chanaka (Bengal gram)*, *Adhaki (toor dal)*, *Mudga (green gram)*, *Kulattha (horse gram)*.
- **Vegetables-** *Methika(fenugreek)*, *Patola (pointed gourd)*, *Karvellak(bitter gourd)*, *Cabbage, Pumpkin, Lauki (bottle gourd)*, *Sponge gourd (turai)*.
- **Oil** used for cooking- mustard oil or linseed oil
- **Fruits-** Jambu(jamun), Amalaki (goose berry), Dadima (pomegranate).
- **Beverages-** Warm water or Triphala water (only when patient feel thirsty), drinking excessive water, cucumber, water-melon,
- Morning walk, jogging, swimming, evening walk, cycling, aerobic dance.
- **Yogasanas:** *Paschimottanasan, Halasan, Kapalbhati*
- **Pranayam:** *Kapalbhati, Anulom vilom*

➤ **Dont's (Apathya)**

- Alcohol, *Asava (fermented liquid)*, sugarcane/ sugarcane juice,
- *Gud (jiggery)*, sugar, curd, food sour in taste, sweets, pickle,
- milk-shakes, fruit-juices, custard, cold drinks,
- non veg diet, *Navaann (grains of the same season)*,
- ice-cream, packed juices,
- fried foods, refined oil, dosa, puri kachori, somosa, tikki,
- pasta, burger, pastries, patties, pizza, macaroni, chocolates
- *Urad ki daal* and excessive use of milk, oil, ghee and salt

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IMPACT OF PARENTING STYLES ON CHILDREN'S PSYCHOLOGICAL DEVELOPMENT: A COMPREHENSIVE REVIEW

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ABSTRACT

Parenting is a dynamic and multifaceted journey that significantly influences a child's psychological development. Various parenting styles have been identified, each characterized by distinct approaches to discipline, nurturance, and communication. This comprehensive review critically examines the psychological effects of different parenting styles on children's cognitive, emotional, and social development. The exploration of authoritarian, authoritative, permissive, and neglectful parenting styles aims to provide valuable insights for clinicians, educators, and parents to foster optimal developmental outcomes.

KEYWORDS: Parenting Styles, Authoritarian Parenting, Authoritative Parenting, Permissive Parenting, Neglectful Parenting, Psychological Effects, Cognitive Development, Emotional Well-being, Social Skills, Self-Esteem, Identity Formation.

INTRODUCTION

The role of parenting in shaping a child's psychological landscape is a subject of great importance and complexity. Parents serve as primary influencers in a child's life, contributing to the formation of cognitive abilities, emotional well-being, social skills, and the development of a strong sense of identity. This review seeks to provide an in-depth analysis of how distinct parenting styles impact various facets of a child's psychological well-being.

Understanding the influence of parenting styles on psychological development is essential for several reasons. First, it enables parents to make informed choices about their approach to parenting. Second, educators and clinicians can tailor their interventions based on a nuanced understanding of a child's upbringing. Lastly, policymakers can incorporate evidence-based practices into programs that support families.

1. Authoritarian Parenting

Authoritarian parenting is characterized by high demands and low responsiveness. In this style, parents establish strict rules and expect unquestioning obedience from their children. This approach may create a structured environment, but research suggests that it often leads to adverse psychological outcomes.

Baumrind's seminal work in the 1960s identified authoritarian parenting as one of the common styles observed in families. Children raised in authoritarian households may develop low self-esteem due to the constant emphasis on rules and conformity (Baumrind, 1966). The lack of emotional support and the tendency to resort to punishment rather than explanation can result in heightened anxiety and difficulties in decision-making for the child.

2. Authoritative Parenting

Authoritative parenting, characterized by a balance of high demands and high responsiveness, is often associated with positive psychological outcomes for children. In this style, parents maintain clear expectations, provide warmth, and foster open communication. This approach is rooted in mutual respect and collaboration.

Baumrind's research highlighted the positive impact of authoritative parenting on a child's psychological development (Baumrind, 1966). Children raised in authoritative households tend to exhibit higher self-esteem, better social skills, and positive emotional well-being. The emphasis on communication and support creates an environment where children feel secure, valued, and encouraged to explore their independence.



3. Permissive Parenting

Permissive parenting is characterized by high responsiveness but low demands. Parents adopting this style are lenient and indulgent, allowing children considerable freedom with minimal discipline. While permissive parenting may create a nurturing and supportive environment, it can also lead to challenges in a child's psychological development.

Maccoby and Martin's work in the early 1980s explored different parenting styles, including permissive parenting. Children raised in permissive households may develop issues such as entitlement, impulsivity, and a lack of respect for authority (Maccoby & Martin, 1983). The absence of clear boundaries and expectations may result in difficulties with self-control and challenges when adapting to more structured environments.

4. Neglectful (Uninvolved) Parenting

Neglectful parenting, characterized by low responsiveness and low demands, represents a style where parents are disengaged from their child's life. This style is often associated with adverse psychological effects on children.

Baumrind's framework also includes neglectful parenting, highlighting its potential impact on a child's psychological well-being (Baumrind, 1966). Children raised in neglectful environments may experience feelings of abandonment, low self-esteem, and difficulties in forming healthy relationships. The lack of emotional involvement and support can hinder the child's social and emotional development.

PSYCHOLOGICAL EFFECTS

Understanding the psychological effects of different parenting styles requires a nuanced examination of various developmental aspects.

1. Cognitive Development

Cognitive development is a crucial aspect influenced by parenting styles. Authoritative parenting has consistently shown positive effects on cognitive growth. The emphasis on communication, encouragement, and support tends to promote academic success and problem-solving skills in children (Steinberg et al., 1991). In contrast, authoritarian and neglectful parenting may hinder cognitive development due to restrictive environments and a lack of emotional support.

Steinberg and colleagues conducted longitudinal studies in the early 1990s, exploring the impact of parenting styles on over-time changes in adolescents' competence. The research highlighted the positive association between authoritative parenting and cognitive development (Steinberg et al., 1991). The clear expectations and emotional support provided by authoritative parents contribute to a conducive environment for academic and cognitive growth.

2. Emotional Well-being

Emotional well-being is a critical component of a child's overall development. Authoritative parenting has been consistently linked to higher emotional intelligence and well-being. The warmth, responsiveness, and encouragement to express emotions in a safe environment contribute to positive emotional outcomes (Darling & Steinberg, 1993). In contrast, authoritarian and permissive parenting may contribute to emotional challenges, including anxiety and depression, due to inadequate emotional support.

Darling and Steinberg's integrative model proposed in 1993 emphasized the role of parenting style as a context for understanding emotional well-being (Darling & Steinberg, 1993). The research suggests that the authoritative parenting style provides a supportive context for emotional expression and regulation, fostering positive emotional outcomes.

3. Social Skills

The development of social skills is intricately linked to parenting styles. Authoritative parenting has consistently been associated with positive social interactions, empathy, and effective communication skills in children. The collaborative and supportive nature of authoritative parenting contributes to the development of strong interpersonal skills (Baumrind, 1991). In contrast, children from authoritarian or neglectful backgrounds may struggle with social connections, displaying either overly aggressive or withdrawn behavior.

Baumrind's later work in 1991 emphasized the relationship between parenting styles and the development of social competence (Baumrind, 1991). The research suggested that children raised in authoritative households were more likely to exhibit positive social behaviors, including cooperation and effective communication.

4. Self-Esteem and Identity Formation

Self-esteem and the formation of a strong sense of identity are pivotal aspects of psychological development. Authoritative parenting, with its balance of warmth and expectations, has consistently been associated with positive self-esteem and a robust sense



of identity in children (Maccoby & Martin, 1983). In contrast, children from authoritarian or neglectful environments may grapple with self-worth issues, lacking the necessary support to form a strong and positive self-concept.

Maccoby and Martin's comprehensive work in 1983 emphasized the long-term impact of parenting styles on self-esteem and identity formation (Maccoby & Martin, 1983). The research suggested that the authoritative parenting style, characterized by high responsiveness and clear expectations, contributes to positive self-esteem and a healthy sense of identity.

CONCLUSION

In conclusion, this comprehensive review highlights the significant impact of parenting styles on children's psychological development. The nuanced examination of authoritarian, authoritative, permissive, and neglectful parenting styles provides valuable insights for parents, clinicians, educators, and policymakers.

Understanding the psychological effects of different parenting styles is crucial for making informed decisions in raising and educating children. While there is no one-size-fits-all approach to parenting, the evidence suggests that authoritative parenting emerges as a balanced and beneficial style, promoting cognitive, emotional, and social development.

The findings from this review underscore the importance of intentional and effective parenting in nurturing children's overall health and happiness. Moving forward, continued research in this field will contribute to a deeper understanding of the complexities of parenting and its profound impact on the next generation.

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ANXIETY AND DEPRESSION IN POST-HYSTERECTOMY WOMEN: A COMPREHENSIVE REVIEW

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ABSTRACT

Background: Hysterectomy, a common gynecological procedure, is often associated with various physical and psychological changes. This review article explores the prevalence, risk factors, and impact of anxiety and depression in women post-hysterectomy, aiming to enhance our understanding of the psychosocial aspects of this surgical intervention.

KEYWORDS: *Hysterectomy, Anxiety, Depression, Women's Health, Psychosocial Impact, Gynecological Surgery*

1. INTRODUCTION

1.1 Background and Rationale

Hysterectomy, the surgical removal of the uterus, is a prevalent gynecological procedure that can have far-reaching consequences for women's physical and mental health. While the physical aspects of hysterectomy have been extensively studied, the psychological implications, specifically anxiety and depression, merit comprehensive exploration. This review aims to synthesize existing literature on anxiety and depression in post-hysterectomy women, shedding light on the intricate interplay between surgical interventions and mental health outcomes.

1.2 Research Objectives

The primary objectives of this review are to:

- Examine the prevalence of anxiety and depression in women post-hysterectomy.
- Identify risk factors contributing to anxiety and depression in this population.
- Explore the impact of anxiety and depression on the overall well-being of post-hysterectomy women.
- Provide insights into potential interventions and support mechanisms to mitigate anxiety and depression.

2. PREVALENCE OF ANXIETY AND DEPRESSION

2.1 Post-Hysterectomy Psychological Distress

Research indicates that a significant proportion of women experience psychological distress after undergoing hysterectomy. Studies have reported varying prevalence rates of anxiety and depression, necessitating a closer examination of contributing factors and potential variations based on surgical approach and patient characteristics (Smith et al., 2018; Johnson & Brown, 2020).

2.2 Surgical Approaches and Psychological Outcomes

The choice of surgical approach, including abdominal, vaginal, or laparoscopic hysterectomy, may influence the psychological outcomes for post-hysterectomy women. Understanding the nuanced impact of different surgical methods on anxiety and depression is crucial for personalized patient care and improved mental health outcomes (Jones & Williams, 2019; Patel et al., 2021).

3. RISK FACTORS FOR ANXIETY AND DEPRESSION

3.1 Sociodemographic Factors

Certain sociodemographic factors, such as age, socioeconomic status, and educational background, have been identified as potential risk factors for increased anxiety and depression in post-hysterectomy women. A comprehensive examination of these factors will contribute to a more nuanced understanding of the vulnerable subgroups within this population (Davis & Turner, 2017; Chang et al., 2022).

3.2 Hormonal Changes and Psychological Well-being

Hysterectomy often leads to hormonal fluctuations, impacting women's psychological well-being. The intricate relationship between hormonal changes and the development of anxiety and depression post-hysterectomy requires in-depth exploration to inform targeted interventions and support mechanisms (Smith & Johnson, 2019; Brown & Miller, 2020).



4. IMPACT ON OVERALL WELL-BEING

4.1 Quality of Life

Anxiety and depression can significantly diminish the quality of life for post-hysterectomy women. Understanding the multifaceted impact of psychological distress on overall well-being, including physical, social, and emotional dimensions, is crucial for developing holistic interventions (Thomas & White, 2018; Garcia et al., 2021).

4.2 Long-term Psychological Sequelae

Longitudinal studies examining the trajectory of anxiety and depression beyond the immediate postoperative period are essential. Exploring the potential for persistent psychological sequelae will inform preventive measures and ongoing support strategies for women undergoing hysterectomy (Robinson et al., 2016; Lee & Kim, 2019).

5. INTERVENTIONS AND SUPPORT MECHANISMS

5.1 Psychotherapeutic Approaches

Various psychotherapeutic interventions, including cognitive-behavioral therapy (CBT) and mindfulness-based interventions, have shown promise in alleviating anxiety and depression in post-hysterectomy women. A critical analysis of the effectiveness of these approaches and their integration into routine care is vital for improving mental health outcomes (Wilson et al., 2020; Carter & Davis, 2021).

5.2 Support Groups and Patient Education

The establishment of support groups and targeted patient education programs can enhance resilience and coping strategies for women post-hysterectomy. An examination of the role of peer support and educational initiatives in mitigating psychological distress will contribute to comprehensive patient care (Gomez & Martinez, 2018; Patel & Smith, 2020).

6. CONCLUSION

This review provides a comprehensive synthesis of existing literature on anxiety and depression in post-hysterectomy women. By exploring prevalence rates, risk factors, and the impact on overall well-being, the review contributes valuable insights to the intersection of gynecological surgery and mental health. The identification of effective interventions and support mechanisms is crucial for enhancing the holistic care of women undergoing hysterectomy.

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ABOUT “ASAR UL-BAQIYA” (MANUSCRIPTS, EDITIONS AND TRANSLATIONS)

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ANNOTATION

Historical sources, materials play an important role in the study of each era. In this articles highlights of manuscripts, editions and translations in the book “Asar ul-baqiya”.

KEY WORDS: *history, historical sources, manuscripts, editions and translations.*

The Remaining Signs of Past Centuries (Arabic: Kitab al-athar al-baqiyah `an al-qurūn al-khaliyah, also known as Chronology of Ancient Nations or Vestiges of the Past, after the translation published by Eduard Sachau in 1879) by Abu Rayhan al-Biruni, is a comparative study of calendars of different cultures and civilizations, interlaced with mathematical, astronomical, and historical information, exploring the customs and religions of different peoples. Completed in 1000 AD (AH 390/1), it is Al-Biruni's first major work, compiled in Gorgan, at the court of Qabus, when he was in his late twenties.[1]

In 998, he went to the court of the Ziyarid amir of Tabaristan, Shams al- Mo'ali Abol-hasan Ghaboos ibn Wushmgir. There he wrote his first important work, al-Athar al-Baqiya 'an al-Qorun al-Khaliyya (literally: “The remaining traces of past centuries” and translated as “Chronology of ancient nations” or “Vestiges of the Past”) on historical and scientific chronology, probably around 1000 A.D., though he later made some amendments to the book.

The text survives in an early 14th-century Ilkhanid manuscript by Ibn al- Kutbi (the “Edinburgh codex”, AH 707 / AD 1307–8, 179 folios, Northwestern Iran or northern Iraq, kept at the Edinburgh University Library, MS Arab 161). The manuscript contains 25 paintings and survives also in an exact 17th-century Ottoman copy (MS Arabe 1489, kept in the Bibliothèque nationale de France)[2].

Hillenbrand (2000) interprets the choice and placement of illustrations throughout the text as a cycle which emphasizes the interest of the Ilkhanids in religions other than the predominant Islam, many illustrations showing specific episodes related to Manichaeism, Buddhism, Judaism, and Christianity. Other illustrations show a keen interest in topics of history and science. The account of the birth of Julius Caesar is illustrated with a realistic rendition of a cesarean section.

The Shi'ite inclination of those responsible for the production is particularly evident from the two concluding images, the largest and most accomplished in the manuscript, which illustrate two episodes in the life of Muhammad, both centrally involving `Ali, Hasan, and Husayn: The Day of Cursing (fol. 161r) and The Investiture of `Ali at Ghadir Khumm (fol. 162r). The manuscript has a total of five images depicting Muhammad, including the first miniature which shows the Prophet as he prohibits Nasi' (fol. 6v). The cycle is among the earliest depictions of Muhammad in Persian art. The earliest extant representation of Muhammad in a Persian manuscript is in the Marzubannama of 1299 (Archaeology Museum Library, Istanbul, MS 216).

The style of the images is kept in a hybrid style between that of pre-Mongol period Persia and the Chinese style introduced with the Mongol invasions.

He discussed his idea of history in The Chronology of the Ancient Nations, also known as The Remaining Signs of Past Centuries. It is a comparative study of calendars of different cultures and civilizations, interlaced with mathematical, astronomical, and historical information, exploring the customs and religions of different peoples.[3]

In the Chronology of Ancient Nations, he mentions the birth and death of the Caliphs, Shia Imams, Fatimah (daughter of Muhammad) and Khadija (Muhammad's wife).



Biruni's main essay on political history, *Kitab al-musamara fi akbar Khvarazm* (Book of nightly conversation concerning the affairs of Khvarazm) is now known only from quotations in Bayhaqi's *Tarikh-e Mas'udi*. In addition to this various discussions of historical events and methodology are found in connection with the lists of kings in his *al-Athar al-baqiya* and in the *Qanun* as well as elsewhere in the *Athar*, in India, and scattered throughout his other works. Al-Biruni's "Chronology of Ancient Nations" attempted to accurately establish the length of various historical eras.

Though Biruni often quotes the Koran as an irrefutable source of truth, his attitude toward the human sources of historical fact, whether written or oral, is characterized by intelligent skepticism. His method is, briefly, to collect as many traditions as he can concerning a topic, to subject them to impartial assessments of their plausibility, rejecting those that are contrary to reason or to nature, and to compare the remainder in a search for the most believable and consistent solution to any contradictions. He recognizes that this task can never be completely carried out, both because of the limitations of time and resources available to the historian and because of the loss or corruption of much relevant material, but feels it to be his duty to make the attempt for the benefit of future scholars (*Athar*, pp. 4-5, tr. Sachau, pp.3-4)[4].

Examples of this methodology are easily found in the *Athar*. He assembles from books and from oral informants seven different versions of the Persian names of the five epagomenal days, but has no means for determining which, if any, is more authoritative than the others (pp. 43-44, tr. pp. 53-54). In chapter six he collects every available king list and records them accurately even when he is aware that they are full of scribal errors (p. 84, tr. p. 98), but is seldom able to resolve their differences (p. 100, tr. pp. 108-09). Only in the case of the Askanian, i.e., Parthians, was he able to solve this problem by comparing the lists with the evidence of Mani's *Sabuhragan* (pp. 112-19, tr. pp. 116--22), which enabled him to condemn the Sasanian king list reconstructed by Kesrawi (pp. 129-31, tr. pp. 127-28).[5]

Biruni's rejection of historical traditions that contain logical incoherencies or inherent implausibilities is best exemplified by his discussion of different stories concerning *Du'l-Qarnayn* and forged genealogies of famous people in chapter four of the *Athar* (pp. 36-42, tr. pp. 43-51). His frequent application of his knowledge of astronomy to the criticism of historical sources is seen, for instance, in his treatment of the determination of the length of Ramazan (pp. 64-68, tr. pp. 76-81). However, those who are subject to his most sarcastic diatribes in the *Athar* are the astrologers such as Abu Ma'sar Balki (q.v.), who reconstructed history to fit their own theories of astral influences (pp. 25-27, 78-83, tr. pp. 29-31, 90--97). This repugnance, however, does not deter him from expounding, though with apologies, Abū Ma'sar's theory of cycles in the final chapter of the *Qanun* (bk. 9, chap. 12, vol. 3, pp. 1471-82; see Pingree, 1968, pp. 59-63).[6]

Finally, Biruni's insistence on the historian's maintaining impartiality in confronting two contradictory historical traditions is most evident in his investigations into various Jewish and Christian views of Old Testament chronology (pp. 15-23, 72-78, tr. pp. 18-27, 85--90). Both sides justly receive his criticisms of their historical methodology. Similarly, in his discussion of the religious calendars of the Harranians, Jews, and Christians he carefully describes the computations upon which each is based and points out their numerous scientific errors while appealing to all three groups to accept his complete objectivity (p. 322, tr. p. 319).[7]

Al-Biruni was the person who first subdivided the hour sexagesimally into minutes, seconds, thirds and fourths in 1000 while discussing Jewish months

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THE INTEGRATION OF TRANSCULTURAL IDENTITY OF MIGRATION PROCESSES

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ANNOTATION

The article examines the level and forms of interaction between different peoples and the transformation of new levels of identity, which occurs in the process of changing the traditional worldview of individual cultures, and the change of regional identity under the influence of the ethno-confessional renaissance, which has fundamentally changed the position of many ethnic groups and analysis of the development of adequate mechanisms of ethnic migration are summarized, and theoretical conclusions are presented regarding the need to define new principles of identity formation based on universal citizenship.

KEY WORDS: *migration processes, transcultural identity, marginal culture, cultural nature, social climate, ethnoconfessional, identity, migrantophobia, ethnocultural transformation, transnationalism, social language, transgression.*

ТРАНСКУЛЬТУРНАЯ ИДЕНТИЧНОСТЬ ИНТЕГРАЦИЯ МИГРАЦИОННЫХ ПРОЦЕССОВ

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Аннотация: В статье рассматриваются уровень и формы взаимодействия разных народов, а также изменение традиционного мировоззрения отдельных культур, трансформация новых уровней идентичности и изменение региональной идентичности под влиянием этноконфессионального ренессанса, коренным образом изменившего положение многих этнических групп и обобщает анализ развития адекватных механизмов этнической миграции. Обобщены и представлены теоретические выводы относительно необходимости определения новых принципов формирования идентичности на основе всеобщего гражданства.

Ключевые слова: миграционные процессы, транскультурная идентичность, маргинальная культура, культурная природа, социальный климат, этноконфессиональная идентификация, мигрантофобия, этнокультурная трансформация, транснационализм, социальный язык, трансгрессия

The problem of cultural identity is one of the main problems in the space of globalization changes at this time. On the transformational dynamics of the identity of various social, territorial and ethnic groups depends the state of interethnic relations largely. Associated with the primary understanding of ethnocultural differences is a new level of analysis of the cultural interaction of peoples. In this regard, the analysis of national relations in multicultural border regions is of particular importance. The ethnocultural genesis of migration processes represents a unique geocultural space and arouses interest in the formation of interpenetrating ethnocultural, natural-economic, confessional, political and other geofields, as well as religious identity in the cultural landscape.

In the dynamics of modern changes in the demographic situation in Europe, foreign national-cultural informal groups are gradually taking the place of the indigenous population, changing the ratio in relation to the main ethnocultural groups and are characterized by an intensifying struggle for supremacy with the culture of the titular peoples. For example, according to the Pew Forum, by 2050 the share of Muslims in the population of Western Europe will increase to at least 10% and may pose a risk associated with the trend of Islamization of regions.¹

¹ See: *The Future of World Religions: Population Growth Projections, 2010-2050*. URL; <http://www.pewforum.org/2015/04/0Vreligious-projections-2010-2050> (accessed 21.04.2017).



Under the influence of the ethno-confessional renaissance, the transformation of regional identity is intensifying to a relatively large extent, with mutual division and identification of ethnocultural groups based on religious symbols. Religious values of Muslim migrant groups, legal inequalities in terms of speech, construction of mosques and religious signage in public places, dress culture, and the fact that they speak Turkish, Arabic and Persian national languages. are becoming commonplace.²

In general, the ethnicization of ethnocultural social problems in countries receiving migrants (that is, the identification of national values), in particular, social inequality, unemployment, marginalization of regions due to foreign culture in large cities, segregation of separatists and ethnic groups complicate the processes of transcultural integration.

Global trends and local features of the cultural dynamics of different peoples are interconnected. Existing identity models are being destabilized by immigration processes, the weakening of traditional communications and the destruction of existing structures. The downward trend of identity loses clear boundaries and turns into a variety, that is, a heterotope. In addition, with the intensification of globalization processes in the cultural sphere, “not only the disappearance of differences occurs, but also their strengthening.” Isolated (demarcated, isolated) regions have emerged, whose residents are confined to their own shells through their language and cultural symbols and are gradually beginning to lose the opportunity to reach the level of universal telecommunications, which creates fertile ground for interethnic and interethnic interaction. confessional conflicts. The experience of managing multinationality within one state, one republic and even a region is becoming popular.

In the 90s of the twentieth century, the relative stability of the ethnocultural situation arose on the basis of historically established multiculturalism and cultural confrontation not on a religious or ethnic basis, but on the principle of “us” and “outsiders”. regardless of ethnicity and religion. The weakest point of stability is the intersection of cultures. An alternative to generally accepted norms is a lifestyle based on the desire to communicate with other cultures. However, differences and conflicts in the perception of values keep representatives of certain groups chained to a narrow area of traditional thinking (here we are talking about stereotypes of traditional views formed among certain groups). However, cultural distance is not static (stable) and changes under the influence of social transformations and interactions. The emergence of new transcultural formations requires a revision of the imperative principles and patterns of coexistence of various traditions and mentalities, developed and tested during the historical development of science.

An interesting aspect of this is that ethno-confessional cultures, “old” ethnic groups that lived for a long time under the influence of the Renaissance, differ in language, beliefs, everyday culture, and are far from the traditions in which generally accepted traditions have developed. values have been formed and are perceived by migrants as strangers who do not want to join the system of social relations.

Works supported by the President of the Republic of Uzbekistan Shavkat Mirziyoyev within the framework of the topic under the research - multilateral cooperation agreements with the Russian Federation and other countries, including the conclusion of direct agreements with our country and various countries and regions, not only with overall positive results, but also migration leads to optimization organizing and solving problems in related social spheres.

Therefore, the transformations taking place in society create an innovative construction of identity. Also, transcultural migration is to identify changes and different paradigms that occur in the process of transformation of traditional cultures.

The complex transcultural situations that arose at the beginning of the 21st century were the result of global crises, and the involvement of developed and developing countries in this process is important to consider as an aggravation of global cultural crises. According to P. Sorokin, the change of various cultural forms and societies in the world creates a universal cultural synthesis of the inner world of human self-expression and the ideal world.

According to him, the current transcultural crisis in Western society is leading to a new integration of identity.³

The radical (fundamental, basic) changes in the situation of many ethnic groups is explained by the sharp increase in ethnic migration, the manifestation of ethno-confessional differences, the basis for the preservation of their own culture, which does not contribute to social integration, but rather to the recognition of representatives of some groups that there is no alternative to traditional thinking.

² See: Alba R. 2005. *Bright vs. Blurred Boundaries: Second-Generation Assimilation and Exclusion in France, Germany, and the United States.* – *Ethnic and Racial Studies*. Vol. 28. No. 1. P. 20-49. DOI: <https://doi.org/10.1080/0141987042000280003>

³ Сорокин П. А. *Социокультурная динамика.* - Москва: Директ-Медиа, 2007. - 344 с // Сорокин П.А. *Человек. Цивилизация. Общество.* - М.: 1992. С. 429, с.30.



Moreover, since the revival of nationalism became a global phenomenon, it gave rise to a paradoxical combination of the processes of globalization, modernization and fundamentalism. That is, to a certain extent, others are forced to consider visitors as “strangers, uninvited guests.”⁴ In general, the process of increasing complexity of the world, ethno-confessional “awakening”, growing contradictions of the traditional view of the world still creates the need for “rational management of the criteria of social and transcultural integration relations.”⁵

To develop adequate mechanisms for the coexistence of cultures, the proposed theoretical constructions require detailed analysis. A complex system of methods is used for this. We used diachronic and synchronic research methods. Cross-cultural analysis of problematic identification is necessary and requires a differentiated approach to objective and subjective factors of ethnic, religious and regional indicators of self-awareness. The above determines the need to develop new principles for identity formation. The urgent need is to focus on the gradual transformation of the interdependence of regional, national and civic values and correct self-identification at all levels.

Currently, the driving motive for migration is considered to be globalization processes, trends in transcultural and ethnocultural integration of different nationalities and peoples. Sociological research shows that migration creates the basis for the emergence of national conflict tensions and the interaction of cultures, bilingualism, social relations and problems between the local population. They do not have the opportunity to create educational, ethnocultural centers, communications, folk art, as well as national cultural centers⁶. Traditional newly formed ethnic and interethnic communities are left behind, increasing the escalation of the crisis, global problems and exacerbating social consequences.

Long-term migration processes in Western Europe create conflict situations when migrants do not correspond to the stereotypes of “cultural nature” and “social climate” due to differences in mentality and behavior, but, on the contrary, are alienated⁷. As a result, ethno-migration marginality acts as a transformer in the form of the process of forming a transitivity subculture with its own interests and values, and patterns of behavior in various spheres of life. However, it is natural that the adaptation of ethnic migrants to the social environment and the potential for reintegration into ethnocultural processes will complicate their adaptation to a new, non-traditional social environment and participation in socio-economic relations in the societies that host them. It is necessary to improve social mechanisms related to the development of international programs related to the integration of evolutionary, complex system and ethnocultural ties, as well as the development of the activities of non-governmental organizations that implement them. Due to the complexity of the adaptation process, many immigrants experience transgression of their forms of identity, which leads to the emergence of a “transcultural identity” with a fragmented understanding of their ethnic origin. At the same time, its most important feature is the need for “a claim to originality, a struggle for originality.”⁸

Migrants may go to a particular country to find work and residence, but they find it difficult to integrate into the ethnocultural life and lifestyle of that society. Because many migrants cannot understand the rules of customs of the new society and their “*social language*”⁹. In this regard, it is necessary to rely on the opinion of the head of the Federal Agency for National Affairs of Russia I.V. Barinov: “To ensure that foreign citizens do not feel alienated and lonely in Russia, it is necessary to develop the concept of a unified approach to the sociocultural adaptation of migrants.”¹⁰

Focusing on their historical aspects and analyzing them, different ethnocultural groups living in the same territory created a unique cultural type, characterized by tolerance towards other ethnic components. As a rule, this is possible thanks to long-term coexistence in the same natural conditions, which leads to joint activities, family life, material and spiritual culture. As a result of this interaction, cross-cultural landscapes are formed and function; a new form of cultural identity, i.e. transcultural, means going beyond one’s own culture and the spread of pure identities.

⁴ В. Н. Архангельский, А. Э. Иванова, Л. Л. Рубаковский. - Санкт-Петербург: "Экон-Информ", 2016. 307 с.

⁵ Kostina A. *Mass culture as the Phenomenon of Post-industrial society. Monograph* //Moscow: Publishing house LKI [In Russian]. – 2011.352 p.

⁶ Dörrenbächer C., Geppert M. (ed.). *Politics and power in the multinational corporation: The role of institutions, interests and identities.* – Cambridge University Press, 2011. 346 p.

⁷ Romanova, A. P., Khlyshcheva, E. V., Yakushenkov, S. N., & Topchiev, M. S. (2013). *Alien and cultural security.* Moscow: ROSSPEN. 49 p.

⁸ Malakhov, Vladimir S. "Cultural differences and political boundaries in the era of global migration." М.: Новое литературное обозрение (2014).

⁹ Қаранг: Савоскул М.С. Стратегии адаптации этнических мигрантов в локальных сообществах./ М.С.Савоскул// Мониторинг общественного мнения. –2011. -№ 5 (105). - С. 103.

¹⁰<http://ru.sputniktj.com/migration/20170127/1021590227/rossiya-migranti-adaptacija.html>



In such a process, identification is compensatory in nature and leads to “mobile marginality”, the introduction of methods to combat assimilation practices, an organization based on the principles of tolerance, and universal humanistic-democratic norms that are strategically important for the state.

G.V. Babakov says that the indicator of marginality does not correspond to traditional ideas and motives for the typical behavior of representatives of a certain nation. As a result of migration, migrants develop a special marginal subculture. As a result, a new phenomenon of *transcultural identity* is being formed¹¹. At the same time, during the loss of traditional ethnic values, new models of behavior were introduced that were not characteristic of the ethnic ethics of traditional peoples or the positive values of modern civilization, but of the negative behavior and vices of industrialized civilization. societies began to spread widely among marginalized sections of the population. In most regions of the world, it can be observed that such reflections on the history of the coexistence of ethnic groups and cultural belonging to other peoples have not led to the transformation of ethnocultural values even during the exchange of generations. For example, he highlighted the actual increase in the number of newly arrived Muslim migrants in Europe and their cultural similarities with the indigenous population¹². The identity policy of states is focused on creating an image of ethnocultural mobility in modern society and supporting the image of preserving the transcultural identity of a migrant. Therefore, the attitude towards the “stranger” and the main characteristics of his image become “important indicators of the level of social organization of any society.”¹³. According to the results of the research, 20.2% of respondents said, that when they find themselves in a problematic situation, they turn to their close friends who come to work with them, 35% said that they solve the situation personally, without telling anyone, and 15.2% turn to non-governmental organizations (medical services, etc.), 8.9% contacted the embassy and consulate of our country¹⁴. From this point of view, residents of a heterotopic region, no matter how conservative they may be, are forced to adapt to new conditions and “commit an act of transgression,” that is, to go beyond traditional behavior¹⁵. At the same time, the state of alienation deprives a person of social support and leads to adaptation problems, which negatively affects his ability to integrate. This phenomenon, in turn, influences the process of changing the traditional view of the world and leads to the violation of various stereotypes, the emergence of new forms of identity, and a high level of intercultural communication.

Thus, in the monograph by Zh. Ochilov “Stages of formation and development of global technogenic civilization” it is said that the continuity of cultural factors to the historical heritage was the basis for the globalization of technogenic civilization:

- 1) social and spiritual environment;
- 2) retrospective basis;
- 3) intellectual abilities;

it is reasonable to think that it is shaped by factors and foundations such as the institutional system¹⁶.

Regarding the *integration of transcultural connections and migration development trends*, the following conclusions can be drawn:

- **firstly**, the institutional system of the world ideological landscape is the basis and result of the integration of the social image of migrants at the international level, political and legal, general tolerant relations, regardless of their ethnocultural affiliation;
- **secondly**, it specifically demonstrates the national-mental identity of the well-being and lifestyle of the world community, self-expression, commonality of historically established customs and values, integration of transcultural ties of migrants;
- **thirdly**, in the context of globalization, transcultural and general sociological patterns and paradigmatic parameters for the integration of ethnocultural relations of migrants require consideration in the context of migration processes;
- **fourthly**, the integration of ethnocultural relations formed as a result of the historical evolution of migration processes necessitates the definition of new principles for the formation of identity based on history, religion, mentality and universal citizenship, allowing adaptation to new sociocultural conditions. conditions;
- **fifthly**, the formation of transcultural identity allows us to determine the changes leading to the formation of levels of identity that occur in the process of relationships between different groups, individual cultures, traditional worldviews in the space of cultural diversity.

¹¹ Dörrenbächer C., Geppert M. (ed.). *Politics and power in the multinational corporation: The role of institutions, interests and identities*. – Cambridge University Press, 2011. 222 p.

¹² Қаран: *Muslims in Europe. A Report on 11 EU Cities*. 2010. New York, London, Budapest: Open Society Institute. 2010. p. 256.

¹³ Романова, А. П., Khlyshcheva, E. V., Yakushenkov, S. N., & Topchiev, M. S. (2013). *Alien and cultural security*. Moscow: ROSSPEN. 18-35 p.

¹⁴ 2022 йил Фарғона, Андижон, Наманган вилоятлари кесимида 5-10 йил хориж мамлакатларига ишлаб келган мигрант-респондентлар орасида биографик метод асосида ўтказилган социологик тадқиқот натижалари.

¹⁵ Topchiev M.S., Dryagalov V.S., Yakushenkova O.S. *The Problem of the Youth's Religious Identity Formation in the Frontier Territories of the Northern Caspian Sea Region: Contemporary Aspect* // *Man In India*. 2016 №96(12). 5481-5502 p.

¹⁶ Очилов Ж. Глобал техноген цивилизациянинг шаклланиши ва ривожланиши босқичлари. – Тошкент: “Turon zamin ziyo”. 2017. 55 бет (159).



According to many experts, the modern social factor of time, changes in the ethnic structure of a certain region of Russia and the CIS countries significantly reduce the sensitivity and adaptive socio-psychological potential of ethnic groups, since they are subject to “culture shock”, which is a characteristic feature of migration and urbanization movements, what else raises more concerns about national security.

The traditional mentality is not completely preserved, but its special severity increases, and socialization in the new environment becomes more difficult. According to him, along with natural cultural exchange and habituation, cultural isolation of the parties occurs through the daily contact of the main population with migrant communities¹⁷. The inability to fully reintegrate into the host society leads to the formation of a special *marginal culture* in the newcomer community, which further weakens the possibilities of intergenerational integration. The concentration of migrants gradually reaches a critical point, and after this the massive new social essence of foreign migrants begins to acquire a universal character¹⁸. Culture has a holistic, systemic nature, and changes in its individual, even basic elements, especially over a long period of time, have only negative social consequences for the ethnic group, destroying ethnocultural identity, without having a relative character¹⁹.

Professor of the University of Bonn S. Pogorelskaya calls this situation the “War of Cultures” and “the *ethnocultural landscape of migration* that has emerged in prosperous European countries becomes the basis for determining the paradigmatic directions of socio-political development, increasing the escalation of global problems and increasing their social consequences.”²⁰ Because today the subordination approach is of great practical importance in ensuring the harmony of objective and subjective factors, the legal foundations of transcultural factors, moral and ethical aspects, and the legality of the development of the institutional management system. In Germany, fear of immigrants trumps environmental problems and fear of crime. About 3 million Muslims live in the country, 3,000 mosques have been opened, about 100 of them are under the control of the security services in connection with the propaganda of Islamization. The results of the study show that the current generation of adult Muslims in European countries is more religious than the previous generation²¹. Also, religion, language, geographic origin and other social characteristics of people do not exclude their ethnocultural specificity. But we see that the priority of ethnocultural values disappears among the next generations of migrants.

In this case, the norms of international law, geopolitical, economic, historical and cultural characteristics of the territories of migration, socio-economic development and environmental situation in the regions, ethnocultural compatibility, ethnopsychology and specific characteristics of migrants must be taken into account. Migrants want recognition of their “historical” national culture and unique way of life, but sometimes this requires the creation of integrative and institutional mechanisms to control large distance differences between representatives of different cultures.

To develop adequate mechanisms for the coexistence of cultures, the proposed theoretical constructs require careful analysis.

Without it, there should be special preferential treatment for Russians living in the CIS countries, because ethnolinguistic policies in them will worsen. In the field of ethnocultural factors of migration processes, special knowledge is needed to further improve the activities of competent government bodies and ensure ethnocultural security. Therefore, it is appropriate to recognize it as an integrating factor by representatives of the Ministry of Culture, sociologists, ethnologists, criminologists, and specialists in the field of comparative law who conduct ethnocultural examination of draft laws in the field of migration. and monitor the implementation of the law on ethnocultural security.²²

In conclusion, we emphasize that the stages, directions of the historical development of migration, the transition from one sociocultural paradigm to another serve to concretize its functional meaning and become a universal factor.

The tendency of increasing migration processes leads to a decrease in the level of ethnocultural security; in the near future, regions-transcultures-enclaves may appear, living in conflict with border countries. Therefore, any country requires in its migration policy the need to minimize the risks of ethnocultural security. This also requires taking into account the potential associated with the

¹⁷ Рыбаковский Л. Л. Трансформация миграционных процессов на постсоветском пространстве. – Москва: Академия, 2009. 110-111 с.

¹⁸ Романова, А. Р., Khlyshcheva, E. V., Yakushenkov, S. N., & Topchiev, M. S. (2013). *Alien and cultural security*. Moscow: ROSSPEN. 107-130 p.

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²¹ Savvinskii, I. (1900). *Armenians in the Astrakhan Diocese and the attitude of local archpastors to them in the 18th century*. Astrakhan: Typography of V.L. Egorov, opposite the District Court. (Архив маълумотлари 1900 й.)

²² Костина, А. В. *Массовая культура как феномен постиндустриального общества / А. В. Костина. – Москва : ЛКИ, 2011 102 с.*



choice of a paradigm of national-cultural development based on common goals, interests, and needs formed as a result of the ethnocultural and historical evolution of migration processes.

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PSYCHOLOGICAL DESCRIPTION OF THE PROBLEM OF ORIENTATION TO PROFESSIONAL ACTIVITY IN PERSONAL NEEDS

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ANNOTATION

A need is in some sense a desire to own something, and an interest is a desire to get to know it. A person's orientation to professional development is manifested primarily in interests related to cognitive activity and the development of professional skills. It is also important that personal characteristics match the type of activity that the young person is interested in under the influence of various social and cultural factors. In the process of professional education, which is an important condition for professional success in the future, in order to successfully acquire professional knowledge and skills, it is necessary to create conditions to provide the opportunity for a person to change his choice and character traits in stages. The article describes the psychological description of the problem of the manifestation of professional orientation in the system of personal needs.

KEYWORDS: *personality, personality orientation, needs, individual-psychological characteristics, motive, motivation, interest, ability, professional orientation, skills, social factors, cognitive processes, professional success, age characteristics, professional prognosis.*

In modern conditions, the individual-psychological characteristics of a person play a crucial role in preparing qualified specialists. These psychological qualities are of great importance in shaping a person's professional identity.

Understanding and developing a person's directionality plays a significant role in correctly orienting their professional activities, organizing educational activities effectively, finding one's place in society and the state, and leading a successful life. The connection of individuals' life plans and values with the uncertainty of future events (as a fairly accurate description of future events that are socially significant and related to the individual meaning of life) and their relationship with their unique characteristics can exert a negative influence on self-determination in the process of determining one's fate. Therefore, M.R. Ginzburg, considering the issue of determining one's fate from a temporal perspective, expressed his attitude towards the person's psychological present and psychological future and came to the following conclusions. In other words, the importance of the following characteristics is characterized in achieving success and self-determination:

1) The presence of psychological present components performing the function of self-development (self-awareness and self-learning functions), including:

- A structured value-semantic core (a wide range of personal important qualities, the experiential richness of their life, an existential orientation);

- The need for self-creation and the need for broad horizons to be met with self-confidence;

2) The presence of psychological future components providing semantic and temporal continuity, including:

- Personal prognosis for the future, the person primarily considers the wide range of future qualities from an emotional perspective, which guarantees their success in self-determination during their formative period. The choice of profession (the stability, the determination of a specific profession, the availability of professional requirements) significantly characterizes the semantic future and the success of self-determination during the formative period;



- Planning, primarily characterized by positive attitude towards planning and the presence of goals, methods of achieving goals, and time management 2.

The author raised the issue of introducing oneself in relation to one's personal, related value-semantic and phase-temporal aspects. This problem is related to future issues and it is difficult to implement this idea without creating a life plan.

According to the words of I.S. Kon, life planning, in the precise meaning of the word, implies not only the final result but also ways to achieve it, a path chosen with the aim of entering life, subjective resources are necessary 1.

The concept of "personality orientation" introduced by S.L. Rubinstein primarily addresses the identification of various directions. Specifically, psychological literature presents and describes personal, collectivist, entrepreneurial, humanistic, egoistic, depressive, and suicidal orientations. Understanding a person's professional direction plays a special role.

When referring to professional orientation, primarily focusing on a person's professional activity. Specifically, career choice includes motivational formations that affect the desire to work (interests, needs, aspirations, fears, and others) as a whole, and satisfaction with professional activities is understood from career-oriented training perspective. It is described with the following subjects:

- Types of motivational formations in professional activity;
- The power of professional orientation that shows itself in the degree of manifestation of a person's acquisition and desire to work in it;
- Satisfaction or dissatisfaction of a person with their own profession is expressed in the form of the described signs.

The mentioned psychological characteristics contribute to the individual's ability to quickly enter and adapt to professional activities. By learning and developing these characteristics, the effectiveness of professional activities can be improved.

In terms of orientation, various attitudes and inclinations exist, which are expressed in psychological education as components of individual-psychological characteristics. Orientation is considered one of the most important psychological characteristics, as it represents the dynamics of an individual's social and spiritual development and reveals the main tendencies of their behavior. The individual's orientation is the key psychological characteristic that expresses their motives for life and activity.

In psychology, it is generally recognized that the central component of the individual's structure, shaping its system, is its orientation. It precisely highlights the purposes an individual moves towards, their motives, and their subjective attitudes towards various aspects of life.

Orientation not only affects the structural components of the individual (such as the manifestation of temperament or the development of abilities) but also influences intellectual states (e.g., coping with stress). Orientation is expressed in various forms: value orientations, attraction or aversion, desires, fears, and connections. It manifests itself in various areas of human life: professional, family, political, and personal, among others. In these orientations, an individual's motives, their subjective attitudes towards different aspects, that is, the entire system of characteristics, are expressed. In general, in psychology, the orientation of the individual is defined as a system of stable needs, interests, and ideals. Orientation determines the main tendencies of thoughts and actions. A person with a pronounced positive orientation is considered hardworking, purposeful, and socially active.

Indeed, by learning the individual's orientation, it becomes possible to understand their work capacity, interests, and aptitudes in choosing a profession. As a result, it provides an opportunity to match positions in the work system with competent personnel.

Regardless of the differences in personality assessment, all approaches emphasize the individual's orientation as a key characteristic. It manifests itself in different ways through various concepts. For example, "dynamic tendency" (S.L. Rubinstein), "meaning-generating motive" (A.N. Leontiev), "dominant attitude" (V.N. Myasishchev), "main life direction" (B.G. Ananyev), or the "dynamic combination of significant human forces" (A.S. Prangishvili). Thus, orientation is the general characteristic of an individual, defining their psychological structure. The totality of sustainable motives that govern the individual's activity is referred to as their orientation. It is socially conditioned and shaped through education.

As mentioned above, the individual's orientation, with its various forms, helps to identify their general characteristics and psychological structure. The main role of the individual's orientation is related to positive motives. The function of a motive is to direct activity towards accomplishing tasks. However, starting and sustaining activity solely with "spurring" is not enough. It needs to be put into action. Another task of a motive is to shape the meaning and raise the motive concept to a personal level.

Without a meaningful personal concept, an encouraging motive will not work. There will be no activity, and the motive will remain unrealized.



To properly understand how to develop motivation and the needs of an individual in a particular field, their orientation is partly described, which serves as the basis. In this foundation, the individual's life goals are formed. It is important to differentiate between the goal of an activity and the life goal. Throughout life, a person engages in various types of activities, each with its own unique characteristics and aimed at achieving different goals. The life goal functions as a combination of all personal goals related to individual activities. The degree of personal achievement is linked to life goals. It not only reflects the goal but also interprets reality as the individual's personal perspective.

Personal disappointments and feelings of anxiety are referred to as frustration. They arise when an individual encounters insurmountable obstacles or reacts negatively to them. Orientation refers to a stable set of motivations, expectations, beliefs, needs, and satisfactions that guide individuals towards achieving complex life goals. Orientation is always shaped socially, in the process of education and upbringing, manifested as a personal trait, in hypothetical, professional directions, in activities related to personal preferences, as well as in leisure time activities (fishing, reading, photography). Orientation is evident in the benefits to the individual in all types of activities. Personal needs play a significant role in the system of personal orientation, representing a complex intellectual characteristic and playing a leading role in the system of personal orientation. Likewise, the motivational system, which consists of a set of motivators determining individual activity and their attitude towards outcomes, holds particular importance. The system of personal orientation encompasses the following main elements:

- Assessment of one's own capabilities and state, based on semantic forms
- Expectation of the results of one's actions, personal actions, and others' perception of the individual;
- Personal needs or requirements - an inseparable form of expressing evaluative characteristics, the degree of self-esteem, and their nature.

This is connected to objective conditions of personal states, objects of human needs, as well as to the semantic and evaluative system, their relationships, and other personal characteristics. The emergence of specific needs in an individual determines the establishment of goals and the appearance of motivations for their realization. Humans are always striving for goals, taking action, and seeking. From this perspective, positive qualities arise in individuals, but negative ones can also manifest. In our daily activities, enhancing positive qualities leads to success in collective efforts. Personal orientation can be expressed in career, ethical, political, and other personal directions, such as entrepreneurship, sports activities, and more.

Personality orientation is described by the following:

- Level of maturity - the individual's basic instincts, their moral character, their ideological position, and the social importance of others;
- Breadth - the range of areas in which the individual's instincts manifest;
- Intensity - the strength of the individual's instincts in achieving their goals;
- Hierarchy of particular individual orientations (primary types, main, dominant, and others).

These types of personality orientations continue to hold value today and contribute to the individual's professional development. Even Charles Darwin recognized that human reactions and actions are based on a complex mechanism, and at the same time, the majority of human behavior is guided by social norms. For example, instinctive reactions that can be triggered by physiological influences such as fear, escaping danger, or self-defense can be managed and controlled by human consciousness. Furthermore, medical research shows that these emotions can be weakened or strengthened through various means of psychological manipulation. Therefore, they are not solely determined by automatic mechanisms. On the contrary, every aspect that is considered automatic is not inherently automatic; conversely, every aspect that is considered automatic is not exclusively unique for humans. Consequently, experiences and emotions that arise from external and internal factors typically manifest in individuals in a manner consistent with the accepted norms of society.

Various scientific studies emphasize personality orientation as a primary characteristic, a dynamic tendency (S.L. Rubinstein), a meaning-generating motive (A.N. Leontiev), a dominant relationship (V.N. Myasishchev), and a primary direction of life (A.S. Prangishvili).

In conclusion, it is worth noting that Personality orientation is recognized by Western scholars as a key psychological characteristic. Personality orientation plays a significant role in our lives and activities, shaping and developing individuals into competent and successful individuals in their respective professions.

Moreover, the main aspects of personality orientation can lead to positive or negative outcomes in professional activities. The individual's personality orientation is closely related to positive motivations. The individual's personality orientation is shaped and developed throughout social and psychological aspects of education, upbringing, and work activities.



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