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DEVELOPMENT AND VALIDATION OF A STABILITY-INDICATING REVERSED-PHASE HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY (RP-HPLC) METHOD FOR ASSAY OF PRUCALOPRIDE DRUG SUBSTANCE

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ABSTRACT

A reverse phase-high-performance liquid chromatography method can measure tablet Prucalopride content. This procedure is simple, accurate, economical, reliable, and powerful, and it may be repeated. The amount of Prucalopride in a pharmaceutical was previously determined using UV spectroscopy and a few HPLC methods (4.73 minutes' retention time). New RP-HPLC technique can evaluate bulk and prescription Prucalopride drugs with a shorter retention duration than existing methods. The separation employed RP-HPLC with a mobile phase of 30% Orthophosphoric acid and 70% methanol (v/v). The mobile phase was moved at 1 mL/min, and UV was measured at 225 nm. Prucalopride retained 1.5 minutes under chromatographic conditions. This method was evaluated against ICH standards to assure accuracy, consistency, and reliability. In stress testing, various breakdown products were created. This comprised acid, alkali, boiling water, hydrogen peroxide, dry heat, and UV light. Prucalopride tablets and mass may be evaluated using the specified chemical method.

KEYWORDS: Prucalopride, RP-HPLC, Spectrophotometry, ICH, UV

1 INTRODUCTION

In high performance liquid chromatography, often known as HPLC, the separation of compounds may be accomplished by using a stationary solid phase in conjunction with a mobile liquid phase. This technique also goes by the name of high pressure liquid chromatography (HPLC), which is another term for it. The speed, specificity, accuracy, precision, and automation-feasibility of the HPLC technique make it an excellent choice for the analysis of a wide range of multicomponent dosage forms. This is because the HPLC method may be used to separate out individual components of the dose. The time-consuming processes of extracting and separating chemicals may be avoided with the use of a technique known as high-performance liquid chromatography (HPLC), which is an analytical technique. Prucalopride, a pharmacological medication, has been given the green light for use in the treatment of persistent constipation in female patients. Prucalopride is the medication of choice for the treatment of chronic idiopathic constipation (CIC), a functional gastrointestinal disorder that lasts for an extended period of time (1, 2).

Prucalopride acts as a selective agonist of serotonin receptors. This is what it does. It's probable that this compound is a dihydrobenzofuran carboxamide of a very high purity. This procedure enhances the motility of the colon, which in turn improves bowel function. The production of acetylcholine is boosted all the way through the gastrointestinal tract. In the evaluation of the literature about Prucalopride, there were only a few UV spectroscopy methods and one High Performance Liquid Chromatography (HPLC) technique mentioned. As was noted in the introductory materials, the primary objective of this research was to investigate strategies to reduce the amount of time that subjects were had to wait before being processed. The RP-HPLC technique of liquid chromatography served as the primary means of chemical differentiation throughout this investigation. For the purpose of treating Prucalopride, the chemical compound known as 4-amino-5-chloro-2, 3-dihydro-N-[1-(3-methoxypropyl)-4-piperidinyl] (PRU) is used (3).

According to the drug's chemical nomenclature, it is possible that the compound in question may be identified as 7-benzofurancarboxamide butanedioate. This substance is a member of the benzofuran family of chemicals. The pharmacological effects of the compound under investigation are brought about through enterokinetic regulation of the 5-HT₄ receptor. The



compound under investigation is a derivative of dihydro benzofuran carboxamide. The abdominal muscles are significantly affected as a result of this. As a result, it facilitates the restoration of normal function to the digestive system. Even while the amount of time spent in the stomach remained basically the same, there was an increase in the number of times that bowel motions occurred (4, 5).

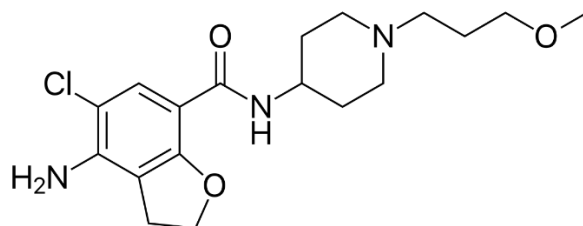


Figure 1 Structure of Prucalopride

Only a few number of analytical techniques that can be used for the purpose of quantitatively analyzing pharmaceutical formulations have been published in the relevant body of academic research. A few examples of such techniques are UV-spectrophotometry, high-performance liquid chromatography, and ultra-high-performance liquid chromatography–mass spectrometry. Since there is little evidence supporting the HPTLC method's reliability, its application is limited. The primary objective of this study was to develop and verify a novel HPTLC technique for assessing the stability of Prucalopride in pharmaceutical goods. This objective was one of the key goals of this research. This technique was developed to provide a straightforward, fast, and selective approach to evaluating the drug's long-term stability (6-8).

The stability-indicating reversed-phase high-performance liquid chromatography (RP-HPLC) approach for routine analysis of Prucalopride in either bulk or pharmaceutical (tablet) forms is not included in any of the world's pharmaceutical databases. In order to effectively mitigate the quality-related issues that are associated with pharmaceutical companies engaged in the production of Prucalopride, it is essential to develop an analytical methodology that is capable of consistently evaluating the quality characteristics of both tablet formulations containing Prucalopride and Prucalopride in its bulk form. This study is devoted to the systematic development of a validated reversed-phase high-performance liquid chromatography (RP-HPLC) technique for the detection of Prucalopride concentrations in tablet formulations and commercially made items. This approach will be used in this research. This approach is differentiated from others by its user-friendliness, its cheap cost, its great precision and accuracy, its high robustness, and its high repeatability (9).

2 MATERIALS AND METHODS

2.1 Chemical and Reagents

Prucalopride was provided in its original form by Alkem laboratories in Mumbai, India. In this analysis, researchers employed the medication Prudac 1 (Zydus Cadila, India). The pills, which were purchased from a local vendor, were confirmed to contain 1 milligram of Prucalopride each. The research made use of AR-grade acids and toxins. (Merck Specialties Private Limited's headquarters are located in Mumbai, India.)

2.2 Chromatographic Conditions and Equipment

The study was done with a UV monitor built into a Shimadzu LC_2010 CHT HPLC. The signal at the output was watched and changed with the help of the LC solution program. The C18 (150mm × 4.6mm, 5 μ) chromatographic column was used. Gradient filtration was used to do the study. As the mobile phase, 85:15% v/v ACN was mixed with ammonium acetate, which had its pH changed to 5.0 with glacial acetic acid (10).

2.3 Instrumental Parameters

The gradient's mobile phase flow rate was held constant at 1 ml/min. 20 μ L were injected. The sample was run for 10 minutes at 215 nm under close observation. The sample was held for a total of around 2.519 minutes.

2.4 Determination of Wavelength

The standard stock solution (B) was diluted many times using a diluent, and the spectrum analysis was performed from 400 to 200 nm. Absorbance's of note at 227 nm, 254 nm, 277 nm, 296 nm, and 309 nm were used to construct the spectra.

2.5 Preparation of Standard and Test Solutions

2.5.1 Preparation of Stock Solution

A stock solution of 1000 μ g/ml was prepared by adding 100 mg of Prucalopride to 100 ml of methanol and shaking the vial (11).



2.5.2 Preparation of Working Standard Solutions

After transferring the standard stock solution into 10 volumetric containers at intervals of 0.25, 0.50, 0.75, 1.0, 1.25, and 1.5 ml each, a working standard solution was created. Due to the fact that the volume was set aside for the mobile phase, the resultant concentration was anywhere between 25-150 µg/ml.

2.5.3 Preparation of Sample Solutions

Take 20 tablets (20 mg) of the commercial preparation and determine the weight of the average content. A weight equal to 20 mg prucalopride was transferred to a 100 ml volumetric flask and dissolved in methanol. The solution was sonicated and filtered through Whatman filter paper. Average tablet weight was calculated as 113.2 mg.

2.6 Forced degradation study (12-15)

Forced degradation studies of these chemicals were carried out under acidolysis, alkaline, neutral, oxidation, thermal and photolysis degradation conditions.

2.6.1 Acid Hydrolysis

Use 2 ml of prucalopride stock solution in a 10 ml volumetric flask and force it to degrade in an acidic environment. Add 2 ml of 2N HCl to the beaker and leave at 80°C for 30 minutes. Then neutralize with 2N NaOH and dilute to volume with mobile phase. Solution is 100 µg/ml.

2.6.2 Alkali Hydrolysis

Transfer 2 ml of prucalopride stock solution to a 10 ml volumetric flask to force degradation in alkaline media. Add 2 ml 2N NaOH to the beaker and store at room temperature. 2 hours at 80°C. Then neutralize with 2N HCl and dilute to volume with mobile phase. Solution is 100 µg/ml.

2.6.3 Neutral Hydrolysis

For forced degradation of neutral hydrolysis, take 2 ml of prucalopride stock solution into a 10 ml volumetric flask. Add 2 ml of HPLC grade water to the vial and leave at 80°C for 2 hours. Dilute to volume with mobile phase. The solution is 100 µg/ml.

2.6.4 Oxidative Degradation

Place 2 ml of prucalopride stock solution into a 10 ml volumetric flask and force degradation under oxidative conditions. Add 2 ml 10% H₂O₂ to the bottle and let sit at 80°C for 30 minutes. Dilute to volume with mobile phase and shake well. Solution strength is 100 µg/ml.

2.6.5 Thermal Degradation

For forced degradation during thermal degradation, weigh 10 mg prucalopride and place at 70 °C for 8 hours. After exposure, mix the powder and transfer to a 10 ml volumetric vial, dissolve in methanol and dilute to the mark with diluent. Make final dilution with standard diluent to obtain a final concentration of 100 µg/ml.

2.6.6 Photolytic Degradation

Photolytic error degradation, 10 mg prucalopride is weighed and exposed to 254 nm for 24 hours. After exposure, mix the powder and transfer to a 10 ml volumetric vial, dissolve in methanol and dilute to the mark with diluent. Make final dilution with standard diluent to obtain a final concentration of 100 µg/ml. Inject 20 µl of the above solution into the HPLC system and analyze according to the specified chromatography conditions.

2.7 Method Validation (16-18)

2.7.1 Linearity and Range

The experiment included adding various volumes of standard solution to volumetric flasks of 10 ml: 0.25, 0.50, 0.75, 1.0, 1.25, and 1.5 ml. Concentrations of 25-150 µg/ml were achieved by diluting the contents of the flasks with methanol. Three separate 20-µl aliquots of each solution were analyzed by chromatography, and a more refined procedure was used each time. By plotting the average area of the Prucalopride peak vs drug concentration, a regression equation may be generated.

2.7.2 Precision

2.7.2.1 Intra-day Precision

We analyzed standard solutions of Prucalopride at 50, 75, and 100 µg/ml to determine the precision of measurements made within a single day.



2.7.2.2 Inter-day Precision

The accuracy across days was determined by testing SAR reference solutions from 50 to 100 µg/ml on three separate occasions. Prucalopride RSD was calculated to be a certain proportion.

2.7.3 Accuracy

The degree to which a measurement or computation is correct is referred to as its precision (2.7.3). It quantifies how The reliability of the experiment was evaluated by determining how much Prucalopride was recovered using the standard addition method. Prucalopride 100 µg/ml standard solutions were made by adding 4.0, 5.0, and 6.0 ml of a known volume to a 2 ml sample solution of Prucalopride of the same concentration. The resultant solution was diluted with methanol to the 10-milliliter mark in a volumetric flask. Each solution was injected three times, and recovery was calculated by inspecting the slope and intercept of the calibration curve's regression equation at their respective peaks.

2.7.4 Limit of Detection and Limit of Quantification

In order to determine the drug's LOD and LOQ, the recommended formulae from the International Council for Harmonization of Technical Requirements for Pharmaceuticals for Human Use (ICH) were used.

$$\text{LOD} = 3.3 \sigma/s \text{ and } \text{LOQ} = 10 \sigma/s \text{ were found.}$$

Where, σ is the SD of the response, S is the slope of the calibration curve.

2.7.5 Robustness

Robust studies have been conducted to evaluate the effects of small but intentional changes in chromatographic conditions. Power is controlled by the difference of four small variables such as flow rate (1.0 ± 0.2 ml/min), organic level (70 ± 5 ml), injection volume (20 ± 5 µL) and pH (5.0 ± 0.5). was done. Check the area, HETP, tail factor, and retention time after injecting each sample. A 20 µL aliquot of the sample drug was injected under chromatographic conditions, the peak area was measured, and the % content was calculated according to the regression equation. Response is average of six determinations.

3 RESULTS AND DISCUSSION

3.1 Determination of Wavelength

Maximum absorbance (λ_{max}) at a wavelength of 277 nm was used to choose the drug for the investigation.

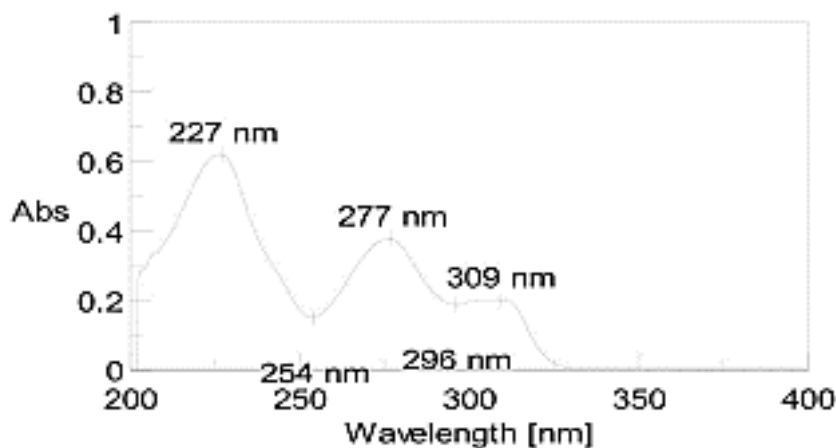


Figure 2 UV spectrum of Prucalopride

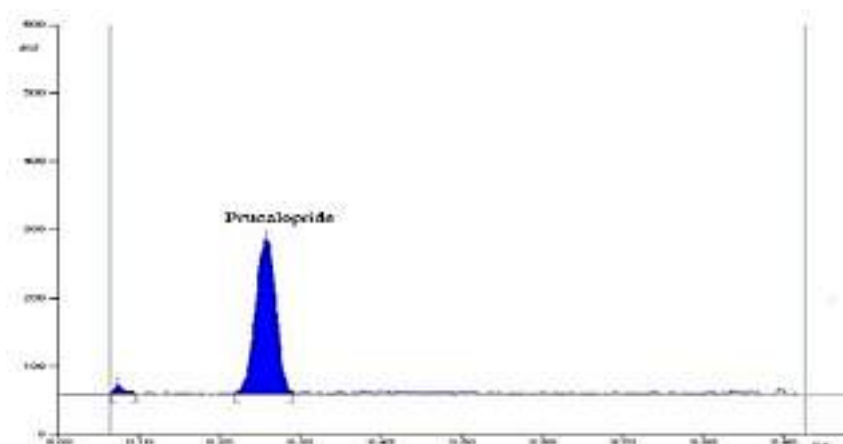


Figure 3 Densitogram of standard solution of Prucalopride

3.2 Method Development and Optimization of Chromatographic Conditions

The new research was developed through much trial and error and eventually Grace selected the most suitable cell (acetonitrile: 0.02 M potassium dihydrogen phosphate at a 20:80 v/v ratio) for 10 min chromatography at ambient temperature on C18. temperature (30 °C), the chromatography column (diameter 250 × 4.6 mm, particle size 5 μm) is used at a flow rate of 1 mL/min, and the detection wavelength is 277 nm. The selection of the C18 line was inspired by previous research. Elution was reached after (on average) 5,416 min for several consecutive experiments in isocratic mode (Figure 3).

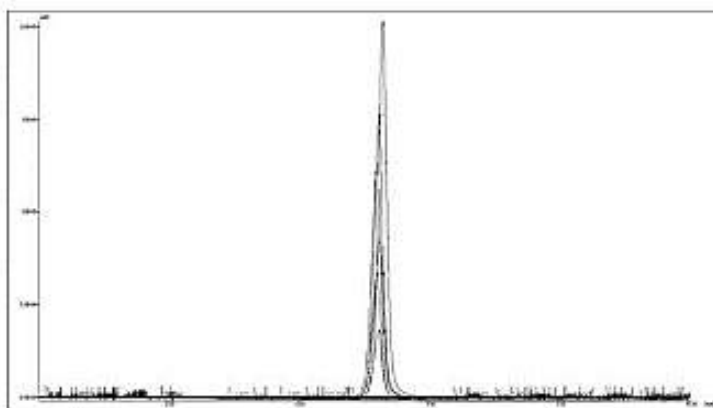


Figure 4 Chromatogram of Prucalopride obtained from multiple sampling

A low pH for the mobile phase is preferred because it lowers the peak, prevents breakdown of the silica reverse phase column, and increases the strength of the process. The pH value is similar to the pKa value to determine whether the solvent is in an ionized state, which is important to achieve high solubility. Therefore, it is necessary to choose pH = pKa up to 2 units. Short runs have many advantages in terms of solvent and time. The capsule sample measured a mean recovery of 99.17% with a %RSD value of 1.172 (Table 1). The chromatographic method facilitates routine analysis of large quantities of drugs and is precise, accurate and robust.

Table 1 Assay performed for tablet formulation sample of Prucalopride

S. No.	Peak area (4 μg/mL)	Amount recovered (μg/mL)	% Recovery
1	136135	4.060	101.500
2	132914	3.958	98.943
3	133381	3.973	99.314
4	132193	3.935	98.371
5	133565	3.978	99.460
6	135158	4.029	100.724
Mean	133891	3.989	99.719
SD	1472.75	0.047	1.169
% RSD	1.09996	1.172	1.172



3.3 Method Validation

The method was validated in compliance with ICH guidelines.

3.3.1 Linearity and Range:

Linearity Plot the calibration curve of 6 standard solutions with concentrations of 5-30 µg/mL. Each dilution is repeated over time, location is on the Y-axis and concentration is the amount on the X-axis. Linearity is measured by horizontal analysis as shown in Figure 5.

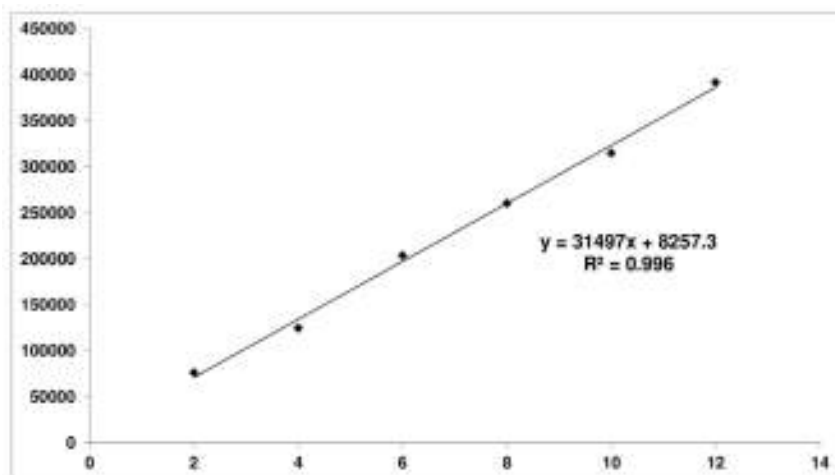


Figure 5 Linearity of Prucalopride

Table 2 Linearity study of Prucalopride

Conc. (µg/mL)	Replicates	Area	Mean	SD	% RSD
2	1	74890	76462	1369.939	1.792
	2	78630			
	3	75895			
	4	76530			
	5	76365			
4	1	123367	124788.6	2346.6	1.880
	2	125193			
	3	122465			
	4	128564			
	5	124354			
6	1	200993	203675	3026.817	1.486
	2	204564			
	3	201468			
	4	202865			
	5	208485			
8	1	265148	260540	4327.437	1.661
	2	262489			
	3	256412			
	4	255460			
	5	263191			
10	1	318986	315075.2	5707.997	1.812
	2	322102			
	3	307409			
	4	312564			
	5	314315			



12	1	398410	391874.2	6438.445	1.643
	2	385272			
	3	391456			
	4	385823			
	5	398410			

3.3.2 Accuracy

The estimation of the proportion of Prucalopride recovered by the chromatographic technique was derived from the created calibration curve, using the slope and Y-intercept of the graph, both of which have significant importance. The percentage relative standard deviation (RSD) values of 0.755%, 0.588%, and 0.482% conform to the permissible range of ± 2% as specified by the United States Pharmacopeia (USP) Pharmacopoeia.

Table 3 Recovery for accuracy studies for Prucalopride

Level	Conc. of sample solution (µg/mL)	Conc. of standard solution spiked (µg/mL)	Area	Amount recovered (µg/mL)	% recovery (mean ± % RSD)
50%	4	2	195951	5.959	100.173 ± 0.755
			198666	6.045	
			198080	6.027	
100%	4	4	257427	7.911	99.077 ± 0.588
			259554	7.978	
			256740	7.889	
150%	4	6	317558	9.820	98.575 ± 0.482
			320423	9.911	
			318236	9.842	

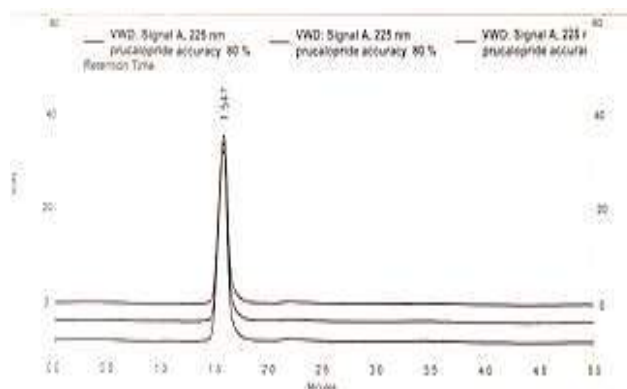


Figure 6 Chromatogram of accuracy 50%

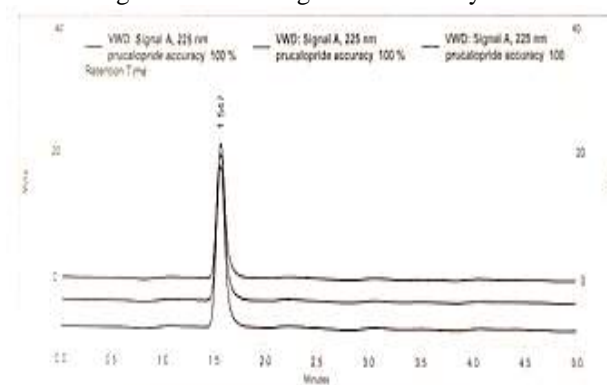


Figure 7 Chromatogram of accuracy 100%

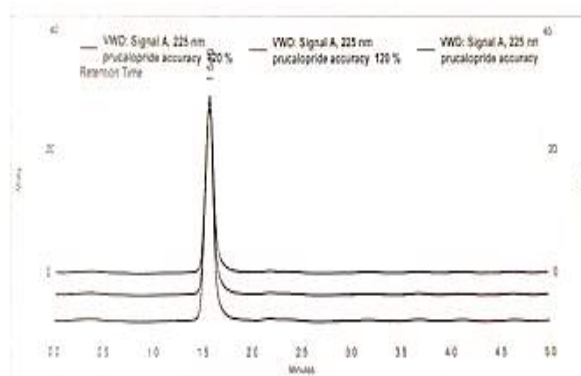


Figure 8 Chromatogram of accuracy 150%

3.3.3 Precision

The examination of intra- and inter-day variation for Prucalopride within the range of 6-10 g/mL shown a high degree of accuracy. There was agreement between the sample solution and the standard solution in terms of peak area, and the RSD stayed below 2%. For the purpose of analyzing daily fluctuations, the percentage relative standard deviations (RSDs) are listed in Table 4. The measured RSDs were 0.754, 1.032, and 0.482. Table 5 displays the findings of the investigation into the variability experienced across days, with the relative standard deviations (RSDs) coming in at 0.797, 0.559, and 0.524 percent. According to the results, the chromatographic method delivered a high degree of accuracy with a small margin of error.

Table 4 Precision data of intra-day variability.

Concentration (µg/mL)	Area	% recovery	SD	% RSD
6	198331	101.442	0.765	0.754
	201079			
	200485			
8	257518	99.919	1.031	1.032
	262707			
	259859			
10	321415	99.804	0.481	0.482
	324315			
	322102			

Table 5 Precision data of inter-day variability

Concentration (µg/mL)	Area	% recovery	SD	% RSD
6	198485	100.337	0.800	0.797
	198988			
	196155			
8	260529	100.758	0.563	0.559
	263191			
	262707			
10	318986	99.240	0.520	0.524
	322102			
	321415			

3.3.4 Robustness

The retention time of the chromatogram (shown in Figure 9) did not vary visibly when the flow rate, frequency, and composition of the mobile phase were altered. When the settings were altered, there was a marginal change in the amount of time it took to hold. High peak area, more than 2000 theoretical plates, and a tailing factor of 2% were all determined to be in compliance with the requirements of the USP pharmacopeia. The investigation confirmed the validity of the developed chromatographic technique.

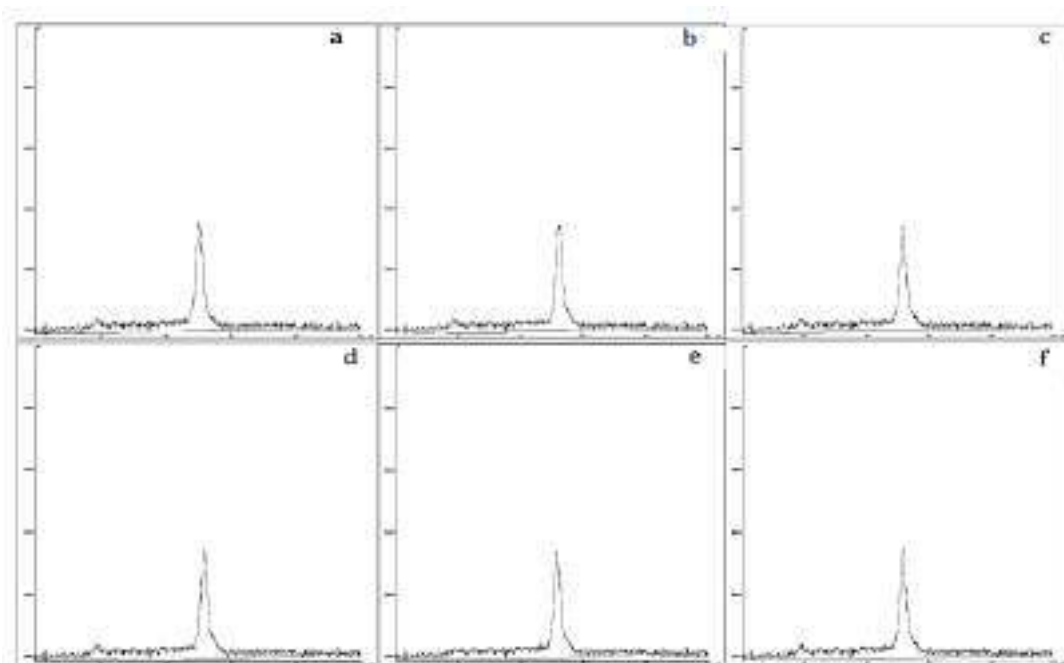


Figure 9 Robustness studies of Prucalopride: (a) Flow rate at 0.9 mL/min; (b) Flow rate at 1.1 mL/min; (c) Wavelength at 275 nm; (d) Wavelength at 279 nm; (e) Mobile phase composition 18:82 v/v; and (f) Mobile phase composition 22:78 v/v

3.3.5 Limit of Detection and Quantification

It was determined that 0.36 $\mu\text{g/mL}$ was the LOD for Prucalopride and that 1.111 $\mu\text{g/mL}$ was the LOQ. According to the results, the chromatographic method discussed in this paper can identify solutes with amazing sensitivity. The method has the capacity to identify huge volumes or very low concentrations of Prucalopride inside formulations.

Table 6 Validation Parameter of Prucalopride

Sr. No.	Parameter	Prucalopride
1.	Linearity Range	30 $\mu\text{g/mL}$
2.	Regression Line equation	$Y=27691x+ 914034$
3.	Correlation co-efficient	0.996
4.	Precision (%RSD)	
	Intra-day Precision	0.754, 1.032, and 0.482
	Inter-day Precision	0.797, 0.559, and 0.524
5.	Accuracy (%Recovery)	0.755, 0.588, and 0.482,
6.	Limit of Detection($\mu\text{g/ml}$)	0.367 $\mu\text{g/mL}$
7.	Limit of Quantification($\mu\text{g/ml}$)	1.111 $\mu\text{g/mL}$
8.	% Assay	101.1
9.	Robustness (% RSD of Assay)	0.85

3.4 Forced Degradation Studies

Others, such as photolytic action, peroxide treatment, neutral pH, temperature variations, acidic treatment, and base therapy, produced a deteriorated product between 2.1 and 3.4 minutes. A peak with distortion was seen around 2.1–2.3 minutes. However, the acidic and basic regimens' forced degradation chromatograms showed no significant peaks. However, the chromatograms of materials without oxidation, heat treatment, or UV radiation exhibited a clear peak with a retention time of 2.148 minutes. Figure 7 shows that the system deteriorated most when subjected to oxidative stress, as seen by the R_t values of 2.148 and 3.43 minutes. Acidic and basic therapeutic processes are well-studied. However, the mechanisms of oxidative stress, the main cause of deterioration, remain unclear. Despite this, oxidative stress may rupture weak connections and quickly remove protons from the therapeutic material.

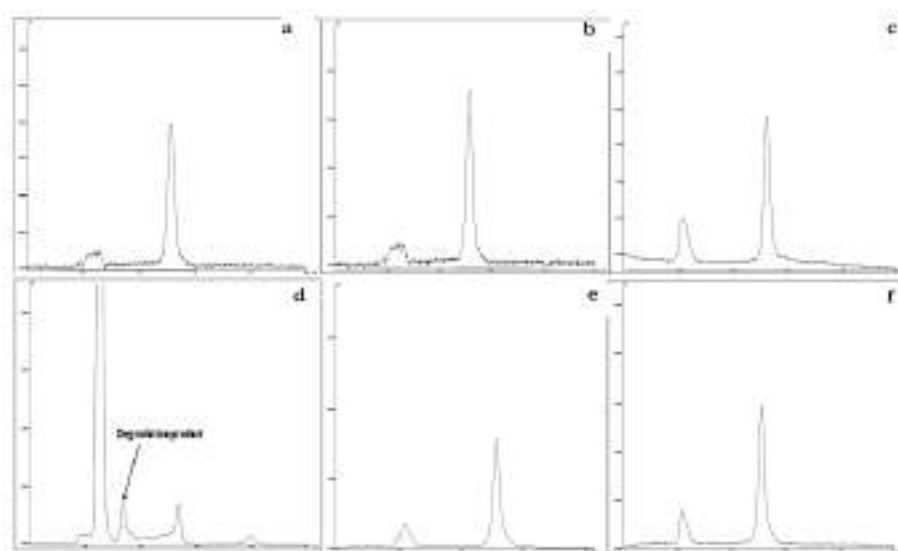


Figure 10 Force degradation studies of Prucalopride: (a) Acidic condition; (b) Alkaline condition; (c) Neutral hydrolysis; (d) Oxidative condition; (e) Dry heat condition; and (f) UV-light

Table 7 Result of Forced Degradation Study of Prucalopride

Sr. No.	Stress type	Condition	No. of peaks	% Degradation
1	Acid Hydrolysis	2 N HCl at 80°C for 30 min.	1	7.25
2	Alkali Hydrolysis	2 N NaOH at 80°C for 2 hr.	-	-
3	Neutral Hydrolysis	H ₂ O at 80°C for 2 hr.	-	-
4	Oxidative Degradation	10% H ₂ O ₂ at 80°C for 30 min.	1	5.24
5	Thermal Degradation	At 70°C for 8 hr.	-	-
6	Photolytic Degradation	UV 254 nm for 24 hr.	-	-

3.5 Comparison with Other Methods for Estimation of Prucalopride

Comparison of properties such as accuracy, robustness, reproducibility, precision, and linearity is not possible because no reverse phase stability-indicating HPLC method has previously been developed or reported on the prediction of Prucalopride in bulk and tablet formulations. We have developed a method that can be called the “exponential RP-HPLC method” to estimate Prucalopride. A few years ago, researchers used tandem mass spectrometry and ultrahigh-performance liquid chromatography to measure Prucalopride levels in rat plasma (19). It has been determined that acetonitrile-water (containing 0.1% formic acid) solution, which is the mobile phase drug used in the selection process, has many uses in rapid, accurate and sensitive pharmacokinetics. The method developed by our group to estimate Prucalopride in bulk can also be used to estimate Prucalopride in biological samples (especially plasma), although the detection ability may be lower than in our body.

4 CONCLUSION

We found that the created strategy was basic, touchy and particular for Prucalopride investigation. Prucalopride debases somewhat in acidic and oxidative conditions and has been appeared to be steady in all other conditions. The percent corruption is calculated by comparing the debasement crest region in each corruption condition with the crest range of the medicate in non-degradation conditions. Within the think about, a safety-informed RP-HPLC strategy for Prucalopride estimation was created and approved agreeing to ICH rules. We created and approved a vigorous HPTLC procedure that does not depend on added substances or corruption items to gauge Prucalopride substance in tablet materials (20). The results appear that the method is exceptionally particular and the medicate and its corruption items are well isolated. The built up chromatographic strategy can be utilized by examiners for every day item security to gauge Prucalopride in bulk and tablet details and to screen the least due to its tall affectability, vigor, repeatability, accuracy and linearity (key ICH-Q2A and Q2B necessities). USP monograph is required for following, RSD and hypothetical plates. Considers on stretch (corrosive, oxidative, UV-induced, dry warm, impartial and antacid) appear degraders that offer assistance increment the sum (21).



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MORPHOLOGICAL AWARENESS IN ESL LEARNING IN UZBEKISTAN

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ABSTRACT

To better understand how morphological awareness affects ESL (English as a Second Language) learning among Uzbekistani students, this study examines the subject. This acknowledges the growing significance of English in international trade and communication. To thoroughly explore the effect of morphological awareness on ESL proficiency, the study used a mixed-methods approach that combines quantitative and qualitative methodologies. The results show a significant relationship between morphological awareness and general language competency, reading comprehension, and word retention. Learners who comprehend English morphemes more fully exhibit improved language abilities. The study emphasizes how morphological education may alter ESL pedagogy by giving students valuable vocabulary-building tools, reading comprehension, and a deep understanding of English. Future studies should investigate efficient methods for raising ESL students' morphological awareness and the long-term effects of morphological training on language competency.

KEYWORDS: Morphological Awareness, ESL Learning, Uzbekistan, Vocabulary Retention, Reading Comprehension, Language Proficiency, Pedagogical Implications, English Language Acquisition.

1. INTRODUCTION

Learning English as a Second Language (ESL) has become incredibly important worldwide, especially in Uzbekistan. Knowing what influences ESL performance is essential because English remains the language of business, education, and communication. This study explores the function of morphological awareness in Uzbekistani students' ESL learning. Understanding word structure and its morphemes, or morphological awareness, is an essential component of language development that has yet to receive much attention in Uzbekistan.

The growth of vocabulary, reading comprehension, and language proficiency depends on morphological awareness. The development of Uzbekistan's ESL learning methodologies and curriculum can benefit from research on this subject. Additionally, given the distinctive characteristics of Uzbek, research into how morphological awareness affects the learning of English morphemes may result in more efficient teaching strategies specifically suited to the needs of Uzbekistani students (Tashmuradova, 2023).

This study will address the issue of "How does morphological awareness impact ESL learning in Uzbekistan?". We may determine the possible advantages of including morphological education in ESL programs by examining the connection between morphological awareness and ESL proficiency.

2. METHODS

Research Methodology

This research uses a thorough mixed-methods research strategy to present a complete image of the significance of morphological awareness in ESL education among Uzbekistani students. Specifically, it combines quantitative and qualitative research methods. By combining these two approaches to collecting data, we aim to gain a more in-depth comprehension of the complex dynamics at play.

Sample Selection

To provide a representative and diverse sample, participants were chosen by a rigorous stratified random sampling procedure. 300 ESL students, ranging in age from 18 to 35, made up the sample. With this strategy, we were able to collect manageable amounts of data that would have statistical significance and later be analyzed.

Instruments and Assessments

1. Quantitative Assessment: To quantify morphological awareness, participants underwent a rigorous assessment encompassing tasks designed to gauge their morphological proficiency. These tasks included morphological segmentation, morphological



analysis, and assessments of morphological awareness in reading. The quantitative evaluation aimed to generate numerical data that would form the basis of statistical analysis.

- Qualitative Interviews:** We conducted structured interviews with a subset of participants in tandem with quantitative assessments. These interviews delved into the qualitative aspects of participants' experiences and perceptions regarding the role of morphological awareness in ESL learning. Through these interviews, we aimed to capture nuanced insights that quantitative data alone might not reveal.

Data Collection Timeline

Data collection spanned six months, allowing for comprehensive and in-depth data gathering. This timeframe encompassed the administration of quantitative assessments and the conduct of qualitative interviews.

Table 1: Summary of Quantitative Assessment Results

The following table provides an overview of the quantitative assessment results, illustrating the correlation between morphological awareness and ESL proficiency among Uzbekistani learners:

Morphological Awareness	Vocabulary Retention	Reading Comprehension	Overall Language Proficiency
High	High	High	High
Moderate	Moderate	Moderate	Moderate
Low	Low	Low	Low

Data in Table 1 comes from this study's quantitative assessments. It shows the exact association between morphological awareness and ESL vocabulary retention, reading comprehension, and language competency. Results show that morphological awareness strongly influences Uzbek ESL learners' language skills.

3. RESULTS

Role of Morphological Awareness

Our research reveals a strong correlation between Uzbekistani learners' morphological knowledge and their ability to communicate in English, illuminating the complex processes involved in language learning. Notably, those with a more profound comprehension of English morphemes displayed noticeably better language abilities across various ESL learning parameters (Kosimov, 2021).

Enhanced Vocabulary Retention

The apparent correlation between morphological awareness and vocabulary retention was among the most remarkable findings. Participants with a stronger command of English morphemes could learn and remember various languages. The importance of morphological knowledge as a powerful tool for ESL students looking to diversify their linguistic repertoire is shown by this study.

Empowered Reading Comprehension

Moreover, our research underscored the pivotal role of morphological awareness in reading comprehension. Learners equipped with a robust understanding of morphemes exhibited a distinct advantage in comprehending written texts in English. The ability to dissect complex words into meaningful morphemes facilitated a more profound comprehension of sentence structures and the nuances of textual content.

A Holistic Boost to Language Proficiency

Beyond vocabulary and reading comprehension, our study unveiled the overarching influence of morphological awareness on overall language proficiency. Participants endowed with a heightened morphological acumen demonstrated a comprehensive grasp of English. This encompassed improved listening and speaking skills, grammatical accuracy, and a more profound appreciation of English as a language governed by systematic rules and structures.

Pedagogical Implications

The implications of these findings for ESL pedagogy are nothing short of transformative. The revelation of the intrinsic relationship between morphological awareness and ESL proficiency highlights an untapped resource for educators in Uzbekistan. By incorporating morphological instruction into ESL curricula, teachers can embark on a journey to reshape the landscape of language education.

Unlocking English Word Structure



Integrating morphological awareness exercises and activities represents a paradigm shift in ESL teaching (Zhang, 2022). These endeavors empower learners with the invaluable skill of deciphering unfamiliar words and phrases based on their morphological components. Such an approach not only enhances vocabulary acquisition but also nurtures a deep-seated appreciation for the inherent structure of English words.

Fostering a Systematic

Understanding Furthermore, incorporating morphological instruction enables a systematic understanding of English, erasing the often-daunting perception of the language as a vast sea of exceptions. Learners with morphological awareness recognize that English, like any language, adheres to systematic rules and structures that can be deciphered and mastered.

4. DISCUSSION

Interpreting the Results

Our findings underscore the significance of morphological awareness as a catalyst for ESL proficiency. The ability to recognize and analyze English morphemes equips learners with valuable skills for vocabulary expansion and reading comprehension. These results align with international research, emphasizing the universal importance of morphological awareness in language acquisition.

Enhancing ESL Pedagogy

The study suggests practical implications for ESL educators in Uzbekistan. ESL instructors should consider integrating morphological awareness exercises and strategies into their teaching methodologies. This integration can occur through structured lessons, vocabulary activities, and reading comprehension tasks emphasizing morphological analysis.

Future Research Future research should delve deeper into the strategies and teaching methods that effectively enhance morphological awareness in ESL learners in Uzbekistan. Additionally, longitudinal studies can explore the long-term impact of morphological instruction on language proficiency and academic success (Akter, 2019).

5. CONCLUSION

In conclusion, this study illuminates the pivotal role of morphological awareness in ESL learning among Uzbekistani learners. Understanding the morphological structure of English words enhances vocabulary retention, reading comprehension, and overall language proficiency. By recognizing the significance of morphological awareness in ESL education, educators and policymakers in Uzbekistan can take proactive steps to integrate morphological instruction into ESL curricula, ultimately empowering learners with the tools they need to succeed in English language acquisition. This study calls for continued research and pedagogical development in ESL teaching, focusing on morphological awareness as a critical component of effective language instruction.

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BEYOND TRADITIONAL LEARNING: A CRITICAL REVIEW OF THE STATUS OF PEACE EDUCATION IN INDIA

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ABSTRACT

The relentless efforts of peace advocates and international agencies have helped broaden the view of peace to include micro-economic factors relating to the peaceful coexistence of individuals. Despite these efforts, global peacefulness has fallen by over 3% in the last 15 years (Global Finance Magazine - World's Most Peaceful Country 2023 — Global Peace Index, 2023). Even the most developed nations record a remarkably low performance in the global peace index. For instance, the United States ranks 131st in the global peace index despite its regard as the most developed economy in the world (Global Finance Magazine - World's Most Peaceful Country 2023 — Global Peace Index, 2023). Such pieces of evidence tend to imply that global peace is not a complementarity to development, but needs to be fostered through careful practices. Despite the strenuous efforts made by the Indian economy to foster peace, it currently holds the 126th position in the Global Peace Index (Global Finance Magazine - World's Most Peaceful Country 2023 — Global Peace Index, 2023). Owing to the high degree of correlation between the value systems of an individual (imbibed and built in early years) and their attitudes towards peace; the Nation Council Framework (NCF) for education has explicitly detailed ways to integrate peace education into the current educational framework.

KEYWORDS: *National Council Framework (NCF), National Education Policy (NEP), peace education.*

INTRODUCTION

The NCF 2005 draft introduced various guidelines for the conduct of education in schools, and re-established several existing ones. A key improvement in the NCF 2005 draft was the integration of peace education into the schooling systems by viewing micro-economic peace as an inherent part of the curriculum rather than as an “add-on subject” (Rajgopalan, 2008). Despite its various acclamations, the integration of peace education in the NCF 2005 draft was fine-tuned to the prevalent economic and social conditions of India. Two decades of rapid economic growth in India have ushered in a fundamental change in both the social and economic landscape. This shift, coupled with the advancement in scientific reasoning around emotional and mental development, has led to the release of a new educational framework by the NCF, as signified by the NCF 2023 pre-draft. This paper aims at reviewing the journey of peace education in India over the years against the backdrop of the recommendations of the 2023 NCF pre-draft. It aims to identify the key components of integrating peace education into the schooling systems, as signified by the NCF 2023 pre-draft, and review the challenges posed by the current Indian socio-economic state to its implementation.

The contributions of this paper are threefold: firstly, it critically examines the efforts of the NCF in integrating peace education into the curriculum in 2005 and comments on its success. Secondly, it reviews the proposed ways of integrating peace education as laid down in the NCF pre-draft of 2023 and comments on its strengths and challenges. Thirdly, it presents policy recommendations aimed at meeting the challenges presented to the implementation of peace education in India.

METHODOLOGY

This is a review paper which draws on the work of the existing field of research in this topic. Electronic literature databases were searched to identify studies that examined the current literature on peace education in India, governmental policies and projects for the same (at national and international level). This systematic literature review is guided by the Cochrane method, and the search method and findings are presented in accordance with the relevant sections of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Higgins and Green, 2011, Moher et al., 2009). Studies were included in the systematic literature review based on the following inclusion criteria: they must (a) quantitatively examine and report the menstrual health management status in India, associated issues, policies and future direction; (b) use a multidimensional conceptualization of menstrual health management; (c) be published in an academic journal and public sector reports; and (d) be available in English.

JOURNEY OF PEACE EDUCATION IN INDIA IN THE 21ST CENTURY

The concepts of peace education and conflict resolution were in their infancy stages in India at the dawn of the 21st century. In 2003, there were no institutions in India that offered conflict resolution courses, and the general understanding of peace was limited to global issues like nuclear disarmament and world peace (Neha Sharma, 2021). In April 2003, the Centre for Peace and Conflict



Resolution Studies was formed with support from the ICEE and USEFI (Neha Sharma, 2021). In 2005, the Domestic Violence Act of 2005 was passed to safeguard households from domestic abuse (Neha Sharma, 2021). A major milestone was achieved in 2005 when the NCF integrated peace education into the existing schooling system by developing a framework more conducive to moral and ethical growth. The lack of structural and institutional factors to uphold peaceful relationships could be viewed as the key challenge faced by India during this time. To overcome this shortcoming, the UGC encouraged the study of human rights by funding universities to introduce courses in this area in 2007. Efforts by various stakeholders have led to an improvement in the awareness and practice of peace education in India over the years (Barbara et al., 2007). These efforts improved India's ranking in the global peace index from the 143rd position in 2014 to the 126th position in 2023 (Global Finance Magazine, World's Most Peaceful Country 2023—Global Peace Index, 2023). However, it's clear that we are miles away from where we want to be, which has led to reformulated guidelines for upholding moral values in the NCF 2023 pre-draft (NCF, 2023)

The country's overall peacefulness has increased by a significant 3.5 percent over the past year, which could be attributed to a number of factors ("Global Peace Index," 2023). This could be attributed to better management of violent crime, more cordial international relations, and lowered political instability ("Global Peace Index," 2023). India saw a decrease in geopolitical tensions with China as a result of fewer border incidents, and this, along with a general decline in social unrest, helped to improve the political instability indicator ("Global Peace Index," 2023).

NCF 2005 DRAFT

Challenges to Peace Education in 2005

At the time of formulation of the NCF 2005 draft, the following factors threatened regional, national and global peace in the Indian economy:

- **Structural features:** The lack of structural features in place to impart the values of peace at a global and inter-personal level furthered the ignorance of citizens. Moreover, many people did not believe in the power of education. For instance, only 10% of students opted for high school education in 2003. (Neha Sharma, 2021).
- **Institutional features:** The education system in India was highly traditional and autocratic. A new educational approach built on the principles of non-violence and cooperation was the need of the hour. The shortage of educational institutes trained in such matters further fuelled the lax attitude towards peace (Barbara et al., 2007).
- **Diversity and Cultural beliefs:** Several cultural factors led to hostility between different cultural and ethnic groups in India. Many empirical researches confirm the presence of such diversities and hostilities. Communal hatred, classism, and cultural beliefs hindered effective communication and peaceful coexistence (Rajgopalan, 2008).

Reviewing the effectiveness of the implementation of the NCF guidelines

In this section, we draw on the results of the textbook review conducted by Rajgopalan, 2008. The textbook review aimed at investigating the tone, content, and instructions included in the textbooks published by the NCERT and TTC to gauge the level of success of the NCF in implementing the guidelines. The key results of the textbook review are documented below:

a) Areas of Success

- Cultural diversity was promoted in the textbooks by including references to various cultures and regions (Rajgopalan, 2008). The text was carefully written to avoid gender-based, culture-based, and religion-based stereotypes; and the tone was to promote inclusivity among various individuals (Rajgopalan, 2008).
- Under the "train the trainer" model of the NCF, the textbooks included separate sections to guide the teachers in fostering ethical and moral values (Rajgopalan, 2008).
- A great deal of attention was given to making the students realize the existence and relevance of prevalent social norms against the backdrop of social and environmental issues. Open-ended discussions and debates ensured that students "learn by doing" (Rajgopalan, 2008).

b) Shortcomings

- Certain subjects used judgmental languages which could propagate communal hatred (Rajgopalan, 2008). For example, the history lessons in the NCERT curriculum only focused on the demerits of the British and Mughal empires.
- The absence of follow-up activities in some areas of the curriculum (for example, English and Hindi) led to limited impact accruing from lack of accountability (Rajgopalan, 2008).
- Owing to the low level of cultural and economic diversity at the school level, practical lessons on inclusivity called for a more sophisticated approach.
- Lack of parental training led to a limited impact of the program. Thus, interventions to remedy cultural biases of the parents, and parental training in promoting inclusivity could be seen as the main missing feature of this initiative by NCF.



Reviewing the underlying psychological mechanisms

In order to better refine our recommendations against the backdrop of the NCF 2023 pre-draft, we need to outline the underlying psychological processes in inter-personal communication. In this section, we refer to several studies pertaining to human behaviour in different situations which would enable us to further refine the policy recommendations.

Cricket and segregation

A field study was carried out in India to examine the effectiveness of collaborative and competitive communication in upholding the contact hypothesis. Cultural beliefs led to prejudice, which caused a divide between the upper caste and lower caste in India (Lowe, 2021). People of the two castes were enrolled into a cricket league comprising of mixed caste teams (collaborative interaction) and single caste teams (competition between single caste teams) (Lowe, 2021). Trade was facilitated between members of different castes through a trading game where they were given mismatched flip-flops and rewarded for finding the other half (Lowe, 2021). The intervention showed that collaborative interaction led to better friendships and trade (a proxy for productivity), whereas competitive interactions had no effect, at best (Lowe, 2021).

Teaching students to be peace-maker program

This program aimed at investigating ways to encourage integrative mediation between students and discourage distributive mediation (Johnson, 2004). The resultant blue-print for promoting such constructive strategies of discourse could help in executional planning. The program advocated in-depth teaching of theoretical concepts for a year; followed by its practical application in non-classroom and non-school settings (Johnson, 2004).

Extended contact hypothesis

A study on the extended contact effect (which refers to the spill-over effects of inter-communal friendships) confirmed its presence and outlined ways in which it could be promoted (Aron et al, 1997). The study revealed that friendship between members of prejudiced groups helped overcome the cultural biases of society in general (Aron et al, 1997). The study found that friendship between person A and person B (who belong to prejudiced groups) led to a reduction in the biases of the friends and relatives of person A and B (Aron et al, 1997). The study employed anxiety reduction mechanism to achieve its desired result (Aron et al, 1997).

NCF 2023 PRE-DRAFT

Critical Acclamations

The NCF pre-draft guidelines have been carefully drafted after consulting with several teachers, experts, parents, and students. Such careful consideration, coupled with a scientific understanding of ethical and moral development has led to the establishment of an effective design for the NCF 2023 pre-draft. The guidelines have been established in line with the 5 stages of emotional, moral, and ethical development of individuals; which forms the rationale for the 5+3+3+4 structure of the curriculum (NCF, 2023). Moreover, the NCF draft acknowledges the five layers of self (physical development, development of life and energy, emotional development, intellectual development, and spiritual development), which has enabled the curriculum to outline ways to effectively stimulate these. (NCF, 2023). Additionally, the NCF has proposed several changes in the course content. The NCF has proposed to reduce the syllabus for students with a view to provide greater flexibility to schools in fostering moral and ethical development (NCF, 2023). It has also included a plan to facilitate textbook re-development in order to enhance cultural diversity, inclusion, teamwork, and cooperation (NCF, 2023). In order to further inclusivity and cultural tolerance, the NCF has decided to remove references regarding the 2002 Gujarat riots and certain aspects of the Mughal era.

Challenges to successful implementation of the NCF 2023 pre-draft

Any plan is only as successful as its implementation is. Even though the NCF 2023 pre-draft has formulated guidelines in line with scientific understanding and thorough consultations; serious executional challenges may overestimate the impact of this initiative. These executional challenges are enumerated below:

- **Teacher training:** The scientific approaches to fostering moral and ethical values in an individual has increased the complexity of the educational process, making it more “teacher dependant”. The acute shortage of teachers, as signified by the remarkably high student to teacher ratio in Indian schools, can hamper the conduct of a teacher-centric learning process (Nanda, 2021). Additionally, the resources required in teacher training and teacher provision in government schools could further hinder this process (Nanda, 2021). The pupil-teacher ratio in some Indian states is so high (38:1 in Bihar, 41:1 in UP, and 42:1 in Jharkhand) that it hampers effective delivery of sessions by teachers (ASER, 2019). Empirical evidence re-iterates the above point, as only 26.8% of class 3 students knew how to read and 41.1% of class 5 students could solve basic math problems (ASER, 2019). Additionally, it was revealed that only 33% of class 8 students could solve real-life math problems and 43% of class 10 students understood science (ASER, 2019).
- **Appropriate follow-up mechanisms:** Lack of accountability on educational institutes may further the complacency on the teacher's part. Suitable mechanisms need to be developed to ensure the desired conduct of the NCF guidelines.



- **Lack of Economic Diversity:** The structure of the Indian schooling system has led to the lack of economic diversity within its institutions. The astronomical fees associated with private education have led to an economic divide in the educational structure of India. Thus, prejudices related to classism need to be targeted through more innovative strategies such as practical learning.
- **Discontinuity in educational practices:** A large proportion of the Indian economy lives below the poverty line (10.2% of the total population as of 2019). This has led to the exclusion of several individuals from the schooling system and a discontinuous approach by many others. Most of the poor do not attend the entire 12 years of schooling, and thus special provisions need to be made for this segment of the population. The drop-out rate in primary schooling (grades 1-5) was 4.3%, whereas that in secondary schooling (grades 6-8) was 17.1% (Pajankar, 2019).

POLICY RECOMMENDATIONS

- **A peaceful society:** Children learn from the world around them, and inter-personal peace could be propagated only through regional, national, and global peace. News channels should be encouraged to promote positive examples of national peace. At a regional level, the sustenance of basic human wants should be ensured to prevent violence occurring from unmet necessities (Nagasubramaniyan & Joseph, 2022).
- **Parental Training:** The key shortcoming of the integration of peace education in the NCF 2005 draft was the lack of focus on parental training, which led to a confused understanding of moral and ethical values. The facilities in place to inculcate independent thinking among students may help overcome this problem to some extent, but a larger intervention program is required for the parents. Such workshops should focus on removing the communal biases of parents to facilitate them in becoming successful role models. Additionally, bottom-up flow of information could be propagated by enabling students to apply their learnings in non-classroom settings.
- **Feedback mechanism:** Appropriate events should be organized to test the communal beliefs of students. Additionally, surveys could be designed to review the conduct of educational practices in schools, thereby increasing accountability on part of the educational institution. A centralized framework needs to be developed to collect feedback from parents, students, and other stakeholders to review the conduct of educational practices in schools. Suitable reward and punishment mechanisms need to be developed based on the degree of adherence to the NCF guidelines. For example, a release of national ranking for schooling practices based on the quantitative and qualitative surveys held to improve accountability.
- **Creating a ripple effect:** The view of culture as "self-enforcing beliefs" implies that a change in these beliefs would ultimately create a ripple effect throughout the economy. A "train the trainer" model may be propagated, where students who have mastered the art of peaceful coexistence are appointed as lay counsellors to help others. The education system may mandate students to be part of NGOs which may play a crucial role in enabling the literate students to inculcate such values among the illiterate ones. Collaborative engagement between different communities helps overcome personal prejudices, thereby leading to friendships (contact hypothesis); which in turn lowers the prejudice of society in general (extended contact hypothesis) (Aron et al, 1997).
- **Teacher training:** Teachers should be made aware of the scientific reasoning behind the guidelines laid down by the NCF. Additionally, they should be well trained in psychological theories in order to make them better aware of their roles. The social interdependence theory and its empirical validity calls for collaborative approaches to foster positive interdependence between students (Mbogo, 2016). Additionally, the constructive controversy theory lays the foundation for the conduct of collaborative activities. Students should be made to engage in deliberate discourse, where they discuss the advantages and disadvantages of a course of action, in order to promote creative problem solving (Mbogo, 2016). The teachers should ensure that negotiations are of an integrative nature (where the goal is to make mutually beneficial agreements) rather than of a distributive nature (Johnson, 2004). The results of the "Teaching Students to be peace-maker program" is highly applicable in this setting owing to the universality in psychological development. The study advocated teaching concepts of mediation and negotiation processes in one school year, followed up by its practical applications in classroom and non-classroom settings in the next year (Johnson, 2004). This type of intervention led to a reduction in disciplinary problems by 60%, and led to integrative approaches among trained students (Johnson, 2004). The strong empirical relationship between peace education and school culture (correlation coefficient = 0.812***) implies that deliberate efforts should be taken by the management to promote an inclusive and peace-loving environment (Mbogo, 2016)

CONCLUSION

A comparative evaluation of the NCF 2005 draft and NCF 2023 pre-draft shows the sound planning framework of the education committee in India, which is line with scientific understandings and theories. Both of these drafts established guidelines which were relevant to the existing state of affairs in India at the time. Moreover, thorough consultation with the stakeholders ensured greater applicability of the NCF pre-draft guidelines. However, certain executional features which hindered the effectiveness of the guidelines of the NCF 2005 draft, such as lack of parental training and lack of accountability of educational institutions, seem to be present in the NCF 2023 pre-draft as well. In order to circumvent these, more sophisticated executional planning is required to ensure that the NCF 2023 pre-draft delivers on its promises. Moreover, the power of the student community could be leveraged in



spreading general awareness about the issue and create a ripple effect. Additionally, teacher training and appropriate feedback mechanisms to review the effectiveness of these efforts may help overcome these executional challenges to a great extent.

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CHARACTERISTICS OF BIOECOLOGICAL DEVELOPMENT OF THE COMSTOCK WORM (PSEUDOCOCCUS COMSTOCKI KUV V.) IN THE CONDITIONS OF KARAKALPAKSTAN

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ANNOTATION

The article presents characteristics of bioecological development of the comstock worm (Pseudococcus comstocki kuv v.) in the conditions of Karakalpakstan.

KEY WORDS: *insects, phytophages, entomophages, ticks, agroecosystem, insect fauna, sucking pests.*

INTRODUCTION

Comstock worm (*Pseudococcus comstocki* Kuv v.) is a widespread, omnivorous insect belonging to the subfamily Coccinea. It can be found in almost all fruit and ornamental trees, woody plants and some herbaceous plants.

The Comstock worm infects more than 350 different plants. The damage of the Comstock worm causes the branches to become crooked, the leaves turn yellow and dry, swelling and cracks form in the tree trunk, roots and branches, and the tree loses its strength. A mulberry leaf contaminated with worm dung is harmful to silkworms. In addition to mulberry, the Comstock worm damages peaches, catalpa, pomegranate, corn, potatoes, carrots, beets, cabbage, tomatoes, pumpkin, melons, watermelons, and quite a few other woody and herbaceous plants. Comstock worm slows down the growth of all plants when it multiplies, makes the branches of trees and shrubs crooked, reduces the yield and quality of fruit crops, tubers. The fruits of infected plants are small and tasteless. And potato fruits develop poorly.

The Comstock worm can be found in any tree, lives in a shelter, its biological characteristics are very complex, and it is very difficult to fight against it due to its rapid spread in nature.

Comstock worm is spread in all countries of Central Asia and there is a risk of widespread spread to all regions.

It is necessary to know the characteristics of bioecological development of the pest in order to carry out measures to control the Comstock worm.

THE PURPOSE OF THE RESEARCH

To study the characteristics of bioecological development of Comstock worm (*Pseudococcus comstocki* Kuv v.) in orchards in the conditions of Karakalpakstan.

In 2022-2023, stationary and route research was conducted in the southern and northern districts of the Republic of Karakalpakstan.

METHODS OF THE RESEARCH

All methods used in general entomology and agricultural entomology: observational, entomological, phenological, zoogeographical, ecological methods were used in the research.

The Comstock worm overwinters in the egg stage under the bark, on the trunk of trees, on the roots of plants, among mosses, in wall cracks and in the soil. Eggs are laid 5 to 16 cm deep in the soil and rarely 30 to 40 cm deep. Overwintering eggs are very resistant to cold. One female worm lays 250 to 600 golden-yellow eggs in a waxy white bag. This bag is produced by the wax glands of the female worm. Eggs are packed inside this white sac.



Comstock worm usually accumulates in large numbers in the active stage or in the form of eggs in and near trees in October-November. Both adult females and larvae survive the winter, but die in cold weather and heavy rainfall. As soon as the cold falls, the worms and their females die completely. Many of the eggs in poorly protected areas will also die over the winter. All the eggs left for the winter will die. Only when the winter is good and warm, 5-15 percent of Comstock worm eggs survive in the wild. Therefore, the first generation of Comstock worms is usually very small.

The period of emergence of caterpillars from overwintered eggs coincides with the time of budding and the appearance of the first leaves of the trees, that is, about the end of March and the beginning of April. Hatched worms stay in a waxy bag for the first 2-3 days, then crawl and cling to the underside of the leaves, along the veins. Temperature and humidity are the main factors affecting the development of the Comstock worm.

This pest goes through three larval ages. Depending on the temperature, the development of first-instar worms lasts 12-16 days. For the first few days after shedding, most worms feed near the molting pods, then roam around for 5-7 days. Although the larvae of the first age ("brodajka") crawl in all directions from the place of emergence, the worm can only actively move within a short distance within a branch of a tree or neighboring branches. It spreads to new plants mainly passively: seedlings, leaves, twigs, wood, vehicles, clothes, animal fur, bird (especially sparrows) paws, stream water (comstock worm does not drown in water and can live without food for several days), the worm can also be spread by agricultural tools and vegetables and fruits.

The Comstock worm is omnivorous and can live on 350 species of wild and cultivated plants, especially mulberry, catalpa, blackberry and ivy. The Comstock worm eats all parts of the plant: the trunk, stems, branches, leaves, buds, pods, flowers, fruits, and penetrates the soil at a depth of 5-6 cm and sucks the upper part of the roots. In some cases, it is found at a depth of up to 40 cm. The worm usually feeds along the veins on the underside of the leaf.

In the conditions of Karakalpakstan, the Comstock worm reproduces three times a year, and partially reproduces a fourth time. But as soon as the cold falls, the fourth generation dies.

In the conditions of Uzbekistan, the development of the first generation of the Comstock worm lasts from the beginning of April to the end of May.

The development of the second generation lasts from the middle of May to the beginning of June.

The third generation lasts from the beginning of July to the middle of September. The third generation lays eggs for wintering in September-November. These waxy bags are firmer and denser than the ones in summer. The development of one generation lasts from 42 to 65 days, depending on the temperature.

The Comstock worm gives birth about once every month and a half. Gives three, sometimes four offspring throughout the summer. The female starts laying eggs 10-30 days after the last moult. The first generation of an insect usually lays 200-350 and a maximum of 670 eggs, the second generation 250 and a maximum of 435, and the third generation 200 and a maximum of 350 eggs. The female worm lives 15-36 days in total. Adult worms and larvae live in dark places; it dies in 3 minutes at a temperature of 38°C in direct sunlight.

Egg laying, hatching of worms, moulting, and formation of male worm cocoons take place at night.

In nature, the Comstock worm is destroyed by several predators; one of them *Leusoris bona* Rohd. is more important, its larvae often kill 80-90% of overwintering worms. Although it produces 5-6 offspring per year, it is still few in spring and summer and reproduces only at the end of the growing season. The Comstock worm is eaten by the larvae of goldeneyes (especially *Chrysopa vulgaris* Schr.) and button beetles (Coccinellidae).

A parasite called pseudoficus (*Pseudapcus malinus* Gah.) specially brought from abroad plays an important role in the elimination of the Comstock worm.

CONCLUSIONS

In the article, the characteristics of the bioecological development of the Comstock worm (*Pseudococcus comstocki* Kuv v.) in fruit orchards in the conditions of Karakalpakstan were studied.



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SPECIES OF ARMORED SCALE INSECTS (DIASPIDIDAE) IN THE CONDITIONS OF KARAKALPAKSTAN, CHARACTERISTICS OF BIOECOLOGICAL DEVELOPMENT

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ANNOTATION

The article presents species of armored scale insects (Diaspididae) in the conditions of karakalpakstan, characteristics of bioecological development.

KEY WORDS: *insects, phytophages, entomophages, ticks, agroecosystem, insect fauna, sucking pests.*

INTRODUCTION

It is an insect belonging to the family of armored scale insects (Diaspididae), order Nemeptera, and there are many species that damage fruit and ornamental crops. There are more than 4000 species of armored scale insects in the world fauna, more than 500 species in the CIS countries, and more than 120 species in Uzbekistan (Insects of Uzbekistana, 1993).

A characteristic sign is the appearance of red spots on the fruits, branches, and bark of branches of plants infected with armored scale insects. Armored scale insects weaken trees by sucking sap, often killing some branches, especially young ones, and sometimes completely withering trees. Armored scale insects stain the fruit and reduce its quality. It is widely polyphagous and damages plants belonging to many families.

In the fruit orchards of Karakalpakstan, there has been an increase in the number of armored scale insects in recent years, and it has been found that it cracks the tree bark, dries the branches and even whole trees, and causes damage by sucking sap from the fruits, and it has been proven that it is especially harmful to trees, the number of such places is increasing.

In the conditions of Karakalpakstan, it is important to make recommendations on the introduction of a scientifically based control method to production based on the study of the affected center of the pest and the determination of its bioecological characteristics.

THE PURPOSE AND TASKS OF THE WORK

To study the species of armored scale insects (Diaspididae) and bioecological development in the conditions of Karakalpakstan.

In 2022-2023, stationary and route research was conducted in the southern and northern districts of the Republic of Karakalpakstan. The fauna and taxonomic analysis of the armored scale insects found in fruit and ornamental trees in the conditions of Karakalpakstan were studied.

METHODS OF THE RESEARCH

Researches were carried out on the basis of methods adopted in general entomology, applied entomology and agrotoxicology. In the researches, in order to identify the armored scale insects that are more common in fruit and ornamental trees, the lower, middle and upper layers of the plant were examined, and it was determined what stage of development the armored scale insects are at the same time during the wintering period and in the fodder plant.

Collection and storage of the collected armored scale insects was carried out based on the methodology of N.S.Borghsenius.

The collection materials were kept in separate boxes in the case where armored scale insects were cut from 10-15 cm long branches of the food plant, and the leaf samples were kept in the herbarium.



The study of the biological characteristics of armored scale insects began in the spring and was systematically monitored every week. Observations were made using the method of bioimaging (once a day) in selected model trees, the distribution, density, and number of changes of the armored scale insects based on the arrangement of the armored scale insects on the plant trunk, branches and seedlings, fruits and leaves. In addition, when taking samples from the armored scale insects, it was tried to take the circular sides of the parts of the trees at the same height from the ground. Changes in the number of armored scale insects in modular trees, their life processes, egg-laying, hatching of larvae, emergence of males were also studied. Morphological and classification features of armored scale insects were studied on the basis of a number of identifiers and scientific sources related to the field.

In the study of the biological characteristics of armored scale insects, first of all, their wintering period, hatching of larvae from eggs in spring, gradual transition of larvae from first to second instar, molting, turning into young female or male individuals were taken into account. In addition, male insect larvae were separated and kept in test tubes, and the duration of emergence of males was determined in laboratory conditions. Also, the processes of egg-laying of females and emergence of larvae from eggs were constantly monitored.

The development of armored scale insects was monitored in selected and isolated model tree trunks, where continuous observations were made. Samples were cut from plants infested with armored scale insects, labeled and studied under laboratory conditions. The samples taken during the observation work in field conditions were numbered and recorded in a notebook. When taking samples from different ecological areas, 10 control plants were selected from each of the four sides of the area, and 10 samples were taken from them. Controlled trees were conditionally divided into three tiers, and it was decided to place armored scale insects along the tiers. Attention was paid to the number of control bushes, the age and composition of their populations. The length of the sampled branches was 10 cm. A part of the samples (bark, branch, leaves, fruit) was cut and placed in a special box with fluffy cotton under it, and a part was put in 70% alcohol and fixed, and the species composition was studied in the laboratory.

As a result of the research, a taxonomic analysis of the armored scale insects encountered in fruit and ornamental plants in the conditions of Karakalpakstan was determined.

According to the taxonomic structure of the fauna of armored scale insects found in the fruit and ornamental plants of the Republic of Karakalpakstan, they belong to the *Diaspididae* family in the fauna: *Diaspidiotus perniciosus* (Comstock, 1881), *D. elaeagni* (Borchsenius, 1939), *D. salicis* (Lupo, 1953), *D. transcaspensis* (Marlatt, 1908), *D. slavonicus* (Green, 1934), *D. prunorum* (Laing, 1931), *D. turanicus* (Borchsenius, 1935), *D. leguminosum* (Archangelskaya, 1937), *Diaspis bromeliae* (Kerner, 1778), *Dynaspidiotus ephedrarum* (Lindinger, 1912), *Unaspis euonymi* (Comstock, 1881), *Shansiaspis ovalis* (Chen, 1983), *Salicicola archangelskaya* (Lindinger, 1929), *Parlatoria oleae* (Colvée, 1880), *P. ephedrae* (Lindinger, 1911), *Lepidosaphes turanica* (Archangelskaya, 1937), *L. juniperi* (Lindinger, 1912), *L. ulmi* (Linnaeus, 1758), *L. pistaciae* (Archangelskaya, 1930), *Leucaspis gigas* (Maskell, 1879), *Aulacaspis rosarum* (Borchsenius, 1958), *Aonidia isfarensis* (Borchsenius, 1962), *Chionaspis salicis* (Linnaeus, 1758), *Chio etrusca* (Leonardi, 1908), *Chlidaspis asiatica* (Archangelskaya, 1930), *Prodiaspis tamaricicola* (Malenotti, 1916), *Mercetaspis halli* (Green, 1923), *Carulaspis juniper* (Bouché, 1851), *Rhizaspidotus canariensis* (Lindinger, 1911), *Pseudaulacaspis pentagona* (Targioni Tozzetti, 1886) were recorded for the first time for the fauna of Karakalpakstan.

CONCLUSIONS

As a result of our research, in the case of Karakalpakstan, According to the taxonomic composition of the fauna of the shields found in fruit and ornamental plants of the Republic of Karakalpakstan, the number of genera in the *Diaspididae* family in the fauna is 18, and the number of species is 30.

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EXPLORING THE INTERSECTION OF GENDER AND HEARING IMPAIRMENT: MENTAL HEALTH EXPERIENCES OF TEENAGERS

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ABSTRACT

The purpose of this study is to examine the intersection between gender and hearing impairment in the mental health experiences of adolescents. A survey was conducted among 30 congenitally deaf adolescents between the ages of 16 and 17 using the Screen for Child Anxiety Related Emotional Disorders scale and modified Child Behaviour Checklist scale. The results of our analysis indicate that mental health manifestations differ significantly by gender. In particular, females are more susceptible to anxiety-related symptoms, such as separation anxiety and social anxiety. A number of behavioural domains are highlighted by the CBCL scale. In conclusion, this study underscores the complexity of mental health among hearing-impaired adolescents and highlights the need for tailored interventions and support services. Our findings provide a better understanding of the mental health challenges that this demographic faces.

KEY WORDS: *hearing-impaired, adolescents, congenital, mental health, SCARED scale, CBCL YSR scale, anxiety related problems, emotional and behavioural problems.*

1. INTRODUCTION

In the realm of adolescent mental health, there exists a significant gap in understanding the intricate interplay between gender and hearing impairment, particularly concerning the experiences of teenagers. While some researchers like A Hogan(2011)¹, Theunissens(2014)² and RT Bigelow(2020)³ has explored mental health aspects among individuals with hearing difficulty in various life stages, the journey of deaf teenage community remains relatively uncharted territory. This study embarks on a critical inquiry, seeking to unveil how gender interacts with hearing impairment to shape the mental health experiences of teenagers, with a specific emphasis on identifying significant gender-related differences in the manifestation and experiences of mental health issues within this population.

By illuminating these nuanced dynamics, the study not only expands our comprehension of this unique demographic but also sets the stage for tailored interventions and support systems designed to address their distinct mental health needs.

2. LITERATURE REVIEW

Permanent childhood hearing loss (PCHL) remains linked to increased emotional and behavioural disorder (EBD) scores as assessed through parent-rated SDQ assessments throughout the late teenage years. It is important to note that the majority of teenagers with PCHL do not exhibit clinically evident elevations in EBD levels (Stevenson et.al., 2017). The stress proliferation model point out that hearing impairment of wives affect husbands by elevating their depressive symptoms. But the disability of husband doesn't elevate the depression symptoms of the counterpart (S west et.al., 2020). Hearing loss was affected cognitive functions, and leisure time activities showed moderate connection among males than females (Gao et.al., 2020). Women having impairment of two sensory organs (auditory & vision) showed increased depression and anxiety (Pardhan et.al., 2021)

3. PARTICIPANTS & METHODS

This research represents a development – oriented study aimed at analysing the prevalent psychological challenges faced by the deaf community. Its primary objective is to address the gender based mental health problems among this population.

A psychological survey was conducted within a student community having congenital deafness in the CSI School for the deaf at Valakom, Kollam district, Kerala, India. A total of 30 students aged between 16 and 17 years and without known and visible psychological problems were selected for the study. Among them 18 were females and 12 were males. Informed consent was obtained from the subjects, and the confidentiality of the information was assured. The survey was conducted in august 2023.



3.1. LANGUAGE ACCESSIBILITY

Since the subjects included in the study were having hearing loss and their way of communication was through sign language, basic knowledge of the language was an advantage for the study. In addition, a sign language interpreter was also assisted to ease up the procedure. Questionnaires were distributed to each participant to ensure the accuracy of data collection.

3.2. DATA COLLECTION

The questionnaire was developed with the assistance of SCARED (Screen for Child Anxiety Related Emotional Disorders) and some questions were modified from CBCL (Child Behaviour Check List) scales.

i. SCREEN FOR CHILD ANXIETY RELATED EMOTIONAL DISORDERS

It is a self-report screening questionnaire containing 41 questions for anxiety disorders developed in 1997. It is intended for youth (9 to 18 years old) and their parents and can complete in about 10 minutes⁴. The questions were aimed to measure their social belonging, self-esteem, peer interaction, aggressiveness and academic related concerns. It can discriminate between depression and anxiety, as well as among distinct anxiety disorders. It has five subscales which differentiate⁵, panic or somatic symptoms, generalised anxiety disorder, separation anxiety disorder, social anxiety disorder and school avoidance. Participants respond to each questions based on three response options. 0= not true or hardly true, 1= somewhat true or sometimes true, 2= very true or often true.

ii. CHILD BEHAVIOUR CHECK LIST

It is a widely used report form identifying problem behaviour in children. In this survey 34 questions from the youth self-report (YSR) pages of school-age (11 to 18 years) version⁶ cbcl were selected and modified it according to the need. Responses are recorded on a likert scale same as that of scared. For analysis, the questions are further divided to 7 sub scales namely⁷ withdrawn symptoms, somatic problems, social problems, attention disorder, aggressive disorder, depression/ anxious and delinquent behaviour.

3.3 MODIFICATION OF THE SCALE

In this survey, parent or caregiver version of both the scales were not used. Because when parents describe their child's behaviour, it may reflect their own concerns rather than an accurate assessment of the child's emotional and behavioural well-being. Secondly, these measuring tools rely heavily on verbal communication and were designed for normal-hearing children. So certain words used in the questions were altered to make easy for the participants to understand. Otherwise the accuracy of the evaluation might hindered by the fact that many disabled children have limited language skills, and it can be hard to establish a connection if the child doesn't understand what the examiner is saying.

3.4 DATA ANALYSIS TOOLS

Analysis of the obtained data was done by calculating mean score for SCARED scale and T score for CBCL scale. The values were calculated with the help of SPSS software.

4. RESULT

Analysis using SCARED scale

Table 1: Questions coming under each subscale and cut off

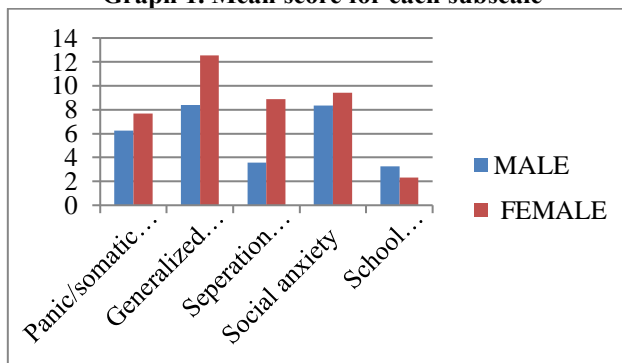
Sub Scale	Question	Cut
	No	Off
Panic/somatic anxiety	1,6,9,12,15,18,19, 22, 27	7
Generalized anxiety	4,8,13,16,2,25, 29,31	9
Separation anxiety	4,8,13,16,20, 25,29,31	5
Social anxiety	3,10,26,32,39,40, 41	8
School avoidance	2,11,17,36	3



Table 2: Mean score for each subscale

Subscale	Mean	
	MALE	FEMALE
Panic/somatic anxiety	6.25	7.67
Generalized anxiety	8.41	12.56
Separation anxiety	3.58	8.89
Social anxiety	8.33	9.44
School avoidance	3.25	2.33

Graph 1. Mean score for each subscale



CBCL scale analysis

Each subscale is interpreted on the basis of T score. Approximate T score of 65 and below – normal range, approximate T score of 65 to 70 – borderline ranges, approximate T score of 70 and above – clinical range.

Table 3 .T score of cbcl

Subscales	Male	Female
Withdrawn	40	84
Somatic Problems	30	66
Social Problems	67	70
Attention Problems	60	58
Aggressive Disorder	82	91
Depression/ Anxious	65	66
Delinquent	40	48

5. DISCUSSION

5.1 Interpretation of the results

By using SCARED scale for the evaluation, significant insights into the prevalence of anxiety-related symptoms among our study group were revealed.

Panic anxiety, as assessed by questions probing feelings of nervousness, terror and sudden fear, revealed that females exhibited scores above the established threshold, suggesting the presence of panic anxiety symptoms. In case of male part, they displayed scores only slightly below these cut-offs (6.25), suggesting that they may also be at risk of developing symptoms related to anxiety disorders, albeit to a somewhat lesser extent than females. Generalised anxiety, explored through questions related to persistent worrying about various aspect of life, was notably elevated among females (12.56), with scores surpassing the threshold(9). males



also exhibited scores (8.41) almost near to the cut off scores, indicating the prevalence of generalized anxiety symptoms in this cohort. The separation anxiety subscale, assessing concerns related to detachment from parents or care givers, demonstrated a substantial discrepancy. Females displayed markedly higher scores (8.89), signalling a heightened likelihood of separation anxiety. Conversely, males scored below the threshold, indicating a lower tendency for separation anxiety. Social anxiety, reflecting feelings of shyness and apprehension about social interactions, yielded scores above the threshold for both gender (8.33&9.44 respectively). Although females had slightly higher scores, the study illuminates the prevalence of social anxiety symptoms in both hearing-impaired population. In the school avoidance subscale, addressing reluctance or fear of attending school, males displayed scores (3.25) above the normal range, suggesting a propensity for school avoidance, while females scored below the threshold (2.33), indicating a lower likelihood. While SCARED scale provides information about anxiety related problems only, it is important to analyse the findings of CBCL scale also.

For the withdrawn subscale, which explores social withdrawal and emotional detachment, indicates a pronounced contrast between the genders, with females scoring (84) significantly higher than the counterpart, suggesting a greater prevalence of social withdrawal tendencies among the disabled female population. Somatic problems, probing physical complaints without apparent medical cause, reveals a similar pattern. The score of males fell within the normal range (30), while opposite part displayed a slightly elevated T score, suggesting a slightly higher likelihood of somatic complaints among them. Social problems, which assesses difficulties in social interactions and relationships, demonstrates that both the genders scored within the normal range, indicating typical levels of social difficulties for both, although females has slightly higher scores (60). In contrast, the attention disorder subscale showed a striking disparity. Females scored well above the normal range (81), indicating a heightened risk of attention-related difficulties, while male's scores remained within the normal range (33). Aggressive behaviour reveals higher scores for both females (91) and males (82), providing a notable presence of aggressive tendencies within the study group particularly among females. Depression or anxious score were relatively balanced, with females (70) and males (69) displaying similar T scores, Suggesting an even distribution of emotional symptoms in this area.

5.2 Limitations of the study

The study focused on the age groups 16 and 17. A more refined age breakdown provides deeper insights into the same topic. The research primarily relied on self-report measures, which can introduce response bias and may not fully capture the participant's experiences. Findings from the study are context-specific and may not be compared with other cultural or geographic settings, as these factors can significantly influence mental health. Lastly, this study did not extensively explore external factors such as family dynamics, educational environments or access to support services which could contribute to the mental health status.

6. CONCLUSION

By evaluating the anxiety related issues of non-hearing community including both males and females using SCARED scale, notably scores above the established thresholds in the panic anxiety, generalized anxiety, and social anxiety were observed especially in females of 16 and 17 age. Slightly higher scores were consistently exhibited by them across these subscales, suggesting a potentially heightened vulnerability to anxiety symptoms within this group. When coming to male group, they showed scores only slightly below these cut offs for the first three subscales, indicate that they are also at risk category. Additionally, it can be concluded that the tendency of school avoidance is comparatively less in both genders even though boys showed a very slightly increased score. The marked contrast in scores between males and their opposite gender in the context of separation anxiety is a noteworthy finding in the study. This discrepancy suggests that the attachment and separation from caregivers or parents may be a particularly distressing issue for female community in this population. Another intriguing finding of the research was the notably elevated social anxiety scores observed in both genders which suggest that social interactions and situations are a significant source of anxiety within this age group. The analysis using CBCL YSR point out that while most of the subscales yielded scores within the normal range for males except aggressive and depression scale, there were notable differences in specific areas when considering the females. They displayed elevated scores in all subscales except social problems and delinquent behaviour. In conclusion, the analysis of both scales underscores the gender based differences in the manifestation of mental health problems among hearing impaired adolescents. Anxiety related symptoms, as revealed by the SCARED scale, appear to be prevalent, particularly among females, with potential implications for their emotional well-being. Additionally, the CBCL scale sheds light on distinct behavioural patterns, with again females displaying elevated scores in specific areas, including aggression and attention.

7. RECOMMENDATIONS

1. Integrate holistic interventions such as yoga and mindfulness practices to the daily routines of non-hearing adolescents. These practices can reduce the intensity of issues and promote emotional health and resilience.
2. Advocate for broader awareness campaigns within the education system and the community at large to reduce stigma associated with hearing impairment and mental health challenges.
3. Implementation of routine mental health screening for hearing-impaired adolescents help in the early detection of anxiety, depression and other emotional concerns which can further lead to timely intervention and support.



4. Research by including parent version of SCARED and CBCL scale further help to understand the problem more deeply and it clarifies the importance of involving parents and caregivers in mental health support process.
5. Establishing mental health support services within educational institutions including on-site counsellors, therapists or psychologists who are trained in working with deaf individuals will be fruitful in long term.

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SCARED SCALE QUESTIONNAIRE (CHILD VERSION)

1. When I feel frightened, it is hard for me to breathe
2. I get headache when I am at school
3. I don't like to be with people I don't know well
4. I get scared if I sleep away from home
5. I worry about other people liking me
6. When I get frightened, I feel like passing out
7. I am nervous
8. I follow my mother or father wherever they go
9. People tell me that I look nervous
10. I feel nervous with people I don't know well
11. I get stomach-aches at school
12. When I get frightened, I feel like I am going crazy
13. I worry about sleeping alone
14. I worry about being as good as other kids
15. When I get frightened, I feel like things are not real
16. I have nightmares about something bad happening to my parents
17. I worry about going to school
18. When I get frightened, my heart beats fast
19. I get shaky
20. I have nightmares about something bad happening to me
21. I worry about things working out for me
22. When I get frightened, I sweat a lot
23. I am a worrier
24. I get really frightened for no reason at all
25. I am afraid to be alone in the house
26. It is hard for me to talk with people I don't know well
27. When I get frightened, I feel like I am choking
28. People tell me that I worry too much
29. I don't like to be away from my family
30. I am afraid of having anxiety(panic) attacks
31. I worry that something bad might happen to my parents
32. I feel shy with people I don't know well
33. I worry about what is going to happen in the future
34. When I get frightened, I feel like throwing up
35. I worry about how well I do things
36. I am scared to go to school
37. I worry about things that have already happened



38. When I get frightened, I feel dizzy
39. I feel nervous when I am with other children or adults and I have to do something while they watch me
40. I feel nervous when I am going to parties, dances, or any place where there will be people that I don't know well.

CBCL SCALE (MODIFIED)

1. Argues a lot
2. Refuses to talk
3. Fails to finish things you start
4. Runs away from home
5. Can't concentrate & pay attention for long
6. Secretive, keeps things to self
7. Clings to adults or too dependent
8. Sleeps less than others
9. Cruelty, bullying, or meanness to others
10. Sleeps more than others
11. Deliberately harms self/attempts suicide
12. Inattentive or easily distracted
13. Destroys your own things
14. Destroys things belonging to your family
15. Steals at home
16. Steals outside the home
17. Disobedient at home
18. Disobedient at school
19. Feels or complains that no one loves you
20. Feels worthless or inferior
21. Withdrawn, doesn't get involved with others
22. Sudden changes in mood or feelings
23. Talks about killing self
24. Doesn't feel guilty after misbehaving
25. Temper tantrums or hot temper
26. Unhappy, sad, or depressed
27. Doesn't feel guilty after misbehaving
28. Temper tantrums or hot temper
29. Unhappy, sad, or depressed
30. Gets teased a lot
31. Prefers being with older kids
32. Prefers being with younger kids
33. Impulsive or acts without thinking
34. Would rather be alone than with others
35. Lying or cheating
36. Overtired without good reason
37. Physical problems without know medical cause:
 - Aches or pains
 - Headaches
 - Nausea, feels sick
 - Problems with eyes (not corrected by glasses)



LEGISLATIVE STANDARDS GOVERNING THE CAUSES, CONSEQUENCES AND PENALTIES OF SEXUAL VIOLENCE AGAINST CHILDREN

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ABSTRACT

The article describes the theoretical and practical analysis of the situations that cause physical violence against minors (children), its causes, statistical analysis, consequences, and legal norms that provide responsibility for these situations.

KEY WORDS: *sexual violence, pedophilia, sexually transmitted diseases, disabled person.*

INTRODUCTION

Cases of violence against children are condemned and severely punished in countries around the world. In our country, human dignity and dignity are valued as the highest values, and children are honored as the successors of the country's future nation. Any violence committed against children is responsible under applicable law.

On December 9, 1992, the Republic of Uzbekistan ratified the UN Convention on the Rights of the Child. For the first time in the Convention, the child is considered as a person with rights that states that have ratified the Convention are required to "respect and guarantee". This provision shows that the child is a very vulnerable member of society and therefore requires and deserves special protection.

LITERATURE REVIEW

According to the convention, **the Child is considered as an independent person.** The Convention describes the child as a person with specific rights: the right to live (Article 6), to form a family (Article 9), to name and nationality. On education (Article 7), **on protection from violence (Article 19)**, on equality, freedom of thought and expression (Article 13), rest and recreation (Article 31), medical. services and health care (Article 24), state assistance (Articles 18-27), etc.

A Child (Children) is a person (persons) up to eighteen years of age (adult). Large-scale work is being carried out on fundamental improvement of the institutional and legal foundations of reliable protection of children's rights, freedoms and legal interests, state support for minors, children with disabilities and children deprived of parental care, reliable provision of guarantees of children's rights.

No matter how much it is condemned, child abuse, especially sexual abuse, pedophilia, continues to occur. Crimes against the sexual freedom of minors are increasing every year.

In particular, the number of people found guilty of sexual intercourse with a child under the age of 16 was 99 in 2019, 153 in 2020, 216 in 2021, and 238 in 2022. judgments have been issued. According to the information service of the Supreme Court, During the last 6 months of 2023:

- 15 criminals touch the honor of a person under 14 years of age;
- 44 criminals used violence against a person under the age of 14, intimidated or used the victim's weakness to satisfy sexual needs in an unnatural way;
- 163 criminals having sex with a person under 16 years of age;
- 35 criminals were punished for committing lewd and lascivious acts against a person under 16 years of age.

Pedophilia is a psychiatric disorder in which adults or adolescents experience a primary or exclusive sexual attraction to minors. Although puberty usually begins at age 10 or 11 for girls and 11 or 12 for boys, the pedophilia criteria extend the puberty cut-off



point to age 13. To be called a "pedophile" (pedophile), a person must be at least 16 years old and at least five years older than a minor.

The global prevalence of child sexual abuse is 19.7% for women and 7.9% for men. Most sex offenders know their victims; about 30% are relatives of the child, often siblings, fathers, uncles, or cousins; about 60% other acquaintances, such as "friends" of the family, babysitters, or neighbors; in approximately 10 percent of child sexual abuse cases, strangers are the perpetrators. Most sexual abuse of children is perpetrated by men; studies of female rapists show that women commit 14% to 40% of crimes against boys and 6% of crimes against girls.

DISCUSSION AND RESULT

Various diseases can be observed in sexually abused children, for example, injuries of body parts and internal organs of various severity during physical abuse, broken bones. Sexually transmitted diseases can occur with sexual violence: infectious and inflammatory diseases of the genitals, syphilis, gonorrhea, AIDS, acute and chronic infections of the urinary tract, trauma, bleeding from the genitals and rectum, rupture of the rectum and vagina.

Child abuse often occurs in the family or close to the minor. Parents, step-parents, close relatives, close friends or their guardians are often responsible for the misbehavior committed by a minor.

Legislation adopted in recent years has made it possible to widely cover the previously "closed" topic of violence. Decision No. PD-4296 dated April 22, 2019 of the President of the Republic of Uzbekistan "On additional measures to further strengthen the guarantees of children's rights", Decision No. PD-4342 of May 29, 2019 "On radical improvement of the activities of specialized educational institutions" Decree No. PD-4736 of May 29, 2020 "On additional measures to improve the system of child rights protection" Decree No. PD-6275 of August 9, 2021 "On additional measures to further improve the system of guaranteeing children's rights" acceptance confirms our opinion.

Violation of privacy through sexual violence is punishable under Article 118 (indecent assault) and Article 119 (abnormal satisfaction of sexual desire using force). Committing such crimes against a child is considered an aggravating circumstance, and a heavier punishment is imposed for them.

The Criminal Code has a separate chapter (Chapter 5) dedicated to crimes against the family, youth and morals, which includes evasion of financial support for minors or persons incapable of work (Article 122), child substitution (Article 124), adoption secrecy disclosure (Article 125), engaging a minor in anti-social behavior (Article 127), having sex with a person under 16 years of age (Article 128), committing indecent acts against a person under 16 years of age (Article 129), preparation or distribution of pornographic material (Article 130), keeping a brothel or conniving (Article 131).

The right of the child to be protected from sexual violence is guaranteed by the provision of appropriate liability for the violation of this right in the criminal legislation of the Republic of Uzbekistan. Articles 118-121 of the Criminal Code of the Republic of Uzbekistan provide for liability for defamation and a number of other crimes against sexual freedom. In the Criminal Code of the Republic of Uzbekistan, having sex with a person under the age of 16 (Article 128), committing indecent acts against a person under the age of 16 (Article 129), preparing and distributing pornographic materials (Article 130), keeping a brothel or being a joint (Article 131) provides for liability.

In order to take drastic measures and ensure the inevitability of punishment for those who have committed such a crime in our country, the President of the Republic of Uzbekistan Shavkat Mirziyoyev signed the law on improving the system of reliable protection of the rights, freedoms and legal interests of women and children. measures were strengthened.

The new law provides for the inevitability of liability and provides that the act of a person who commits sexual violence against a person under the age of 14, 16 or 18, whether he is aware of the victim's age or not, will be assessed based on the actual age of the victim and a proportionally severe punishment will be determined.

With the new law, the level of social danger of sexual crimes has been increased by one level, previously minor crimes have been included in the category of serious crimes, and serious crimes have been included in the category of extremely serious crimes.

Crimes committed against children's sexual freedom have been equated with crimes against peace and human security, and humanitarian acts such as early parole or commutation of punishment to those who committed them will not be applied.



This law establishes an effective system of protection of children's rights, freedoms and legal interests from oppression and violence, as well as implementation of significant work in the field of state support for children with disabilities and children deprived of parental care, at the same time, women and the issues of mutual coordination and implementation of the legislative documents related to the protection of children's rights, freedoms and legal interests were defined.

Also, ensuring the guarantees of children's rights and freedoms is reflected in a number of normative legal documents adopted by our government.

Children's rights in Uzbekistan are regulated by the following legal documents:

- Constitution of the Republic of Uzbekistan;
- Family Code of the Republic of Uzbekistan;
- Law of the Republic of Uzbekistan "On Guarantees of Children's Rights";
- Law of the Republic of Uzbekistan "On Guardianship and Sponsorship";
- Law of the Republic of Uzbekistan "On State Policy Regarding Youth";
- Law of the Republic of Uzbekistan "On Education";
- Decision PD-4296 dated April 22, 2019 of the President of the Republic of Uzbekistan "On additional measures to further strengthen the guarantees of children's rights" and others.

The Law of the Republic of Uzbekistan "*On Guarantees of Children's Rights*" provides guarantees *of the child's freedom and privacy, guarantees of the child's rights to protection, guarantees of the child's right to be protected from illegal transfer, guarantees of the child's right to express his opinion*. One of the directions of the state policy for the protection of children's rights is to ensure the rights, freedoms and legal interests of the child; protection of the child's life and health; not to allow the child to be discriminated against; protection of the child's honor and dignity.

These regulatory legal documents are used in our country to ensure the use of fundamental rights and freedoms of children, to protect them from various forms of violence, and to apply strict punishment measures to persons who commit any violence against minors (children). In most cases, as a result of minors' (children's) improper use of Internet social networks, interest in various prohibited programs, virtual communication with various unknown persons, making acquaintances and providing them with their personal information, personal photos, they become "prey" of malicious individuals in cyberspace. It's no secret that it remains. In this case, minors (children) become victims of online violence, child pornography and other such virtual violence.

In many developed countries of the world, restrictions have been set for children's use of the Internet or telephone. We can cite developed countries such as the USA, Russia, China, and Germany as examples. These qualifications have certain restrictions on internet and smartphone usage for minors, and this works automatically. For example, in China, children cannot use the Internet or smartphones for more than 2 hours, and those under the age of 18 are prohibited from using the mobile Internet between 10:00 p.m. and 06:00 a.m. Excludes educational programs, personal security services, emergency calls, and certified mental and physical development programs. Similar restrictions have been imposed in Russia and Germany.

CONCLUSION

Along with the countries of the developed world, certain restrictions on the use of internet networks and smartphones by minors (children) have been established in our country, automatic programs such as "control", "parental control" have been developed and implemented in their use of smartphones and (or) internet networks. It would be expedient if a legal norm was developed to regulate it.

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FACTORS THAT INFLUENCE PARENTAL INVOLVEMENT IN HOMEWORK AMONG LEARNERS WITH VISUAL IMPAIRMENT IN SELECTED PRIMARY SCHOOLS IN LUSAKA DISTRICT

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ABSTRACT

This study was to establish the factors that influence parental involvement in homework among learners with visual impairment. A descriptive survey design supported by qualitative and quantitative method of data collection was used. The sample size was 109 participants consisting of 38 parents, 27 teachers, 4 head teachers who were purposively selected and 40 learners with visual impairment who were selected using simple random procedure. Quantitative data was analysed using Statistical Package for the Social Sciences (SPSS) software version 23 to generate descriptive statistics and inferential tests such correlation, t-test and multiple regression. Qualitative data was analysed through thematic analysis with actual voice as verbatims. The study showed that there were some factors that influenced parental involvement in homework which in a way negatively affected the learners' academic performance. These included high level of illiteracy, busy schedules of parents, and differences between home and school braille use which led to failure to help children with homework. The study recommended that government should take the initiative to orient and train parents in braille to enable them communicate effectively in reading and writing in braille with their children when doing homework.

KEYWORDS: Braille; Academic Performance; Homework; Parental Involvement; Visual Impairment.

INTRODUCTION

Statistics show that the performance, progression and completion rate for children with visual impairment is low at grade seven as well as grade twelve (Ndume, 2021). In order to see improvement in school for learners with visual impairment, Wanjiru et al (2019) revealed that the role parents play in the education of their children has potential to strengthen the support provided by school and improves the education outcomes of a child with learning needs. Homework links what is learned at school and learning in the home environment. Likewise, other educational research studies have repeatedly established the benefits of effective homework (Carr, 2013; Dettmers et al., 2019; Barrera-Osorio et al., 2020). Hence study to examine factors that influence parental involvement in homework among learners with visual impairment.

Although, the education policy document of 1996, strongly states that each school required to have a clear schedule of performance-monitoring activities that check pupils' progress. Prominent among those is homework given to pupils on a regular basis, thoroughly marked, and quickly returned and parents have to be there to give guidance and support to their children (MoE, 1996). However, little seems to be known whether it's also applicable to learners with visual impairment in primary schools and not much has been gathered in this area, but there have been efforts through the Ministry of Education in trying to ensure that parents are brought on board to improve learning. Also, parental involvement inadequacy in the learning process among children with visual impairment has not only become a national issue but a worldwide outcry. From the parents' perspective, Masa and Mila (2017) lament that today's parents have no time for their children. Due to the fact that children with visual impairment use braille at school which the parents are not familiar with, despite they can engage in verbal discussion. Lack of braille skills became an intimidating factor when parents and schools could not communicate effectively (Barrera-Osorio et al., 2020). Therefore, it's appropriate in this study to ascertain if parents for children with visual impairment whelp them with their homework despite their educational level as it has been stated from studies on regular children (Manasi et al., 2015; Bonnati and Rubach, 2022).

Much of the literature reviewed were conducted using parents of regular schools with no inclusion of learners with disabilities. Most studies have not considered involvement of parents in the learning process involving persons with disabilities and the visually-impaired in particular. Hence, the study to determine the factors that influence parental involvement in homework implementation among learners with visual impairment in primary schools. A research carried out by Mubanga (2011) in regular schools suggests that parental involvement in homework is associated with academic success of the learners in such institution. That study and many others didn't address the on the factors that influence parental involvement in homework implementation among learners with visual



impairment. Hence, the need to determine the factors that influence parental involvement in homework implementation among learners with visual impairment in primary schools.

METHODS

The study adopted the descriptive survey design using a mixed approach. This study used this design over other designs to enable the researcher to obtain in-depth information which could be used to facilitate the generalization of findings to the larger population. The special schools are dotted around the country, Zambia has ten provinces but the study was carried out within the surrounding communities of Lusaka District, in Lusaka province and it only limited to those selected schools which cater for children with visual impairments. The sample for the study comprised of 109 participants; 4 head teachers, 27 visual impairment specialist teachers, 40 learners with visual impairment and 38 parents for the same number of learners with visual impairment were qualitatively surveyed. Purposive sampling was employed in this study for selection of head teachers, teachers and parents and simple random procedure was used to pick the learners.

Before beginning the data collection process, consent was gotten from participants. Among the teachers and learners, questionnaires were self-administered which enabled the researcher to collect both qualitative and quantitative data. The researcher conducted a face-to-face interview with head teachers and parents as it allowed the researcher to ask follow up questions that could not be asked if a questionnaire was used. Quantitative data was analysed using Statistical Package for the Social Sciences (SPSS) software version 20 to generate descriptive statistics and inferential tests such correlation, t-test and multiple regression was used to find level of significance. Qualitative data from semi-structured interviews was also collected from head teachers and parents was transcribed and analysed thematically, verbalisms were used to indicate actual voices of the participants.

RESULTS

The study sought to establish factors that influenced parental involvement in homework among learners with visual impairment. A question was asked to the participants on the rate of parental involvement in homework at the sampled schools. Findings from participants on the rate of parental involvement in homework at their schools showed that out of the 109 participants, 35 (32.1%) indicated good, 33 (30.3%) indicated excellent, 31 (28.4%) said that it was fair, while 10 (9.2%) indicated poor. The results were subjected to a t-test to compare male and female parents in their involvement in homework of learners with visual impairment as well as between parents who were aware of the homework policy and those not aware of the homework policy. The results of the test are shown in the table 1.

Table 1 T-Test on equality of gender variation on involvement and awareness of homework policy for learners with Visual Impairment

Variables	t-statistic	P-value	95% Confidence Interval of the difference	
			Lower	Upper
Gender	0.326	0.747	-0.259	0.355
Awareness of homework policy	-3.707	0.001	-0.86	-0.245

The results show that there was a statistically significance difference in homework involvement between parents who were aware of the homework policy and those not aware of the homework has the probability value was 0.001 at 95% confidence interval. It was likely that parents who were aware of the homework policy were more involved in homework of learners with visual impairment compared to parents who were not aware of the homework policy. On the other hand, the study found no statistically significance difference between male and female parents being involved in homework of learners with visual impairment as the table shows probability value at 95% confidence interval of 0.747, which was above the level of significance of 0.05. This means that although parental involvement helps the learner to do well in school it did not depend on gender.

When participants were asked concerning the positive factors on parental involvement in homework at school, the in responses were as shown in the Table 2.

Table 2 Positive Factors of Parental Involvement in Homework

Factors	Participants				Total
	Pupils	Teachers	Parents	Head Trs.	
Working together as a team	7 (6.4%)	7(6.4%)	12(6.4%)	3 (2.8%)	29(26.6%)
The demand for parents' signature on the homework	10 (9.2%)	5(4.6%)	7(6.4%)	0 (0%)	22(20.2%)
As per policy to assign homework	5(4.6%)	7 (6.4%)	4 (3.7%)	0 (0%)	16(14.7 %)
The benefits of homework to a learner	18 (16.5%)	8(7.3%)	15(13.8%)	1(0.9%)	42 (38.5%)
Total	40 (36.7%)	27 (24.8%)	38 (34.9%)	4 (3.7%)	109(100%)



When the participants were asked about the key positive factors of parental involvement in homework at school, 42 (38.5%) indicated “the benefits of homework for a learner”, while 29 (26.26%) indicated “collaboration among teachers, parents and learners as a team” and 22 (20.2%) indicated “the demand for parents’ signature on children homework”. Further, 16 (14.7 %) indicated “as per policy to assign homework”. In support of this, a female parent explained: “A reminder by the teacher to us, parents, when picking up a child is that there is homework book in the bag”.

Also, the benefits the children gain in terms of academic progress by ensuring continuity of learning even at home make a parent to be involved in homework. This was indicated as the other facilitator of parental involvement. A female head teacher said: “Parents help in order to see the child’s performance improve and also the demand by the teacher to sign against the homework as per policy”.

From the findings, it was evident that the teacher–parent warm relationship of working together to improve the participation and performance of the learner in the learning process was the key facilitator of parental involvement. Learners were able to improve on their academic work because of the motivation from their parents.

On the other hand, when participants were asked on what they thought were key negative factors on parental involvement in homework at school, the responses were as shown in Table 3.

Table 3 Negative Factors on Parental Involvement in Children’s Homework

Items	Participants				Total
	Pupils	Teachers	Parents	Head Trs	
Illiteracy of parents	9 (8.3%)	5 (4.6%)	7 (6.4%)	1 (0.9%)	22 (20.2%)
Inability to express or write in Braille	16 (14.7%)	9 (8.3%)	17 (15.6%)	2 (1.8%)	44 (40.4%)
Busy schedules by parents	12 (11.0%)	5(4.6%)	8 (7.3%)	0 (0%)	25 (22.9%)
Negative attitude toward homework	3(2.8%)	2 (1.8%)	1 (0.9%)	0 (0%)	6(5.5%)
Lack of knowledge about importance of homework	0 (0%)	6 (5.5%)	5 (4.6%)	1(0.9%)	12 (11.0%)
Total	40 (36.7%)	27 (24.8%)	38 (34.9%)	4 (3.7%)	109 (100%)

When the participants were asked on the key barriers to parental involvement in homework at school, 44 (40.4%) indicated inability of the parents to write or express themselves using braille, while 25 (22.9%) indicated busy schedules by parents as some parents leave their homes early in the morning and come back late in the night; they have no time to check children’s academic work. Further, 22 (20.2%) indicated illiteracy among parents as some can’t write and read, while 12 (11.0%) and 6(5.5%) indicated lack of knowledge about importance of homework and negative attitude toward homework respectively. In support of this, one teacher said: “Parents of learners with visual impairment are challenged by braille used by persons with visual impairment. Most children with vision loss born to sighted parents who fail to communicate in writing well with them due to braille skill barrier”.

Further, teachers indicated that majority of parents of learners with visual impairment were not aware of the curriculum provided to their children in schools. This unawareness made it difficult for them to assist the learners in schoolwork. Illiteracy amongst some parents was seen to be equally a great challenge. It was noted that among parents who did not check children’s homework were unable to express themselves or write in braille. A male parent who was a retired special education teacher explained: “Some parents are illiterate; others have a negative attitude they think their children cannot progress to higher levels. Also, lack of knowledge by parents on the questions asked in the homework or not having knowledge on the subject matter”.

One female parent said: “It is difficult for me especially during weekdays because I spend much of my time at work and knock off late and tired. Also, sometimes I am not sure of questions asked in the homework”.

Contributing on the question on negative factors to parental involvement in homework, one male learner with visual impairment said the following: “Many parents don’t know braille; hence it becomes difficult for them to help me in homework. Their education level is also a factor; some parents are not educated. Lack of knowledge about the importance of homework is a barrier”.

In support of this, one female head teacher said: “Most parents are not involved due to inability to communicate well with their children as they don’t know how to read and write in braille, hence it becomes difficult for them to help their children in their homework”.



From the findings, it was noted that lack of confidence and work pressure, lack of time and inability of the parents to express themselves using braille were the main negative factors hindering parental involvement in homework. The results were subjected multiple logistic regression analysis to understand its significance that is factors influencing parental involvement in homework implementation among learners with visual impairment in primary schools.

Table 4 Multiple Regression analysis on factors influencing parental involvement in homework implementation among learners with Visual Impairment in primary schools.

Variables in the Equation	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Gender	-0.368	1.09	0.114	1	0.736	0.692	0.082	5.863
Awareness of homework policy	3.401	1.372	6.142	1	0.013	30	2.037	441.839
Homework guidelines put in place	21.203	9473.574	0.235	1	0.998	1.62	0.182	6.342
Frequency of homework	2.603	1.28	4.133	1	0.042	13.5	1.098	165.972
Impression of homework	0.223	1.285	0.03	1	0.011	1.25	0.101	15.499
Schedules of parents	-19.756	17974.84	0	1	0.999	0	0	0
Literacy level	1.946	1.543	1.59	1	0.002	7	0.34	144.056
Ability to express or write in braille	0.223	1.285	1.03	1	0.021	1.25	0.201	15.499
Constant	-73.664	16022.4	0	1	0.996	0		

From the results we can see that Awareness of homework policy ($p=0.013$), Frequency of homework ($p=0.042$), Impression of homework ($p=0.011$) and Literacy level ($p=0.002$) added significantly to the model. However, Gender ($p=0.736$), Homework guidelines put in place ($p=0.998$), Schedules of parents ($p=0.999$) and Ability to express or write in braille (0.021) did add significantly to the model. The odds ratio of 30 on Awareness of Homework policy indicates those who are aware of the homework policy were 30 times more likely to get involved in the homework of learners with visual impairment compared to those who are not aware of the homework policy. Furthermore, Parents with lower levels of literacy were 7 times less likely to get involved in homework of learners with visual impairment compared to parents with high levels of literacy. Therefore, the Logistic regression model was found to be statistically significant, $X^2 = 11.234$, $P < 0.05$ (significance level = 0.001) at 95% Confidence Interval. The model explained 86.1% (the Nagelkerke R^2) of the variance in Parental involvement in homework of learners with visual impairment and correctly classified 84.6% of the cases. Parents who were aware of the homework policy were 30 times more likely to get involved in homework of learners than those parents who were not aware of the homework policy. Parents with higher levels of literacy were found to be 7 times more likely to get involved in homework of learners with visual impairment than parents with lower levels of literacy.

However, a question was asked on how to reduce barriers and make it easier for parents to be more involved in their children's homework. Some participants indicated that the parents need to be trained in braille so that it becomes easy for them to read and write in braille. Others felt parents should be oriented on the value of homework. In line with these responses, one male parent whose child was in grade six said:

“Encourage community partnership where there is sensitisation on braille for easy communication or offer training to them in braille. Parents and teachers should work together to encourage the pupils to communicate with them effectively by showing kindness even if they don't know how to read and write in braille”.

When the same question was asked to head teacher, a male head teacher has this to say: *“There need for increase of parental involvement, even if the parents do not know how to read and write in braille can help their children verbally, then, they write themselves in braille”.*

From the findings it was clear that parents needed to be sensitised on the importance of their involvement in homework. The study acknowledged presence of barriers in an attempt to argue parents to be involved in the homework given to their children.

DISCUSSION

The results from participants on the rate of parental involvement in homework majority rated parents'/guardians' involvement in their homework as either excellent or good but there were times when they failed. When the results were subjected to a *t*-test to compare male and female parents in the involvement in homework of learners with visual impairment as well as between parents who were aware of the homework policy and those not aware of the homework policy. The results show that there was a statistically significance difference in homework involvement between parents who were aware of the homework policy and those not aware of the homework at the rate at which they were involved ($p=0.001$, 95% CI). This implies that though the parents tended to strive to ensure they were fully involved, there was still much more that children got from their involvement which helped them perform



better in school. This was supported by some parents interviewed who fully involved themselves in homework to enhance children's performance and saw their self-esteem improving. It can be noted that parents are quite involved, especially the mothers, as they help the children to do the task given from school (Wanjiru, et al., 2019).

Further, when respondents were asked concerning the facilitator of parental involvement in homework at school, it was noted that teacher-parent warm relationships facilitate for parental involvement to see the academic progress on the part of a child with visual impairment. If a teacher was working hand in hand with a parent, it would be easier for a parent to help a child effectively (Erlendsdóttir et al., 2022). It was also found that majority of respondents indicated that a teacher, parent and learners themselves were the main facilitators because as they work together they can improve the participation and performance of the learner with visual impairment in the learning process. These findings resonate with Bonanati & Rubach, (2022), who asserted that teachers with positive facilitating attitudes toward involving parents encourage more parents to become involved and increase the effectiveness of involvement in homework to improve the academic performance of children.

The results indicated that reminders to parents by teachers to help in homework given to them when picking up their children and the demand for parents' signature after the task has been answered were facilitators of parental involvement. It further indicated academic improvement are seen in the performance of their children when fully engaged in homework at home. This is in line with the literature by Bonanati & Rubach, (2022) who equally said parents increased and effective involvement in schoolwork enhances progress among their children. This concludes that teachers' commitments towards children's education facilitates their involvement in assisting learners with visual impairment at home.

From the findings despite the overwhelming data that supports the need for schools and parents to work together, multiple obstacles stand in the way of convincing parents to get involved. Parents were found to be not sure about how to help with homework and may not engage in helping their children with visual impairment or become involved with the school because they feel they lack the communication skill, confidence and knowledge that are utilized by school staff. Further, findings revealed that some parents do not check homework, they show unwilling to help their children due to lack of braille literacy. This resonates with Wanjiru, et al., (2019) who argued that there was some evidence that parental willingness to help with homework has been associated with their involvement. The study showed that illiteracy was a strong factor affecting parental involvement in pupils' homework in schools. As it was evidently explained that when parents are illiterate or are too busy, they do not help their children with visual impairment at homework. In support, Manasi et al. (2015) said illiteracy among some parents may be a great challenge that discourages them from assisting their children in homework. The results were consistent with the survey report by Maldonado et al (2022), which stated that illiterate parents are not able to play roles of supporting children's education at home. Findings showed inability to express themselves or write in braille. This is in line with Bonanati & Rubach (2022) who said that most parents for children with visual impairment faced braille barriers (unable to read and write in braille) hindering them from effectively supporting their children in academic work. Parents of learners with visual impairment are challenged by braille used by persons with visual impairment.

Further, results showed that parental involvement in homework for learners with visual impairment is mainly hindered by the parental attitude towards their own children's learning and parents have never been oriented on the importance of homework and therefore see it as a waste of time. This resonates with Barrera-Osorio et al (2020) who stated that parents who are not supportive of teachers' homework policies communicate their dissatisfaction to their children, who are then likely to share their parents' negative attitudes. Similarly, Erlendsdóttir et al (2022) who found that most teachers and principals attributed the lack of parental involvement to the parents' lack of interest in their children's education and sometimes teachers are unaware of processes that could be used to involve parents in homework or other school activities.

Another factor revealed in the study as contributing to low parental involvement was the parents' lack of knowledge on the importance of homework. In addition to time constraint barriers, the study found that low-income parents may also experience psychological barriers (Maldonado et al., 2022). It should be noted that any obstacles that may inhibit parents from actively seeking involvement in schools must to be identified and addressed in order to build a positive relationship with the school system.

Therefore, in order to address barriers for parental involvement in homework for learners with visual impairment there is need to enhance parental involvement in learners with visual impairment's homework, parents should be encouraged to check their children's homework in order to help them know what they are learning and also to monitor whether their children are actually doing their homework. Showing interest in the learners with visual impairment's learning by the parents may motivate the child to work harder in school. Generally, parents need to be educated on the need to be involved in their learners with visual impairment's homework. Also, parents and teachers should work together to encourage the pupils to communicate with them effectively by showing kindness.



They, also need to be trained in braille so that it becomes easy for them to interact properly with their children in school work when they acquire the skill in reading and writing in braille. In line with this finding, a study by Wilder (2014) revealed that adult literacy programmes were necessary in assisting parents overcome illiteracy. Literacy programmes can assist parents to become involved in children's homework by imparting literacy skills in learners with visual impairment.

CONCLUSION AND RECOMMENDATIONS

There were perceived barriers to getting parents to get more involved in helping their children with visual impairment with homework. These barriers include: busy schedules at work, inability to use braille or illiteracy. Further, both children and parents had household responsibilities leaving parents with insufficient time to devote to homework. In order to foster productive parental involvement in pupils' homework, proposed a deliberate attempt to raise the literacy level of the illiterate, parents more so in braille. In particular, this involves the strengthening of orientation and training in the braille literacy. We recommend that;

- All parents should be given a copy of the homework policy at the beginning of each school year upon registration of their child. It should be made available in the language that the parents are familiar with and with clear guidelines.
- Parents expressed ignorance about reading and writing in braille, hence it is recommended that the government through schools take initiative to orient and train parents in the braille in order for them to effectively communicate in writing with children who have visual impairment when doing homework.
- Parents and teachers' collaboration were quite weak. The study therefore recommends strategies aimed at strengthening the parents-teacher's relationships in order to support homework policy implementation and promote positive attitudes and practices towards homework.

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CHALLENGES AND OPPORTUNITIES OF PADDY FARMING IN PALAKKAD

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ABSTRACT

Paddy cultivation in palakkad confronts declining cultivation area and production, coupled with productivity fluctuations. These trends pose significant threats to food security and farmer livelihoods. This research delves into the challenges encountered by paddy farmers in Palakkad and identifies opportunities within the sector. Focusing on Vallapuzha Panchayath ,it aims to provide insights for growth in this vital agricultural domain.

INDEX TERMS – *Agricultural laborers, Challenges, machinery, Opportunities, Palakkad*

1.INTRODUCTION

The area under paddy cultivation in kerala has been rapidly diminishing since the 1980s,(Fig 1). The production figures have also witnessed a decline(Fig 2), Season-wise data of rice reveals that the area under Virippu (autumn) and Mundakan (winter) has declined, while that of Punja (summer) crop has increased in 2021-22 over the previous year. The historical trajectory of rice productivity in the Kerala, offers a compelling narrative of agricultural evolution. Beginning in the mid-20th century, rice productivity in the area stood at a modest 1,144 kilograms per hectare in 1955-56. Over the ensuing decades, this figure experienced fluctuations, punctuated by gradual improvements, reaching a peak of 2,920 kilograms per hectare in 2018-19. This significant increase in productivity reflects advancements in agricultural practices, technology, and perhaps changing environmental conditions. However, in the subsequent years, there was a slight reduction, with productivity settling at 2,872 kilograms per hectare in 2021-22.

The cultivation of paddy in Palakkad, the leading producer in the state demonstrates a noteworthy consistency in its agricultural metrics over the past three years. The area dedicated to paddy farming has exhibited minimal fluctuations, with a subtle decline from 2018-19 to 2020-21.(fig 4) In parallel, the production of paddy has experienced variations, notably soaring from 2018-19 to 2020-21, after a dip in the intervening year(fig 5). There is fluctuations in productivity , which peaked in 2019-20(fig 6), and slightly decreased in the following years following the trend exhibited by the state.

1.1 Area

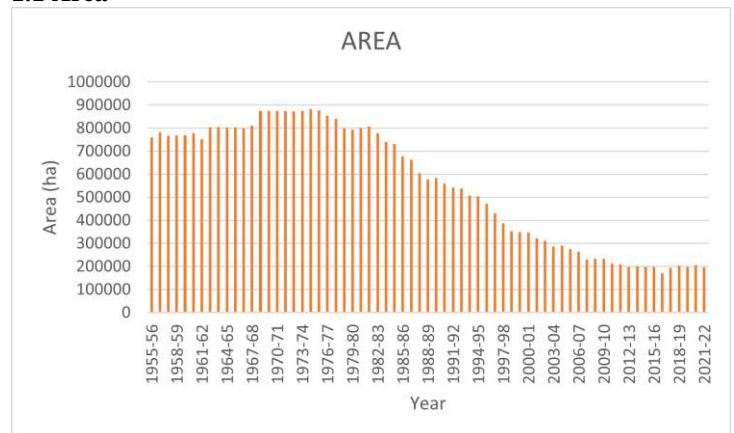


Figure 1-Area under paddy farming over the years in kerala

There has been a prominent decline in paddy cultivation in Kerala since the 1980s, after 2006 the area is more or less stable with slight fluctuations from year to year.

1.2 Production

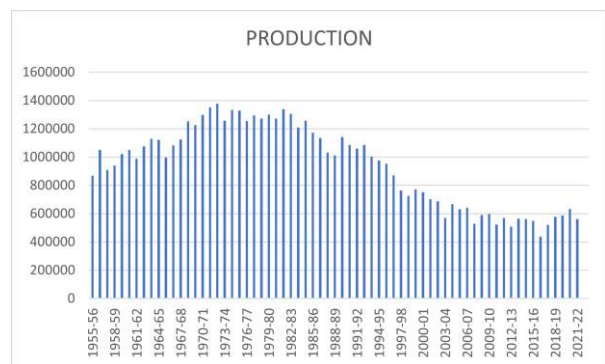


Figure 2-Production in metric tonnes over the years in kerala



The production has been decreasing since the 1980s. There has been an increase in production from 2017-18, but the year 2021-22 marked a decline."

1.3 Productivity

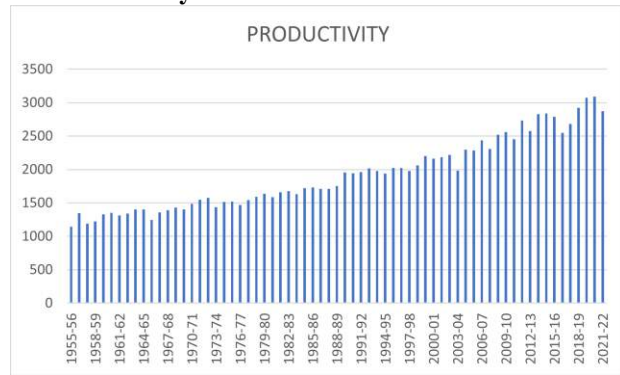


Figure 3- Productivity in kg/ha over the years in kerala

There has been increasing productivity in the case of rice, which peaked in 2020-21, but the year 2021-22 underwent a decline compared to previous years

1.4 Area under paddy cultivation in palakkad

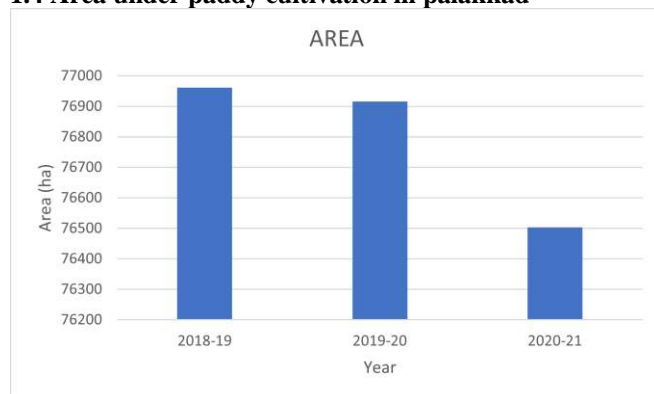


Figure 4- Area under paddy cultivation in palakkad from 2018-21

The area under paddy farming in palakkad is declining year by year

1.5 Production of paddy in palakkad

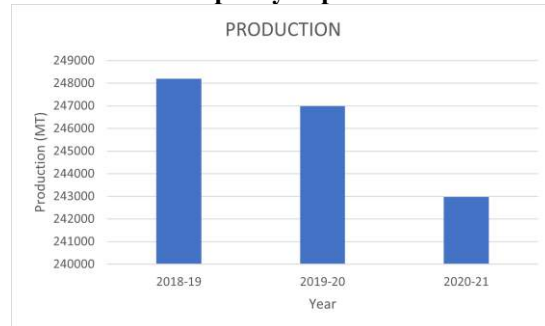


Figure 5- Production from paddy farming in palakkad (2018-21)

The production is decreasing year by year.

1.6 Productivity of paddy farming in palakkad

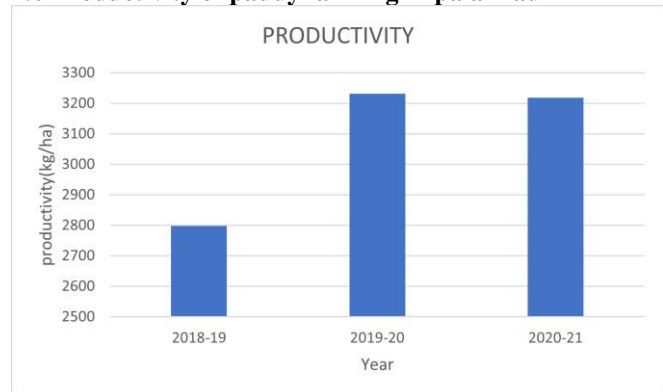


Figure 6- Productivity from paddy farming in palakkad(2018-21)

The productivity has been fluctuating over the last three years.[1]

2.STATEMENT OF THE PROBLEM

The paddy cultivation landscape in Kerala, particularly within the Palakkad region, has undergone significant transformations over the past few decades. A primary concern in this evolving agricultural scenario is the persistent and alarming decline in the area dedicated to paddy cultivation, a trend that has endured since the 1980s. This ongoing reduction in cultivated land poses a formidable threat to the sustainability of paddy farming in the region, potentially jeopardizing both food security and the livelihoods of local farmers. Adding to these challenges is the recent emergence of a second critical issue: the year-to-year fluctuations in paddy production and productivity. These unpredictable variations create considerable obstacles for farmers, making it exceedingly difficult to plan their agricultural activities and secure a stable income. In response to this complex agricultural landscape, this paper examines the challenges



faced by farmers in the area, with a specific focus on the Vallapuzha Panchayath. Furthermore, it endeavours to shed light on the potential opportunities that exist within the realm of paddy cultivation, offering insights to enhance the prospects of farmers in this dynamic environment.

Objectives of the study

1. Analyse the existing challenges and constraints faced by paddy farmers in the Palakkad region, with a focus on understanding the factors that hinder productivity, cultivation area, and economic stability within the sector.
2. Explore the scope of paddy farming in the region, suggest potential avenues and strategies for enhancing paddy farming practices, productivity, and economic viability in the Palakkad region, with the goal of identifying sustainable opportunities and innovative approaches for local farmers.

3.METHODOLOGY OF STUDY

3.1 Sampling and Participants:

The research sampling size consisted of 53 participants surveyed from three different 'padashekarams'(paddy polders) in Vallapuzha village. The selection aimed to capture diverse perspectives and experiences within the local paddy farming community.

3.2 Survey Questions

1. What are the major problems or challenges you face in paddy farming?
2. Can you rank the identified problems in order of their significance or impact on your paddy farming activities?

3.3 Data Collection Methods

- a. **Observations:** Direct observations of paddy farming activities, crop management were conducted to assess on-ground implementation.
- b. **Surveys:** Structured questionnaires were administered to the selected participants to gather their feedback, insights, and perceptions paddy farming practices.
- c. **Financial Analysis:** Financial data pertaining to the costs incurred during cultivation, which includes expenses for materials, equipment, and labour, were meticulously collected from presidents of padashekarams. This information was analysed to assess the economic feasibility.

3.4 Data Analysis

Data collected from observations, surveys, and financial analysis were subjected to rigorous quantitative and qualitative analysis. Statistical tools and software were employed to analyse survey responses, while qualitative data was categorized, coded, and thematically analysed to identify

trends and patterns. The challenges in paddy farming were ranked based on the ratings given by participants on a scale of 1 to 5.

3.4 Limitations

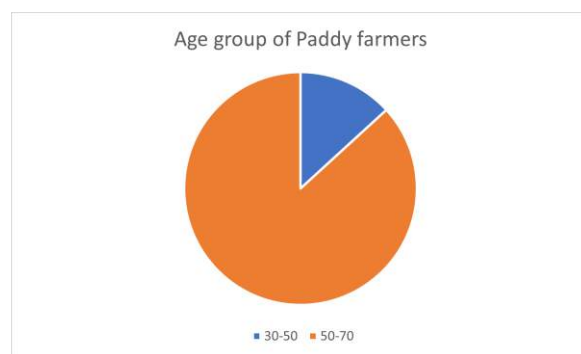
The study was conducted within the specific geographical context of Vallapuzha village, which may limit the generalizability of the findings to broader paddy farming regions. Additionally, as with any self-reported data, there may be potential biases in participant responses, which we have taken into consideration during our analysis. Despite these limitations, the research provides valuable insights on paddy farming in this particular area.

4.DATA ANALYSIS AND INTERPRETATION

Following the completion of data collection involving a sample of 53 farmers through both questionnaire administration and personal interviews, the subsequent phase involves data processing. This stage encompasses tasks such as data editing, classification, and analysis of the collected Primary Data. The Primary Data has been transformed into a coded format and subjected to analysis employing various charts and graphs. Software tools like Excel is utilized for this purpose. After the graphical representation, the data is then interpreted to derive meaningful insights.

4.1 Age of farmers

Age group	Number of farmers	Percentage
30-50	7	13.3
50-70	46	86.7

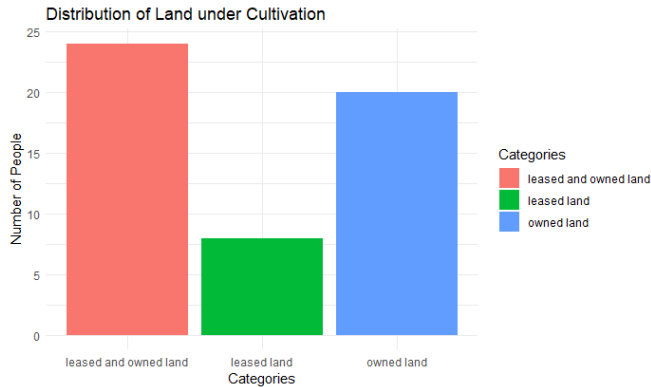


Most farmers, comprising 86.7%, fall within the age group of 50 to 70. This demographic distribution strongly implies that the younger generation is notably absent from paddy farming, which is a significant contributing factor to the decline in cultivated area.



4.2 Nature of land area under cultivation

Nature of land area under cultivation	No of farmers
Leased and owned land	24
Leased land	8
Owned land	20

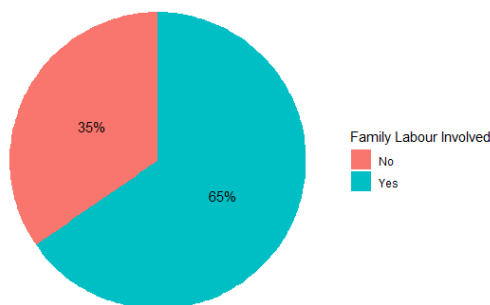


From the data, it is clear that, 24 farmers cultivate on both owned and leased land. 20 farmers used owned land only, 8 farmers cultivated on leased land only. Only a few farmers are willing to cultivate by taking land on lease.

4.3 Involvement of family labour

Family labour involvement	No of farmers
Yes	34
No	18

Family Labour Involvement

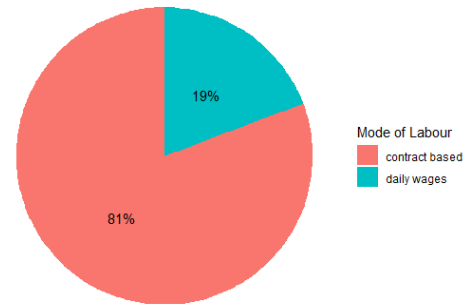


Notably, a significant majority, constituting 65% of the surveyed individuals, reported active involvement of family labour in their cultivation practices. In contrast, the remaining 35% indicated that family labour was not engaged in their cultivation activities.

4.4 Mode of labour

Mode of labour	Number of farmers
Contract based	42
Daily wages	10

Mode of Labour

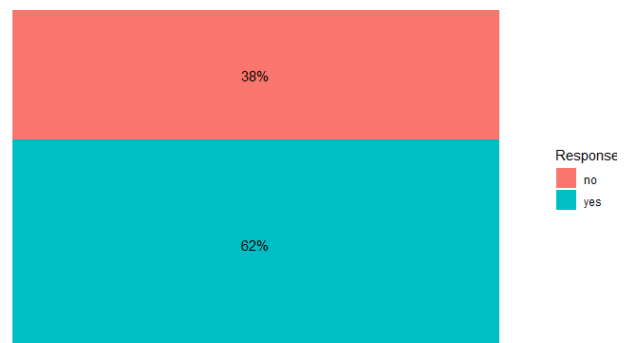


It is clear from the data that 81% of farmers got labourers from contractors while 19% of them employed labourers in daily wages form.

4.5 Availability of farm machinery

Shortage of farm machinery	Number of farmers
Yes	32
No	20

Shortage of Farm Machinery



4.6 Problems of paddy cultivation in the region

4.6.1 Water Scarcity:

One of the most pressing concerns voiced by the majority of respondents was the significant decline in water availability, particularly impacting paddy cultivation. As captured in the nostalgia of a respondent, there were times when the region thrived with three cropping seasons, but the present scenario restricts this to merely one. "It's like nature's pendulum. One year we're flooded, the next, we're parched," lamented another participant. This erratic pattern, tied to climatic uncertainty, leaves farmers on an ever-shifting footing, trying to anticipate



and adapt. Echoing this sentiment, a respondent mentioned the absence of a river in the village as a significant exacerbating factor, stating, "Our fields long for a river's embrace, but it's just a dream for now." According to a farmer's statement, the absence of proper irrigation facility in the village is a major problem, further exacerbated by the fact that the village is not currently covered by any irrigation projects.

4.6.2 Changing Labour Dynamics and Shortage of Farm Machinery

Diving into labour dynamics, respondents painted a contrasting picture of the past and present. As one interviewee reminisced, "There was a time when our fields buzzed with native laborers, but now they chase different dreams in the city." This shift towards urban, non-agricultural jobs is not just an economic decision but a reflection of changing aspirations. Another intriguing transformation highlighted by a respondent is the emerging trend of contract-based labour, introducing a departure from traditional practices. Mechanization, too, has carved its own space in this evolving landscape. While tractors have become a common sight, planting machines remain elusive, as mentioned by one farmer. In contrast, harvesters have become indispensable, but their availability sometimes poses challenges. "We're at the mercy of neighbouring states when it comes to certain machinery," shared another respondent. This reliance, juxtaposed with a lack of subsidies for mechanized farming, was a recurring concern among participants.

4.6.3 Pig Attack

Wildlife interactions have always been a part of farming, but the village's challenge with pig attacks seems to have intensified. Electrified fences, as described by a respondent, seemed like a beacon of hope. However, the tales of accidents and fatalities associated with these fences have given them a sinister undertone. The narratives oscillate between efficacy and fear. As one farmer put it, "The fences protect our crops, but at what cost?" This dilemma, layered with safety concerns, continues to haunt many in the village.

4.6.4 Others

Paddy cultivation, as the respondents described, is a symphony of challenges and aspirations. Seed quality emerged as a chorus among the voices, with many stressing the need for enhanced varieties. The delicate dance between fertilization and weed management was another motif, beautifully captured by a farmer's statement: "It's like tending to a child, knowing when to nurture and when to discipline." Market dynamics, too, resonated across narratives, with participants emphasizing both the value of their produce and the support they yearn for from the market and government.

4.7 Overall ranking of the problems

Given in the table is the ranking of the problems. Farmers were asked to rate these challenges on a scale of 1 to 5, with 1 indicating the lowest severity and 5 indicating the highest severity. The overall score, calculated by adding all the ratings given by farmers, is represented in the table. Additionally, the number of farmers who gave different ratings between 1 to 5 for each problem is also indicated.

Challenges	Overall score	Rank	1	2	3	4	5
1.Climatic variability	238	1	1	2	3	11	36
2.Shortage of farm machinery	198	2	2	4	12	23	12
3.Insufficient irrigation infrastructure	195	3	1	12	5	20	15
4.Lack of supply of climate resilient varieties	176	4	7	7	12	16	11
5.Excess growth of weeds	175	5	4	6	22	12	9
6.Lack of quality seeds	128	6	15	16	11	7	4
7.Pest and disease	120	7	16	19	11	7	1

4.8 Economic viability of paddy farming

In the given table below, the cost of paddy cultivation per hectare is calculated, along with the profit per hectare of paddy cultivation. These calculations are based on data collected from the presidents of Padashekarams through direct interviews.

Sl no	Components	Cost per ha(rs)
1	Hired human labour	33200
2	Machine labour	8900
3	Seed	3500
4	FYM and Chemical fertilizers	8300
5	Plant protection	2000
6	Land tax and irrigation	210
7	Repair and maintenance charges of implements, machinery and building	120
8	Miscellaneous cost	1500
	Total cost	57730

Considering the returns, recent trends suggest that there is an average of 3000 kg/ ha productivity. Supply-co procures it and average rate of 28 rupees/kg .



So total returns = $3000 \times 28 = 84000$
Net profit per ha = $84000 - 57730 = 26,270$ rs per ha

5.FINDINGS

1. Demographic Shift in Cultivators: The domain of paddy cultivation in Vallapuzha is currently dominated by farmers with a lengthy history in the occupation, having started at a young age. This generational shift and the reluctance of the younger generation present significant challenges.

2. Climate Variability: Unpredictable weather patterns, swinging between floods and droughts annually, intensify the challenges in paddy cultivation. Intense rainfall leads to runoff, eroding topsoil with high water-holding capacity, this combined with Excessive borewell digging exacerbates groundwater depletion, creating a destructive cycle.

3. Insufficient irrigation infrastructure: A notable lack of irrigation infrastructure, coupled with the absence of a proximate river, reduces cropping seasons. The absence of an effective rainwater storage system results in challenges during dry periods.

4. Changing Labor Dynamics: Indigenous workers are transitioning to different livelihoods, with laborers from neighbouring states filling the void. This shift appears to be driven by the prospect of consistent year-round earnings in alternative professions as opposed to the seasonal income from rice cultivation. Additionally, the study revealed the emergence of contract-based labour arrangements, representing a departure from longstanding agricultural practices, where labourers were available on daily wage basis.

5. Mechanization Deficit: There's a dependency on machinery from neighbouring states, which presents challenges concerning the consistency of equipment quality and its timely availability, subsequently affecting productivity.

6. Wildlife Concerns: Frequent wild boar intrusions and the associated risks of conventional electrification methods highlight the need for newer protective strategies.

7. Weed Proliferation: Inadequate knowledge about herbicide application and prevailing misconceptions contribute to the proliferation of weeds.

8. Requirement of climate resilient varieties: There should be supply of climate resilient varieties to farmers in the region. There is an urgent need to popularize such varieties.

6.SUGGESTIONS

1. Adoption of rice production methods that require less water, such as aerobic rice system, the system of rice intensification, alternate wetting and drying method and direct seeding, it is essential to raise awareness among farmers regarding these systems. Further research needs to be conducted to assess the suitability of these systems to this region.

2. Farmers in the Padashekarams region have the opportunity to foster collaboration and establish a new Farmer Producer Company. They can unite to initiate a Custom Hiring Centre, with financing options accessible through the National Agriculture Infrastructure Financing Facility under the Department of Agriculture and Farmers Welfare.[2]

3. To promote youth involvement in agriculture, it is imperative for both the central and state governments to implement more schemes. Furthermore, enhancing the effectiveness of existing initiatives such as ARYA (Attracting and Retaining Youth in Agriculture) implemented by ICAR (Indian Council of Agricultural Research) is essential. Establishing awards and recognition programs for young farmers who excel in agricultural innovation is also Necessary.[3]

4. Wild Boar Deterrence: Implement the use of Borep, an olfactory repellent by Kerala Agricultural University (KAU), to reduce pig attacks, ensuring better crop safety and yield.[4]

5. Educational Initiatives on Weed Management: Offer comprehensive training on herbicide application techniques, eradicating misconceptions and fostering effective weed control strategies.

6. Implement sustainable farming practices, including conservation tillage, crop rotation, and cover cropping, to minimize soil disturbance and erosion. Additionally, use organic matter and mulching to improve soil structure. Plant grass strips, windbreaks, and erosion control structures to reduce wind and water erosion in open fields.

7. Promote rainwater harvesting and aquifer recharge to replenish groundwater levels. Enforce laws and regulations to regulate borewell drilling and penalize illegal or unauthorized digging.

8. Key areas of improvement in irrigation infrastructure include promoting larger rainwater harvesting tanks, diversifying rainwater usage, increasing awareness through outreach programs, streamlining government subsidy processes, addressing tap connection issues in rain water



harvesting tanks, emphasizing regular tank maintenance, promoting sustainable gutter materials, encouraging diverse roofing materials, monitoring system sustainability, promoting year-round rainwater use, and assessing tank capacity to meet actual needs effectively.[5]

7.CONCLUSION

Paddy cultivation in Palakkad is at a crossroads, confronted by both natural and socio-economic challenges. From shifting labour dynamics to climate unpredictability, farmers face a myriad of obstacles. However, through strategic interventions and collaborative efforts, there is potential to turn these challenges into opportunities. Proper implementation of the above suggestions, combined with continued research and support, can set the course for a sustainable and prosperous future in paddy cultivation.

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ANALYSIS OF CONTEMPORARY CONFLICTS IN “AL-JAZEERA” AND “AL-ARABIYA” REGION

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ABSTRACT

The history of conflicts in human history is a diplomatic process with deep roots. By the 21st century, the nature of human conflicts has turned into an unconventional war. Among such conflicts, the conflict between Saudi Arabia and Qatar began on June 5, 2017, after Saudi Arabia and four other Arab countries severed diplomatic ties with Qatar. Al-Jazeera and Al-Arabia play an important role in this regional conflict. The article analyzes the role of media outlets Al-Jazeera and Al-Arabia in the information war between Saudi Arabia and Qatar. An attempt was made to shed light on socio-economic relations between the two countries, as well as diplomatic relations between the countries.

KEY WORDS: *diplomatic conflict, media frames, media development, Al-Qaida, Al-Jazeera, Al Arabiya, Saudi Arabia, Qatar,*

INTRODUCTION

The diplomatic history between Saudi Arabia and Qatar has been uneven, with many ups and downs. Qatar has had good relations with Saudi Arabia since the demarcation of the border between the two countries in 1965. During the Cold War, Qatar followed Saudi policy and became part of the Gulf Cooperation Council. Saudi Arabia also played the role of a mediator in the Qatar-Bahrain border conflict. Saudi Arabia and Qatar are using the power of the media in diplomatic disputes. Both channels have access to regional and global audiences. They are using modern diplomacy and using it. Al Jazeera has made Qatar a regional player and the world sees it as an economically prosperous country.

This channel has a large audience in the region and globally. Any critical reporting of Saudi politics shown by Al Jazeera will certainly have some effect on people. Neither country is inherently democratic, but Saudi Arabia has severe restrictions on local media and the public cannot openly discuss government policies. This is a plus point for Qatar as it has a more modern environment than Saudi Arabia. Al Jazeera has been critical of Saudi policies towards its people, and the audience knows very well that people in Saudi Arabia live in a conservative environment.

This is a direct threat to the Saudi regime, as Al Jazeera already played an important role in the Arab Spring, and Saudi Arabia cannot support any insurgency at home. On the other hand, the Al-Arabiya channel sponsored by Saudi Arabia is trying to prove that Qatar is a power-hungry country and that it supports some terrorist organizations to disrupt the peace of the region

LITERATURE ANALYSIS AND METHODS

In the process of covering this article, the logicity, historicity, consistency and objectivity methods were widely used. This article analyzes the media war between the Saudi-sponsored Al-Arabia channel and Qatar's Al-Jazeera channels. The popularity of channels, for better or for worse, is highlighted as a shaper of public opinion. Their news coverage often determines what happens and what doesn't happen, as well as what issues Arab audiences think about. Events highlighted in the news programs of Al-Arabia and Al-Jazeera channels and criticisms expressed by guests often had a significant impact on the development of events in the region. In the West Bank and Gaza, Al Jazeera is the primary news source for a staggering 53.4 percent of Palestinian viewers, according to recent polls. And Al-Arabiya is 23.8.[8] The result of Al Jazeera's market dominance is that it has positioned itself as a mover and shaker in Palestinian politics, attempting to shape public perceptions and influence debate. The article focuses on the scientific analysis of these processes.

DISCUSSION AND RESULTS

Today, mass media has become an important tool for the countries of the region, which are competing for leadership in the international arena to achieve their geopolitical and geoeconomic interests. It is known from the science of political science that politics is a struggle, a struggle of interests. In ancient times, interstate disputes led to war, and the solution of problems between them was directly related to the outcome of the war. However, over time, the "military solution" became S. Huntington's "cultural competition", and today this problem is being conducted within the framework of F. Fukuyama's "information war" wrapped in an



ideological-ideological shell. In the 2nd century BC, the Chinese general Sun Zi said: "Fighting a hundred times and winning a hundred times is not the excellence of victory, the excellence of victory is to destroy the enemy before entering into battle" is a topical issue of the times.

Information warfare is a product of the globalization process, and it is reasonable to say that it has become a very sharp weapon of ideological influence and serves the interests of various political forces and centers. Of course, this situation is not new for today. Powerful people who have left a deep mark on the history of mankind have effectively used the "weapon of information", which is far superior to military weapons. It should be noted that research in this direction began in the 60s of the 20th century in a number of intellectual centers of foreign countries. British Prime Minister Winston Churchill's phrase: "Until the truth wears its slippers, a lie will have time to travel around the world" defines the meaning of the information war. It is known that "Information War" is very cheap compared to military actions, and it is more powerful than nuclear weapons.

That is, a person with information gets the opportunity to control any process and use it effectively for his own goals and interests. Man is both the object and the subject of this struggle. Concepts and doctrines promoted by some countries openly state that "it is necessary to lose the ideas of socialization in people".

According to the opinions of political scientists, the tasks of the information war are as follows: 1. Pure ideological influence; 2. Providing incorrect information to the country's population (instilling distrust in state and government leaders, creating feelings of dissatisfaction with some directions of state policy, losing trust in official propaganda and information sources and channels); 3. Trying to put psychological pressure on citizens (spreading rumours, creating unhealthy moods, creating hostile moods among different social groups - nationalism, racism, religious extremism and fanaticism) are considered issues. We can see this kind of information war in the case of Al-Jazeera and Al-Arabiya.

At the end of 1996, Al-Jazeera began broadcasting with the help of the Emir of Qatar. The BBC, based in Saudi Arabia, was forced to stop broadcasting in the region as the Saudi government tried to censor the channel. Many former employees of this channel joined the newly established Al-Jazeera TV channel. [1] Qatar has always been under the influence of Saudi Arabia since its inception. Qatar's foreign policy was usually decided by the Saudi government. Al Jazeera aired controversial news about Saudi Arabia's royal family. As a result, this channel is banned in Saudi Arabia. Qatar wanted to conduct its foreign policy without the influence of Saudi Arabia. In response to Al-Jazeera, the Saudi government created the Dubai-based Al-Arabiya channel, sparking a rivalry between Qatar and Saudi Arabia. Saudi Arabia and several other Gulf states cut diplomatic ties with Qatar. The reason for this is that Qatar supports terrorist organizations. Qatar supports the ideology of the Muslim Brotherhood, as well as Iran in the Middle East region. The clash between Saudi Arabia and Qatar can be seen on their media channels. And their channels showed how interested countries can win this diplomatic conflict.

The government of Saudi Arabia is totalitarian in nature; they must defend their regime from a democratic and liberal point of view. Saudi Arabia can protect its authoritarian system within the state through censorship or state control of the media. [2] But the Saudi government must maintain its hegemony in the Middle East region. In the modern world, conventional warfare is not an easy way to threaten or defeat an enemy state. The mass media is the best tool for spreading specific views and threats against rival groups. Qatar is one of the main founders of the Gulf Cooperation Council (GCC). It is also the third country among the GCC group to have signed and ratified both UN treaties. One was on political, social and cultural human rights (ICESC) and the other on political and civil human rights (ICCPR). (Qatar Accedes to Core Human Rights Treaties, 2018) Qatar has ratified an emphatic version of human rights, including media freedom, but its domestic legislation tells a different story. But under its domestic media and publication laws, media freedom is limited to whatever government officials want. The media and media professionals in Qatar face severe government restrictions. Al Jazeera, sponsored by Qatar, is allowed to broadcast any controversial material about countries and their leaders. [3]

Since World War I, the mass media have been used for propaganda and to change public opinion. But with the advent of global satellite news channels, government-sponsored channels have also played an important role in public diplomacy in the states. Al Jazeera is playing an important role in the diplomatic war with Saudi Arabia. Since Al Jazeera's inception, it has been covering Saudi affairs in a highly critical manner that is not accepted by the Saudi government. (Samuel Azran, 2013)

Both countries do not have free media in their states. Their laws are not in favor of media freedom. This means that a country can manipulate its media and use it against another country, especially in that region. The state of enmity between the two countries is not new, and over time it is turning into a media war. Al Jazeera English is completely free to discuss any global issue, including criticism of Saudi Arabia. Al Jazeera's news is focused on Saudi Arabia and related to the diplomatic conflict. Both media channels correct certain issues and try to show a negative image of each other's sponsoring countries. On the other hand, Al-Arabiya English constantly discusses such activities of Qatar and corrects that these actions are against peace in the Middle East and that Qatar is



actually supporting terrorism in the region. Most of the English stories on Al-Arabiya English are from US media, such as the New York Post and the Huffington Post. This means that this channel serves the interests of the United States and Saudi Arabia in the region. [7]

The conflict between two countries in the Middle East, Saudi Arabia and Qatar, is the reason for the strategic use of media freedom for their own interests. Content analysis to identify state-sponsored media diplomacy and media framing is an appropriate way to explain this inquiry. The content of both media channels regarding the conflict between the two countries shows how they use media frames to reinforce their point of view. Both countries are trying to undermine each other through media.

Both channels have access to regional and global audiences. They are using modern diplomacy. Al Jazeera has made Qatar a regional player and the world sees it as an economically prosperous country. This channel has a large audience in the region and globally. Any critical reporting on Saudi politics shown by Al Jazeera will certainly have some effect on people. Neither country is inherently democratic, but Saudi Arabia has severe restrictions on local media and the public cannot openly discuss government policies. This is a plus point for Qatar as it has a more modern environment than Saudi Arabia. Al Jazeera has been critical of Saudi policies towards its people, and the audience knows very well that people in Saudi Arabia live in a conservative environment. This is a direct threat to the Saudi regime, as Al Jazeera already played an important role in the Arab Spring, and Saudi Arabia cannot afford any insurgency within the country (Amini, 2016). [7] On the other hand, the Al-Arabiya channel sponsored by Saudi Arabia is trying to prove that Qatar is a power-hungry country and that it is supporting some terrorist organizations to disrupt the peace of the region. Qatar has long resented Saudi Arabia's attempts to exert control over its foreign and domestic policies and its pursuit of broader regional hegemony. The two countries were locked in a border conflict in the early 1990s and clashed again in the mid-1990s when Saudi Arabia backed multiple attempts to overthrow Qatar's then-emir, Sheikh Hamad Bin Khalifa Al Thani. In 2002, Saudi Arabia recalled its ambassador to Qatar after Al Jazeera decided to broadcast an interview with a Saudi dissident. The two nations also clashed over relations with Israel and Qatar's plans to build a gas pipeline to Kuwait, among other things.

The controversy escalated in 2011 when Qatar (and Al Jazeera) supported the Arab Spring protests. The Arab Spring, which served as the final trigger for the political conflict of 2017, helped further define and demarcate Gulf relations. In the Arab Spring, the UAE and Bahrain, as well as the "deep state" of Egypt, joined Saudi Arabia. Qatar, on the other hand, has been relatively isolated among the GCC and other Arab governments, many of which have opposed democratic protest movements. With Qatar's support for the Arab Spring, Turkey's Islamic Justice and Development Party, which also supported the Arab Spring, and the Muslim Brotherhood, which won post-Arab Spring elections in Egypt and Tunisia, there were accusations that he was charging. In 2012, disturbed by Al Jazeera's media coverage, Qatar's relationship with Turkey and the Muslim Brotherhood, and the Qatari government's broader support for the Arab Spring, the UAE formed the Camstoll Group, a multi-million dollar American consulting firm. The main goal of the new company was to spread negative news about Qatar in the American media. In 2014, the UAE, Bahrain and Saudi Arabia withdrew their ambassadors from Qatar because of the country's support for the Brotherhood.

Al-Jazeera was not the only mass media that took a central place in the Persian Gulf crisis. In June 2017, other media played an aggressive and passive role in the resurgence of tensions in the Persian Gulf. For example, a June 5, 2017 announcement by a Saudi-led group resulted in the UAE government's May 2017 hacking of the Qatar News Agency. UAE intelligence allegedly hacked a Qatari news website and falsely quoted Qatari Emir Sheikh Tamim bin Hamad bin Khalifa Al Thani. The quotes were used by mainstream UAE, Saudi and Egyptian media as a pretext to launch a media and political blitz against Qatar.

Al Jazeera was a more direct participant in the 2017 Gulf crisis. At the end of June 2017, a group led by Saudi Arabia announced a list of 13 demands to the Qatari government. One of the demands was that Qatar shut down Al Jazeera. Qatar rejected the list of 13 demands in its entirety, saying Al Jazeera was not ready for negotiations or discussions. [5]

Anecdotal evidence suggests that in the early weeks and months of the Saudi blockade against Qatar, both Al Jazeera and the Saudi-owned satellite news network Al Arabiya took strong positions in favor of their respective ownership groups. However, to date, no research has systematically examined network coverage.

CONCLUSION

In conclusion, it uses quantitative content analysis to analyze how Al Jazeera and Al Arabiya portrayed the early stages of the conflict and, more importantly, tries to explain what framing mechanisms were used. Al Arabiya sees itself as a rival to Al Jazeera and against extremism. It exhibits more professionalism than the typical government-owned, highly censored Arab news media, and is credited with securing high-profile exclusive interviews and breaking a number of major regional events.

However, researchers point to Al Jazeera's relatively high quality of news production, which forces other Arab television news networks to improve their production efforts in order to be competitive.



In the information war between Saudi Arabia and Qatar, the media Al-Jazeera and Al-Arabia play an important role. Socio-economic relations between the two countries and diplomatic relations between the countries are especially important in this regard.

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TRANSLATION THEORY AND IMPORTANCE OF EXPLANATORY DICTIONARY

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ANNOTATION

In this article the theory of translation and translating principles are analyzed. Also advices to make a good translation are given. The definition and need of Explanatory Dictionary are explained.

KEYWORDS: *to transfer, communication, transmission, translation theory, translation criticism, to expand vocabulary, source language, target language, Explanatory Dictionary, definition.*

“What is translation?

Translation comes from Latin ‘translātus’ meaning ‘to transfer’ (Simpson and Weiner 1989, p. 410). They define translation as:

1. the ... process of turning from one language into another;
2. the rendering of something in another medium or form.

Hornby (2010, p. 1646) defines the verb translate as:

1. to express the meaning of speech or writing in a different language.
2. to be changed from one language into another.

Translation is further defined as:

1. “reproducing in the receptor language the closest natural equivalent of the source language message, first in terms of meaning and secondly in terms of style” (Nida and Taber 1969, p. 12);
2. “the replacement of textual material in one language (SL) by equivalent textual material in another language (TL)” (Catford 1965, p. 20)”¹

The translation has a deep history like human being. Translation brought out according to the communication needs of societies who used different languages. In the initial stage or stages, translation was used orally, and later it developed in a written form. The agreements signed by different nations can be considered the oldest written examples of translation. During this historical process, communication between different peoples increased stage by stage, and the process of translation rose to the level of science.

When speaking about the science of translation, based on a deep historical process, many factors are needed to be mentioned. Translation is a science that studies the act of transferring text from source language to target language properly and the the process during this transfer and the final product.

The theory of translation is seemed as entire part of humanity, and when theory and practice is joined, it becomes one whole thing. The aim of translation is to look at the cooperation between people, cultures and societies to find out how and why they came about and how they made contribution to these processes.

“In this sense, translation theory and translation studies are very close and complementary concepts. It should only be remembered that translation studies also includes translation criticism, which is, so to speak, the linguist of translation studies and, at the same time, its vanguard. Translation criticism is a very good field. It serves to the experience of translation, quality, level, practical importance of translations, impact on the circle of readers, socio-aesthetic aspects, all-round impact on the translated language (expanding the vocabulary, filling it with new concepts, terms, increasing the power of expressive-emotional influence), and opens new horizons, significantly activates and spontaneously accelerates socio-cultural processes.”²

¹ Basics of Translation: A Textbook for Arab University Students / By Mahmoud Altarabin. This book first published 2019

² Tarjima nazariyasi: Teaching aid for the students of higher educational institutions / I.Gafurov, O.Muminov, N.Kambarov. - Tashkent: Tafakkur-Bustoni, 2012. 216 p.



The process of translating is a time of creative and cultural transmission as well as mechanical transmission. According to this, the question "How should a good translation be?" arose. These points of view and approaches took time in the development of the field of translation as a science in the history.

The study of the correct principle of translation is translation theory. This theory holds different languages jam in certain forms based on a foundation of understanding how languages are dealt, while guiding translators to find intend ways of transferring meaning using the most appropriate forms of each language. Translation theory includes many other themes that are important for perfect translation, such as the rules of translating a particular language, dealing with lexical inconsistency.

There are two theories of translation. One of them expresses the meaning of each word and phrase in the original form, while the other conveys the content of the text, and the target text is generally different from the source language.

The following three important requirements must be taken into account in order to perform the work properly, that is source language, target language, and subject matter. Based on it, translators find the original meaning in the source language and tries to make the same meaning in the target language based on the rules of the language. So the form of sentences and rules are usually changed, but the meaning and intended message must be saved.

Before translator starts translation he must understand the content of the text and the aim of the author. For this translator must read the whole text and guess the meaning of the text in the source language and then start his work. The translator must know both the source and target languages perfectly in order to be able to use equivalents in the two languages, because lack of knowledge in both languages leads to the fail of translation.

Though translator knows languages well, he needs some special dictionaries, especially Explanatory Dictionaries of terminologies. Explanatory Dictionaries are needed in translation process. It helps to achieve perfect translation. As words are developing and changing day by day, new words that appear in languages should be studied and included to these dictionaries.

Explanatory Dictionary is the type of dictionary where definitions of words are given in the same language. It may contain foreign, rare or complex terms. Also it contains definitions, abbreviations, keywords and different phrases related to a particular theme.

Explanatory Dictionary is a useful tool which helps translator to use terms correctly, due to a list containing terms specific to each sphere. Translator is required to work properly and be able to use a term in its place correctly to achieve his goal in translation.

Creating Explanatory Dictionary helps to increase the efficiency of the work, that is, the translator does not need to translate the term that is in the dictionary. Also, it helps to save time during translation, and the terms in the Explanatory Dictionary become a part of the translator's translation memory, which leads to a reduction in costs as a result of the translation in a short period of time.

Explanatory Dictionary is an effective helper of translator, because translator does not have to translate terminologies himself, he just refers to the dictionary of terminologies. It saves te valuable time and expands his vocabulary.

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THE SCIENTIFIC HERITAGE OF IBN ABIDIN ON HANAFI FIQH

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ABSTRACT

This article provides information about the scientific heritage, writings and works of Ibn Abidin, one of the most accomplished scholars of the Hanafi sect. In addition, information is also given about his most famous works, "ar-Roddul al-Mukhtar".

KEY WORDS: *Ibn Abidin, Hanafi sect, Fiqh, Allama, "ar-Rodd al-mukhtar".*

The original name of the scientist known as Ibn Abidin is Muhammad Amin ibn Amr ibn Abdulaziz ibn Ahmad ibn Abdurrahman ibn Najmuddin ibn Muhammad Salihiddin. He was born in 1776 AD (1197 AH) in the city of Damascus in the family of a businessman. He received a good education from his youth and memorized the Holy Qur'an completely. Since his father was engaged in commerce, his son helped his father in the store. Despite being engaged in business, he did not stop reciting the Qur'an. One day, one of the customers who came to the store objected to his recitation.

First of all, he says that he does not fully follow the rules of tajwid of the Qur'an, and secondly, he says that despite the fact that it is obligatory to listen to the recitation, the people in the shop are engaged in commerce and sales, and he accuses them of sin. Because in the fourth verse of Surah Muzzammil, Allah the Exalted says: "Recite the Qur'an carefully"! It is known from this verse that it is obligatory to read the Qur'an based on the rules of tajweed. A person who does not read the Qur'an according to the rule of tajweed is a sinner. Besides, you are reading it in an inappropriate place. "People don't listen to him because they are busy with business". Because Allah Almighty says in verse 204 of Surah A'raf: "When the Qur'an is recited, listen to it and remain silent, perhaps you will receive mercy".

One of the great scientists of that time was Sheikh Said Hamawi. Ibn Abidin, may God's mercy be pleased with him, was greatly affected by this objection, and he requested that he go to Shaykh Hamawi and give him lessons in the knowledge of the Qur'an and tajwid. The scholar orders Ibn Abidin to memorize the rules of Tajweed from the books of Imam Shatibi and Jazari. After the student has memorized all the books, he starts to learn sarf, nahw and fiqh of Imam Shafi'i from his teacher.

Shaykh Muhammad Salimi taught Muhammad Amin the sciences of exegesis, hadith, and logic, saying that the true knowledge is before the Hanafis, and jurisprudence is literally in the hands of the Hanafis, and interested him in the jurisprudence of the Hanafi school: "If you study the issues of the school of Imam Abu Hanifa, you will see many wonderful and strange discoveries. It is a perfect sect", he says.

Obedying the orders of his teacher, Ibn Abidin read all the books of usul and fiqh related to the school of Imam Abu Hanifa. Soon he will reach the level of famous scientists of his time.

Then, in order to further improve his knowledge, he went to Egypt, one of the centers of knowledge at that time, and began to obtain permits and certificates one by one from the famous scientists there. He also starts teaching and writing books. He is even known as one of the greatest jurists of the 19th century, and mentored the famous scientists of his time. There he meets Amr Sheikh and asks him to teach him a lesson. Amr Sheikh teaches him all the knowledge he knows. Ibn Abidin also learned from Shaykh Muhammad Kazbari, a well-known Muhaddith of Sham. Muhammad Kazbari allows his student to teach others the knowledge he taught. Such a degree is awarded only to potential students who have passed the master's test.

Ibn Abidin, may Allah have mercy on him, showed that he had perfected his research and research with his works, and demonstrated to everyone that he had a deep understanding of jurisprudence. For this reason, this scholar remained in history as one of the last jurists in the classic era of fiqh. Alloma was considered one of the most accomplished scholars of his time, and today it is impossible to imagine Hanafi jurisprudence without his works. There are many works and treatises of Ibn Abidin, and the repeated reference to these works by scholars indicates that these works are an important source. The most famous books of the scientist are:



1) “ar-Radd al-mukhtar ’ala ad-Durr al-mukhtar” (“Amazing comments on the work called “Ikhtiyar al-mukhtar”). It is considered to be the royal work that made Ibn Abidin, may God have mercy on him, famous, and it is the border of the commentary “ad-Durr al-mukhtar” written by Muhammad al-Haskafi (1616-1677), may God have mercy on him. And this “ad-Durr al-mukhtar” was written in the text book “Tanvir al-absar” on the Hanafi jurisprudence of Muhammad ibn Abdullah al-Khatib al-Khatib al-Temirtashi (1532-1595), a Hanafi jurisprudence originally from Khorezm is a comment.

Today, a person who has not seen “ar-Radd al-mukhtar” cannot understand fiqh deeply, and a student who has not read it cannot fully understand Hanafi fiqh, and will not understand the precise issues and subtleties of fiqh. Representatives of other sects do not fail to turn to “ar-Radd al-mukhtar” when learning Hanafi jurisprudence. This masterpiece was published in lithographs in 6 volumes, its modern editions are published in 11 and 14 volumes.

2) “al-Uqud ad-durriya fiy tanqih ‘al-Fatawi al-hamidiya” (“Coral branches in the purification of “complimentary fatwas”). This is a corrected and reworked version of Hamid ibn Ali ibn Ibrahim al-Imadi al-Dimashqi (1692-1757), may Allah have mercy on him. The author created this collection of fatwas in response to questions that arose during his 18 years as a judge in Sham in 1725-1742. “al-Uqud ad-Durriya” was published in Cairo in 2 volumes.

3) “Nasamot al-ashor ’ala sharh ‘al-Manor” (“The morning breeze in the review of the work called “Chirog’dan”). This is a commentary on the book of usul al-fiqh by Hafizuddin Abul-Barakat al-Nasafi (1232-1310), the famous Hanafi scholar, author of “Tafsiri Nasafiya” and “Kanz al-Da’iq”.

4) “Minhat al-Khaliq ’ala al-Bahr ar-raiq” (“Gift of the Creator to the work called “Sweet Sea”). This is a marginal commentary on the work of the famous Hanafi scholar Zain al-Din (Zain al-Abidin) ibn Ibrahim ibn Muhammad ibn Nujaim al-Misri (1519-1563). It was published together with al-Bahr ar-Raiq.

5) “Majmuat ar-rasail” (“Collection of Treatises”). This is a collection of 32 (thirty-two) treatises of Ibn Abidin, may God bless him and grant him peace, which contains the most important treatises of the scholar. Exactly more than 600 pages, this collection was made into 2 volumes, and they were a great contribution to the development of Hanafi jurisprudence.

“Al-Ilm al-Zahir” dedicated to the descendants of the Prophet, “Uqudi Rasm al-Mufti” dedicated to the rules of issuing fatwas, “Manhal al-Waridin” on the issues of menstruation, “Shifa” on the issues of paying a fee for reciting and funeral rituals. al-ali”, “Tanbeh al-ghafil” on the issue of observing the month of Ramadan, “Tanbeh al-vulot wa-l-hukkom” on the judgment of those who insult the Prophet, peace and blessings be upon him, “Tanbeh al-ruqud ‘ala masail” on the issue of cash and paper money an-nuqud”, treatises such as “Nashr al-urf” dedicated to issues of tradition are very important.

Ibn Abidin was considered one of the most accomplished scholars of his time, and in addition to his many written works, he also had students who were considered his followers. Below we will mention a few students of Alloma. These are: Abdulghani Miydani, Hasan Baytari, Ahmad Efandi Islambuli and other scholars who received education from Ibn Abidin and are considered mature scholars of their time.

The most famous of Ibn Abidin’s books that have come down to us is “Raddul Mukhtar ala Durrul Mukhtar” (Leading the lost to the chosen paths). In addition, his “Raf’ul anzor amma avrodahu al-Halabi ala Durrul Mukhtar” (Focusing on the things added by Halabi to Durrul Mukhtar), “Nassamatul al-Ashkar ala Sharhi Minor” (Morning Breezes to the Commentary of Minor), “Hoshiya al Mutul” dedicated to various sciences. (Mutulga Hashiya), “Ar-Rahiqul Makhtum” (Sealed molasses), “Khavosh ala tafsil Bayzavi” (Hashiya written on Bayzavi’s commentary), “Majma’atur rasail” consisting of thirty-two treatises.

Alauddin Muhammad ad-Dimishqi (1828-1889), the son of Ibn Abidin, may Allah have mercy on him, also carried out scientific activities as a well-known jurist of his time. He is one of the authors of the famous “al-Majallat al-adliya”, which is considered as the first modern constitution of Islam. He completed his father’s unfinished work “ar-Radd al-mukhtar” and named it “Qurratu uyn al-akhyor”. There is a commentary on “Nur al-Iyzah” called “Me’raj an-najah” and also a jurisprudential work called “al-Hadiyyat al-Aloiya” written in simple language.

Ibn Abidin, one of the most productive scholars of the Hanafi school and who surprised all Maghreb and Eastern scholars with his scientific potential, presented rare books and treatises to his fans for 54 years. His works were highly recognized by scientists. After acquiring many sciences, Ibn Abidin, may God bless him and grant him peace, in order to further increase his knowledge, met Sheikh Amr, may God bless him and grant him peace, and asked him to teach him knowledge. Shaykh Amr taught him all the knowledge he knew.

In order to satisfy his thirst for knowledge and fill his cup of knowledge, Ibn Abidin met with the famous Muhaddith Sheikh Muhammad Kazbari and learned many sciences from him. Muhammad Kazbari, may Allah bless him and grant him peace, allows his student to teach others the knowledge he taught. He achieved great success in spreading knowledge, teaching and writing books. Even he became one of the greatest scientists of the number of fingers. After the time of Ibn Abidin, may Allah bless him and grant



him peace, his students Sheikh Abdulghani Miydani, Sheikh Hasan Baytari and Ahmad Efandi Islambuli and many other scholars received education.

Ibn Abidin, may Allah bless him and grant him peace, used to see Rasulullah with the corners of his eyes when he prayed. If they do not see the Messenger of Allah during their prayers, they know that they have left some Sunnah. Ibn Abidin, may God's mercy be upon him, was so great and dignified that even all the scholars were afraid of him. Ibn Abidin is known to the whole world for his piety, chastity, potential and beauty of contentment. Scholars of the sheikh from all over the Maghreb and East have seen his scientific potential and recognized him as an unparalleled scientist. The libraries of the Islamic countries were filled with books written and classified by Ibn Abidin, may God bless him and grant him peace. His works are written on the basis of deep knowledge, precise arguments, mature and eloquent language, high enlightenment. He even died to take his place from the status of mujtahid levels.

This is what the famous scholar Ibn Abidin says about Abu Yusuf's "Amoli" books. "Operational" is a plural form of spelling. In this case, when the Mujtahid is sitting, his students are sitting around him with their pens and paper. Then, the scholar recites from memory what God revealed to him in science. Students write it down. Then, they compile what they wrote and make a book. They call it "spelling" or "practice". Past jurists, muhaddis and scholars of the Arabic language had similar habits".

His Holiness Jalaluddin Rumi says: all creatures are satisfied by drinking water. But the fish is not satisfied even if it walks in the water;

O seekers of knowledge, as if you were like a fish in water, do not be satisfied with knowledge;

His Holiness Rumi also says: "It takes many years and centuries for a man to become a true guardian".

People of knowledge will not be without benefit if they compare themselves to this person in their pursuit of knowledge. Because the Prophet, may God bless him and grant him peace, said: "Whoever likens himself to a people, then he is one of them". One of the beloved servants of Allah, Rabia Adabiya, may Allah bless him and grant him peace, says: "Whoever imitates the Prophets, his deeds will surely come to him". Therefore, it is appropriate for us to hope for God's grace and always try to acquire knowledge. Ibn Abidin, the author of famous works on fiqh of our Hanafi sect, died in Damascus in 1252 AH at the age of fifty-four. The grave of this alloma is located in the "Bobus Saghir" cemetery.

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A HEALTHY LIFESTYLE IS THE BASIS OF A PROSPEROUS LIFE

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ABSTRACT

A healthy lifestyle should be rationally organized, active, hard-working, and hardening. It should protect against adverse environmental influences, allow one to maintain moral, mental and physical health until old age; proper nutrition allows the body to realize its maximum potential. Proper nutrition allows the body to reach its maximum potential. Carbohydrates, fats and proteins provide the body with energy. Physical exercise helps people maintain youth, delay old age, improve their appearance, lose excess weight, increase vitality and improve well-being. Physical culture, regimen, and daily routine are a powerful accumulator of vitality, bringing vigor and cheerfulness, pride in one's motor skills and capabilities.

KEYWORDS: *healthy lifestyle, nutrition, sleep patterns, physical education, daily routine.*

INTRODUCTION

A healthy lifestyle is a broad concept, which includes productive work, active rest, physical education and sports, exercising the body, observing personal hygiene, eating wisely, refraining from harmful habits, seeing a doctor every year [1,5,7,9].

Health is not only the absence of disease or physical defects, but also a state of complete physical, mental, and social well-being.

According to statistical data, in the following years, the general morbidity among the population, disability from childhood, and infectious diseases among children will increase. One of the main reasons for this is the fact that a healthy lifestyle is not properly promoted in every family, and the medical awareness of family members, especially young mothers, is insufficient [2,6,7,9,11]. Therefore, forming a healthy lifestyle in the family, increasing the medical awareness of family members is not only an urgent problem of today, but also a demand of the times.

According to the definition of the World Health Organization: health is not only the absence of disease and physical defects, but also the possession of a healthy physical, mental and social state. Personality, human health is not only the absence of illness, disease, or physical defects, but also the harmonious balance of the activities of all organs and organs of a person with the external natural and social environment, the harmony of a person's social, biological and mental state [3,10,12].

It is nutrition that ensures human life activity, normal growth and development, strengthens his health and helps prevent diseases [1,4,8].

The diet should contain the following nutrients: proteins, fats, carbohydrates, vitamins and minerals.

Our great scholar Ibn Sina in his 5-volume book "The Laws of Medicine" cites seven principles of a healthy lifestyle in maintaining human health:

1. Maintaining the harmony of the body structure
2. Selective consumption of food and drinks
3. Cleaning the human body from harmful waste
4. Balancing the harmony between the organs of the human body
5. Breathing fresh air
6. Observance of clothing and personal hygiene
7. Keeping the body and mind in moderation.

All people need to be disciplined and willful should have knowledge and skills about proper and rational nutrition, active life and physical education, organization of day and work regime based on biorhythmic laws, normalization of relationships, refraining from harmful habits, cleanliness, caution from accidents and injuries, and healthy lifestyle.



The standard of living also plays an important role in human health. Standard of living means people's food, education, employment, working conditions, living conditions, social security, recreation, clothing, leisure time, rights.

Human health is, first of all, the development of his mental and physiological qualities, maintaining the maximum length of life. According to many scientists, the functional capabilities of the human body and its stability to unconscious factors from the external environment change throughout its life, because maintaining health is a dynamic process that depends on age, gender, professional activity, living environment. improves (health improves or improves) depending on it.

Health can never be bought with material wealth and money. A person can live happily only when he is healthy. Everyone should be able to maintain the standard of daily life. When reading, sleeping, walking, jogging, eating, resting, laughing, coughing, there is such a limit, major, that the violation of this norm will definitely harm health.

It is necessary to deeply understand the secrets of strengthening health and to deeply understand that the only way to preserve health is a healthy lifestyle.

Lifestyle is a routine of daily life. The main factor determining it is the person himself. A healthy lifestyle is a life activity based on the acquisition of skills that help ensure the safety of a person's life. This is such a way of life that there should be no harmful factors affecting people's health.

The main directions of a healthy lifestyle are as follows

- Follow the rules of personal and collective hygiene
- Physical activity
- Compliance with the agenda
- Refrain from harmful habits
- Healthy eating
- Work and rest
- Culture of treatment
- Peace of mind
- Medical civility
- Sexual education.

Everyone should learn a very simple way of creating a healthy lifestyle.

A high level of education among the population, increased attention to a healthy lifestyle, regular physical education and sports have significantly reduced the incidence of heart diseases in many countries.

A person should be mentally and physically strong and fit.

The formation of a healthy lifestyle in each individual, family and community serves as the basis for the prevention of various chronic diseases. Our great grandfather Abu Ali ibn Sina, the Sultan of Medicine, recommended the basics of a healthy lifestyle in order to maintain human health a thousand years ago, and defined its spiritual, spiritual, physical and medical directions as follows:

1. Proper nutrition
2. Physical education
3. Proper rest
4. Rest depending on the season
5. Refraining from harmful habits.

Regular adherence to a healthy lifestyle is a factor of a beautiful and happy life, free from various diseases. Most importantly, it has a positive effect on the nation's gene pool.

CONCLUSION

Advances in science and technology are increasingly relegating physical labor to the background, giving preference to mental work with its complex psycho-emotional stress. The brain, heart, and blood vessels of a person are forced to work with incomparably greater tension than his muscular system, which makes up about 40% of the entire body. The disturbed normal physiological balance of the human body gives rise to more and more new ailments that limit its vital functions. People do not want to get sick and grow old prematurely; they are looking for the most effective means of maintaining high performance. Physical exercise activates a person's natural reserve forces. Nothing can compensate our nervous system for what it receives from active muscle work and optimal physical activity. Exercises in the gym, swimming pool, stadium, sports fields, skating rink, forest paths lay the foundation for high performance, the opportunity for prolonged stress on the most complex functions of the nervous system. Physical education



and properly organized training sessions are a reliable shoulder that you can and should lean on at any age. Physical culture is a powerful accumulator of vitality; it brings vigor and cheerfulness, pride in one's motor skills and capabilities.

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EFFECT OF MANGOSTEEN (*GARCINIA MANGOSTANA L.*) PEEL ETHANOL EXTRACT ON WOUND HEALING AFTER TOOTH EXTRACTION IN WISTAR RATS (*RATTUS NORVEGICUS*)

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ABSTRACT

Modern research shows that herbal medicines are effective for health and do not cause side effects like chemical drugs. The development of herbal medicines that tend to have lower side effects and are safer is very important. One of the natural ingredients that has the potential to be used as an alternative is mangosteen peel. The purpose of this study was to analyse the effect of mangosteen (*Garcinia mangostana L.*) peel ethanol extract on wound healing after tooth extraction in rats. This laboratory experimental study used a complete randomised design with a post-test-only control group design pattern. The experimental animals used in this study were 32 male Wistar rats, physically healthy, 2-3 months old, with body weight between 200-250 grams. The rats will be divided into two groups, namely, 16 rats treated with 45% Ethanol of mangosteen fruit peel (*Garcinia mangostana L.*) and 16 rats treated with 90% Ethanol of mangosteen fruit peel (*Garcinia mangostana L.*) to see the comparison of accelerated wound healing after tooth extraction. The study used pure experiment with nonparametric Chi-Square Test, after testing showed that ($p < 0.05$) means there is a significant difference between groups. Based on Chi-Square data analysis, there is a significant relationship between the number of fibroblast tissue per visual field in Wistar rats after tooth extraction by administering 45% Mangosteen Fruit Peel Ethanol Extract (*Garcinia mangostana L.*) and 90% Mangosteen Fruit Peel Ethanol Extract (*Garcinia mangostana L.*), $p = 0.007$ ($p < 0.05$). Based on the results and discussions that have been carried out in this study, it can be concluded that 45% and 90% ethanol extracts of mangosteen fruit peel (*Garcinia mangostana L.*) are effective in accelerating wound healing time after tooth extraction of Wistar rats.

KEYWORDS: *Garcinia mangostana L.*, Wound healing, Tooth extraction, Ethanol

I. INTRODUCTION

Tooth extraction will cause an open wound in the oral cavity; the severity of the injury depends on the amount of trauma the tissue receives (1). Routine wound healing is a complex and dynamic process. The wound healing process can be divided into three main phases, namely, the inflammatory phase, the proliferation phase, and the remodeling phase. These phases continue from the onset of the wound until wound closure. The inflammatory phase is the body's reaction to the damage that starts after a few minutes and lasts about three days after the injury. The proliferation phase is characterized by the appearance of new blood vessels resulting from reconstruction and occurs within 3-24 days. The maturation phase is the final stage of the wound healing process. This process can take up to 1 year, depending on the depth and extent of the wound (2).

Fibroblasts are stem cells that form and lay down fibers in the matrix, especially collagen fibers. They secrete small tropocollagen molecules that combine with the primary substance to form collagen fibers. Collagen will provide strength and integrity to any well-healed wound. Fibroblasts more actively synthesize matrix components in response to the damage by proliferating and increasing fibrinogenesis. Therefore, fibroblasts are the leading agents in the wound-healing process (3). Modern research also shows that herbal medicine is effective for health and does not cause side effects like chemical drugs. From the facts above, developing herbal medications that tend to have lower side effects and be safer becomes essential. One of the natural ingredients that have the potential to serve as such an alternative is mangosteen peel. Mangosteen peel is a shell that is discarded by consumers or can be called agricultural waste. So far, the utilization of mangosteen peels is only for tanning leather, traditional medicine, and the making of anti-rust substances and textile dyes (4); (5). The utilization of mangosteen rind for treatment in Indonesia is still not much, especially as a wound healing. Therefore, researchers are interested in exploring the wound-healing effects of mangosteen peel extract.



II. RESEARCH METHODS

This experimental laboratory study uses a randomized controlled design with a post-test-only control group design pattern. The experimental animals used in this study are Wistar rats, 32 males, physically healthy, 2-3 months old, with a body weight between 200-250 grams. The rats will be divided into two groups, namely, 16 treated with 45% Ethanol Mangosteen fruit peel (*Garcinia mangostana* L) and 16 treated with 90% Ethanol Mangosteen fruit peel (*Garcinia mangostana* L) to see the comparison of accelerated wound healing after tooth extraction. The sample size was determined by the Federer formula, namely: $(t - 1) (r - 1) \geq 15$. Where t = several treatments; (2 treatments) r = several replications. Thus, the minimum sample size for each treatment was 16 rats.

$$\begin{aligned} &= (t-1) (r-1) \geq 15 \\ &= (2-1) (r-1) \geq 15 \\ &= (r-1) \geq 15 \\ &= (r-1) \geq 15 \\ &= r \geq 15 + 1 \\ &= r \geq 16 \end{aligned}$$

Tools

Tools used in research:

1. Number-coded experimental animal cages.
2. Diagnostic set (mouth glass, sonde, tweezers).
3. Nierbeken.
4. Dental extraction forceps (in this case a needle holder is used) under sterile conditions.
5. Syringe.
6. Gloves.
7. Mask.
8. Petri dish of jaw preparation.
9. A set of tools for making histology preparations.
10. Microscope.

Material

Materials used in the study:

1. Ethanol Mangosteen fruit peel (*Garcinia mangostana* L) Extract 45%
2. Ethanol Mangosteen fruit peel (*Garcinia mangostana* L) Extract 90%
3. Ketamine.
4. Formalin 10%.
5. Histology preparation material with Hematoxylin Eosin (HE) staining.
6. 70% alcohol as sterilization material.
7. Cotton pellet.

Data Type

The type of data collected in this study is primary data obtained from the results of measurements (scoring) on the histological picture of the process of accelerating wound healing after tooth extraction by administering Ethanol Mangosteen fruit peel (*Garcinia mangostana* L) 45% and Ethanol Mangosteen fruit peel (*Garcinia mangostana* L) 90%.

Extraction on Ethanol Mangosteen fruit peel (*Garcinia mangostana* L)

Collecting 3 kg of turmeric, the turmeric was washed and divided into two parts to take the inner flesh to obtain the gel. After washing, the turmeric flesh was dried in an incubator at 500 for 72 hours. The dried turmeric meat was then pulverized using a blender to form a powder. The turmeric meat that has become powder is then extracted by maceration with stirring. The extraction process uses water solvent. The powder is put into a maceration vessel or impermeable lid container and then filtered using filter paper; the pulp is macerated up to 2 times. The obtained maceration results were collected and evaporated using a rotary vacuum evaporator at 50°C until there was no more solvent condensation on the condenser. After the solvent is evaporated using a rotary vacuum evaporator, evaporation is continued using a 70-degree temperature water bath to obtain a pure extract. The turmeric extract was then diluted with water to get 45% and 90% extract concentrations.

Treatment of Wistar Rats

1. Before treatment, 32 rats were divided into 45% turmeric extract and 90% turmeric extract. After that, all rats were adapted for one week. Then, animals were put into cages, with five rats in each cell in the same environmental conditions, given the same food, and monitored for health.



2. Rat tooth extraction will be performed using a modified needle holder under the anesthetic effect of ketamine 1000 mg/10 ml at a dose of 20 mg/kg bw intraperitoneally.
3. One incisor tooth will be extracted from every five rats daily.
4. After tooth extraction, observe the extraction wound and apply a tampon (cotton pellet) to stop bleeding in the wound for 5 minutes.
5. Dropped Ethanol Mangosteen fruit peel (*Garcinia mangostana* L) 45% in treatment group I and dropped Ethanol Mangosteen fruit peel (*Garcinia mangostana* L) 90% in treatment group II shortly after tooth extraction as much as 0.05 ml every day.
6. After extraction and treatment, the test animals (rats) were fed fine porridge with attention to the health of the test animals.
7. On the 5th day after tooth extraction, rats from each group were physically sacrificed by neck dislocation. The rat's tail was held and then placed on a surface it could reach. The rat will stretch its body; when the rat's body extends, a holder held by the left hand is placed on the nape of the neck. The right hand pulls the tail hard so the rat's neck will be dislocated. Then the jaw of the rat is taken out.
8. Then the tissue was fixed with 10% formalin for 24 hours at room temperature, then the decalcification process was carried out using Ethylene Diamine Tetra Acetic Acid (EDTA 10%) solution at room temperature.
9. Tissue dehydration was then performed using alcohol. First, the specimen was put into toluol alcohol solution (1:1) using pure toluol, then into a paraffin-saturated toluol solution.
10. The following process is infiltration in the oven by inserting the specimen into liquid paraffin.
11. The embedding process is carried out (inserting the tissue into paraffin) and then labeled/coded. After the embedding stage, the tissue is sliced in series with a thickness of approximately 6 microns using a microtome.
12. Evaluating fibroblast cell response using Hematoxylin Eosin (HE) staining. The procedure that must be done is deparaffinization using xylol and alcohol solution, then continued with the rehydration process with alcohol. After that, it is washed with running water, rinsed with distilled water, and then wiped. The glass slide was then placed in Meyer's hematoxylin solution, washed with running water, and then rinsed with distilled water, after which the staining was assessed under a light microscope. If the staining has been considered good, proceed to the next step, namely the dehydration process with alcohol in stages, and then wipe.
13. The next step, put it into xylol solution, and the object glass was covered with deck glass and observed using a light microscope.
14. Fibroblast density was assessed by counting the fibroblasts in 5 fields of view.

Histopathology Scoring Parameters for Fibroblast Counts

Histopathology scoring parameters to determine the distribution of fibroblast tissue is done based on the field of view is:

1. (-) = no fibroblast tissue found
2. (+) = small number of fibroblasts (less than 10% per field of view)
3. (++) = moderate amount of fibroblast tissue (10%-45% per field of view)
4. (+++) = large amount of fibroblast tissue (45%-90% per field of view)

Data Analysis Method

Data analysis using the SPSS 16 program. Research using a pure experiment with a nonparametric Chi-Square Test, after testing, showed that ($p < 0.05$) means there is a significant difference between groups.

III. RESULTS AND DISCUSSION

Table 1. Distribution and Frequency Data of Fibroblast Tissue Counts Per Field of View After Tooth Extraction

NO	Number of Fibroblasts	Ethanol extract of mangosteen fruit peel (<i>Garcinia mangostana</i> L)			
		Concentration 45%		Concentration 90%	
		n	%	n	%
1	No fibroblast tissue found	0	0%	0	0%
2	A small number of fibroblasts (less than 10% per field of view)	7	22%	4	13%
3	Moderate amount of fibroblast tissue (10%-45% per field of view)	6	19%	6	19%
4	A large amount of fibroblast tissue (45%-90% per field of view).	3	9%	6	19%

From Table 1, it can be seen that all samples found fibroblast tissue in the administration of 45% and 90% Ethanol extract of mangosteen fruit peel (*Garcinia mangostana* L) after tooth extraction of Wistar rats. The number of fibroblasts found in the small category (less than 10% per field of view) on the administration of 45% Ethanol extract of mangosteen fruit peel (*Garcinia mangostana* L) after tooth extraction of Wistar rats was 7 (22%) and on the administration of 90% Ethanol extract of mangosteen fruit peel (*Garcinia mangostana* L) was 4 (13%). The number of fibroblasts found in the moderate category (10%-45% per field of view) on the administration of mangosteen fruit peel Ethanol extract (*Garcinia mangostana* L) 45% after tooth extraction of Wistar



rats as many as 6 (19%) heads and on the administration of mangosteen fruit peel Ethanol extract (*Garcinia mangostana* L) 90% as many as 6 (19%) heads. The number of fibroblasts found in the many categories (45% - 90% per field of view) on the administration of mangosteen fruit peel Ethanol extract (*Garcinia mangostana* L) 45% after tooth extraction of Wistar rats as many as 3 (9%) heads and on the administration of mangosteen fruit peel Ethanol extract (*Garcinia mangostana* L) 90% as many as 6 (19%) heads.

Table 2. Relationship between the number of tissue fibroblasts per field of view in Wistar rats after tooth extraction with turmeric extract concentrations of 45% and 90%

Number of Fibroblasts	Ethanol extract of mangosteen fruit peel (<i>Garcinia mangostana</i> L)		p
	Concentration	Concentration	
	45%	90%	
1. No fibroblast tissue was found	0	0	0,012*
2. A small number of fibroblasts (less than 10% per field of view)	7	4	
3. Moderate amount of fibroblast tissue (10%-45% per field of view)	6	6	
4. A Large fibroblast tissue (45%-90% per field of view).	3	6	

Significant $p < 0.05$. Chi Square Test

From Table 2. it can be seen that there is a significant relationship between the number of fibroblast tissue per field of view in Wistar rats after tooth extraction by administering Ethanol Mangosteen fruit peel (*Garcinia mangostana* L) with a concentration of 45% and Ethanol Mangosteen fruit peel (*Garcinia mangostana* L) with a concentration of 90%, $p = 0.007$ ($p < 0.05$).

IV. DISCUSSION

Based on Chi-Square data analysis, there is a significant relationship between the number of fibroblast tissue per field of view in Wistar rats after tooth extraction by administering 45% mangosteen fruit peel Ethanol Extract (*Garcinia mangostana* L) and 90% mangosteen fruit peel Ethanol Extract (*Garcinia mangostana* L), $p = 0.007$ ($p < 0.05$). This is seen in the distribution of data on the number of fibroblasts that are many (45%-90% per field of view) in 90% mangosteen fruit peel Ethanol (*Garcinia mangostana* L) as many as five samples and in 45% mangosteen fruit peel Ethanol (*Garcinia mangostana* L) only six pieces. The number of fibroblasts (less than 10% per field of view) was also found to be more in 45% mangosteen fruit peel Ethanol (*Garcinia mangostana* L) in as many as seven samples. In comparison, only four pieces were found in 90% mangosteen fruit peel Ethanol (*Garcinia mangostana* L).

The results of this study are supported by Ayati et al. (2019), entitled The Effect of Watermelon Skin Extract Gel Combination (*Citrullus lanatus* (Thunb.) And Mangosteen Skin Extract (*Garcinia Mangostana* L.) Against Healing Burns In Rabbits (Effect of Watermelon Skin Extract Gel Combination (*Citrullus lanatus* (Thunb.)) And Mangosteen Skin Extract (*Garcinia Mangostana* L.) Against Healing Burns In Rabbits). He stated that giving rabbits a combination of watermelon rind and mangosteen skin gel can affect the diameter of burn wound closure. The most effective formula in healing rabbit burns is formula 3, combining 75% watermelon rind and 25% maggie peel. The gel preparation of various watermelon rind and mangosteen rind extracts for healing burns in rabbits provides reasonable quality control (6). Ethanol mangosteen fruit peel (*Garcinia mangostana* L) stimulates the formation of new fibroblast cells and accelerates wound healing due to glucomannan content. This complex polysaccharide can stimulate fibroblasts to increase rapidly in the wound area. Active substances such as mannose, glucomannan, chrysophane acid, acemannan, flavonoids, saponins, tannins, vitamin A, vitamin C, vitamin E, and enzymes contained in Ethanol mangosteen fruit peel (*Garcinia mangostana* L) are beneficial in the wound healing process (4). Saponins are steroids or triterpenoid glycosides that are essential to human and animal health. Saponins can trigger vascular endothelial growth factor (VEGF) and increase the number of macrophages migrating to the wound area, thus increasing the production of cytokines that will activate fibroblasts in the wound tissue. In addition, saponins will increase the action of TGF- β on fibroblast receptors, and TGF- β will stimulate fibroblast migration and proliferation (6).

Kharani (2020) states that mangosteen fruit peel extract cream (*Garcinia mangostana* L.) has an activity to accelerate burn healing in white male rats. The optimum concentration of extract cream to accelerate burn healing in white male rats is shown in 15% extract (7). Using mangosteen peel extract topically is safe to use and can reduce inflammation and accelerate ulcers' healing process due to scratches (8) and promote angiogenesis in wound healing (5). From the results of this study, it can be seen that 90% Ethanol extract of mangosteen fruit peel (*Garcinia mangostana* L) is more effective in the wound healing process than 45% Ethanol extract of mangosteen fruit peel (*Garcinia mangostana* L) because the higher the concentration of the section, the content in the Ethanol extract of mangosteen fruit peel (*Garcinia mangostana* L) is also higher, so that the wound healing process is faster.



V. CONCLUSION

Based on the results and discussions that have been carried out in this study, it can be concluded ethanol mangosteen fruit peel (*Garcinia mangostana* L) 45% and 90% are effective in accelerating wound healing time after tooth extraction of Wistar rats.

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ANALYSIS OF THE EFFECTIVENESS OF ANDALIMAN FRUIT EXTRACT (*ZANTHOXYLUM PIPERITUM*) IN WOUND HEALING AFTER TOOTH EXTRACTION IN WISTAR RATS

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ABSTRACT

*Andaliman contains phenol compounds, monoterpenes, sesquiterpenes, nones, and essential oils, a class of terpenoid compounds. Based on its chemical content and physiological activity, andaliman can be used as a spice, preservative, medicinal material and supplement, and vegetable pesticide. The study aimed to analyze the effectiveness of andaliman (*Zanthoxylum piperitum*) fruit extract 40% and 80% in wound healing after tooth extraction in rats. This laboratory experimental study used a complete randomized design with a post-test-only control group design pattern. The experimental animals used in this study were 32 male Wistar rats, physically healthy, 2-3 months old, with body weight between 200-250 grams. The rats will be divided into two groups, namely 16 rats treated with 40% Andaliman fruit (*Zanthoxylum piperitum*) and 16 rats treated with 80% Andaliman fruit (*Zanthoxylum piperitum*) to see the comparison of accelerated wound healing after tooth extraction. The study used a pure experiment with a non-parametric Chi-Square Test after the test showed that ($p < 0.05$) means a significant difference between groups. The results showed that there was a meaningful relationship between the number of fibroblast tissue per visual field in Wistar rats after tooth extraction by giving Andaliman Fruit Extract (*Zanthoxylum piperitum*) at 40% concentration and Andaliman Fruit Extract (*Zanthoxylum piperitum*) 80% concentration, $p = 0.010$ ($p < 0.05$). Based on the results and discussion that has been done in this study, it can be concluded that Andaliman Fruit Extract (*Zanthoxylum piperitum*) 40% and 80% effectively accelerate wound healing time after tooth extraction of Wistar rats*

KEYWORDS: *Andaliman Fruit, Wound Healing, Extraction*

I. INTRODUCTION

Tooth extraction will cause a wound in the form of exposed alveolar bone in the oral cavity (1). An injury is anatomical damage or partial destruction of tissue due to trauma. The severity of the wound depends on the amount of trauma received by the tissue. Physiologically, the body can repair damage to its skin tissue (injury), known as wound healing (2). The wound healing process can be divided into three main phases, namely, the inflammatory phase, the proliferation phase, and the remodeling phase. These phases continue from the onset of the wound until wound closure. The inflammatory phase is the body's reaction to the damage that starts after a few minutes and lasts about three days after the injury (3). The proliferation phase is characterized by the appearance of new blood vessels resulting from reconstruction and occurs within 3-24 days. The maturation phase is the final stage of the wound-healing process (4).

Andaliman is closely related to the people of the Batak tribe because andaliman fruit is often used as a spice for traditional Batak cuisine in North Sumatra. Not only utilized as a seasoning, andaliman also has benefits as a producer of terpenoid substances with antioxidant activity and antimicrobial and immunostimulant effects. Silalahi (2021) states that andaliman contains phenol compounds, monoterpenes, sesquiterpenes, nones, and essential oils, which are terpenoid compounds. Based on its chemical content and physiological activity, the utilization of andaliman can be increased; it is not just a seasoning but also a preservative, medicinal material and supplement, and vegetable pesticide (5). Several studies have reported the potential of andaliman as an antimicrobial, antioxidant, anti-inflammatory, xanthine oxidase inhibitor, and cytotoxic. Other studies have also reported the antibacterial activity of andaliman extract against food-pathogenic bacteria such as *Bacillus cereus*, *Escherichia coli*, *Staphylococcus aureus*, and *Salmonella typhimurium* (6); (7). Because of the above, the author is interested in examining the effectiveness of 40% and 80% Andaliman Fruit (*Zanthoxylum piperitum*) extract in accelerating wound healing time after tooth extraction in Wistar rats.



II. RESEARCH METHODS

This experimental laboratory study uses a randomized controlled design with a post-test-only control group design pattern. The experimental animals used in this study are Wistar rats, 32 males, physically healthy, 2-3 months old, with a body weight between 200-250 grams. The rats will be divided into two groups, namely, 16 treated with 40% Fruit Andaliman (*Zanthoxylum piperitum*) and 16 treated with 80% Fruit Andaliman (*Zanthoxylum piperitum*) to see the comparison of accelerated wound healing after tooth extraction. The Federer formula determined the sample size, namely: $(t - 1)(r - 1) \geq 15$. Where t = several treatments; (2 treatments) r = several replications. Thus, the minimum sample size for each treatment was 16 rats.

$$= (t-1)(r-1) \geq 15$$

$$= (2-1)(r-1) \geq 15$$

$$= (r-1) \geq 15$$

$$= (r-1) \geq 15$$

$$= r \geq 15 + 1$$

$$= r \geq 16$$

Tools

Tools used in research :

1. Number-coded experimental animal cages.
2. Diagnostic set (mouth glass, sonde, tweezers).
3. Nierbeken.
4. Dental extraction forceps (a needle holder is used) under sterile conditions.
5. Syringe.
6. Gloves.
7. Mask.
8. Petri dish of jaw preparation.
9. A set of tools for making histology preparations.
10. Microscope.

Material

Materials used in the study:

1. Fruit Andaliman (*Zanthoxylum piperitum*) Extract 40%
2. Fruit Andaliman (*Zanthoxylum piperitum*) Extract 80%
3. Ketamine.
4. Formalin 10%.
5. Histology preparation material with Hematoxylin Eosin (HE) staining.
6. 70% alcohol as sterilization material.
7. Cotton pellet.

The type of data collected in this study is primary data obtained from the results of measurements (scoring) on the histological picture of the process of accelerating wound healing after tooth extraction by administering Fruit Andaliman (*Zanthoxylum piperitum*) 40% and Fruit Andaliman (*Zanthoxylum piperitum*) 80%. Collecting 3 kg of Fruit Andaliman (*Zanthoxylum piperitum*), the Fruit Andaliman (*Zanthoxylum piperitum*) was washed and divided into two parts to take the inner meat to obtain the gel. After washing, the flesh of the Fruit Andaliman (*Zanthoxylum piperitum*) was dried in an incubator at 500 °C for 72 hours. The dried flesh of the Fruit Andaliman (*Zanthoxylum piperitum*) was then pulverized using a blender until it became powder. Fruit Andaliman (*Zanthoxylum piperitum*) meat that had become powder was then extracted by maceration while stirring. The extraction process uses a water solvent. The powder was put into a maceration vessel or container with a watertight lid and then filtered using filter paper; the pulp was macerated up to 2 times. The obtained maceration results were collected and evaporated using a rotary vacuum evaporator at a temperature of 500C until there was no more solvent condensation on the condenser. After the solvent was evaporated using a rotary vacuum evaporator, the evaporation was continued using a 70°C water bath to obtain a pure extract. The Fruit Andaliman (*Zanthoxylum piperitum*) extract was then diluted with water to get 40% and 80% extract concentrations.

Before treatment, 32 rats were divided into 40% *Zanthoxylum piperitum* extract and 80% *Zanthoxylum piperitum* extract. After that, all rats were adapted for one week. Then, animals were put into cages, with five rats in each cell in the same environmental conditions, given the same food, and monitored for health. Rat tooth extraction will be performed using a modified needle holder



under the anesthetic effect of ketamine 1000 mg/10 ml at a dose of 20 mg/kg bw intraperitoneally. One incisor tooth will be extracted from every five rats daily. After tooth extraction, observe the extraction wound and apply a tampon (cotton pellet) to stop bleeding in the wound for 5 minutes. Dropped Fruit Andaliman (*Zanthoxylum piperitum*) 40% in treatment group I and dropped Fruit Andaliman (*Zanthoxylum piperitum*) 80% in treatment group II shortly after tooth extraction as much as 0.05 ml every day. After extraction and treatment, the test animals (rats) were fed fine porridge with attention to the health of the test animals.

On the 5th day after tooth extraction, rats from each group were physically sacrificed by neck dislocation. The rat's tail was held and then placed on a surface it could reach. The rat will stretch its body; when the rat's body extends, a holder held by the left hand is placed on the nape of the neck. The right-hand pulls the tail hard so the rat's neck will be dislocated. Then, the jaw of the rat is taken out. Then, the tissue was fixed with 10% formalin for 24 hours at room temperature, and the decalcification process was carried out using Ethylene Diamine Tetra Acetic Acid (EDTA 10%) solution at room temperature. Tissue dehydration was then performed using alcohol.

First, the specimen was put into a toluol alcohol solution (1:1) using pure toluol and then into a paraffin-saturated toluol solution. The following process is infiltration in the oven by inserting the specimen into liquid paraffin. The embedding process is carried out (inserting the tissue into paraffin) and then labeled/coded. After the embedding stage, the tissue is sliced in series with a thickness of approximately 6 microns using a microtome. It was evaluating fibroblast cell response using Hematoxylin Eosin (HE) staining. The procedure that must be done is deparaffinization using xylol and alcohol solution, then continued with the rehydration process with alcohol. After that, it is washed with running water, rinsed with distilled water, and then wiped. The glass slide was then placed in Meyer's hematoxylin solution, washed with running water, and then rinsed with distilled water, after which the staining was assessed under a light microscope. If the staining has been considered good, proceed to the next step, namely the dehydration process with alcohol in stages, and then wipe. The next step was to put it into xylol solution, and the object glass was covered with deck glass and observed using a light microscope. Fibroblast density was assessed by counting the fibroblasts in 5 fields of view. Histopathology scoring parameters to determine the distribution of fibroblast tissue is done based on the field of view:

1. (-) = No fibroblast tissue found
2. (+) = small number of fibroblasts (less than 10% per field of view)
3. (++) = moderate amount of fibroblast tissue (10%-40% per field of view)
4. (+++) = large amount of fibroblast tissue (40%-80% per field of view)

Data analysis using the SPSS 16 program. Research using a pure experiment with a non-parametric Chi-Square Test, after testing, showed that ($p < 0.05$) means there is a significant difference between groups.

III. RESULTS AND DISCUSSION

Data distribution and frequency of the number of fibroblast tissue per field of view in Wistar rats after tooth extraction in groups given 40% and 80% Andaliman Fruit extract (*Zanthoxylum piperitum*) can be seen as follows:

Table 1. Distribution and Frequency Data of Fibroblast Tissue Counts Per Field of View After Tooth Extraction

No	Number of Fibroblasts	Fruit Andaliman (<i>Zanthoxylum piperitum</i>)			
		Concentration 40%		Concentration 80%	
		n	%	n	%
1	No fibroblast tissue was found	0	0	0	0
2	A small number of fibroblasts (less than 10% per field of view)	8	25	3	9
3	Moderate amount of fibroblast tissue (10%-40% per field of view)	4	13	6	19
4	A large amount of fibroblast tissue (40%-80% per field of view).	4	13	7	22

Table 1 shows all samples found fibroblast tissue in the administration of Andaliman Fruit extract (*Zanthoxylum piperitum*) 40% and 80% after tooth extraction of Wistar Rats. The number of fibroblasts found in the small category (less than 10% per field of view) on the administration of Andaliman fruit extract (*Zanthoxylum piperitum*) 40% after tooth extraction of Wistar rats as many as 8 (25%) heads and on the administration of Andaliman fruit extract (*Zanthoxylum piperitum*) 80% as many as 3 (9%) heads. The number of fibroblasts found in the medium category (10%-40% per field of view) on the administration of Andaliman fruit extract



(Zanthoxylum piperitum) 40% after tooth extraction of Wistar rats as many as 4 (13%) heads and on the administration of Andaliman fruit extract (Zanthoxylum piperitum) 80% as many as 6 (19%) heads. The number of fibroblasts found in the many categories (40% - 80% per field of view) on the administration of Andaliman Fruit extract (Zanthoxylum piperitum) 40% after tooth extraction of Wistar Rats as many as 4 (13%) heads and on the administration of Andaliman Fruit extract (Zanthoxylum piperitum) 80% as many as 7 (22%) heads.

Table 2. Relationship between the number of tissue fibroblasts per field of view in Wistar rats after tooth extraction with the administration of Andaliman Fruit Extract (Zanthoxylum piperitum) at a concentration of 40% and 80%.

Number of Fibroblasts	Fruit Andaliman (Zanthoxylum piperitum)		p
	Concentration 40%	Concentration 80%	
No fibroblast tissue was found	0	0	
Small number of fibroblasts (less than 10% per field of view) 3.	8	3	
Moderate amount of fibroblast tissue (10%-40% per field of view)	4	6	0,010*
A large amount of fibroblast tissue (40%-80% per field of view).	4	7	

Significant $p < 0.05$. Chi-Square Test

From Table 2. it can be seen that there is a significant relationship between the number of fibroblast tissue per field of view in Wistar rats after tooth extraction by giving Andaliman Fruit Extract (Zanthoxylum piperitum) with a concentration of 40% and Andaliman Fruit Extract (Zanthoxylum piperitum) with a concentration of 80%, $p = 0.010$ ($p < 0.05$).

Tooth extraction is the process of removing teeth, both whole and the remaining roots, from the alveolar because it cannot be treated anymore. Tooth extraction will cause injury by exposing the alveolar bone in the oral cavity. The wound is anatomical damage or destruction of part of the tissue due to trauma (1). The body will repair tissue damage (harm), known as the wound healing process, and begins from injury until wound closure. The primary cells involved in the wound-healing process are fibroblasts. The proliferation of fibroblasts determines the outcome of wound healing. This is because fibroblasts will produce collagen that will link the wound and affect the revitalization process that will close the wound.

Rat tooth extraction will be performed under the anesthetic effect of ketamine 1000 mg/10 ml dose of 20 mg/kg bw intraperitoneally. After extraction, the post-extraction wound will be observed, and a tampon (cotton pellet) will be applied to stop bleeding in the damage for 5 minutes. Andaliman Fruit Extract (Zanthoxylum piperitum) 40% was given to treatment group I. Andaliman Fruit Extract (Zanthoxylum piperitum) 80% to treatment group II shortly after tooth extraction as much as 0.05 ml daily by dropping. On the 5th day, the rat jaw was taken and fixed with 10% formalin for 24 hours at room temperature. The decalcification process used the Ethylene Diamine Tetra Acetic Acid (EDTA 10%) solution at room temperature. The tissue was then dehydrated in a toluol alcohol solution (1:1) using the pure tool.

The fibroblast cell response was evaluated using Hematoxylin Eosin (HE) staining. Fibroblast density was assessed by counting the number of fibroblasts in 3 fields of view. The sample test was carried out on the fifth day because fibroblasts are known to start growing during the third to the seventh day of the wound healing process, so researchers took the average day, namely on the fifth day (Stojanovic et al., 2011). Based on Chi-Square data analysis, there is a significant relationship between the number of fibroblast tissue per field of view in Wistar rats after tooth extraction by giving 40% Andaliman Fruit Extract (Zanthoxylum piperitum) and 80% Andaliman Fruit Extract (Zanthoxylum piperitum), $p = 0.010$ ($p < 0.05$). This is seen in the distribution of data on the number of fibroblasts (40%-80% per field of view) in Fruit Andaliman (Zanthoxylum piperitum) 80% as many as eight samples and in Fruit Andaliman (Zanthoxylum piperitum) 40% only four pieces. The results of this study are supported by Shasti (2017), which states that Andaliman Fruit Extract, with a concentration of 8%, has the highest clear zone against the growth of *S.aureus* bacteria. In addition, the antibiotic effect of Andaliman Fruit extract at all concentrations was not significantly different, while cefotaxime with Andaliman Fruit extract at all concentrations had significant inhibition (8). Andaliman fruit has the potential to be an antioxidant and glucosidase inhibitor. Andaliman is a spice widely used by the Batak community as a seasoning. Fruit andaliman has the potential to be an antioxidant and glucosidase inhibitor. The extract of andaliman fruit has the best antioxidant activity, with IC50 reaching 30.04 ppm. Fraction C (IC50 16 ppm) has acted as the most active glucosidase inhibitor and also contains flavonoid compounds of the around and flavanone group, which are the most active compounds as glucosidase inhibitors (9).



Anggraeni's research (2020) stated that andaliman simplistic contains 7.32% moisture content, 13.62% water-soluble juice content, 29.54% ethanol-soluble juice content, 4.80% total ash content, 0.26% acid-insoluble ash content. In addition, phytochemical screening results show that andaliman simplistic contains alkaloids, flavonoids, glycosides, saponins, tannins, and steroid/triterpenoid compounds (7). Saragih's research (2019) states that the observations made show that the seeds of andaliman contain active chemical compounds that can function as ingredients for treatment. The active chemical compounds in andaliman seeds include phenolics, saponins, flavonoids, tannins, triterpenoids, and alkaloids. These secondary metabolite compounds have antibacterial, antimicrobial, antiviral, and protein denaturing and prevent bacterial growth in digestion. Therefore, knowledge of the content of these active chemical compounds can be used as a basis for further utilization of andaliman seeds as a remedy for other diseases (10). From the results of this study, it can be seen that 80% Andaliman Fruit (*Zanthoxylum piperitum*) extract is more effective in the wound healing process than 40% Andaliman Fruit (*Zanthoxylum piperitum*) extract because the higher the concentration of the section, the content in the Andaliman Fruit (*Zanthoxylum piperitum*) extract is also higher so that the wound healing process is faster.

IV. CONCLUSION

Based on the results and discussions carried out in this study, it can be concluded that andaliman Fruit Extract (*Zanthoxylum piperitum*) 40% and 80% effectively accelerate wound healing time after tooth extraction of Wistar rats.

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ADULT EDUCATION FOR NATION DEVELOPMENT UNDER NEP 2020; A CRITICAL STUDY

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ABSTRACT

This report critically examines the significance of adult education for national development under the National Education Policy (NEP) 2020 in India. It highlights the key goals of NEP 2020, the major components of adult education, the challenges in implementation, and recommendations to enhance its effectiveness. By focusing on skill development, economic growth, social empowerment, health and well-being, lifelong learning, and social cohesion, adult education plays a vital role in building a prosperous and inclusive society. However, several critical issues such as access and equity, infrastructure and resources, awareness and outreach, curriculum development, training and professional development, evaluation and assessment, coordination and collaboration, and funding and sustainability need to be addressed to ensure the successful implementation of adult education programs. This report provides insights into the importance and challenges of adult education and offers recommendations for strengthening its impact on national development.

KEYWORDS: *New Education Policy, Adult Education, Digital India, Community, Literacy.*

INTRODUCTION

The connection between adult education and national development cannot be overemphasised. The reason being, adult education is regarded as an important instrument of change and development. It is the formal, informal and non-formal system of education that is based on the needs of adults and provide empowerment opportunities in all spheres, i.e. social, political, economic, and cultural. In other words, adults are well-equipped, so they are able to lead to progression. In developed countries, the rate of literacy is high as compared to underdeveloped countries. When acquiring an understanding of the role of adult education in national development, it is vital to pay attention towards various aspects, these are, free and democratic society, just egalitarian society, united, strong and self-reliant nations, great and dynamic economy, opportunities for citizens, economic progress, even distribution of income, racial harmony and maintenance of law and order (Cavalevu, n.d.). These aspects can be achieved, when individuals are educated and aware. When they are educated, they would not only put into practice the measures that are necessary to promote their well-being, but also would implement practices that are necessary to promote welfare and goodwill of the community (Saad, 2017). This implies that not only social development, but it also aimed to create awareness among people about various policies, law, rights and duties of the government and people for successive implementation of the strategy of redistributive justice. The NEP 2020 has been drafted to integrate lucrative output in the education system in India. Especially various impediments arising due to online banking and transactions frauds and deplorable activities makes it indispensable to spread awareness, literacy and basic skills to each member of a society.

OBJECTIVES OF THE STUDY

- ✓ To understand the role of NEP 2020 in promoting Adult education for Nation Development.
- ✓ To understand the curriculum framework for adult education for Nation Development.
- ✓ Analyzing various platforms imperative to foster growth and development of Adult Education .
- ✓ Analyzing various platforms imperative to foster growth and development of Nation .
- ✓ To understand the role of Adult education for Nation Development.

RESEARCH QUESTIONS OF THE STUDY

- What are the the role of NEP 2020 in promoting Adult education for Nation Development ?
- What are the curriculum framework for adult education for Nation Development.
- What are the various platforms imperative to foster growth and development of Adult Education ?
- What are the various platforms imperative to foster growth and development of Nation ?



- What are the role of Adult education for Nation Development ?

METHODOLOGY OF THE STUDY

- The methodology of the paper is qualitative in nature. Researchers analyzed the data qualitatively.
- In-depth research of reliable and valid sources of information and Sources used in this study Of adult education in NEP 2020 from various magazines, websites and articles.

FINDINGS OF THIS STUDY

✓ OBJECTIVES: 1 To understand the role of NEP 2020 in promoting Adult education for Nation Development.

According to the National Education Policy 2020 (NEP 2020), adult education plays a crucial role in the development of a nation. NEP 2020 recognizes the significance of lifetime learning and aims to provide education opportunities to all individuals, regardless of age.

Here are some key points highlighting the importance of adult education for nation development according to NEP 2020:

- **Inclusive Development:** NEP 2020 emphasizes inclusive and equitable education, ensuring that individuals of all ages have access to learning opportunities. By providing adult education, the policy aims to empower adults from all walks of life and enable their active participation in the development of the nation.
- **Skill Development:** The policy recognizes the need to enhance the skills and knowledge of individuals throughout their lives. Adult education programs focus on developing new skills or upgrading existing ones, enabling adults to adapt to the changing requirements of the job market. This, in turn, contributes to the economic growth of the nation.
- **Human Resource Development:** Adult education is crucial for the overall development of human resources in a nation. By providing opportunities for adults to enhance their knowledge and expertise, NEP 2020 aims to create a highly skilled workforce. A well-educated adult population can contribute to various sectors, including industry, research, innovation, and entrepreneurship, driving overall national development.
- **Active Citizenship:** Adult education promotes active citizenship by fostering critical thinking, democratic values, and social responsibility. By equipping adults with the necessary knowledge and skills, it enables them to engage actively in civic and social activities, participate in decision-making processes, and contribute to the well-being of the society and the nation.
- **Bridging the Education Gap:** Adult education helps address the education gap among individuals who were unable to complete their formal education in their earlier years. It offers a second chance for those who may have missed out on educational opportunities due to various reasons. Bridging this gap through adult education ensures that everyone has access to lifelong learning, promoting educational equity and social inclusivity.

Overall, adult education holds immense potential for nation development according to NEP 2020. By investing in adult education programs, a nation can harness the potential of its adult population, enhance their skills and knowledge, and create a more prosperous and inclusive society.

✓ OBJECTIVES: 2 To understand the curriculum framework for adult education for Nation Development .

The New Education Policy 2020 (NEP 2020) in India recognizes the importance of adult education in contributing to national development. The curriculum framework for adult education under NEP 2020 plays a crucial role in equipping adults with the knowledge, skills, and competencies necessary for personal and professional development.

The goals of adult education in the NEP 2020 include:

- **Universal Access:** NEP 2020 aims to provide universal access to adult education, ensuring that all adults, including those in marginalized and disadvantaged communities, have the opportunity to engage in lifelong learning.
- **Functional Literacy:** The policy seeks to promote functional literacy among adults, enabling them to acquire basic reading, writing, and numeracy skills. This helps adults effectively participate in various aspects of life, such as employment, civic engagement, and personal development.
- **Lifelong Learning:** NEP 2020 recognizes the importance of lifelong learning and aims to create opportunities for adults to enhance their knowledge, skills, and competencies throughout their lives. It encourages adults to engage in continuous learning to adapt to changing societal and economic demands.
- **Vocational Skills Development:** The policy highlights the need to provide adults with vocational skills training and development opportunities. It seeks to equip them with relevant skills that enhance employability, entrepreneurship, and economic self-sufficiency.



- **Digital Literacy:** NEP 2020 recognizes the importance of digital literacy in today's digital age. It aims to ensure that adults have access to digital skills training and focuses on enabling them to use technology effectively, access information, and participate in the digital economy.
- **Personal Development:** The policy emphasizes personal development through adult education. It aims to empower adults to pursue their passions, interests, and personal goals, promoting holistic development and self-fulfillment.
- **Inclusive Education:** NEP 2020 promotes inclusive education by addressing the specific learning needs and barriers faced by adults with disabilities, women, minorities, and other marginalized groups. It aims to provide equal opportunities for all adults to access and benefit from adult education programs.

The curriculum framework for adult education provides a guiding document that outlines the key principles, goals, and content areas for adult education programs. It includes elements such as goals and objectives, a competency-based approach, flexible pathways, relevant content areas, pedagogical approaches, assessment and evaluation guidelines, and support services for adult learners.

By implementing the curriculum framework for adult education, India can ensure that adults have access to quality education and opportunities for personal and professional growth. This, in turn, contributes to national development by creating a skilled workforce, reducing poverty and inequality, promoting active citizenship, improving health and well-being, fostering social integration and cohesion, and cultivating a culture of lifelong learning.

In conclusion, the curriculum framework for adult education under the New Education Policy 2020 aims to fulfill the diverse learning needs of adults, promoting their personal, social, and economic well-being, and ultimately contributing to the overall development of the nation.

✓ **OBJECTIVES:3 Analyzing various platforms imperative to foster growth and development of Adult Education**

In the Indian perspective, there are various platforms that play a crucial role in fostering the growth and development of Adult Education. These platforms are designed to address the unique challenges and requirements of adult learners in India. Let's analyze some of these platforms and their contributions to adult education:

- **New India Literacy Programme (NILP):** The NILP is a notable platform approved by the Indian government for the period FYs 2022-2027. Aligned with the National Education Policy (NEP) 2020, NILP aims to provide adult education through online platforms. It focuses on imparting foundational literacy and numeracy, critical life skills, vocational skills development, basic education, and continuing education. The program encourages volunteerism by involving students, teachers, Anganwadi workers, ASHA workers, and other community volunteers. This comprehensive approach aims to provide adult education to non-literates in the age group of 15 years and above.
- **Skill Development Programs:** Skill development plays a vital role in adult education by enhancing employability and income-earning potential. The Indian government, along with various organizations, offers skill development programs that provide vocational training and technical skills to adults. These programs cover a wide range of sectors, including healthcare, agriculture, tourism, manufacturing, and digital skills. Skill India, Pradhan Mantri Kaushal Vikas Yojana (PMKVY), and Industrial Training Institutes (ITIs) are some examples of initiatives focusing on skill development for adults.
- **Digitalization and Online Learning Platforms:** The integration of technology in adult education has significantly contributed to its growth and development in India. The government emphasizes digital literacy and provides digital infrastructure in rural areas, bridging the technology divide. Online learning platforms like SWAYAM, SWAYAMPURABHA, and National Digital Library offer a wide range of courses and resources for adult learners. These platforms provide flexibility in learning, allowing adults to access educational materials at their convenience.
- **Community-based Organizations and NGOs:** Community-based organizations and NGOs play a crucial role in promoting adult education in India. They work closely with local communities, raise awareness about the importance of education, mobilize resources, and provide support systems for adult learners. These organizations conduct adult education programs, vocational training, and awareness campaigns tailored to the specific needs of the community. They also collaborate with government agencies and other stakeholders to create a sustainable framework for adult education.
- **Government Initiatives and Policies:** The Indian government has implemented various initiatives and policies to promote adult education. The National Literacy Mission, Saakshar Bharat Mission, and National Skill Development Mission are some of the prominent initiatives aimed at increasing adult literacy rates and providing skill development opportunities. These initiatives focus on providing financial support, infrastructure, and resources for adult education programs.
- **Accreditation and Certification:** Accreditation and certification play a significant role in ensuring the quality and recognition of adult education programs. Recognized certifications enhance the employability of adult learners and provide a sense of



achievement. The government promotes accreditation and certification programs for adult education to improve credibility and encourage learner participation.

- **Public-Private Partnerships:** Collaboration with corporates and private sector organizations can provide additional resources and opportunities for adult learners. Public-private partnerships facilitate the creation of training programs, job placements, and apprenticeships, enabling adults to acquire relevant skills and find employment. These partnerships leverage the expertise and resources of the private sector to enhance the effectiveness of adult education programs.

Overall, the growth and development of adult education in India rely on a multi-faceted approach involving government initiatives, skill development programs, digital platforms, community involvement, accreditation, and partnerships. These platforms and strategies work together to address the specific challenges faced by adult learners and provide them with the necessary educational opportunities to enhance their knowledge, skills, and socio-economic prospects.

OBJECTIVES:4 Analyzing various platforms imperative to foster growth and development of Nation :

The New Education Policy 2020 in India emphasizes the importance of various platforms to foster the development of the nation. These platforms have been proposed to promote digital learning, enhance access to quality educational resources, empower teachers, and facilitate the use of technology in education. Let's analyze some of these platforms and their contributions:

- **National Education Technology Forum (NETF):** The establishment of NETF aims to facilitate the free exchange of ideas, resources, and best practices in the field of educational technology. This platform promotes innovation, collaboration, and the adoption of technology-enabled teaching and learning methods. By bringing together educators, policymakers, and experts, NETF plays a crucial role in leveraging technology for the improvement of education and ultimately contributes to the overall development of the nation.
- **DIKSHA:** DIKSHA is a national digital infrastructure designed to provide e-content and resources for school education. It offers a wide range of learning materials and interactive modules, accessible to teachers, students, and parents. DIKSHA promotes access to quality education, especially in remote areas, and enhances the teaching and learning experience. The platform empowers teachers with digital tools and resources, enabling them to deliver effective and engaging lessons. By fostering the use of technology in education, DIKSHA contributes to the development of a digitally literate nation.
- **Online Teacher Training Modules:** The New Education Policy 2020 recognizes the need for online training modules to enhance the digital skills of teachers and improve their teaching methodologies. These modules provide teachers with the necessary knowledge and skills to effectively integrate technology into their classrooms. By empowering teachers with digital competencies, online teacher training programs contribute to enhancing the quality of education and ensuring that students receive a well-rounded learning experience.
- **National Repository of Open Educational Resources (NROER):** NROER is an online platform that offers a wide array of open educational resources for teachers, students, and parents. This repository includes textbooks, videos, audio resources, and interactive learning materials. NROER promotes the use of open educational resources, which are freely accessible to everyone. It enhances access to high-quality educational materials, supports self-paced learning, and empowers teachers with additional resources to deliver engaging and effective lessons. The platform also contributes to reducing the cost burden of educational resources, making education more accessible to all segments of society.
- **E-Pathshala:** E-Pathshala is a digital platform that provides access to e-books and digital textbooks developed by various organizations. It covers a wide range of subjects and is available in multiple languages. E-Pathshala promotes digital learning and ensures that students have access to textbooks and learning materials, regardless of their geographical location. By reducing reliance on physical textbooks, this platform enhances the efficiency and effectiveness of the education system. E-Pathshala, therefore, contributes to the development of a knowledge-based society.
- **Virtual Labs:** The New Education Policy 2020 proposes the development of virtual labs to provide access to laboratory experiments for students, particularly those in remote areas. These virtual labs create a simulated laboratory environment, allowing students to perform experiments and gain practical knowledge in science and other subjects. By bridging the gap between theoretical knowledge and practical application, virtual labs contribute to the development of scientific and analytical skills among students. This platform ensures that every student, regardless of their location, has an equal opportunity to engage in practical learning experiences.
- **National Academic Depository (NAD):** NAD is a digital repository for academic records, such as degrees, certificates, and mark sheets. It provides a secure and reliable platform for online verification of academic credentials. NAD simplifies the process of verifying educational qualifications, reduces paperwork, and ensures the authenticity and integrity of academic records. By streamlining the verification process, NAD contributes to building a transparent and credible education system.



These platforms mentioned in the New Education Policy 2020 play a crucial role in fostering the development of the nation by promoting digital learning, enhancing access to quality educational resources, empowering teachers, and leveraging technology for the improvement of education. They contribute to the creation of a knowledge-driven society and prepare students for the challenges of the future.

✓ **OBJECTIVES:5 To understand the role of Adult education for Nation Development.**

Adult education plays a crucial role in contributing to the overall development of a nation, and the New Education Policy 2020 recognizes its significance. The policy aims to address the needs and aspirations of adult learners by providing them with opportunities for lifelong learning and skill development. Here's how adult education contributes to national development in the context of the New Education Policy 2020:

- **Economic Development:** Adult education enables individuals to acquire new skills and knowledge, enhancing their employability and productivity. By upgrading their skills and improving their professional competence, adults can contribute to the economic growth of the nation. The policy emphasizes vocational training and entrepreneurship skills, empowering adults to enter new fields, change professions, or start their own businesses.
- **Social Development:** Adult education promotes social inclusion and empowerment by providing equal opportunities for individuals from all backgrounds and communities. It helps marginalized groups, immigrants, and disadvantaged communities to integrate into society, overcome barriers, and improve their quality of life. By fostering social cohesion and cultural exchange, adult education contributes to building inclusive and harmonious communities.
- **Health and Well-being:** Adult education programs often include health and wellness components, educating individuals about nutrition, disease prevention, mental health, and healthy lifestyles. By improving the health literacy of adults, adult education indirectly contributes to reducing healthcare costs, increasing productivity, and promoting a healthier society. Healthier individuals contribute to the well-being of families, communities, and the nation as a whole.
- **Civic Engagement:** Adult education encourages active citizenship and civic engagement. By providing knowledge and skills related to social, political, and environmental issues, adult education empowers individuals to participate in community projects, social initiatives, and democratic processes. Informed and engaged citizens are more likely to contribute to nation-building, advocate for positive change, and promote social justice.
- **Lifelong Learning Culture:** The New Education Policy 2020 promotes a culture of lifelong learning, emphasizing the importance of continuous personal and professional development. Adult education plays a vital role in fostering this culture by encouraging adults to acquire new knowledge, skills, and competencies throughout their lives. A nation with a strong culture of lifelong learning remains adaptable, innovative, and resilient in the face of changing economic and societal dynamics.

The New Education Policy 2020 recognizes the importance of adult education and includes initiatives to address the specific needs of adult learners. It emphasizes the establishment of Adult Education Centers (AECs) in every district, provision of vocational education and skill training, recognition of prior learning, and integration of technology-enabled learning. These initiatives provide opportunities for adults to enhance their education, skills, and employability. By investing in adult education, nations can unlock the potential of their adult population, leading to sustainable development, social progress, and a better future for all citizens.

CONCLUSION

Adult education plays a critical role in the overall development of a nation, and the National Education Policy (NEP) 2020 recognizes its significance by including key provisions to promote adult learning and skill development. By addressing the challenges and implementing the recommendations outlined in the NEP 2020, countries can harness the potential of adult education to achieve economic development, poverty alleviation, social development, improved health outcomes, and the cultivation of a lifelong learning culture.

Through adult education, individuals are empowered with the necessary skills and knowledge to contribute to the economic growth of the nation. By enhancing their employability, adults can find stable employment, start businesses, and contribute to various sectors of the economy. This leads to increased productivity and overall economic development.

Moreover, adult education helps individuals break the cycle of poverty. By acquiring new skills and knowledge, adults can improve their employment prospects and earning potential, enabling them to support themselves and their families. This reduces dependency on social welfare programs and contributes to poverty alleviation and the improvement of living standards.

Social development is another significant impact of adult education on the nation. It promotes social inclusion and empowerment by providing opportunities for individuals to acquire life skills, critical thinking abilities, and a deeper understanding of social issues.



Informed and engaged adult learners are better equipped to actively participate in community activities, democratic processes, and advocate for social justice, leading to social cohesion and development.

Furthermore, adult education contributes to the overall health and well-being of individuals and communities. By empowering adults with knowledge about health-related issues, preventive measures, and healthy lifestyles, adult education promotes better decision-making regarding well-being. This results in improved health outcomes, reduced healthcare costs, and a healthier population.

Lastly, adult education fosters a culture of lifelong learning, which is essential in today's rapidly changing world. By encouraging individuals to continue their education and skill development throughout their lives, a society that values and supports adult education creates an environment for innovation, personal growth, and resilience.

However, implementing adult education under the NEP 2020 comes with several critical challenges, including access and outreach, low literacy levels, learning opportunities for the disadvantaged, trained facilitators and teachers, recognition of prior learning, funding and resource allocation, awareness and sensitization, and technology integration. To address these challenges, the NEP 2020 recommends universal access to adult education, flexibility in learning pathways, quality and relevance of programs, training and capacity building, synergies with skill development programs, collaboration and convergence, monitoring and evaluation, and financial and resource support.

By implementing these recommendations, countries can build a comprehensive and inclusive adult education system that caters to the diverse learning needs of adults. This will contribute to the overall progress and prosperity of the nation, ensuring sustainable development and empowering individuals to reach their full potential.

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IMPACT OF DAILY HATHAYOGA PRACTICES AMONG UPSC ASPIRANTS

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ABSTRACT

Yoga, a part of Indian legacy and wisdom has gained global recognition. Yoga can be beneficial for civil services aspirants and others in several ways. Preparing for civil services exams or dealing with other demanding situations can be stressful. Yoga practices such as deep breathing, meditation, and relaxation techniques can help reduce stress and promote mental well-being. Regular practice of yoga can enhance the ability to handle pressure and stay focused during the preparation process. It may hold the key to cracking the UPSC Civil Services exams. Yoga, derived from the Sanskrit word “union,” embodies the balance between mind and body. Its practical application establishes a connection between the human soul and the supreme soul. Moreover, yoga’s positive impact extends to millions worldwide, with universities even advocating its adoption to enhance students’ study capabilities and mental well-being. As an aspiring civil servant, experience a whirlwind of emotions during your preparation. Maintaining equanimity of mind and physical fitness is paramount for success in the UPSC Civil Services exams.

KEY WORDS: Hathayoga Practice, UPSC Aspirants

INTRODUCTION

Having a Universal Consciousness means that your mind and body, as well as Man and Nature, are in perfect balance with one another. Modern scientific consensus is that all of reality is just a variety of the same quantum firmament. Those who reach this state of oneness are said to have practiced yoga and are termed yogis because they have attained the state of freedom known as mukti, nirvana, or moksha. Yoga’s ultimate objective is Self-realization, which leads to this “state of liberation” (Moksha) or “freedom” (Kaivalya). The basic purposes of Yoga are self-liberation and the enhancement of health and harmony in all spheres of existence. The word “yoga” may also refer to an introspective science that instructs its students in the many methods by which they might achieve this synthesis and control their own destiny. Because of the many ways in which it has helped individuals, yoga has been called a “immortal cultural outcome” of the 2700 B.C. The practice of Yoga Sadhana exemplifies universal moral values. Physical, mental, emotional, and energetic levels are all targeted in yoga practice. As a result, Yoga has come to be divided into four major categories: karma yoga, where the body is put to use; bhakti yoga, where the emotions are put to use; gyana yoga, where the mind and intellect are put to use; and kriya yoga, where the energy is put to use.

NEED OF HATHAYOGA PRACTICES FOR PHYSICAL AND MENTAL FITNESS

Each of the Yoga traditions that we study and practice may be placed here. Each person is a unique permutation of these four components. Working with a Guru has been emphasized by every single one of Yoga’s earliest commentators. Each seeker needs a customized combination of the four foundational strands; a Guru is the only one capable of providing this. Methods of Yoga Education: Traditionally, Yoga was taught first by elders in the family (similar to the nuns in western convents) and subsequently by the Seers



(Rishis/Munis/Acharyas) at Ashramas (equivalent to monasteries in the West). However, yoga instruction emphasizes the importance of one's own health and happiness, or "Being." Those who are good, centered, integrated, honest, clean, and transparent are seen to be better for one's self, one's family, one's community, one's country, and all of humanity. In yoga, "orientation" is the first and most important step. To assist individuals concentrate on the "being oriented" aspect of their life, "Yoga" is used to refer to a practice that relies on many different types of living traditions and literature.

Today, you may get a Yoga Education from any number of reputable Yoga Schools, Yoga Universities, Yoga Departments at other universities, Naturopathy Schools, or Private Trusts & Societies. Various therapeutic and medical institutions have established Yoga Clinics, Yoga Therapy and Training Center, Yoga Preventive Health Care Units, Yoga Research Center, etc.

BENEFITS OF HATHAYOGA PRACTICES FOR UPSC ASPIRANTS

1. Improved Physical Health: Regular yoga practice ensures physical fitness and well-being. A sound body serves as a foundation for a healthy mind, keeping minor ailments at bay. By staying fit through yoga, you can avoid wasting precious time due to illness during your UPSC preparation. Physical fitness is essential for overall well-being and can positively impact academic performance. Regular practice of yoga asanas and sequences can improve strength, flexibility, and stamina. Being physically fit can provide the energy and endurance needed for long study sessions and the demanding nature of civil services exams.

2. Enhanced Concentration and Memory: As a result of increased blood flow to the brain, yoga improves mental clarity. This, in turn, enhances focus and memory, both of which are crucial for passing the civil service examination. Practices in yoga, such as meditation and pranayama, have been demonstrated to boost cognitive functions including memory and learning. These practices increase blood flow to the brain, improve neural connections, and enhance overall cognitive function. As a result, yoga can aid in effective learning and retention of information.

3. Reduced Anger and Negativity: Through yoga, you can tap into positive energy and reduce negativity. Yoga helps cultivate emotional balance and resilience. Aspirants face numerous challenges, including failure, setbacks, and uncertainty. Yoga practices such as mindfulness and meditation promote self-awareness, emotional stability, and the ability to cope with stress and adversity. A calm mind and spiritual awakening help diminish negative emotions like anger, frustration, tension, and depression. Attaining a balanced state of mind is crucial for success in the IAS exams.

4. Corrected Posture: Consistent yoga practice cultivates better posture. Since UPSC civil services exam preparation often involves prolonged hours of sitting with books, maintaining a healthy posture is vital. Yoga helps mitigate the risk of postural damage.

5. Improved Concentration and Mental Clarity: Yoga involves various techniques that enhance concentration and improve mental clarity. Asanas (postures) and pranayama (breathing exercises) help increase oxygen supply to the brain, improving cognitive function. This can be particularly helpful for civil services aspirants who need to study and retain a vast amount of information.

6. Better Sleep Quality: Proper sleep is crucial for effective preparation and overall well-being. Yoga can help improve sleep quality by reducing stress, calming the mind, and relaxing the body. Practices like Yoganidra (yogic sleep) and gentle stretching before bedtime can aid in achieving restful sleep. Practising Pranayama, Sudarshan Kriya, and Meditation are very beneficial. Pranayama, a set of breathing exercises, offers multiple advantages that can smoothen your UPSC preparation journey. Meditation, too, provides numerous benefits, including stress reduction, increased attention span, improved immunity, better sleep, and enhanced brain function.

7. Stress Relief: The extensive syllabus and societal pressures associated with UPSC exams can lead to stress and burnout. Yoga offers specific asanas (poses) designed to alleviate stress and motivate aspirants, ensuring a smoother and more fulfilling preparation experience.

8. Improved Time Management and Discipline: Consistent practice requires commitment, discipline, and time management. These qualities are valuable for civil services aspirants and anyone preparing for challenging tasks. Regular practice helps develop a structured study routine, self-discipline, and the ability to manage time efficiently.

OBJECTIVES OF THE STUDY

1. To study the benefits of the yoga practices on the UPSC aspirants.
2. To find out the nature of impact of the yoga practices on the UPSC aspirants.

HYPOTHESIS

1. Yoga Practices are significantly effects on the experimental group of UPSC aspirants.

RESEARCH METHODOLOGY

Research Method: Experimental research method is used the research study.



Research Design: The study used a 'post-test' experimental design with a single control group. The study included an experimental group and a control group, both of which were randomly assigned to different conditions.

Sample Selection: Researcher select two UPSC coaching classes in Nashik city. Experimental group was selected for one coaching class and for control group another one coaching class students.

Sample Size: Eighty UPSC aspirants were used as a sample. Using a purposive selection technique, in these randomly assigned 40 UPSC aspirants to the control group and another 40 to the experimental group.

TOOLS OF DATA COLLECTION

Researchers created a yoga effectiveness scale to assess the benefits of yoga for UPSC candidates. There were a total of 35 inquiries on the scale, all of which related to some facet of yoga. A five-point scale was used. Each respondent's total score on the scale reflects yoga's impact on them as a whole, as determined by the weights assigned to their separate scale responses.

IMPLEMENTATION OF HATHAYOGA PRACTICES PROGRAM

Researcher following some of the Yog Kriyas Aspirant does for 4 months. Researcher used module of Asanas, Pranayama, Suddhi Kriya and Meditation for UPSC aspirants.

Module of Asanas, Pranayama, Suddhi Kriya and Meditation

ASANAS

- | | | | | |
|----------------|------------------|----------------|---------------|--------------|
| 1. Sukhasana | 2. Bhujangasana | 3. Dandasana | 4. Tadasana | 5. Shavasana |
| 6. Ek Padasana | 7. Parsvottasana | 8. Trikonasana | 9. Uttanasana | |

Asanas especially for improved brainpower and memory:

- | | | | |
|------------------|-----------------|-------------|---------------------|
| 1. Shirsasana | 2. Padmasana | 3. Halasana | 4. Paschimotanasana |
| 5. Janushirasana | 6. Sarvangasana | | |

Surya Namaskar

Pranayama, Suddhi Kriya, and Meditation are all disciplines used by aspirants. Breathing exercises, or pranayama, have several advantages that will make the UPSC preparation process easier for any aspirant.

PRANAYAMA

- | | |
|-------------------------|----------------------|
| 1. Nadishodhan Pranayam | 2. Bhramari Pranayam |
|-------------------------|----------------------|

Some of the Advantages of Pranayama are:

- | | | |
|--|--------------------------------|----------------------|
| 1. Relieves stress | 2. Relieves symptoms of asthma | 3. Steadies the mind |
| 4. Helps purify the blood and the respiratory system | 5. Relieves headache | |
| 6. Brings peace and blissfulness | | |

SHUDDHIKRIYA

- | | |
|--------------------------------|------------------------------------|
| 1. Trataka - For Cleaning eyes | 2. Jalneti - For Cleaning Nostrils |
|--------------------------------|------------------------------------|

MEDITATION

Yognidra Meditation – Sleeping Meditation Technique

Practice Meditation also and experiences that comes from Study that is following:

- | | | |
|-------------------------------|-----------------------------|---------------------------------------|
| 1. Reduced stress | 2. Increased attention span | |
| 3. Increased immunity | 4. Improved metabolism | |
| 5. Improved brain functioning | 6. Better sleep at night | 7. Increased positivity and happiness |

DATA ANALYSIS AND INTERPRETATION

All participants in the Experimental and Control groups are assumed to have been of similar characteristics before to the start of the research, and any discernible variations between the two groups in terms of physical and mental fitness are attributed to the influence of yoga. The 't' test for paired samples is used to determine the significance and kind of the effect. The analytical results support the first



hypothesis. In order to rule out the possibility of bias, researchers gathered information from both the experimental and control groups at the same time.

LIMITATION OF THE STUDY

The researchers could not ensure that the experimental and control groups had identical life experiences, personality qualities, and exposure to learning opportunities on a regular basis, therefore the study had limitations in these areas.

RESULT AND DISCUSSION

The typical value of yoga's efficacy was calculated independently for the test and control groups. The study's primary aim was to characterize the effects of yoga on the experimental group's UPSC applicants.

“The difference between the post-test scores of the control and experimental groups was used to determine the influence of yoga practices, which was then discussed. To determine whether or not the experimental group's post-test scores were significantly different from the control group, a t-test was conducted. The 't' test results support the first set of assumptions.

Comparison of the soft skills scores of experimental and control group.

	Mean	SD	N	t	p
Experimental group	64.7	9.4	40	4.2	0.00
Control group	55.3	8.9	40		

Significant at 0.01 level

As can be seen in the table above, the average score for the experimental group of UPSC aspirants is 64.7, whereas the average score for the control group is 55.3. Yoga practitioners in the experimental group had a t value of 4.2, which is significant at the 0.01 level,” greater than those in the control group, suggesting that the practice improved their soft skills relative to those in the latter.

CONCLUSION

As hathayoga practice has positive effects on mental and physical health, UPSC aspirants are advised to do yoga regularly. This gives them many benefits while studying. There is a difference in the abilities of yogis and non-yogis. Don't use the excuse that doesn't have time to practice Yoga if UPSC aspirant studying for the civil services examinations and already know how to do it. If Aspirants don't know much about Yoga, they should educate themselves. Aspirant will earn time in the long term, therefore it's time well spent. The Aspirant's life and UPSC studies would benefit much from even just 30 minutes every day. Yoga's many advantages are too many to dismiss. It's a great tool for Aspirant's personal and professional growth. Aspirants' lives are also more peaceful as a result. However, if Aspirant has any kind of illness, it is imperative that they study Yoga from a qualified instructor before beginning the practice on their own.

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ROLE OF PARIKA YAVANI WITH GOKSHURADI KWATHA IN VYANAVAYU VAISHAMYA {ESSENTIAL HYPERTENSION STAGE-I}

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ABSTRACT

21st century is a world of industrialization, fast and stressful life which has created various life style disorders like Heart disease, Stroke, Obesity, Type 2 Diabetes, Hypothyroidism etc. As per the report of W.H.O. overall prevalence for Hypertension in India was 29.8%. Hypertension is a major cause of premature death worldwide. **Aims of Study-** The present study was carried out with an objective to compare the efficacy of Parsika yavani with Gokshuradi kwatha in Vyanavayu vaishamyia {Essential Hypertension Stage-I}. **Materials and Methods-** The present study was randomised clinical study, Open Randomised Controlled Trial on 60 patients of either sex having symptoms of Vyanavayu vaishamyia. In Group I- 30 patients were subjective with Parsika yavani with Gokshuradi kwatha 2 times in a day. In Group II- 30 patients were subjective with Amlodipine. **Result-** Overall response in Group I was Excellent Improvement in 73.33%, Marked Improvement in 26.66%, Mild Improvement in 0%, No Improvement 0%. Overall response in Group II was Excellent Improvement in 13.33%, Marked Improvement in 66.66%, Mild Improvement in 16.66%, No Improvement 3.33%. **Conclusion-** The Ayurvedic formulation Pariska yavani with Gokshuradi kwatha has a significant effect on both subjective and objective parameters. No adverse drugs effects were observed at the end of study.

KEYWORDS: Vyanavayu vaishamyia, Essential Hypertension, Parsika yavani, Gokshuradi kwatha

INTRODUCTION

Hypertension is the elevation of systolic BP, diastolic BP, or both above normal levels, is common in developed and developing countries and increases in pre-valence with age increase. India is referred to as the "Nation of Hypertension" due to the high prevalence of the condition there. Hypertension is also known as "Silent Killer" of mankind because most sufferers (85%) are asymptomatic and as per available reports, in more than 95% cases of Hypertension, under lying causes are not found. That's why this condition is known as "Essential Hypertension or Primary Hypertension". The patient was advised to modify their lifestyle by reducing their sodium intake, losing weight if they were overweight, exercising regularly, drinking alcohol in moderation, and consuming more potassium-rich foods.

In light of this understanding of Essential Hypertension, the vitiated Vata Dosha was believed to be the main cause. *Dhatugati (Rasagati or Vikshepa)* is performed by Vayu itself. The effects of vitiated Vata are complemented by Pitta and Kapha, which also promotes the spread of disease. *Rasa* and *Rakta* (whole blood) are the main vitiation-mediating factors. The idea follows that the illness is called *Tridoshaja*.

This illness has been linked in recent Ayurvedic literature to *Raktagata vata*, *Vyanabala Vaishamyata*, *Dhamani Prapurana*, *Pittavrita Vata*, etc. The phrases *Raktagata vata* and *Vyanabala Vaishamyia* appear to be more suitable replacements for contemporary terminology in Ayurveda. Since *Vyana Vayu* is mainly responsible for fluid circulation in our body therefore we can correlate *Vyana Vayu Vaishamyia* with Essential Hypertension. Considering the psychosomatic aspect of hypertension it can be said that *Manasa dosha Raja* and *Tama* are also important factors in Essential Hypertension. In Ayurvedic system of medicine, *Medhya Rasayana* has been described as molecular nutrient for brain used to relieve anxiety, stress and mental fatigue, calms the mind and relaxes entire physiology.

AIMS AND OBJECTIVES

- 1) To study the etiopathogenesis of Essential Hypertension on the basis of Ayurvedic parameters.
- 2) To study the effect of Ayurvedic formulation in the management of Essential Hypertension.
- 3) To provide the reliable, cost effective Ayurvedic treatment for Essential Hypertension.

**MATERIAL AND METHODS****Study design-** Open Randomized controlled trial**Source of data-** 60 patients of Essential Hypertension of either sex will be selected for study from O.P.D & I.P.D unit of P.G department of Rishikul Ayurvedic Campus, Haridwar.**Period of study-** 18 months (1½ yr.)**Duration of treatment** – 60 days**Selection of drug-** GROUP 1 – *Parsika Yavani* Capsule with *Gokshuradi Kwatha*

GROUP 2 - Amlodipine 5mg

Dose- In Group 1- 1 Capsule of *Parsika Yavani* (250mg) with *Gokshuradi Kwatha* (40ml)

B.D. with equal amount of water.

In Group 2 – Amlodipine 5 mg OD with water.**Ingredients****Table 1: Showing the ingredients of *Parsika yavani* Capsule**

Drug	Part	Part used
<i>Parsika yavani</i>	1	Seed

Table 2: Showing the ingredients of *Gokshuradi Kwatha*

Drug	Part	Part used
<i>Gokshura</i>	1	Root
<i>Eranda moola</i>	1	Root
<i>Vacha</i>	1/4	Root
<i>Rasna</i>	1	Leaves
<i>Punarnava</i>	1	Root

Diet Chart

भोजन	क्या खाएं	कितना खाएं
सुबह- सुबह (6:30 a.m)	.भूना हुआ अलसी का बीज .लहसुन .बिस्कुट .अंकुरित चना एवं मूंग (20 ग्राम) + पनीर (10 ग्राम)	. 1 चम्मच(5gm) .2 कली . 2 बिस्कुट . 30 gm
सुबह का नाश्ता (9 a.m)	.सब्जी वाला दलिया/oats/उपमा/पोहा/2 इडली/ 1 डोसा .रोटी .सब्जी या .अंडे के सफेद भाग का आमलेट .ब्राउन ब्रेड का स्लाइस	.1 कटोरी(75gm) .1रोटी(50gm) .1कटोरी(75gm) .2 अंडे .2 ब्रेड
सुबह के नाश्ते के बाद (11 a.m)	.सेब/अमरुद/संतरा/seasonal fruit .ग्रीन टी (बिना चीनी)	.1 प्लेट(150gm) .1 कप (50 ml)
दोपहर का भोजन (1-2 p.m)	.सब्जी वाला ब्राउन राइस पुलाव/ दलिया + .खीरा/गाजर/प्याज का रायता .सलाद या .रोटी .शिमलामिर्च/परवल/तोरी/लोकी/seasonal vegetable .दाल/ मुन्गे का सांभर .सलाद	.1 कटोरी(75gm) .1 कटोरी(75 gm) .1 प्लेट (150gm) .2 रोटी (50 gm प्रत्येक) .1 कटोरी(75 gm) .1 कटोरी(75gm) .1 प्लेट(150 gm)



शाम का नाश्ता (5 p.m)	.ग्रीन टी /चुकंदर का जूस .मुमुरे (बिना नमक के)	.1 कप (50 ml)/ 1 गिलास जूस (100 ml) .1 कटोरी (75gm)
रात का भोजन (9 p.m)	.Whole wheat आटे की रोटी .mix vegetable/ मुनगा/पालक .दाल/ कढ़ी	.2 रोटी (50 gm प्रत्येक) .1 कटोरी(75 gm) .1 कटोरी(75gm)
सोने से पहले (10 p.m)	.गाय का दूध कम वसा वाला (बिना चीनी)	.1 गिलास(50ml)

नोट= अपथ्य= 1.नमक का इस्तेमाल कम करें |

2. अधिक तला- भूना भोजन/ अधिक वसा का प्रयोग ना करें|

3. अधिक तनाव न लें|

पथ्य = 1. सेंधा नमक प्रयोग में लायें |

2. दिन- रात का भोजन करने के बाद 100 कदम चलें|

3. साथ में 1 कप गर्म पानी पिएँ|

4. प्रतिदिन 30-45 min. पैदल चलें|

5. प्रतिदिन सुबह 20-25 min. प्राणायाम जैसे: अनुलोमविलोम, भ्रामरी |

आसन जैसे : सुखासन, शवासन, अधोमुखासन,बद्धकोणासन|

Route of Administration- Oral

Assessment criteria- The assessment was done 3 times at the interval of 20 days.

Follow up: The follow up of the patients will be done 15 days after completion of the trial.

Inclusion Criteria

Diagnosed patients without any complication will be included.

- Age between 25 to 65 years.
- Irregularly treated patients for hypertension.
- Blood pressure- up to Stage I (Moderate Hypertension)
Systolic blood pressure- 140-159 mmHg
Diastolic blood pressure- 90-99 mmHg

Exclusion Criteria

- Patients having hypertension due to other secondary disease.
 - Renal disease
 - Due to other drugs
 - Endocrinal diseases
 - Coarctation of aorta
 - Neurogenic causes
- Any other serious medical & surgically illness.
- Patients having complication of Hypertension.

Criteria For Withdrawal

1. Personal matter
2. Aggravation of complaints
3. Intercurrent illness
4. LAMA (patient leave against medical advice)



Subjective Criteria

1. <i>Shiroruja</i> (Headache)	2. <i>Hridrava</i> (Palpitations)
3. <i>Klama</i> (Fatigue)	4. <i>Bhrama</i> (Vertigo)
5. <i>Akshiraga</i> (Redness of eyes)	6. <i>Krodhaprachurya</i> (Irritability)
7. <i>Alpnidra/Anidra</i> (Insomnia)	

Objective Criteria

1. Systolic Blood Pressure	2. Diastolic Blood pressure
3. Pulse Rate	4. Pulse pressure
5. Mean Arterial Pressure	

Investigations

- Hb%, TLC, DLC, ESR
- Random Blood Sugar
- Lipid profile
- SGOT
- SGPT
- Serum creatinine
- Urine- routine & microscopy
- ECG
- X-ray chest PA View (as per examination)

OBSERVATION AND RESULT

Statistical analysis

- For comparison of subjective criteria **Wilcoxon’s Test** will be applied before and after treatment and for objective criteria **Paired T- test** will be applied.
- For inter comparison of two groups subjective criteria **Mann Whitney Test** will be applied and for objective criteria **Unpaired T-test** will be applied.
- The test were carried at the level of 0.05, 0.01, 0.001 level of p.
- Overall percentage improvement of each patient will be calculated by the following formula:

$$\frac{\text{Total BT} - \text{Total AT}}{\text{BT}} \times 100$$

Overall assessment of therapy

The result thus obtained from individual patient was categorized according to the following Grades:

Excellent ≥ 75% relief

Marked Improvement ≥ 50% upto 74% relief

Mild Improvement ≥ 25% upto 49% relief

No Improvement ≤ 24% relief

Table 3: Signs & Symptoms Of 60 Patients Of Essential Hypertension

Signs & Symptoms	Group A	Group B	Total	Percentage
<i>Shiroruja</i> (Headache)	23	20	43	71.6%
<i>Hridrava</i> (Palpitation)	20	10	30	50%
<i>Klama</i> (Fatigue)	9	7	16	26.6%
<i>Bhrama</i> (Giddiness)	16	23	39	65%
<i>Akshiraga</i> (redness of eyes)	6	7	13	21.6%
<i>Krodhaprachurya</i> (Irritability)	10	10	20	33.3%
<i>Alpanidra/Anidra</i> (Reduced sleep)	18	18	36	60%



Table 4: Shows the effect of Parsika Yavani Capsule with Gokshuradi Kwatha in subjective parameters

Subjective parameter	Mean		Median		Wilcoxon Signed Rank W	P- Value	% Effect	Result
	BT	AT	BT	AT				
<i>Shiroruja</i> (Headache)	2.3	0.4	2	0	-276	<0.001	83.01%	Highly Significant
<i>Hridadrava</i> (Palpitation)	2.3	0.6	2	1	-210	<0.001	72.34%	Highly Significant
<i>Klama</i> (Fatigue)	2.1	0.7	2	1	-28	<0.05	68.42%	Significant
<i>Bhrama</i> (Giddiness)	1.8	0.3	2	0	-120	<0.001	85.18%	Highly Significant
<i>Akshiraga</i> (Redness of eyes)	1.8	0.7	2	1	-15	>0.05	63.63%	Non Significant
<i>Krodha Prachuryta</i> (Irritability)	1.7	0.1	2	0	-55	<0.01	94.11%	Significant
<i>Alpanidra/ Anidra</i> (Reduced sleep)	2.2	0.3	2	0	-171	<0.001	87.5%	Highly Significant

Table 5: Shows the effect of Parsika Yavani Capsule with Gokshuradi Kwatha in objective parameters

Objective parameters		Mean	N	SD	SE	t- value	p- value	Result
SBP	BT	148.33	30	7.47	1.36	11.0	<0.001	Highly Significant
	AT	133.66	30	7.65	1.39			
DBP	BT	95.0	30	6.82	1.25	7.37	<0.001	Highly Significant
	AT	85.33	30	5.71	1.04			
Pulse Rate	BT	80.07	30	4.7	0.87	5.11	<0.001	Highly Significant
	AT	76.70	30	3.34	0.61			
Pulse pressure	BT	53.0	30	7.02	1.28	3.50	<0.01	Significant
	AT	48.33	30	7.91	1.44			
MAP	BT	112.63	30	6.08	1.11	9.97	<0.001	Highly Significant
	AT	100.85	30	4.78	0.87			

Table 6: Shows the effect of Amlodipine (Group – II) in subjective parameters

Subjective parameter	Mean		Median		Wilcoxon Signed Rank W	p- Value	% Effect	Result
	BT	AT	BT	AT				
<i>Shiroruja</i> (Headache)	2.4	0.8	2	1	210.0	<0.001	67.35%	Highly Significant
<i>Hridadrava</i> (Palpitation)	2.2	0.8	2	1	36	<0.01	60%	Significant
<i>Klama</i> (Fatigue)	2.2	1	2	1	21	<0.05	55.55%	Significant
<i>Bhrama</i> (Giddiness)	2	0.8	2	1	231	<0.001	57.14%	Highly Significant
<i>Akshiraga</i> (Redness of eyes)	2	0.7	2	1	36	<0.01	62.5%	Significant
<i>Krodha Prachuryta</i> (Irritability)	1.7	0.7	2	1	36	<0.01	58.82%	Significant
<i>Alpanidra/ Anidra</i> (Reduced sleep)	2.2	1	2	1	136	<0.001	55%	Highly Significant



Table 7: Shows the effect of Amlodipine (Group – II) in objective parameters

Objective parameters		Mean	N	SD	SE	t- value	p- value	Result
SBP	BT	151.7	30	8.339	1.523	20.332	<0.001	Highly Significant
	AT	132.3	30	8.976	1.639			
DBP	BT	95.7	30	5.040	0.920	9.866	<0.001	Highly Significant
	AT	84	30	7.240	1.322			
Pulse Rate	BT	79.7	30	6.222	1.136	3.944	<0.001	Highly Significant
	AT	76.40	30	3.793	0.692			
Pulse pressure	BT	56.0	30	8.550	1.561	6.707	<0.001	Highly Significant
	AT	48.33	30	8.743	1.596			
MAP	BT	114.31	30	4.899	0.894	14.658	<0.001	Highly Significant
	AT	100.07	30	6.693	1.22			

Table 8: Shows the Intergroup Comparison Of Subjective Parameters

Subjective parameters	Group	N	Mean	Sum of Ranks	Mann Whitney U	P value	Result
Shiroruja (Headache)	Group A	23	1.913	277.57	386.500	>0.05	Non Significant
	Group B	20	1.65	214.25			
Hridadrava (Palpitation)	Group A	20	1.7	177	111.500	>0.05	Non significant
	Group B	9	1.33	73			
Klama (Fatigue)	Group A	9	1.44	74.5	68.000	>0.05	Non significant
	Group B	8	1.25	57.5			
Bhrama (Giddiness)	Group A	15	1.53	354	354.000	>0.05	Non significant
	Group B	24	1.16	426			
Akshiraga (redness of eyes)	Group A	6	1.16	29	44.000	>0.05	Non significant
	Group B	8	1.25	46			
Krodha Prachuryta (Irritability)	Group A	10	1.6	129	129.000	>0.05	Non-Significant
	Group B	10	1	84			
Alpanidra / Anidra (Reduced sleep)	Group A	18	1.94	455.46	423	>0.05	Non-Significant
	Group B	18	1.22	512			

Table 9: Shows the Intergroup Comparison Of Objective Parameter

Parameters	Group	N	Mean	SD	SE	t value	p value	Result
Systolic blood pressure	Group A	30	14.67	7.30	1.33	-2.850	<0.01	Significant
	Group B	30	19.33	5.20	0.95			
Diastolic blood pressure	Group A	30	9.67	7.18	1.31	-1.132	>0.05	Non significant
	Group B	30	11.67	6.47	1.18			
Pulse rate	Group A	30	3.37	3.60	0.66	0.095	>0.05	Non significant
	Group B	30	3.2	4.48	0.82			
Pulse pressure	Group A	30	4.67	7.30	1.33	-1.708	>0.05	Non significant
	Group B	30	7.67	6.26	1.14			
Mean arterial pressure	Group A	30	11.78	6.48	1.18	-1.601	>0.05	Non significant
	Group B	30	14.24	5.32	0.97			

DISCUSSION

It was found that majority of patients 37% were in the age group of 56-65 years. This data indicates higher incidence of Essential Hypertension among old aged persons. It implies that the risk of hypertension grows along with age. The present study showed that males (51%) and females (49%) are equally affected. According to World Health Organization (2015), the overall gender prevalence of hypertension in India was 24.2% in men and 22.7% in women. In our study 94% were married. Weight wise distribution showed that maximum number of patients (50%) were between 61-70 Kg. This data is parallel with a study published in NCBI that overweight and obese people are more susceptible to have high Blood Pressure. While studying the status of Agni, it was found that maximum number of patients were having Vishama Agni (55%). Vishama Agni aggravates Vata which further increases Vishama Agni. This shows predominant role of vata in the pathogenesis of disease.



Addiction wise distribution showed maximum addiction towards tea more than 3-4 times daily (33%). Tea contains alkaloid caffeine which is known to have cardiac stimulant and acute vasopressor effects. Sleep pattern wise distribution revealed that maximum number of patients (58%) was having disturbed sleep. Sleep helps manage stress hormones like cortisol. If you don't sleep enough, your body can't properly regulate these hormones, which lead to high blood pressure. *Prakriti* wise (*Sharirika*) distribution showed that maximum number of patients (57%) were of *Vata-Pitta Prakriti*. This data possibly reveals the predominant role of *Vata Dosha* in genesis of Essential Hypertension.

Discussion on effect of therapy (Group I)

- In subjective assessment, the result was statistically highly significant in *Shiroruja, Hridadrava, Bhrama and Alpnidra/Anidra* with p value <0.001 in each.
- Statistically significant result was found in *Klama and Krodhaprachuryta* with p value <0.05 and <0.01 and Non Significant result was found in *Akshiraga* with p value >0.05.
- In objective assessment the mean score of SBP was found 148.33 mmHg before treatment which got reduced to 133.66 mmHg after treatment, Mean score of DBP was 95 mmHg which reduced to 85.33 mmHg which statistically showed highly significant result (p<0.001).

(Group II)

- In subjective assessment, the result was statistically highly significant in *Shiroruja Bhrama and Alpnidra/Anidra* with p value <0.001.
- Statistically significant result was found in *Hridadrava, Klama and Krodha Prachuryta and Akshiraga* with p value <0.01 and <0.05.
- In objective assessment, the mean score of SBP was found 151.7 mmHg before treatment which got reduced to 132.3 mmHg after treatment, Mean score of DBP was 95.7 mmHg which reduced to 84 mmHg which is highly significant (p<0.001).

Assessment of Overall response

Overall response in **Group I** was **Excellent Improvement** in 73.33%, **Marked Improvement** in 26.66%, Mild Improvement in 0%, No Improvement 0%. Overall response in **Group II** was **Excellent Improvement** in 13.33%, **Marked Improvement** in 66.66%, Mild Improvement in 16.66%, No Improvement 3.33%.

CONCLUSION

Essential hypertension can be correlated as *Vata Pradhana Tridoshaja Vyadhi*. The condition is accelerated by a high salt and tea intake, a sedentary lifestyle, and little exercise. The main element generating essential hypertension is stress. Since Essential Hypertension is a multi factorial disease, treatment modalities should be based upon vitiated *Vata Dosha* along with *Pitta* and *Kapha*. Overall effect of *Ayurvedic* formulation can be summarized as *Tridosha Shamaka* (mainly *Vata*), *Nidrajanana, Hridya, Medhya and Mutrala*. Due to wider range of action, the *Ayurvedic* formulation *Pariska yavani* with *Gokshuradi kwatha* thus prepared has shown better results in relieving the symptoms of Hypertension. High Blood Pressure can be treated using medications, but can also be lowered with the right diet plan. In lowering the Blood Pressure, satisfactory result was obtained from the self formulated preparation. Remission of treatment lead to increase in Blood pressure, which leads to fact that Essential Hypertension, is a *Yapya* disease. Moreover no side effects were observed in patients during and after the treatment so, it can be concluded that the patients of Hypertension can be managed effectively by *Ayurveda* without fear of side effects as seen in Anti-hypertensive drugs.

RECOMMENDATION

Ayurvedic formulation reveals admirable results when given to the patients of Mild to Moderate stages of Essential Hypertension but further evaluation is to be done as:

1. Study should be repeated by taking sample with longer duration to see whether the recurrence of disease in follow ups has decreased or not.

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ECONOMICAL SUPPORT THAT CONTRIBUTE TO THE WELLBEING OF PEOPLE LIVING WITH HIV AND AIDS (PLWHA) IN MBALA DISTRICT

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ABSTRACT

The purpose of the study was to explore lived experiences of People Living with HIV and AIDS (PLWHA) in Mbala District on how Economical Support has contributed to their wellbeing. The study objective was to establish how Economical Support contributes to the wellbeing of People Living with HIV and AIDS (PLWHA). Phenomenological research design was employed. The study comprised of eight (8) participants who were purposively sampled because they were the ones who experienced the support from the Faith-Based Organisation and were interviewed. It was found that the PLWHA had created a financial base, through the profits they made from the donated money, which they used to support each other during times of difficulties. The other economic support which was established in form of gifts was the presence of the people they love, helping the children with daily needs at home, helping children go to school through fees payment and providing food and their daily care as well as encouraging messages which were more than any other gift. The study recommended that there is also need for the Church and its partners to increase the coverage of their economic assistance so that all vulnerable church members and other vulnerable members in the communities can have access to the empowerment.

KEY WORDS: *economic support, Mbala District, People Living with HIV and AIDS*

INTRODUCTION

AIDS as a human crisis may lead to devastating psychological trauma and stress for patients. Therefore, it is necessary to study different aspects of their lives for better support and care. Diagnosing and contracting HIV/AIDS puts a person in a vague and difficult situation. Patients suffer not only from the physical effects of the disease, but also from the disgraceful consequences of the disease. HIV/AIDS is usually associated with avoidable behaviours that are not socially acceptable, such as unhealthy sexual, relations and drug abuse: So, the patients are usually held guilty for their illness. On the other hand, HIV and AIDS pose a serious threat to the social and economic development of the country. Studies show that HIV/AIDS stigma has a completely negative effect on the quality of life of these patients. Studies that have examined the lives of these patients have shown that these patients will experience mental and living problems throughout their lives (ILO (2023).

Mweemba et al (2022) argued that the infection very often results in unemployment, rejection by spouse or partner, family or community, disruption in inter-personal relationships due to guilt and shame, taboo, and social stigmatization. Societal, economic and cultural impact is generally disastrous for HIV+ people and their families (or group). In some cases, people are not worried about HIV infection due to other, more pressing concerns associated with their 'under-privileged' socio-economic situation. Evidence throughout the world shows that HIV/AIDS decreases average life expectancy, increases the demand for medical services and highlights the problems of poverty and inequality.

People with HIV frequently experience severe economic barriers to health care, including out-of-pocket expenses related to diagnosis and treatment, as well as indirect costs due to loss of income. These barriers can both aggravate economic hardship and prevent or delay diagnosis, treatment and successful outcome, leading to increased transmission, morbidity and mortality. Economic support for patients serves a dual purpose: to help overcome economic barriers to use of health services, and to mitigate the financial burden of illness and care that can precipitate or worsen poverty. People with HIV often experience severe economic barriers to health care in the face of high direct medical costs (consultations, drugs, diagnostics, hospitalization), as well as costs associated with transport, accommodation, food, substitute care, accompaniment and loss of income.

Nasir et al (2023) argued strongly that transfers and additional forms of social protection are essential to enable vulnerable people to protect themselves from infection, increase access to diagnosis and treatment, improve adherence to treatment, and prevent destitution. Imani *et al.* (2021) indicated that there is need in providing economic support to PLWHA. In a variety of forms, from



cash transfers for poverty alleviation to transport reimbursement and meals provided to enable and incentivise attendance at health facilities for care that contribute to their wellbeing of PLWHA. There are different forms of Economical Support which People Living with HIV and AIDS (PLWHA) have access to in their various communities according to their groupings and status. Linnemayr et al (2017) argue that Microfinance for HIV-positive clients may remedy a market failure caused by a lack of credit to HIV-positive people due to HIV-related stigma. With such segregation at hand, it is difficult for PLWHA to have a decent life when they are poor. Further, Slater, et al., (2015) states that the groups were supported by the different faith-based organisations who were funding them and provided capital for businesses. The groups were given resources which evolved amongst themselves. They continue to suggest when they revealed that the members of the group were able to realise profit from the funds they borrowed and were able to sustain their homes, sponsor children and buy their home needs like property, land livestock and clothes among other needs.

Other scholars like Pragram (2013) have indicated that when the vulnerable groups like the PLWHA were funded to ensure they became economically viable, they were able to work hard, provide for their families and sustained themselves economically. To that, Annequin et al., (2016) observed that the economic hardships in times of recession was not only bad for the PLWHA but the whole population because they even failed to have access to financial help from different organisations and individuals. Further, Deshmukh et al (2017) established that the prevalence of depression was higher in females, illiterates, and unemployed HIV patients as compared to males, literates, and employed subjects respectively, as this came from lack of financial support. From this, we can state that there are procedures which are set by different loaning agencies to help the PLWHA survive in this community.

Pragram (2013) stated that through the church gatherings, the PLWHA were also able to have savings which they also borrowed from for their economic benefit. The funds were only meant for start-up capital, capital growth and also developmental projects which were meant to empower the members so that they can stand on their own. The church members were unable to borrow from these funds because they were not in the condition which the members were, PLWHA. The other form of support was linked to the gifts which different people are able to provide to the sick- Chanda (2018) established that the women groups provided forms of economic support which contributed to the wellbeing of PLWHA was the ability to receive gifts from close relatives, family members and the church members during the time of hospitalisation and recovery at home through the savings they have created for each other. As much as their friend was sick, the information on the expenditure and meeting proceedings were being told to them according to the constitution and mode of help they have stipulated. McCarthy (2017) argue that when their member was ill and failed to sustain his or her business, the generated funds in the group was used to sponsor the children at home with food humpers, school fees and routine gifts for the patient at the hospital so as to ease the emotional pressure which was being felt. Leserman (2018) also state that most cooperatives which managed to build a large capital base were able to sponsor their member when he or she was admitted to a hospital. The sponsorship included payment of bills, providing food supplements and also ensuring that the family back home was not missing the necessary food and that children continued going to school without interruption which reduced emotional stress on the patient.

According to Mbala District Annual Integrated Plan (2010) indicated that HIV and AIDS has contributed to high poverty levels among People Living with HIV and AIDS in Mbala district of Zambia thereby negatively affecting their wellbeing. In order to address the problem of managing the wellbeing of People Living with HIV and AIDS, there are various organisations providing different types of HIV and AIDS related support services in Mbala district (Sikazwe, 2013). The Ministry of Health mainly provides clinical (treatment) support; the Ministry of Community Development and Social Welfare mainly provides economical support and Non-Governmental Organisations mainly provides spiritual and economical support. Holistic support in addressing HIV and AIDS has been mentioned (ILO, 2023) but little is known on systematic studies had been done significantly in Zambia employing the holistic economic support approach that contribute wellbeing of the PLWHA. Neglecting this knowledge gap may perpetuate not knowing how economic support received has contributed to the well-being of the PLWHA in Mbala district of Zambia. It is therefore this knowledge gap which made the researcher to establish how Economical Support contributes to the wellbeing of People Living with HIV and AIDS (PLWHA) in Mbala.

METHODS AND MATERIALS

The study was guided by a constructivist paradigm, it enabled the researcher to have in-depth understanding of the subjective world of People Living with HIV and AIDS on how Economical Support contributes to the wellbeing of PLWHA. This study utilised an interpretive phenomenological research design with the intention of conducting a direct exploration, analysis, and interpretation of how Economical Support contributes to the wellbeing of PLWHA.

The study population included all the people living with HIV and AIDS (PLWHA) in Mbala District. The study sampled eight (8) participants who were purposively sampled because they were the ones who experienced the support from the Faith-Based Organisation. Face to face interviews were conducted with eight PLWHA. This procedure has been chosen because it allows the researcher to ask to follow up questions in order to have in-depth understanding of their lived experiences on the subject.



All the interviews were transcribed verbatim. The study used an Inductive thematic approach for data analysis. The transcribed data was synthesised into common heading which were leading the data set which were now called themes. The next stage was to organise the text under the created themes which have emerged from the data so that it can make sense. Through this procedure, data from all participants was organised under the themes the data represented, and this enabled the researcher to present data in the findings using the identified themes at analysis. In order to also show data authenticity, common responses were synthesised into verbatims to bring out the actual voices of the participants in the study. Through thematic analysis, data was presented to represent the actual findings of the study as collected from the different participants who took part in the study.

The study was ethically approved by the ethical committee at the University of Zambia (UNZA) before conducting the study. Through the informed consent, the researcher explained to the respondents the need for their participation, their roles and any information they needed to know before the research could start. Confidentiality and anonymity in this study were ensured. The identity of the respondents regarding their names, status, age and any kind of data they provided were not exposed to any person. In data analysis, the names of the facilities, participants and research areas were not named so as to protect the image and integrity of the respondents in case of whatsoever type of results that may come out.

RESULTS

The study findings are presented under themes which emerged from the study and it is under each theme that the discussion is conducted. Economical Support was found to be contributing to the wellbeing of the PLWHA in the communities of Mbala district through various ways. The PLWHA were able to have access to soft loans which were interest free, they formed their own cooperatives and through group savings. The three are the sub headings which have been used to present the discussion of the findings.

Soft Loans

The acquisition of soft loans was the first economic benefit which contributed to the wellbeing of the PLWHA in Mbala district. The study established that there was a pool of funds which accumulated from the donors through the Faith-Based Organisation operating under the Church. The funds, which were interest free loans, were used to empower the most vulnerable PLWHA in targeted communities as start-up capital (for those in the urban part of Mbala) and for farming as a business for those in the rural part of Mbala. With the bad lending rates around the world, having a pool of funds which is interest free circulating in a group for the vulnerable without collateral is a positive step towards economic liberation. Participant 6 said:

“I was able to access financial support from the funds which is raised for the PLWHA which is used to help us start a business. There is a pool of funds which we have access to whenever we want to borrow and others are given for free due to their economic status. We are first asked to present our ideas on what we want to do to the staff of the Faith-Based Organisation who work in the Livelihood Department, who then approve an amount of money needed to start that business. If the business plan is not achievable, funds are not given to such a one as it is supposed to be for a purpose”.

The PLWHA are therefore in a place where they are economically empowered through the loans which are at their disposal, and they have to utilise them for their benefit.

Further findings established that the PLWHA were supported by the Faith-Based Organisation which operates under one local church in Mbala District. Other local churches in Mbala District do not support PLWHA financially because they did not have access to the money from donors on behalf of PLWHA. This makes the economic status of the PLWHA supported under the Faith-Based Organisation to be stronger than those supported from other local churches. Participant 2 also added that:

“As one of the beneficiaries, I first presented to staff of the Faith-Based Organisation that I needed to start ordering maize for cooking because I stay near the market which is always busy. I asked for a four hundred kwacha to be paid in one month. The members were happy with my idea, and I was given the funds”.

The study found that the PLWHA who benefited from the empowerment were able to use the money wisely to enable others benefit from the funds as well after the donors see the benefits from the beneficiaries. Through the resources provided, the PLWHA were able to organise and engage into viable economic activities which resulted into successful stories of the PLWHA in Mbala district. Since the PLWHA were able to make profits from the borrowing, it can be noted that the people were able make a living from the funds since they were now economically sound. Participant 4 added that:

“I also applied for a loan from HID. I was given the loan because the money was meant to empower and improve PLWHA whose health status has improved to the point that they are able to work on their own, to engage in businesses of their own choice and I was required to present a simple business plan and open a bank account and the process of preparing the business plan and opening the bank account was facilitated by staff from the Households In Distress (HID) Programme”.



Results of the study revealed that the PLWHA were familiar with the needs of the funders hence they managed to make use of the money which was interest free and managed to access farming inputs and Livestock and became economically stable in life. This provided evidence that providing funding for the PLWHA was a way of providing an empowerment for them. Participant 2 noted that:

“Accessing funds was easier when you are familiar with the requirements set by the Faith-Based Organisation. For the PLWHA engaged in farming activities, the Faith-Based Organisation buys them farming inputs according to their requirements and for those rearing livestock, the Faith-Based Organisation buys the livestock for them which I benefited from. The PLWHA are even trained in Entrepreneurship and Business Management; Farming as business and Livestock rearing before support is given to them”.

In line with how Economical Support should be sustained through financial and material support from Faith Based organizations, the study findings indicated that there was need for the PLWHA to continue creating a stronger financial base which should be there to assist them, even new people who are joining them. Participant 5 stated that:

“We have to create a strong financial base. This can be done through weekly or monthly contributions by members as the Faith-Based Organisation has trained many PLWHA through their Support Groups, in Savings and Internal Lending Communities (SILC), and helped them to form SILC groups which are used to help them raise more money to help them improve their household incomes, food security and through donor engagement. The better utilisation of funds by the PLWHA can be linked to the training which they receive for them to use the funds effectively”.

The lack of support from the congregation and groups emotionally and financially brings about depression which could be avoided when such funding could continue and disbursement to the PLWHA in Mbala.

Cooperatives

The other economic support which contributed to the wellbeing of the PLWHA was through the formulation of the cooperatives within themselves which allowed them to access funding and other materials as a group. The cooperatives have also enabled the PLWHA to work together and earn a living through access to economic empowerment like chicken rearing and farming inputs, like fertilisers and seeds, for use in their agricultural activities. Such groupings bring about togetherness amongst the PLWHA and this help them to understand each other's needs. Participant 5 narrated that:

“When we were asked to form a cooperative, we thought that it was just for the community leaders to realise their benefits from us like we have seen in other communities. With time, we were met by a Swedish organisation which asked us on our needs, and we told them that we needed capital for business. They asked for the bank account for the cooperative and within a month, they came back to ask us to make a constitution which removed the clauses of being a business organisation and added that every borrowing should not be paid back with an interest. This has enabled the many of us to borrow and easily pay back after making profit”.

Cooperatives have the potential to bring about reliable investment to people who are organised and work together. Some cooperatives have even grown big because the people around them are supportive and able to make the informed decisions to help each other to prosper which is a contribution to their economic wellbeing.

Findings of the study further revealed that cooperatives enabled the PLWHA to work together to access funds which enabled them to fend for their families, which was the main goal of forming cooperatives. This has worked as the groups have remained well supported and have self-supported families which are economically independent. With better use and investment of the funds from the cooperatives, it is clear that the PLWHA were becoming economically stable in their communities. Participant 3 said:

“Through the cooperative, I was privileged to be trained in chicken rearing when our cooperative was shortlisted for skills training by the NGO which came into our district four years ago. After training, we were also given two hundred chickens to keep, and this was a start-up capital we were given. We only paid back the money for feed which was regularly supplied to us during the time we were keeping the chickens. This empowerment has made me even build a house and manage to educate my children”.

Through group savings in cooperatives, PLWHA are able to access funds, use them to invest and earn a living from the profits which are realised from being in groups.

Group Savings

The study found that in line with the economical contribution to the wellbeing of PLWHA, it was learnt that the PLWHA had come up together to create a financial base, through the profits they made from the donated money, which they used to support each other during times of difficulties. The difficult time in this study ranged from the member or his family members being ill and admitted to the hospital and having a bereavement. Participant 8 explained that:

“We have come to practice what the bible tells us so that we can be independent in one way or the other. We are told by the scriptures not to be lazy but to work hard every time and this is when prayer becomes effective. To this cause, we thoughtof



empowering ourselves by contributing money which we called 'special offering' during our fellowship meetings. We encouraged everyone to bring what they had to our meetings so that we can create financial base which would help everyone. Through faith, we managed to raise over seven thousand in a year and as of today, we have a poultry which we are running as PLWHA which has a total capital of over fifty thousand now".

Contributing on the same, Participant 6 added that:

"We have come to believe that spiritual work ending in words would never take a Christian anywhere and this was why we thought of putting words into practice. We are no longer beggars because we have managed to create a solid financial base which we are using to make ourselves become health from the small amounts we get as commission after sells. We have divided ourselves or I can say we have employed ourselves to run the project. So, our faith is now beyond prayer, but we have come to put into practice what we pray".

Through this, they tend to have an economic base which becomes sound and solid thereby becoming economically sound in that community. Without such local saving groups, the PLWHA would be wallowing in poverty as they are already vulnerable through their condition which should be avoided.

Routine Gifts

Findings of the study established that the other forms of economic support which contributed to the wellbeing of the PLWHA was the ability to receive gifts from close relatives, family members and the church members during the time of hospitalisation and recovery at home. Some of the gifts are actually brought by the members of the group where the patient saves money or has a group investment, and they support each other in such circumstances. These gifts were a contributing factor to the economic status of the PLWHA in the communities during the difficult times. Participant 4 said:

"The gift which has made me be economically supported is the visitations which I received when I was admitted in the hospital for a month. I have been grateful to the people who have been committed to ensure that my children received gifts at home in my absence as I did not know what they were eating and how they survived. This made me think of giving up but every time my children came with good news that the church and family members continued taking food to them and they had enough. This made me get encouraged and feel loved because such support never came by before I was in hospital".

With the flowing gifts from friends and relatives and also the investments made during a period of time, we can speculate that economic achievements are better for the PLWHA as their investment if the people and friends come to pay better with gifts which are material and those which cannot be measured.

The other economic support which was established in form of gifts was the presence of the people they love, helping the children with daily needs at home, helping children go to school through fees payment and providing food and their daily care as well as encouraging messages which were more than any other gift. Being around people we treasure is a healing factor which cannot be detached from any human being despite their condition and support. Participant 1 also noted that:

"I was happy to learn that my children were being supported economically by my family members and church when I was in hospital for a month plus. You see, I was low on my savings and when I remembered and talked about it with my wife, I was getting sicker than being better despite the medicines being enough. However, when my son and brother came in to tell me that they have managed to raise funds to take care of all the bills at home and ensure my last child was always in school just like I wished. This information made me feel healed and contributed to my condition improving. When I saw my child in uniform and talked about how his school was going while I was in hospital, I felt encouraged and realised how much I was supported by the people around me".

It is a fact that when we invest in sound relationships as humans, we receive respect and honour because people will always visit us when we have problems in life. It is the wish for every PLWHA to invest in their friends so that they can be there for them when they are sick and even when they are no more, so that the children are well taken care of. Such investments are what they need to build in every religious grouping so that the communities can be economically sound and effective.

DISCUSSION

Based on the findings of the research question, it was evident from the study that PLWHA in Mbala district, there was a pool of funds which accumulated from the donors through the Faith-Based Organisation operating under the Church. The funds, which were interest free loans, were used to empower the most vulnerable PLWHA in targeted communities as start-up capital (for those in the urban part of Mbala) and for farming as a business for those in the rural part of Mbala. With the bad lending rates around the world, having a pool of funds which is interest free circulating in a group for the vulnerable without collateral is a positive step towards economic liberation. The findings are supported by Linnemayr et al (2017) who found that Microfinance for HIV-positive clients may remedy a market failure caused by a lack of credit to HIV-positive people due to HIV-related stigma. At the same time, it may be an effective economic support for this sample who have a need for credit and plan to use it for business development rather than



personal consumption, avoiding a vicious cycle of loan recycling that led some to caution against giving microcredit to vulnerable, HIV-positive clients. When funds are available for any vulnerable group in the community and the people are able to borrow, it means that the communities and its people are being empowered economically and this has to be recommended. The PLWHA are therefore in a place where they are economically empowered through the loans which are at their disposal, and they have to utilise them for their benefit (Mweemba et al., 2022).

Further findings established that the PLWHA were supported by the Faith-Based Organisation which operates under one local church in Mbala District. Other local churches in Mbala District do not support PLWHA financially because they did not have access to the money from donors on behalf of PLWHA. This makes the economic status of the PLWHA supported under the Faith-Based Organisation to be stronger than those supported from other local churches. From the findings, Slater, et al., (2015) supports the findings when they found that the groups were supported by the different Faith-Based Organisations who were funding them and provided capital for businesses. The groups were given resources which evolved amongst themselves. They borrowed the funds and paid back to ensure other people also used the funds and these funds were only accessible by the PLWHA in the community while the people who were not HIV positive were unable to access such funds since they were able to fend for themselves. The foregoing findings mean that Faith-Based Organisations were able to empower their members through soft loans which were interest free, and this practice was only exclusive to the PLWHA in Mbala district. By doing so, it was a way of providing empowerment for the vulnerable people whose capacities are not capable in the communities.

The study found that the PLWHA who benefited from the empowerment were able to use the money wisely to enable others benefit from the funds as well after the donors see the benefits from the beneficiaries. Through the resources provided, the PLWHA were able to organise and engage into viable economic activities which resulted into successful stories of the PLWHA in Mbala district. Since the PLWHA were able to make profits from the borrowing, it can be noted that the people were able to make a living from the funds since they were now economically sound. These findings are also what Slater, et al., (2015) suggested when they revealed that the members of the group were able to realise profit from the funds they borrowed and were able to sustain their homes, sponsor children and buy their home needs like property, land livestock and clothes among other needs. The economic status for the PLWHA changes when they are supported by the community in various ways. By the economic status changing positively for the PLWHA, it was an indication that they were able to appreciate the funding being provided to them by their being part of the Faith-Based Organisation.

Results of the study revealed that the PLWHA were familiar with the needs of the funders hence they managed to make use of the money which was interest free and managed to access farming inputs and Livestock and became economically stable in life. This provided evidence that providing funding for the PLWHA was a way of providing an empowerment for them. These results are maintained by the Pragram (2013) who indicated that when the vulnerable groups like the PLWHA were funded to ensure they became economically viable, they were able to work hard, provide for their families and sustained themselves economically. They managed to buy economically productive asserts like cattle for milk, goats for rearing and had enough food for sale and home consumption. In agreement with the findings, Annequin et al., (2016) observed that the economic hardships in times of recession was not only bad for the PLWHA but the whole population because they even failed to have access to financial help from different organisations and individuals. Their lack of access to funds which had less interests and interest free was a negative aspect which made them become poorer. The funds provided for the PLWHA was an economic boom which was being used to economically empower the PLWHA since they are vulnerable and usually are not in employment. This meant that the funding to the PLWHA was relevant and needs to continue if these marginalised groups are to develop and help their families have access to nice food and home life.

In line with how Economical Support should be sustained through financial and material support from Faith Based organizations, the study findings indicated that there was need for the PLWHA to continue creating a stronger financial base which should be there to assist them, even new people who are joining them. The study findings are backed by Deshmukh (2017) whose study established that the prevalence of depression was higher in females, illiterates, and unemployed HIV patients as compared to males, literates, and employed subjects, respectively as this came from lack of financial support. HIV patients who were depressed had significantly lower quality of life than the subjects not suffering from depression, more so in the environment and social relationships domains. The lack of support from the congregation and groups emotionally and financially brought about depression which could be avoided when such funding could continue in the Zambian communities where training first takes place before funds disbursement to the PLWHA in Zambia.

The other economic support which contributed to the wellbeing of the PLWHA was through the formulation of the cooperatives within themselves which allowed them to access funding and other materials as a group. The cooperatives have also enabled the PLWHA to work together and earn a living through access to economic empowerment like chicken rearing and farming inputs, like fertilisers and seeds, for use in their agricultural activities. Such groupings bring about togetherness amongst the PLWHA and this



help them to understand each other's needs. The findings established are in tandem with the findings of McCarthy (2017) whose study revealed that the PLWHA who had their own cooperatives were easily empowered with the funds and resources which they applied for in their proposals after analysis, unlike the people who did not have HIV and AIDS. After receiving both management and financial training, it was realised that the PLWHA were able to work together and improve their lives which subsequently led to them becoming economically stable in the community. Further, Linnemayr et al (2017) support the findings when they found that Microfinance and cooperatives for HIV-positive clients may therefore be both a remedy for market failure caused by a lack of credit to HIV-positive people due to HIV-related stigma and at the same time be an effective economic support for this sample who have a need for credit and plan to use it for business development rather than personal consumption, avoiding a vicious cycle of loan recycling that led some to caution against giving microcredit to vulnerable, HIV-positive clients. Cooperatives have the potential to bring about reliable investment to people who are organised and work together. Some cooperatives have even grown big because the people around them are supportive and able to make the informed decisions to help each other to prosper which is a contribution to their economic wellbeing (ILO, 2023).

Findings of the study further revealed that cooperatives enabled the PLWHA to work together to access funds which enabled them to fend for their families, which was the main goal of forming cooperatives. This has worked as the groups have remained well supported and have self-supported families which are economically independent. With better use and investment of the funds from the cooperatives, it is clear that the PLWHA were becoming economically stable in their communities. To demonstrate that these findings are not isolated, Leserman (2018) state that the PLWHA who were able to come together and formed cooperatives were able to access funding from different organisations which were linked to the district HIV committees as long as their aim was for economic empowerment. These funds made the PLWHA to have access to skills and training on how to diversify their income earned from the group, grow it and have shares monthly at times. Additionally, Chanda (2018) also concluded that women cooperatives for the PLWHA was the best form of making the women work together and access funds which can help a group become economically stable with a fund which can see them through different seasons and challenges. Through group savings in cooperatives, PLWHA are able to access funds, use them to invest and earn a living from the profits which are realised from being in groups.

The study found that in line with the economical contribution to the wellbeing of PLWHA, it was learnt that the PLWHA had come up together to create a financial base, through the profits they made from the donated money, which they used to support each other during times of difficulties. The difficult time in this study ranged from the member or his family members being ill and admitted to the hospital and having a bereavement. The findings concur what Pragram (2013) stated that through the church gatherings, the PLWHA were also able to have savings which they also borrowed from for their economic benefit. The funds were only meant for start-up capital, capital growth and also developmental projects which were meant to empower the members so that they can stand on their own. The church members were unable to borrow from these funds because they were not in the condition which the members were, PLWHA. Saving groups which have been popularised today as village banking is a means of helping the people in the community to have resources within themselves so that they can borrow and invest within the community and realise profit. Through this pool of funds, the PLWHA who contribute and are members tend to benefit through using such funds wisely for themselves. Through this, they tend to have an economic base which becomes sound and solid thereby becoming economically sound in that community. Without such local saving groups, the PLWHA would be wallowing in poverty as they are already vulnerable through their condition which should be avoided.

Findings of the study established that the other forms of economic support which contributed to the wellbeing of the PLWHA was the ability to receive gifts from close relatives, family members and the church members during the time of hospitalisation and recovery at home. Some of the gifts are actually brought by the members of the group where the patient saves money or has a group investment, and they support each other in such circumstances. These gifts were a contributing factor to the economic status of the PLWHA in the communities during the difficult times. These findings are supported by Chanda (2018) whose study established that the women groups provided forms of economic support which contributed to the wellbeing of PLWHA was the ability to receive gifts from close relatives, family members and the church members during the time of hospitalisation and recovery at home through the savings they have created for each other. As much as their friend was sick, the information on the expenditure and meeting proceedings were being told to them according to the constitution and mode of help they have stipulated. Such gestures bring a sigh of relief as it helps to release the worst pressure for a patient who is a parent to think about where food for the children and for him or herself will come from. Such thoughts bring about early death for the PLWHA which is sad. With the flowing gifts from friends and relatives and also the investments made during a period of time, we can speculate that economic achievements are better for the PLWHA as their investment if the people and friends come to pay better with gifts which are material and those which cannot be measured.

The other economic support which was established in form of gifts was the presence of the people they love, helping the children with daily needs at home, helping children go to school through fees payment and providing food and their daily care as well as



encouraging messages which were more than any other gift. Being around people we treasure is a healing factor which cannot be detached from any human being despite their condition and support. These views are supported by McCarthy (2017) who found that when their member was ill and failed to sustain his or her business, the generated funds in the group was used to sponsor the children at home with food humpers, school fees and routine gifts for the patient at the hospital so as to ease the emotional pressure which was being felt. With such groupings, the members became more dependent on each other's strength and ideas than ever. The foregoing can be linked to how the PLWHA should invest in human resource or their friends if they are to be helped when things are not as expected or when they get sick. It is a fact that when we invest in sound relationships as humans, we receive respect and honour because people will always visit us when we have problems in life.

The study further found that the healing for the PLWHA was more on Economical Support than the medical care which was obvious. The people should understand that their continuous provision of small gifts as they may call them, taking care of the children at home, the visitations and the faces of encouragement which they presented before the PLWHA were the best support they needed. The findings are in line with Leserman (2018) who also indicated that most cooperatives which managed to build a large capital base were able to sponsor their member when he or she was admitted to a hospital. The sponsorship included payment of bills, providing food supplements and also ensuring that the family back home was not missing the necessary food and that children continued going to school without interruption which reduced emotional stress on the patient. The group paid regular visits to the members every day on a drawn shift to ensure that the support continues from everyone and not the same people. This strategy was proven to be a healing factor to the members who were admitted and helped the members to depend on each other through such economic and social support. It is the wish for every PLWHA to invest in their friends so that they can be there for them when they are sick and even when they are no more, so that the children are well taken care of. Such investments are what we need to build in every religious grouping so that the communities can be economically sound and effective.

CONCLUSION

With regard to findings on the group saving, it was found that in line with the economical contribution to the wellbeing of PLWHA, it was learnt that the PLWHA had come up together to create a financial base, through the profits they made from the donated money, which they used to support each other during times of difficulties. The difficult time in this study ranged from the member or his family members being ill and admitted to the hospital and having a bereavement. The other Economical Support which was established in form of gifts was the presence of the people they love, helping the children with daily needs at home, helping children go to school through fees payment and providing food and their daily care as well as encouraging messages which were more than any other gift. The study indicated that the Faith Based organisation has been instrumental in supporting PLWHA in Mbala District. The Faith-Based Organisation provided financial support in partnership with donors from outside Zambia. Such partnership was strong as the purpose was defined and clear from the start.

Recommendations

From the research findings and conclusion, the following are the recommendations made:

- There is also need for the Church and its partners to increase the coverage of their economic assistance so that every vulnerable Church member and other vulnerable members in the communities in need of support can have access to the empowerment. The service should not be limited to church members only, but caters for every person who is disadvantaged in the community. This will enable the communities to be economically independent and support others in the Zambian community.
- The Church should also help the PLWHA with professional counselling in churches so that they can feel loved as much as the prayers are said to them. This will enable the PLWHA to live a better life which will make them to feel that they are appreciated and loved by other church members.
- The PLWHA should also realise that they need to work hard and sustain the economic empowerment being provided to them through donors. This will enable the communities to realise that this once off empowerment should not be used on consumption but to invest in productive business ventures. This will be one way of creating financial awareness and realisation that investment is important.

Ethics Approval

The ethical approval was provided by the University of Zambia, Zambia with the reference number HSSREC: -2022-AUG. 011

Consent for participants

Informed consent was obtained from all participants in the research.

Conflict of Interest

The authors declare no conflict of interest, financial or otherwise.



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AN OVERVIEW OF SUMUDU TRANSFORM WITH ORDINARY DIFFERENTIAL EQUATIONS

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ABSTRACT

This paper introduces a new integral transform called the Sumudu transformation, which offers unique advantages. Unlike other transforms, Sumudu allows for the preservation of units, making it highly relevant in engineering applications. This paper defines the Sumudu transform, explores its properties, and demonstrates its applicability in solving linear ordinary differential equations. The Sumudu transform's ability to handle non-constant coefficients in equations is highlighted, making it a valuable tool for engineers and scientists dealing with a wide range of differential equations. Ultimately, Sumudu transformation proves to be a versatile and powerful technique for solving differential equations in both the time and frequency domains.

KEYWORDS: Sumudu Transforms, ODEs, Shift Theorems, Differential Equations

1 INTRODUCTION

There are numerous integral transforms, such as Laplace, Fourier, Mellin, and Hankel, to name a few, to solve differential equations and control engineering problems. Of these, the Laplace transformation is the most widely used. The essence of the Laplace transformation is the mapping of a t-domain function such as $f(t)$ to a Laplace domain (s-domain) function $F(s)$ by an integral transformation. By this, the differentiation and integration operations in the t-domain are made equivalent to multiplication and division by s in the s-domain. The variable s and the transformed function $F(s)$ in the s-domain are treated as dummies in this process, and their physical significance is not questioned. A new integral transformation (which is termed the Sumudu transformation) is introduced in this paper. Watagula's [1993] was probably the first paper to introduce the Sumudu Transform and motivate its use. Its simple formulation and direct applications to ordinary differential equations immediately sparked interest in this new tool. In Sumudu transform, the differentiation and integration operations in the t-domain are made equivalent to division and multiplication by u in a u-domain. This makes it possible to treat the variable u and transformed function $F(u)$ as replicas of t and $f(t)$, respectively. It is even possible to express them in the same engineering units as t and $f(t)$ so that the consistency of units in a differential equation describing a physical process can be maintained even after the transformation.

It is known that the Sumudu transform has many other interesting properties. Some of which are:

1. The unit-step function in the t-domain is transformed to unity in the u-domain.
2. Scaling of the function $f(t)$ in the t-domain is equivalent to scaling of $F(u)$ in the u-domain by the same scale factor.
3. The limit of $f(t)$ as t tends to zero is equal to the limit of $F(u)$ as u tends to zero.
4. For several cases, the limit of $F(t)$ as t tends to infinity is the same as the limit of $F(u)$ as u tends to infinity.
5. The slope of the function $f(t)$ at $t = 0$ is the same as the slope of $F(u)$ at $u = 0$. [8]

Our purpose in this study is to show the applicability of this interesting new transform and its efficiency in solving the linear ordinary differential equations. The first part of this paper gives the definition of the Sumudu transform. The properties resulting from the definition are given in the next section, illustrating its simplicity. Application of Sumudu Transform to the differential equation as worked examples are provided in the last section.

2 Definition of Sumudu Transform

The Sumudu Transform is defined by the formula

$$F(u) = S[f(t); u] = \frac{1}{u} \int_0^{\infty} e^{-\frac{t}{u}} f(t) dt \quad u \in (\tau_1, \tau_2)$$

Over the set of functions, $A = \{f(t) \mid \exists M, \tau_1, \tau_2 > 0, |f(t)| < Me^{\frac{t}{\tau_1}}, \text{ if } t \in (-1)^j \times (0, \infty)\}$



For a given function in the set A, the constant M must be finite, while τ_1 and τ_2 need not exist simultaneously, and each may be infinite. [5]

3 Sumudu Transform of the nth Derivative

Theorem 3.1. Let $f(t)$ be in A, and let $G^{(n)}(u)$ denote the Sumudu transform of the n th derivative, $f^{(n)}(t)$ of $f(t)$, then for $n \geq 1$ The Sumudu transform is defined by the following formula:

$$G^n(u) = \frac{G(u)}{u^n} - \sum_{k=0}^{n-1} \frac{f^{(k)}(0)}{u^{n-k}}$$

Proof. By Induction.

Base Case for $n = 1$:

$$G' = \frac{G(u)}{u'} - \frac{f(0)}{u'}$$

Since by definition:

$$G'(u) = \frac{1}{u} \int_0^\infty e^{-\frac{t}{u}} f'(t) dt$$

We can replace the $G'(u)$ in the equation above:

$$\frac{1}{u} \int_0^\infty e^{-\frac{t}{u}} f'(t) dt = \frac{\frac{1}{u} \int_0^\infty e^{-\frac{t}{u}} f(t) dt}{u} - \frac{f(0)}{u}$$

Doing Integration by parts:

$$\begin{aligned} &= \frac{1}{u^2} \left[\left[f(t) \frac{e^{-\frac{t}{u}}}{-\frac{1}{u}} \right]_0^\infty - \int_0^\infty f'(t) \frac{e^{-\frac{t}{u}}}{-\frac{1}{u}} dt \right] - \frac{f(0)}{u} \\ &= \frac{1}{u^2} \left[\left[-u f(t) e^{-\frac{t}{u}} \right]_0^\infty + u \int_0^\infty e^{-\frac{t}{u}} f'(t) dt \right] - \frac{f(0)}{u} \\ &= -\frac{1}{u} \left[f(t) e^{-\frac{t}{u}} \right]_0^\infty + \frac{1}{u} \int_0^\infty e^{-\frac{t}{u}} f'(t) dt - \frac{f(0)}{u} \\ &= -\frac{f(0)}{u} + \frac{1}{u} \int_0^\infty e^{-\frac{t}{u}} f'(t) dt - \frac{f(0)}{u} \\ &\frac{1}{u} \int_0^\infty e^{-\frac{t}{u}} f'(t) dt - \frac{f(0)}{u} = \frac{1}{u} \int_0^\infty e^{-\frac{t}{u}} f'(t) dt - \frac{f(0)}{u} \end{aligned}$$

Induction Step.

Assuming it's true for n , we'll now prove that it's also true for $n+1$.

Proof.

$$G^{n+1}(u) = \frac{G(u)}{u^{n+1}} - \sum_{k=0}^{n-1} \frac{f^{(n+1-k)}(0)}{u^{n+1-k}}$$

$$G^{n+1}(u) = S[f^{n+1}(t)]$$



$$G^{n+1}(u) = S[(f^n(t))']$$

$$G^{n+1}(u) = \frac{S[f^n(t)] - f^n(0)}{u}$$

$$G^{n+1}(u) = \frac{G^n(u) - f^n(0)}{u}$$

$$G^{n+1}(u) = \frac{\frac{G(u)}{u^n} - \sum_{k=0}^{n-1} \frac{f^k(0)}{u^{n-k}} - f^n(0)}{u}$$

$$G^{n+1}(u) = \frac{G(u)}{u^{n+1}} - \sum_{k=0}^n \frac{f^k(0)}{u^{n+1-k}}$$

$$G^{n+1}(u) - \sum_{k=0}^n \frac{f^k(0)}{u^{n+1-k}} = \frac{G(u)}{u^{n+1}} - \sum_{k=0}^n \frac{f^k(0)}{u^{n+1-k}}$$

4 Existence of Sumudu Transforms

Theorem 4.1. If f is of exponential order such that $|f(t)| < Me^{\frac{t}{\tau}}$, where $\exists M_{\tau_1, \tau_2} > 0$ and $t \in (-1)^j \times (0, \infty\}$ then the Sumudu Transform $S[f(t)] = F(u)$ exists. The defining integral for F exists at points $\frac{1}{u} = \frac{1}{n} + \frac{i}{\tau}$ in the right half plane $\eta > K$ and $\varsigma > L$. [2]

Proof. Since

$$e^{\alpha+i\beta} = e^t(\cos\alpha + i\sin\beta)$$

we can use $\frac{1}{u} = \frac{1}{n} + \frac{i}{\tau}$ and can express $F(u) = \int_0^\infty e^{-\frac{t}{u}} f'(t) dt$ in terms of sine and cosine functions.

$$\int_0^\infty f(t) e^{-(\frac{1}{n} + i\frac{1}{\tau})t} dt$$

$$\int_0^\infty f(t) e^{-\frac{t}{n}} (\cos\frac{t}{\tau} + i\sin\frac{t}{\tau}) dt$$

$$\int_0^\infty f(t) e^{-\frac{t}{n}} (\cos\frac{t}{\tau}) dt + i \int_0^\infty f(t) e^{-\frac{t}{n}} (-\sin\frac{t}{\tau}) dt$$

$$\int_0^\infty f(t) e^{-\frac{t}{n}} (\cos\frac{t}{\tau}) dt - i \int_0^\infty f(t) e^{-\frac{t}{n}} (\sin\frac{t}{\tau}) dt$$

Now since

$$A = \{f(t) | \exists M_{\tau_1, \tau_2} > 0, |f(t)| < Me^{\frac{t}{\tau}}, \text{ if } t \in (-1)^j \times (0, \infty\}$$

Then for all values of $\frac{1}{n} + \frac{i}{\tau}$ we have

$$|f(t)| < Me^{\frac{-t}{\tau}} \text{ if } t \leq 0$$



$$|f(t)| < Me^{\frac{t}{\tau}} \text{ if } t > 0$$

$$\int_0^{\infty} |f(t)| \left| \cos \frac{t}{\tau} \right| e^{-\left(\frac{t}{\eta}\right)} dt \leq \int_0^{\infty} Me^{\frac{t}{\tau}} \cdot e^{-\left(\frac{t}{\eta}\right)} dt$$

$$\int_0^{\infty} |f(t)| \left| \cos \frac{t}{\tau} \right| e^{-\left(\frac{t}{\eta}\right)} dt \leq \int_0^{\infty} Me^{\left(\frac{1}{\tau} - \frac{1}{\eta}\right)t} dt$$

$$\int_0^{\infty} |f(t)| \left| \cos \frac{t}{\tau} \right| e^{-\left(\frac{t}{\eta}\right)} dt \leq M \int_0^{\infty} e^{\left(\frac{\eta-\tau}{\eta\tau}\right)t} dt$$

$$\int_0^{\infty} |f(t)| \left| \cos \frac{t}{\tau} \right| e^{-\left(\frac{t}{\eta}\right)} dt \leq M \frac{\eta\tau}{\eta-\tau} \left[e^{\left(\frac{\eta-\tau}{\eta\tau}\right)t} \right]_0^{\infty}$$

$$\int_0^{\infty} |f(t)| \left| \cos \frac{t}{\tau} \right| e^{-\left(\frac{t}{\eta}\right)} dt \leq \left(\frac{M\eta\tau}{\eta-\tau} \right) \text{ for } \frac{1}{\eta} > \frac{1}{\tau}$$

which imply that the integrals defining the real and imaginary parts of F exist for value of $\text{Re}\left(\frac{1}{u}\right) > \left(\frac{1}{\tau}\right)$, completing the proof.

5 Amplification of the Coefficients of the Power Series Function

Lemma 1. We will be using the *Gamma Function* and its properties in the following theorem:

$$\gamma(n) = \int_0^{\infty} u^{n-1} e^{-t} dt \quad n > 0$$

$$\gamma(n + 1) = \int_0^{\infty} u^n e^{-t} dt \quad n > 0$$

Also,

$$\gamma(n + 1) = n!$$

Theorem 5.1. The *Sumudu Transform* amplifies the coefficients of the *Taylor Power series function*,

$$f(t) = \sum_{n=0}^{\infty} a_n t^n$$

by sending it to the power series function,

$$G(u) = \sum_{n=0}^{\infty} n! a_n t^n$$

Proof. Since the function $f(t)$ exists and is analytic, its Sumudu $S\{f(t)\}$ exists, and we can deduce that its Taylor polynomial also exists,

If $f(t) = \sum_{n=0}^{\infty} a_n t^n$ in some interval $I \subset \mathbb{R}$, then by Taylor functions expansion theorem, since



$$f(t) = \sum_{n=0}^{\infty} \frac{f^n(0)}{n!} t^n$$

and transforming our definition of Sumudu to a different form:

$$S[f(t); u] = \frac{1}{u} \int_0^{\infty} e^{-\frac{t}{u}} f(t) dt$$

let $t' = \frac{t}{u}$ and $t = t' u$. Replacing t in the equation:

$$\begin{aligned} &= \frac{u}{u} \int_0^{\infty} e^{-\frac{t' u}{u}} f(t' u) dt' \\ &= \int_0^{\infty} e^{-t'} f(t' u) dt' \\ &= \int_0^{\infty} f(tu) e^{-t} dt \\ G(u) = S[f(t)] &= \int_0^{\infty} f(ut) e^{-t} dt \quad u \in (\tau_1, \tau_2) \end{aligned}$$

we have,

$$S[f(t)] = \int_0^{\infty} \sum_{n=0}^{\infty} \frac{f^n(0)}{n!} (ut)^n e^{-t} dt$$

We can factor out the infinite series from the improper integral because the Taylor polynomial converges absolutely when the function $f(t)$ in analytic,

$$\begin{aligned} &= \sum_{n=0}^{\infty} \frac{f^n(0)}{n!} (u)^n \int_0^{\infty} t^n e^{-t} dt \\ &= \sum_{n=0}^{\infty} \frac{f^n(0)}{n!} (u)^n \gamma(n + 1) \\ &= \sum_{n=0}^{\infty} f^n(0) u^n \end{aligned}$$

And a nice consequence of this is,

$$\begin{aligned} S[(1 + t)^m] &= S\left(\sum_{n=0}^{\infty} C_n^m t^n\right) \\ &= S\left(\sum_{n=0}^m \frac{m!}{n!(m-n)!} u^n\right) \\ &= S\left(\sum_{n=0}^m \frac{m!}{(m-n)!} u^n\right) \end{aligned}$$



$$= S\left(\sum_{n=0}^m P_n^m t^n\right)$$

The Sumudu Transform sends combinations, C_n^m , into permutations, P_n^m , and hence may seem to incur more order into discrete systems.

6 Inverse Sumudu Transform of Power Series

Theorem 6.1. The inverse discrete Sumudu transform, $f(t)$, of the power series $G(u) = \sum_{n=0}^{\infty} b_n u^n$ is given by:

$$S^{-1}[G(u)] = f(t) = \sum_{n=0}^{\infty} \frac{1}{n!} b_n t^n$$

Proof. We say that if the Sumudu transform is applied to the power series $f(t) = \sum_{n=0}^{\infty} a_n t^n$, we get

$$G(u) = S[f(t)] = \sum_{n=0}^{\infty} n! a_n u^n$$

Now as we can see from theorem 5.1 that the Sumudu Transform amplifies the coefficients of the power series. Thus by intuition, the inverse of Sumudu should do the opposite. At least for the discrete case upto null functions. This is a direct implication of theorem 5.1 for discrete case.

$$S^{-1}[S[f(t)]] = f(t)$$

where $f(t)$ is a proper series function; hence Sumudu Transform is simply

$$S^{-1}[G(u)] = \sum_{n=0}^{\infty} \frac{1}{n!} b_n t^n = f(t)$$

7 Sumudu Multiple Shift Theorems

Theorem 7.1. If $G(u)$ denotes the Sumudu Transform of $f(t)$ in A , then the Sumudu Transform of the function $t^n f(t)$ is given by

$$S[t^n f(t)] = u^n \sum_{k=0}^n a_k^n u^k G_k(u)$$

where $a_0^n = n!$, $a_n^n = 1$, $a_1^n = n!n$, $a_n - 1^n = n^2$, and for $k=2, 3, \dots, n$

Proof. Proof by Induction

Base Case for $n=0$

$$S[t^0 f(t)] = u^0 \sum_{k=0}^0 a_k^0 u^k G_k(u)$$

$$S[t^0 f(t)] = a_0^0 u^0 G_k(u)$$

$$S[f(t)] = G(u)$$

hence the statement holds for $n=0$. To perform the induction step, we assume that it's true for n , and show that it carries to $n+1$.

Setting $W(u) = S[t^n f(t)]$, we have



$$\begin{aligned}
 S[t^n f(t)] &= S[t[t^n f(t)]] = u \frac{d(uW(u))}{du} = uW(u) + u^2 \frac{d(W(u))}{du} \\
 uW(u) + u^2 \frac{d(W(u))}{du} &= u^{n+1} \sum_{k=0}^n a_k^n u^k G_k(u) + u^2 \frac{d}{du} \sum_{k=0}^n a_k^n u^k G_k(u) \\
 &= u^{n+1} \sum_{k=0}^n a_k^n u^k G_k(u) + u^2 \sum_{k=0}^n a_k^n [(n+k)] u^{n+k+1} G_k(u) \\
 &= u^{n+1} \sum_{k=0}^n a_k^n u^k G_k(u) + u^{n+1} \sum_{k=0}^n a_k^n [n+k] u^k G_k(u) + u^{k+1} G_{k+1}(u) \\
 &= u^{n+1} \sum_{k=0}^n (n+k+1) a_k^n u^k G_k(u) + u^{n+1} \sum_{k=0}^n a_k^n u^{k+1} G_k(u)
 \end{aligned}$$

Noting that for $k < 0$, or $k > n$, $a_k^n = 0$, we can rewrite the previous equation as:

$$\begin{aligned}
 &= u^{n+1} \sum_{k=0}^{n+1} (n+k+1) a_k^n u^k G_k(u) + u^{n+1} \sum_{k=0}^{n+1} a_{k-1}^n u^k G_k(u) \\
 &= u^{n+1} \sum_{k=0}^{n+1} [(n+k+1) a_k^n + a_{k-1}^n] u^k G_k(u)
 \end{aligned}$$

And since,

$$\begin{aligned}
 a_k^n &= a_{k-1}^{n-1} + (n+k) a_k^{n-1} \\
 &= u^{n+1} \sum_{k=0}^{n+1} a_k^{n+1} u^k G_k(u)
 \end{aligned}$$

Theorem 7.2. Let $G(u)$ denote the Sumudu Transform of the function $f(t)$ in A . Let $f^{(n)}(t)$ denote the n th derivative of $f(t)$ with respect to t . And let $G_n(u)$ denote the n th derivative of $G(u)$ with respect to u . Then the Sumudu Transform of the function $t^n f^{(n)}(t)$ is given by:

$$S[t^n f^{(n)}(t)] = u^n G_n(u)$$

Proof. Being the Sumudu Transform of $f(t)$,

$$G(u) = \frac{1}{u} \int_0^\infty e^{-\frac{t}{u}} f(t) dt$$

let $t' = \frac{t}{u}$ and $t = t'u$. Replacing t in the equation:

$$\begin{aligned}
 &= \frac{u}{u} \int_0^\infty e^{-\frac{t'u}{u}} f(t'u) dt' \\
 &= \int_0^\infty e^{-t'} f(t'u) dt'
 \end{aligned}$$



$$G(u) = S[f(t)] = \int_0^{\infty} f(t)e^{-t} dt$$

$$G(u) = S[f(t)] = \int_0^{\infty} f(ut)e^{-t} dt \quad u \in (\tau_1, \tau_2)$$

Therefore, for $n = 1, 2, 3, \dots$, we have

$$G(u) = \int_0^{\infty} \frac{d^n}{du^n} f(ut)e^{-t} dt = \int_0^{\infty} t^n f^{(n)}(ut)e^{-t} dt$$

$$\frac{1}{u^n} \int_0^{\infty} (ut)^n f^{(n)}(ut)e^{-t} dt = \frac{1}{u^n} S[t^n f^{(n)}(t)]$$

Upon multiplying both sides of the previous equation by u^n , we obtain,

$$S[t^n f^{(n)}(t)] = u^n G_n(u)$$

Sumudu Transformation applies to ordinary linear differential equations with constant terms, the same way as Laplace Transformation does but in case of non-constant coefficients present in the equation, the Laplace Transform does not apply and we have to resort to using Sumudu Transform instead. In our findings below, we will try to build up a global Sumudu shift theorem about $S[t^n f^{(n)}(t)]$. Now, using Theorem 7.1 and 7.2, we can generate the following results.

Lemma 2. Let $G_n(u)$ denote the n^{th} derivative of $G_n(u) = S[t^n f^{(n)}(t)]$, then,

Case 1: where $n = 2$

$$S[t^2 f''] = u^2 [2G_1(u) + uG_2(u)]$$

Proof.

$$S[t^2 f''] = S[t * (tf)']$$

$$= u^2 [a_0^1 u^0 S[tf'] + a_1^1 u^1 [f' + tf'']]$$

$$= u^2 [a_0^1 u^0 G_1(u) + a_1^1 u^1 [S[f'] + S[tf'']]]$$

$$= u^2 [a_0^1 u^0 G_1(u) + a_1^1 u^1 G_1(u) + a_1^1 u^1 S[tf'']]$$

From theorem 7.2 we know that

$$S[t^2 f''] = u^2 \cdot G_2(u)$$

Here $G(u)$ denotes the Sumudu Transform of the function $f(t)$ and $G_n(u)$ denotes the n^{th} derivative of $G(u)$ with respect to function $f(t)$.

Then,

$$S[t^2 f''] = u^2 [(a_0^1 u^1 + a_1^1 u^1)G_1(u) + a_1^1 u^2 G_2(u)]$$

where $a_0^n = n!$, $a_n^n = 1$, $a_1^n = n! n$, $a_n - 1^n = n^2$, and for $k = 2, 3, \dots, n$

$$a_k^n = a_{k-1}^{n-1} + (n + k)a_k^{n-1}$$



and finally we get,

$$S[t^2 f'] = u^2 [2G_1(u) + uG_2(u)]$$

Case 2: where n = 3

$$S[t^3 f''] = u^3 [6G_1(u) + 6uG_2(u) + u^2 G_3(u)]$$

Proof.

$$\begin{aligned} S[t^3 f'''] &= S[t^2 [tf''']] \\ &= u^2 [a_0^2 u^0 S[tf''] + a_1^2 u^1 S[f' + tf'''] + a_2^2 u^2 S[f' + f'' + tf''']] \\ &= u^2 [2u^1 G_1(u) + 4u^1 S[f''] + S[tf'''] + u^2 S[f''] + u^2 S[f'''] + u^2 S[tf''']] \\ &= u^2 [2u^1 G_1(u) + 4u^1 G_1(u) + 4u^2 G_2(u) + u^2 G_2(u) + u^2 G_2(u) + u^3 G_3(u)] \\ &= u^2 [6u^1 G_1(u) + 6u^2 G_2(u) + u^3 G_3(u)] \end{aligned}$$

Factorizing u from the inner equation:

$$= u^3 [6G_1(u) + 6uG_2(u) + u^2 G_3(u)]$$

and finally we get,

$$S[t^3 f'''] = u^3 [6G_1(u) + 6uG_2(u) + u^2 G_3(u)]$$

Case 3: where n = 4

$$S[t^4 f'''''] = u^4 [12G_2(u) + 8G_3(u) + u^2 G_4(u)]$$

Proof.

According to Theorem 7.1,

$$\begin{aligned} S[t^2 [t^2 f''''']] &= u^2 [a_0^2 u^0 S(t^2 f''''') + a_1^2 u^1 S[(t^2 f''''')] + a_2^2 u^2 S[(t^2 f''''')]'] \\ &= u^2 [a_0^2 u^0 S(t^2 f''''') + a_1^2 u^1 S(2tf'''' + t^2 f''''') + a_2^2 u^2 S(2tf'''' + 2f'''' + 2tf'''' + t^2 f''''')] \\ &= u^2 [1u^2 G_2(2) + 4uS[2tf'''' + t^2 f'''''] + u^2 S[2tf'''' + 2f'''' + 2tf'''' + t^2 f''''']] \\ &= u^2 [u^2 G_2(u) + 4u[2uG_2(u) + u^2 G_3(u)] + u^2 [2uG_3(u) + 2G_2(u) + 2uG_3(u) + u^2 G_4(u)]] \\ &= u^2 [u^2 G_2(u) + 8u^2 G_2(u) + 4u^3 G_3(u)] + 2u^3 G_3(u) + 2u^2 G_2(u) + 2u^3 G_3(u) + u^4 G_4 \end{aligned}$$



$$\begin{aligned}
&= u^2 \left[12u^2 G_2(u) + 8u^3(u) \right] + u^4 G_4(u) \\
&= u^4 \left[12G_2(u) + 8uG_3(u) + u^2 G_4(u) \right]
\end{aligned}$$

Theorem 7.3. Following the results of the previous sections, we can build up a general theorem for the Sumudu Transform of a function, $t^n f^m(t)$, given by

$$S[t^n f^m(t)] = u^{n-m} \sum_{k=0}^{n-m} a_k^{n-m} u^k S_k[t^n f^m(t)]$$

where S_k denotes the k^{th} derivative of the function $t^n f^m(t)$ with respect to t .

Now, since we have developed the theorem, we need to make sure it's correct. We can perform proof by the method of induction, to make sure that it holds for $n - m$ and also carries to $n - m + 1$.

Proof. Base case, we assume $n=m$ for arbitrary m :

$$\begin{aligned}
S[t^m f^m(t)] &= u^{m-m} \sum_{k=0}^{m-m} a_k^{m-m} u^k S_k[t^m f^m(t)] \\
&= u^0 \sum_{k=0}^0 a_k^0 u^k S_k[t^m f^m(t)] \\
&= u^0 \sum_{k=0}^0 a_k^0 u^k S_k[t^1 f^1(t)] \\
&= u^0 \left[a_0^0 u^0 S[t^m f^m(t)] \right] = S[t^m f^m(t)]
\end{aligned}$$

Induction Step.

Since it's true for $S[t^m f^m(t)]$ for $n \geq m$ for $m, n \geq 1$, we'll now prove that it carries to $S[t^{n+1} f^m(t)]$ and also $S[t[t^n f^{m+1}(t)]]$ as well. Setting $W(u) = S[t^n f^m(t)]$ we have,

$$\begin{aligned}
S[t^{n+1} f^m(t)] &= S[t[t^n f^m(t)]] = u \frac{d(uW(u))}{du} = uW(u) + u^2 \frac{d(W(u))}{du} \\
uW(u) + u^2 W_1(u) &= u^{n-m+1} \sum_{k=0}^{n-m} a_k^{n-m} u^k S_k[t^m f^m(t)] + u^2 \frac{d}{du} \sum_{k=0}^{n-m} a_k^{n-m} u^{n+k} S_k[t^m f^m(t)] \\
&= u^{n-m+1} \sum_{k=0}^{n-m} a_k^{n-m} u^k S_k[t^m f^m(t)] + u^2 \sum_{k=0}^{n-m} a_k^{n-m} (n - m + k) u^{n+k+1} S_k[t^m f^m(t)] + u^{n+k} S_{k+1}[t^m f^m(t)] \\
&= u^{n-m+1} \sum_{k=0}^{n-m} a_k^{n-m} u^k S_k[t^m f^m(t)] + u^{n-m+1} \sum_{k=0}^{n-m} a_k^{n-m} (n - m + k) u^k S_k[t^m f^m(t)] + u^{k+1} S_{k+1}[t^m f^m(t)] \\
&= u^{n-m+1} \sum_{k=0}^{n-m} (n - m + k + 1) a_k^{n-m} u^k S_k[t^m f^m(t)] + u^{n-m+1} \sum_{k=0}^{n-m} a_k^{n-m} u^{k+1} S_k[t^m f^m(t)]
\end{aligned}$$

Noting that for $k < 0$, or $k > n$, $a_k^n = 0$, we can rewrite the previous equation as:



$$\begin{aligned}
 &= u^{n-m+1} \sum_{k=0}^{n-m+1} (n-m+k+1) a_k^{n-m} u^k S_k[t^m f^m(t)] + u^{n-m+1} \sum_{k=0}^{n-m+1} a_{k+1}^{n-m} u^{k+1} S_k[t^m f^m(t)] \\
 &= u^{n-m+1} \sum_{k=0}^{n-m+1} \left[(n-m+k+1) a_k^{n-m} + a_{k+1}^{n-m} \right] u^k S_k[t^m f^m(t)]
 \end{aligned}$$

And since

$$\begin{aligned}
 a_k^{n-m} &= a_{k-1}^{n-m-1} + (n-m+k) a_k^{n-m-1} \\
 a_k^{n-m+1} &= a_{k-1}^{n-m} + (n-m+k+1) a_k^{n-m} \\
 &= u^{(n+1)-m} \sum_{k=0}^{(n+1)-m} a_k^{(n+1)-m} u^k S_k[t^m f^m(t)]
 \end{aligned}$$

Case 2: We assume $S[t^m f^m(t)]$ to be true, now we'll prove it for $S[t^n f^{m+1}(t)]$.

$$= u^{n-(m+1)} \sum_{k=0}^{n-(m+1)} a_k^{n-(m+1)} u^k S_k[t^{m+1} f^{m+1}(t)]$$

8 Application of the Sumudu Transform to Differential Equations

Let us consider a general Euler equation. Euler equations are linear and homogenous ordinary differential equations of the form

$$t^2 \frac{d^2 y(t)}{dt^2} + \alpha t \frac{dy(t)}{dt} + \beta y(t) = R(t)$$

where α and β represent constants and $R(t)$ represents a linear factor. Let us now consider a third-order differential equation:

$$t^3 \frac{d^3 y(t)}{dt^3} + ct^2 \frac{d^2 y(t)}{dt^2} + bt \frac{dy(t)}{dt} + ay(t) = R(t)$$

whose right-hand side, $R(t)$, is a linear. If we apply Sumudu Transform on our equation it will remain unchanged since $R(t)$ is a linear function. Let us examine an example.

$$2H(t) + 4tH'(t) + t^2H''(t) = 2$$

so if we apply the Sumudu Transform to the above second order linear differential equation, we get

$$2G(u) + 4uG'(u) + u^2G''(u) = 2$$

As we can see the equation remains unchanged generally. Hence there seems to be no direct advantage of using Sumudu transform in this case. On the other hand, much more mileage will be obtained if we recall the unit-preserving quality of Sumudu transform, especially in applications to the arguments of t and u , since they can be used interchangeably. So in cases where we can't find the Sumudu transform of an equation or there seems no advantage of using the Sumudu transform, one can look up for another equation and take its inverse Sumudu transform to solve. To illustrate the idea let us consider the example of a third-order Euler differential equation:

$$6H(t) + 18tH'(t) + 9t^2H''(t) + t^3H'''(t) = 6$$

Obviously, one solution of the above equation is $H(t) = 1$. Now if we apply the Sumudu transform to the above equation, it will remain unchanged. So instead of applying the Sumudu transform we should find another way around it, which is to find a suitable format of an equation such that it can be readily inverted. Now if we take $S[t^n f(t)]$ with $n = 3$ since it's a third-order differential equation, we get the equation whose coefficients matches exactly to our cooked-up example and setting $H(t) = S[h(s)]$, yields



$$S[s^3 h(s)] = t^3 [6H(t) + 18tH_1(t) + 9t^2H_2(t) + t^3H_3(t)] = 6t^3 = S[s^3]$$

In this case, $H(t) = h(s) = 1$. Now let us consider another third order Euler-equation, but now with non-constant coefficients. This means that the coefficients will be different for the order of the equation.

$$18H'(u) + 18uH''(u) + 3u^2H'''(u) = 24$$

Again, if we apply the Sumudu transform to the above equation, it will remain unchanged since the right-hand side is a linear function. This brings us back to finding a suitable format for the equation so that it can be readily inverted. Now an interesting situation arises while we try to find a suitable inverting factor since the coefficients of the equation differ from the order of the equation. In cases like these, we can now rely on our developed theorem.

$$S[t^n f^m(t)] = u^{n-m} \sum_{k=0}^{n-m} a_k^{n-m} u^k S_k[t^n f^m(t)]$$

Now taking $n=3$ with $m=1$ and setting $H(w) = S[h'(s)]$, the above theorem yields

$$6H'(u) + 6uH''(u) + u^2H'''(u)$$

Now if we generalize this equation, we can observe that if we multiply the above equation with 3, it matches to the exact coefficients of our Euler equation. Thus we now have a suitable inverting factor. And setting $H(w) = S[h'(s)]$ we can find the transform of our equation by using the suitable inverting factor

$$S[s^3 h'(s)] = u^3 [6H_1(u) + 6uH_2(u) + u^2H_3(u)] = 6w^3 = S[s^3]$$

Now, in this case, $H'(w) = h'(s) = 1$.

Now we can generalize that any ordinary linear different equation of the form

$$t^n \frac{d^m y(t)}{dt^m} + \frac{dy(t)}{dt} = 0$$

whose power of coefficients differ from the order of differential equation can now be solved by finding a suitable inverting factor.

The main point here is that unlike other transforms, the units-preservation property in combination with other properties of the Sumudu transform may allow us, according to the situation at hand, to transform the equation studied from the t domain to the u domain if the obtained equation is believed to be more accessible; or if necessary to consider the given equation as the Sumudu transform of another more readily solvable equation in the t domain, begotten by u inverse Sumudu transforming the equation at hand. So, the Sumudu transform may be used either way.



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THE IMPACT OF SOFT SKILL TRAINING PROGRAM ON THE SOFT SKILLS DEVELOPMENT OF THE B.B.A. STUDENTS

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ABSTRACT

Both the business and educational landscapes are evolving rapidly. Ten years ago, most businesses actively sought for people who combined exceptional academic performance with relevant professional experience. However, these days, these kinds of hard talents and expertise aren't enough to get into or advance in the corporate sector. Professionals with strong communication and interpersonal abilities are in high demand, and they tend to advance more quickly within an organization. Fewer people are being hired by corporations because applicants lack necessary soft skills. Still, many schools of management are hesitant to include soft skills instruction in their curricula, despite the obvious value of such instruction. The data presented here comes from a research comparing the outcomes for students who get regular instruction in soft skills versus those who do not.

KEYWORDS: *Soft skills training Need of Developing Soft Skills, BBA Students*

INTRODUCTION

The current educational landscape is evolving rapidly. In the business world, technical expertise is not enough to guarantee success; instead, the ability to effectively interact with coworkers and customers is essential. In the corporate sector, communication abilities are among the most crucial of all soft talents.

In today's competitive job market, those with strong soft skills are in high demand across all industries. Having the ability to develop and use soft skills is increasingly important in the corporate world, and Serby Richard (2003) argues that this makes the difference between getting an offer and actually enjoying your new job. Competition for jobs is higher and harder to maintain now that soft skills are more necessary. Applicants who want to stand out from the pack should work to improve their soft skills so that they may succeed in spite of, rather than because of, any difficulties they may encounter throughout the hiring process or while on the job. Hewitt Sean (2008) supports this idea, arguing that employers place high importance on soft skills since they are a good indication of work success. Professionals in the modern day need to have strong interpersonal and communication skills in addition to deep expertise in their fields.

Trainings must be offered as part of the professional curriculum in order to instill soft skills in today's management professionals. In the end, this will help students become more well-rounded people, increasing their chances of finding success in the business world via networking and other professional endeavours.

The ability to communicate effectively and work well with others are two of the most important skills for professionals to have in today's market. According to research by Michael Watts and Russell K. Watts (2008), "soft skills" 85% of success may be attributed to soft talents and 15% to hard abilities. Some of Jaipur's management schools have yet to include training in soft skills into their curricula, despite the widespread recognition of the need of such training in the modern business environment.

This article's goal is to shed light on why it's so crucial for management schools to include training in soft skills in their curricula if they want to produce graduates who get great jobs. Students' overall levels of soft skills were compared between those who frequently attended soft skills workshops and those who did not for the purpose of this study.

OPERATIONAL DEFINITION

Soft skills, often known as people skills, are those that are unique to each individual. The ability to lead, listen, negotiate, and mediate conflicts are all examples of "soft skills," which are "non-technical, intangible, personality-specific skills," as defined by Hewitt Sean (2008). In contrast to hard skills, such as knowledge and technical proficiency, soft skills consist of attitudes and behaviors (Tobin, 2006).



The Purdue University Center for Career Opportunities describes "soft skills" as "the cluster of personality traits, social graces, facility with language, personal habits, friendliness, and optimism that mark each of us to varying degrees." Work ethic, politeness, collaboration, self-discipline, confidence, social conformance, and fluency in at least one language are among the "soft talents" they identify.

Hard talents are not the same as soft skills. Soft talents are those that make a person more marketable beyond the hard abilities they already possess. Unlike hard talents, which are more "along the lines of what might appear on your resume," soft skills are a "cluster of personality traits, social graces, personal habits, friendliness, and optimism," as noted by Martin Carole (2008). Soft skills are not a replacement for technical or hard abilities, but they do complement them and help individuals with average or below-average hard talents reach their full potential.

NEED OF DEVELOPING SOFT SKILLS

Having solid people skills is essential in today's fast-paced corporate world. Competition for both entry-level and experienced roles is higher than ever because of the expanding number of qualified people looking for work in today's society. In order to demonstrate their true potential and get an edge over the competition, they must rely on their soft talents in addition to their hard abilities. One certain way to stand out from the crowd of applicants for management positions is to have superior soft skills.

Thacker and Yost (2002), writing on the significance of teaching "soft skills" in business schools, stressed the need of preparing students to work well in teams. The phrase "business graduates lack good team leadership skills" is one that many employers hear often. Knell et al. (2007) state that businesses consistently need employees with high levels of creativity, communication, and cultural awareness in the workplace.

According to the 2003 National Employers Skills Survey, employers are more concerned with a lack of "soft skills" such as communication, collaboration, and customer focus and responsiveness than a lack of "hard skills" like programming or database administration (Watkins, 2004).

Graduates with strong technical abilities may be disqualified from consideration for employment due to their lack of "soft skills," which include the ability to interact effectively with others (Pauw and et al, 2006).

SOFT SKILLS TRAINING

Regardless of the target group or the context in which the training is delivered, Assertiveness, negotiating prowess, communication skills, and the ability to build and sustain connections are just some of the soft skills that training programs attempt to hone.

Generally speaking, people believe that soft talents are a person's innate abilities. All humans are born with a certain base level of these skills. A person's innate abilities will go to waste if they aren't put to good use or if the person who has them doesn't realize they have them. To put it simply, the aim of any training program designed to improve soft skills is to help the trainee overcome the obstacles that hinder them from doing so. The goal of developing one's soft skills is to help one become more self-aware of one's own potential and to improve one's own growth and success. No matter how much or how little natural talent one may have received, everyone may benefit from training in soft skills.

OBJECTIVES OF THE STUDY

1. The purpose of this study is to investigate the effect that training in soft skills has on the proficiency levels of students majoring in management.
2. Determine which aspects of soft skills were most affected by soft skills training.

HYPOTHESIS

1. Training in soft skills would greatly enhance management students' interpersonal and communication abilities.

RESEARCH METHODOLOGY

Research Method: Experimental research method is used the research study

Research Design: One control group was employed in this 'post-test' experimental investigation. The study included an experimental group and a control group, both of which were randomly assigned to different conditions. The independent variable was the provision of soft skills training to the experimental group, whereas the dependent variable was the provision of the usual content related and management training to the control group. Study participants were carefully chosen to have similar characteristics across demographic categories such as age, gender, socioeconomic status, and level of education. All other factors,



such as parental influence and the nature of the college setting, are assumed to affect students in the control group and the experimental group similarly.

Sample Selection: There are a total of 8 BBA institutions in Nashik; 5 of them require students to take courses in soft skills, while the other 3 put more of an emphasis on developing analytical abilities. One college offering soft skills training was chosen as the experimental group and the same institution was chosen as the control group. Second-year BBA students from Nashik's management institutes were surveyed; they were all between the ages of 18 and 22.

Sample Size: There were 80 total samples taken. Using a purposive selection technique, A total of 80 students were split evenly between a control group and an experimental group.

TOOLS OF DATA COLLECTION

Employers' preferred soft skills scale was used to evaluate students' levels of proficiency in these areas. There were a total of 25 questions on the scale, all of which assessed various aspects of soft skills. The scale went from one to five. Each respondent's total score on the scale will reflect their general level of soft skills because of the way the scale was scored.

OBJECTIVE OF SOFT SKILLS TRAINING PROGRAMS

The primary goals of the soft skills instruction given to BBA students were:

1. Learn to express yourself clearly both orally and in writing.
2. Second, train them to give compelling speeches, write professional letters, and compile accurate business reports.
3. Improve your social, group-management, and leadership abilities.
4. Fourth, improve the student's employability by teaching them new skills that are in demand in the labour market.

The experimental group management universities' successful completion of these objectives was directly attributable to the content of their soft skills curricula. The course was designed to help students become more in tune with themselves, and by extension, to foster in them the drive and determination to succeed no matter how challenging the circumstances.

DATA ANALYSIS AND INTERPRETATION

All participants in the Experimental and Control groups are assumed to have been of similar backgrounds at the start of the research, any differences between the Experimental group and the Control group in terms of soft skills may be traced back to the instruction they received. The significance and character of the effect will be determined by utilizing the paired samples 't' test. The same was achieved using SPSS 17. Hypothesis 1 will be validated or refuted based on the results of this investigation. Researchers gathered information from both groups at the same time to rule out confounding factors including personality training, placement-related education, and the age of the respondents.

LIMITATION OF THE STUDY

One problem with the study is that the researchers didn't compare the demographics of the control and study groups, personalities, and exposure to educational materials.

RESULT AND DISCUSSION

The average worth of experimental group members' soft talents was deduced independently from that of the control group. The study's primary aim was to characterize the effects of soft skills instruction on the control group's management undergraduates.

To evaluate the efficacy of the soft skills training, after each group had taken a post-test, researchers compared their scores. The t-test was used to compare the post-test results of the control and experimental groups to find out whether there was a statistically significant difference between them. The results of the 't'-test will either corroborate or refute the hypotheses being tested.

Comparison of the soft skills scores of experimental and control group.

	Mean	SD	N	t
Experimental group	84.2	8.4	40	3.89
Control group	75.1	7.9	40	
Impact score				

The average value of the experimental group's soft skills is shown to be 84.2 in the table above, whereas the average value of the control group's soft skills is shown to be 75.1. However, when comparing the experimental and control groups, individuals in the experimental group had significantly higher levels of soft skills (t value 3.89, significant at the 0.01 level).



If we provide training in these areas, we can greatly improve the soft skills of future managers. This research shows that educational institutions in the field of management may significantly increase their students' chances of finding gainful employment by focusing on teaching them soft skills. The above finding supports H0, that students majoring in management may benefit greatly from participating in soft skills training.

Once this was established, studies looked for the specific aspects of soft skills that may benefit most from training of this kind.

CONCLUSION

Soft skills, in addition to technical/hard abilities, are now a must-have for today's modern managers. Managers in today's businesses need to be perceptive, able to fill in the gaps when there are discussions lacking, socially adept, and able to rally their teams around a common goal. Good teamwork and communication skills are essential for any business leader looking to advance in their career. The study's findings suggest that students' soft skills may be improved with the help of training sessions at management colleges that are properly structured and standardized.

The results of this paper show that providing students with frequent opportunities to attend training sessions on soft skills may greatly improve both their soft skills and their chances of being hired after graduation.

Students who have access to soft skills training on a regular basis will have a leg up on their peers in terms of both employability and personal growth. It seems to reason that this would show up in their performance in job interviews and elsewhere in their lives. To get started in management, technical abilities are essential. However, a manager's soft skills and conceptual talents are what will take him or her to the next level.

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EVOLVING LANDSCAPE OF CYBERSECURITY SKILLS: AN ANALYSIS OF SKILL REQUIREMENTS AND GAPS IN KERALA

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ABSTRACT

This comprehensive study delves into the dynamic landscape of cybersecurity education and career development within the context of Kerala, India. It addresses a fundamental research question: What are the essential skills and knowledge areas required for various roles within cybersecurity, and how do these requirements vary among roles? Furthermore, it explores emerging skills vital for the future of cybersecurity and evaluates the alignment of existing educational and certification programs with industry demands. Employing a mixed-method approach, the study conducts surveys, curriculum analyses, job listings analysis, and literature reviews to provide a holistic understanding of the cybersecurity domain. The findings underscore students' fervent interest in cybersecurity careers despite limited institutional support, emphasizing the need for curriculum refinement and alignment with industry trends. Universities in Kerala should incorporate secure coding, application security, identity and access management in their cybersecurity programs, and consider adding content on cloud security and machine learning to better meet job market demands.

I. INTRODUCTION

Protecting information has emerged as one of the most significant hurdles in the contemporary era. In an age defined by the relentless expansion of the digital realm, cybersecurity stands as an integral bulwark against evolving threats and vulnerabilities. As the world becomes increasingly interconnected and reliant on digital infrastructure, the demand for skilled cybersecurity professionals continues to surge. This study embarks on a comprehensive exploration of the intricate landscape of cybersecurity education and career development, within the context of Kerala, India.

Research Question

What are the essential skills and knowledge areas for various roles within cybersecurity, and how do these requirements vary among roles? Additionally, what emerging skills and areas of expertise are expected to be crucial in the future of cybersecurity, and how do current educational and certification programs in Kerala address the existing skill gaps in the cybersecurity job market?

Research Objectives

- To compile a comprehensive list of essential skills and knowledge areas required for cybersecurity careers.
- To categorize these skills based on different roles within cybersecurity.
- To identify any emerging skills or areas of expertise that are becoming increasingly important in the evolving cybersecurity landscape.
- To investigate students' attitudes towards cybersecurity, their career interests, knowledge, and perceptions.
- To evaluate the effectiveness of existing educational and certification programs in Kerala in bridging the skill gaps that currently exist in the cybersecurity job market.

II. METHODOLOGY

The research methodology for this study employed a mixed-method approach to comprehensively investigate the landscape of cybersecurity skills and education in Kerala. The following methods were utilized:

Survey: Conducted a survey among students of the Computer Science Department at Mary Matha Arts and Science College, Wayanad. 26 students participated in the survey. Developed a structured questionnaire and was sent to students in google forms. The survey data was analyzed to derive insights into students' attitudes, knowledge, and career interests.

Curriculum Analysis: Collected curriculum and syllabus details from universities and colleges in Kerala providing cybersecurity-related courses. This was done by visiting and checking their institutions website and also by contacting them by phone and mail.



Analysis was done to understand the gap between the curriculum and industry requirements, helping predict potential updates in syllabi.

Job Listings Analysis: Analyzed job listing websites such as Naukri, LinkedIn, and Indeed and studied the rate of cybersecurity job postings and the roles and responsibilities associated with various cybersecurity jobs. Also, gathered information about tools and software beneficial for freshers seeking employment in this field.

Review of Published Journals and Research Papers: Searched and selected relevant papers and journals on cybersecurity and identified the futuristic scope of cybersecurity. This helped in understanding emerging skills, technologies, tools, and anticipated changes in the field.

III. ESSENTIAL SKILLS AND KNOWLEDGE AREAS IN CYBERSECURITY

Collecting data on job vacancies from the websites and analysing the pattern, it was found that the following skills and knowledge areas were required for freshers (with 0-to-2-year experience) seeking job opportunities in the field of cybersecurity.

Job Titles	Skills/Knowledges/Tools
Network Security Engineer	IDS/IPS, Firewalls, Wireshark
Application Security Specialist Secure Coding Engineer	Application Security (Web / Mobile), Secure Coding Practices, Microservices / API Security, Threat Modelling (STRIDE Or Other)
Identity Access Management Specialist Security Policy Developer	IAM, Access Management, Security Policy Development, Security Governance Frameworks, Threat Modelling (STRIDE Or Other)
Security Manager Cyber Security Consultant Security Awareness Trainer	Communication Skills, Problem-Solving, Security Policy Development, Security Awareness Training, Change Management, Security Governance Frameworks, Regulatory Compliance
Information Security Analyst Security Specialist	Security Governance Frameworks, Regulatory Compliance, Risk Management, Security Awareness Training
Security Engineer Security Consultant Penetration Tester	Security Controls, Penetration Testing (Pen Testing), Penetration Testing Tools (Burp Suite, Metasploit, OWASP Zap, OSCP, GPEN, GWAPT), Technical Documentation, Coding
Cloud Security Engineer	Cloud Infrastructure Security Requirements, Cloud Security Policies, Secure Cloud Design
Machine Learning Engineer	Machine Learning Algorithms, AI Algorithms, Cybersecurity Algorithms, Data Analysis, AI for Threat Detection

Table 1

IV. The Evolving Landscape of Cybersecurity

From a futuristic perspective, the industry is witnessing a paradigm shift in the skills and areas of expertise required. As cyber threats become more sophisticated, there is a growing demand for professionals well-versed in cybersecurity practices. The ability to predict and proactively defend against cyberattacks using advanced technologies is becoming the new standard.

Ethical hacking techniques are gaining prominence as a proactive approach in identifying vulnerabilities and mitigating risks. Cybersecurity, as a field, now encompasses not only the protection of digital assets but also the assurance of user data privacy and the preservation of an organization's reputation [1]. So, incorporating ethical hacking with cybersecurity benefits for getting employed in companies.

In the current era, there is a surge in the amount of IoT devices used and there is a lot of cyber-attacks on these devices [2]. This vulnerability of intelligent systems makes security a paramount consideration. The ability to secure and protect these technologies from cyber threats is very much significant for a secured future, which emphasizes the importance of learning Internet of Things with cyber security.

In recent times, there has been a surging enthusiasm for harnessing Artificial Intelligence (AI) in diverse cybersecurity contexts. This heightened interest is primarily driven by a growing acknowledgment of AI's importance in combating cyber threats. [3] Hence, the increasing demand for cybersecurity experts with proficiency in AI-driven solutions has surged. The evolving skills and expertise areas within the cybersecurity field include competency in AI and machine learning.



Machine Learning plays a crucial role in diverse dimensions of cybersecurity, encompassing functions like identifying phishing attempts, detecting network intrusions, assessing the security of protocols, verifying user identity through keystroke dynamics, ensuring secure communication via cryptography, validating human interactions through CAPTCHAs, and identifying spam content within social networks [4]. Researchers and professionals in this field are exploring various applications of machine learning, such as intrusion detection, traffic classification, and email filtering, to effectively combat cyber threats, including zero-day vulnerabilities [5]. The changing realm of cybersecurity necessitates individuals with knowledge of these machine learning applications to adeptly counter the ever-developing and intricate security threats.

Moreover, as the digital realm continues to expand, the role of cybersecurity is expected to grow exponentially, making it a critical domain for safeguarding our interconnected world.

V. EDUCATIONAL AND CERTIFICATION PROGRAMS IN KERALA

The below mentioned are some of the available Cyber Security courses offered by universities in Kerala.

UG/PG Courses		
University	Course Offered	Skills Taught
Kerala University of Digital Sciences, Innovation and Technology (Digital University Kerala)	MTech in Computer Science and Engineering with Specialization in Cyber Security Engineering	Security in Digital Transformation Network and System Security Hardware Security Ethical Hacking and Network Defense Advanced Topics in Cryptography
	M.Sc. in Computer Science with Specialization in Cyber Security	Cyber Security and Digital Forensics Modern Cryptography Security Auditing Lab Applied Cryptography Artificial Intelligence for Cyber Security
University Of Kerala	B.Voc Cyber Security	Fundamentals of Information Security Cyber Forensics Network Security Biometrics Security Risk Assessment & Security Audit
Mahatma Gandhi University	B.Sc. Cyber Forensics M.Sc. Cyber Forensic	Internet Technology & Cyber Laws Computer Security Security Threats and Vulnerabilities
APJ Abdul Kalam Technological University	Computer Science and Engineering (Cyber Security)	Cyber Security Essentials Machine Learning Web Application Security Wireless Sensor Network Security Internet of Things

Table 2

As cybersecurity continues to evolve, the need for cloud functionality has increased. SIEM tools have and continue to evolve to function in cloud-hosted and cloud-native environments.

The below mentioned are some of the Cyber Security certification courses available in Kerala.

Certification Courses		
Institution	Course Name	Taught
ICT Academy of Kerala	Certified Cyber Security Analyst	Foundations of Cybersecurity Network Security and Monitoring Penetration Testing Malware and Metasploit Types of Attacks
Red Team Hacker Academy	Certified Penetration Tester	Networks and Cybersecurity Essentials Security Techniques and Assessments Defense and Protection Social Engineering and Web Security Penetration Testing

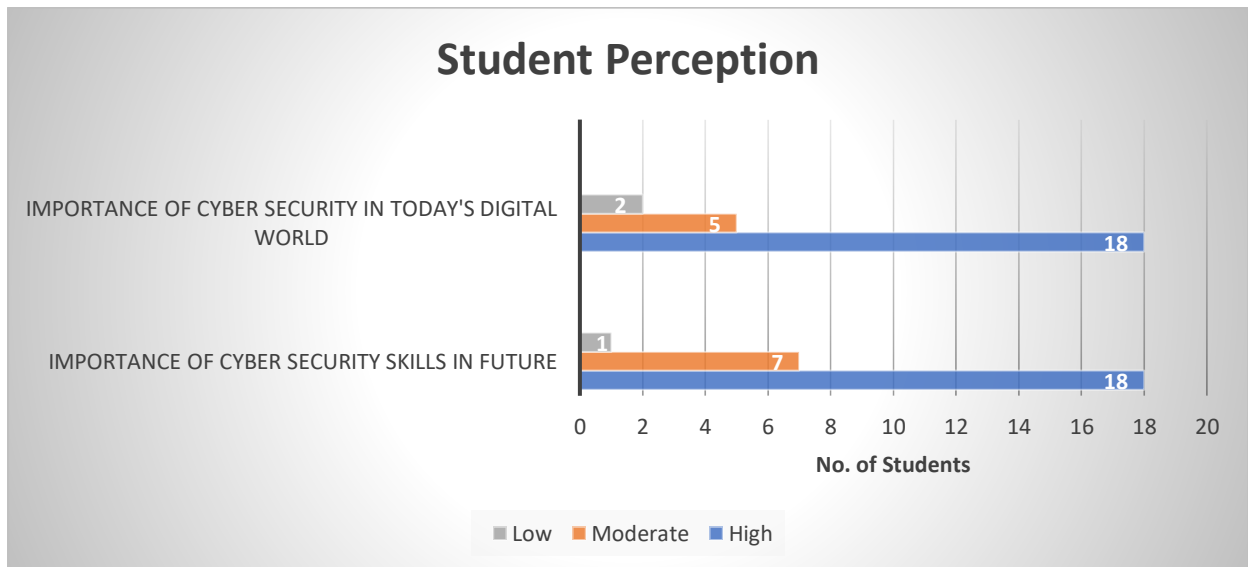


	Certified IT Infrastructure Cyber SOC Analyst	Foundations of Cybersecurity Network and System Security Security Information & Event Management (SIEM) Incident Response and Handling Cybersecurity Career Hacking Program
	Ethical Hacker Jr	Introduction to Cybersecurity and Ethical Hacking System Security and Network Communication Hacking and Securing Wireless Networks Bug Bounty Hunting Essentials System Hacking

Table 3

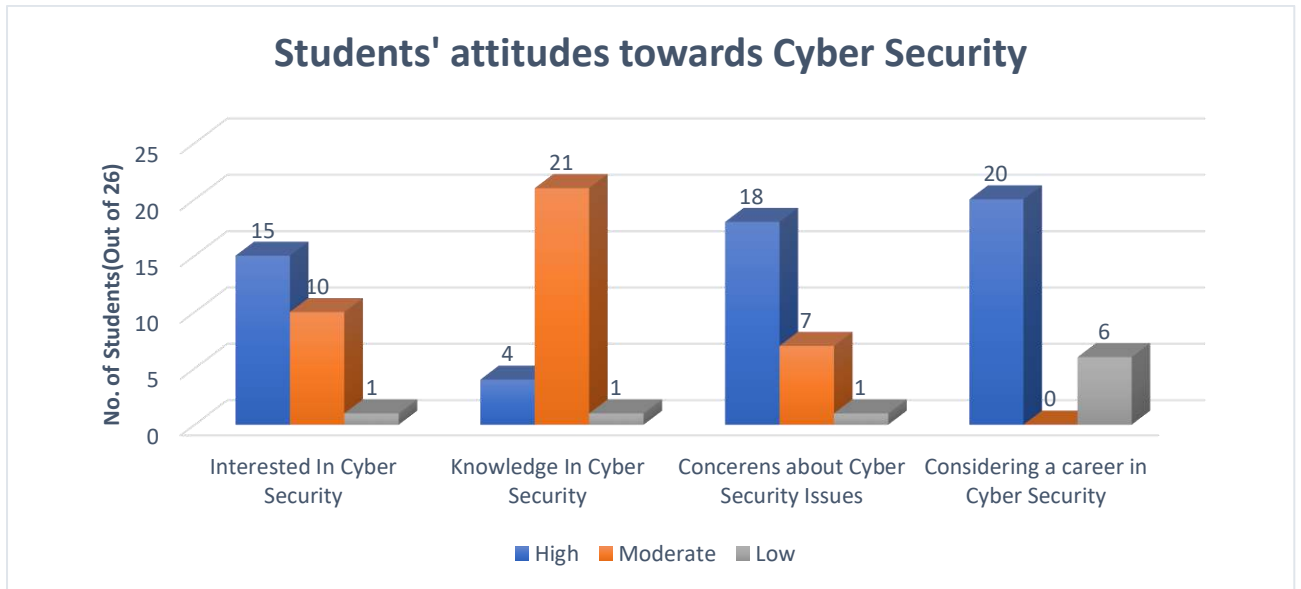
VI. SURVEY FINDINGS: STUDENTS' ATTITUDES TOWARDS CYBERSECURITY

Analysing the survey responses has yielded the following results.:



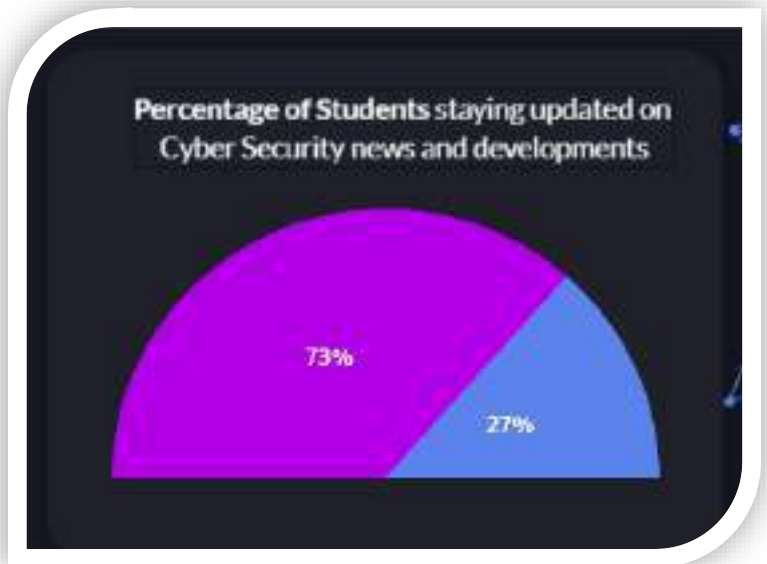
The above chart describes the perception of students in various aspects of cyber security. 70% of the students who participated in the survey believe that the importance of both cyber security skills in future and cyber security in today’s digital world are high. Only less than 7% of students consider cyber security skills unimportant.

The clustered column below depicts the attitude of students towards cyber security. Their interests, knowledge and concerns are classified into three levels a high, moderate and low. Majority of the students are greatly interested and wish to pursue in this field also they have a moderate knowledge in the area.



VII. DISCUSSION & CONCLUSIONS

In the realm of cybersecurity education and career development, the findings of this study underscore the compelling interest and enthusiasm among students for pursuing cybersecurity as a viable career path. It's evident that a substantial number of students are keenly interested in this field and aspire to build careers dedicated to safeguarding digital assets and information. As illustrated in the chart right side 73% of students who participated in the survey are staying updated on cyber security news and developments. However, a significant challenge lies in the current educational landscape, which lacks comprehensive guidance in the foundational aspects of cybersecurity. This gap in the curriculum necessitates a re-evaluation of academic programs to align them with the evolving demands of the cybersecurity job market.



While the courses offered by universities in Kerala cover various aspects of cyber security, there is a need to incorporate more explicit training on secure coding practices, application security, and identity and

management to align with the specific job roles and requirements in the job market. Additionally, considering the importance of cloud security and machine learning in the field, universities may want to consider integrating relevant coursework in these areas. Bridging these skill gaps can help graduates be better prepared for the specific demands of the job market in cybersecurity.

Furthermore, the study highlights the proactive nature of students who exhibit a strong commitment to staying informed about the latest developments in cybersecurity. This self-driven pursuit of knowledge reflects the dynamism and adaptability essential in the cybersecurity domain. It emphasizes the importance of bridging the existing educational gaps to empower aspiring professionals with the requisite skills and expertise. To address these challenges effectively, educational institutions in Kerala should consider refining their cybersecurity curricula, teaching Ethical Hacking lessons, integrating emerging technologies like Artificial Intelligence, Machine Learning, Internet of Things and fostering collaborations with industry experts to provide students with a holistic and up-to-date educational experience. In conclusion, this study calls for a reimagining of cybersecurity education in Kerala, one that aligns with the evolving landscape and equips students with the essential knowledge and skills required to thrive in this ever-changing field.



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TAXONOMIC CHARACTERIZATION OF TWO SPECIES OF THE GENUS *SESBANIA* (FABACEAE) FROM THE STATE OF PUNJAB, INDIA

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ABSTRACT

Present study is conducted in the district Faridkot, Punjab India during paddy season in the year 2023. Two species of the genus *Sesbania* viz. *S. sesban* (L.) Merr. and *S. bispinosa* (Jacq.) W. Wight. are collected from the study area. *Sesbania bispinosa* is a weed species of different kharif crops such as rice, maize, sorghum and cotton. *Sesbania sesban* is generally grown as a green manure crop in the study area. Morphological parameters (stem, leaf, flower, androecium, gynoecium, fruit, seed, etc.) of these species were examined for proper identification. Present findings will be useful for researchers, botanists, ethnobotanists accurate identification of *Sesbania* species.

KEY WORDS- *Sesbania*, weed, taxonomy, flower, botany, Faridkot, Punjab

INTRODUCTION

Genus *Sesbania* is a member of family Fabaceae with about 60 species which consists of annuals, perennials, herbs, shrubs and trees (Evans, 1990). Papilionaceous corolla, smooth to hairy stem, green to light green leaflets and long and narrow pods, small brown to black colour seeds are the important feature of the genus *Sesbania*. According to Heering, (1995) each species of genus *Sesbania* possess the unique features.

So many taxonomic tools available for identification and classification of organisms such as morphology, cytology, palynology, phytochemistry, molecular biology etc. But according to Singh and Sidhu (2022), morphology is a simple and classical tool used for identification of plants. Therefore morphological parameters are consider for identification two *Sesbania* species during present investigation.

Legume species plays a vital role in reforestation of any area (Curasson, 1956) (Bashan *et al.*, 2012). Keeping this in view present study was planned for documentation and taxonomic characterization of two species of the genus *Sesbania* from the state of Punjab, India.

MATERIALS AND METHODS

Study Area

Punjab state is agricultural state which is situated in northern Part of India. Geographically it is divided in to three zones (Majha, Malwa and Doaba). Present study was conducted in district Faridkot (Malwa) during the year 2023.

Collection, morphological study and identification

Regular field visits were conducted for documentation and collection of research material. Morphological features such as plant height, stem (colour and nature), Leaf (colour and size), Flower (colour and size), fruit (size) and seed (size) were studied for identification. Photographs of habitat and morphological parameters were also clicked. Available literature (Hooker, 1872-1897; Bamber, 1916; Nair, 1978; Singh and Sidhu, 2022) was also consulted for proper identification.

Herbarium specimens were submitted to the Herbarium, Biology Lab, Sangat Sahib Bhai Pheru Khalsa Senior Secondary School, Faridkot, Punjab (KSF-118,119,120,121).

RESULTS AND DISCUSSION

Both species of genus *Sesbania* (*S. sesban* (L.) Merr. and *S. bispinosa* (Jacq.) W. Wight. collected from district Faridkot (Punjab) during paddy season in the year 2023. *S. bispinosa* documented from paddy crop fields as a weed species whereas *S. sesban* as a green manure



crop. *S. sesban* also grown as a fuel crop in the study area. Various morphological features such as stem, leaf, flower, fruit, seeds *etc.* were studied for identification (Table no. 1.) (Fig.1 and Fig.2). *S. sesban* is differentiated from *S. bispinosa* on the basis of nature and color of stem, flower *etc.* Stem is pinkish red in *S. sesban* but green in *S. bispinosa*. *S. bispinosa* possesses spines whereas spines are absent in *S. sesban*. Flower is light yellow and dark yellow in *S. bispinosa* and *S. sesban* respectively.

Chanda *et al.* (2021) identified four species of genus *Sesbania* (*S. cannabina*, *S. bispinosa*, *S. sesban*, *S. sastrata*) on the basis of morphological features from Bangladesh. Singh and Sidhu (2022) documented *Sesbania bispinosa* as a weed species from different kharif crops from the state of Punjab and suggested this species possess $2n=12$ chromosome number. Bradbury (1990) also advised that some wild leguminous plants are generally mixed with agricultural crops as a weed species. Recently, Negawo *et al.* (2023) also studied genetic diversity and population structure of *Sesbania sesban*. They collected about one hundred and seventy one accessions of *S. sesban* from different parts of the world.

Table.1. Morphological detail of *Sesbania* species.

S. No.	Character		<i>S. bispinosa</i>		<i>S. sesban</i>	
			Range	Mean	Range	Mean
1.	Height		15cm - 8Ft	6 Ft	25cm - 12 Ft	9 Ft
2.	Stem	Colour	Green		Pinkish red	
		Nature	Spines present		Spines absent	
3.	Leaf	Colour	Light green		Dark green	
		Length	5cm - 25cm	17cm	7cm - 34cm	21cm
4.	Leaflet	Colour	Light green		Dark green	
		Length	1cm - 2.3cm	1.59cm	1.6cm - 3.5cm	2.7cm
5.	Flower	Colour	Light Yellow		Dark Yellow	
		Length	1cm - 1.1cm	1.4cm	1.2cm - 1.6cm	1.4cm
6.	Pedicle	Length	5mm - 7mm	6mm	3mm - 6mm	4.4mm
7.	Fruit	Nature	Pod		Pod	
		Length	4cm - 14cm	11.1cm	6cm - 23cm	11.9cm
8.	Seed	Length	2mm - 4mm	3.5mm	2mm - 4mm	2.8mm
9.	Herbarium Sheet Number (KSF)		118 - 119		120 - 122	

CONCLUSION

Sesbania sesban and *Sebania bispinosa* are identified on the basis of micro morphological parameters. Findings of present study will be useful for taxonomists, researchers, botanists *etc.* for differentiation of two *Sesbania* species.

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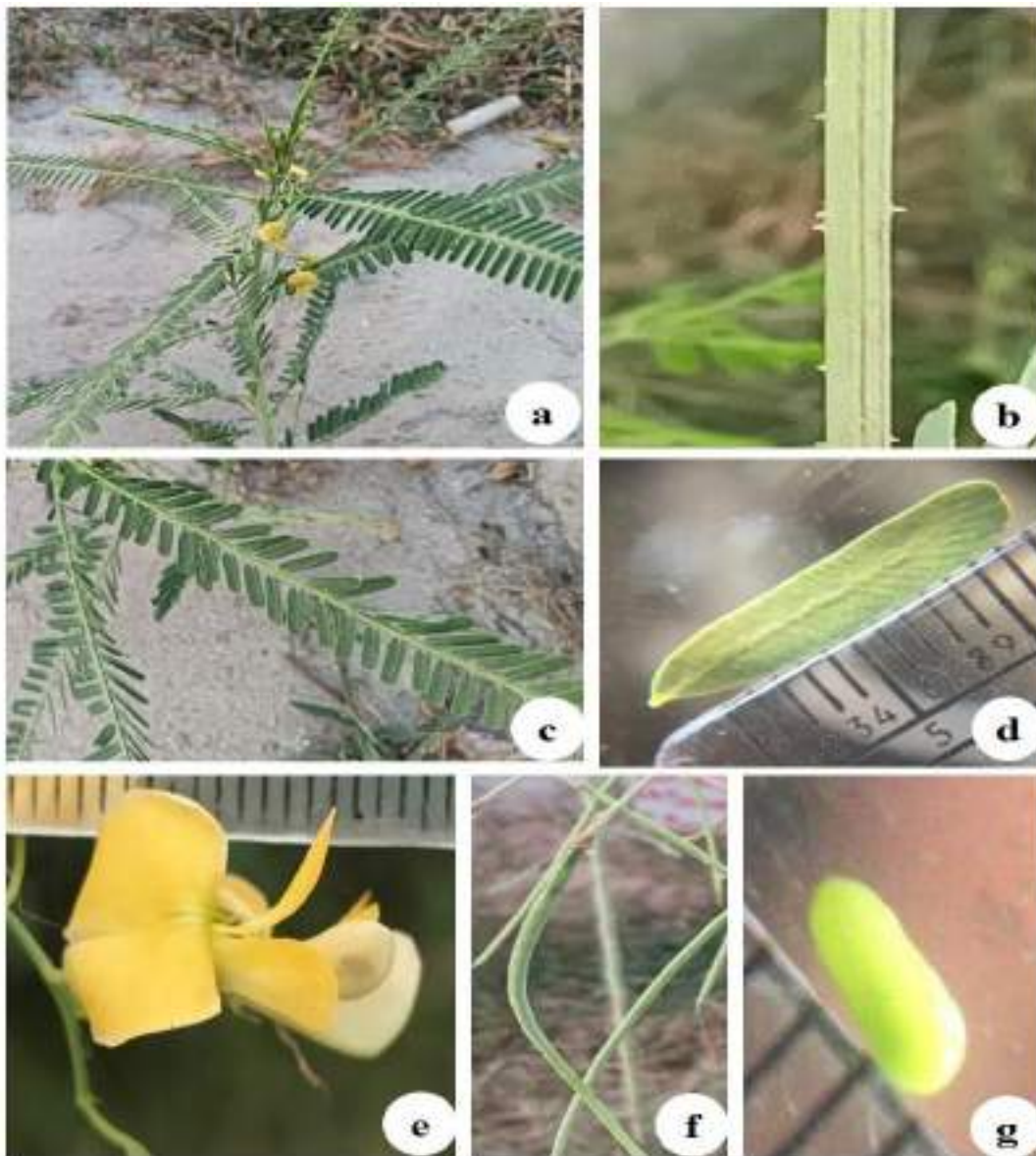


Fig.1. Morphological parameters of *Sesbania bispinosa* (a-g). a- Habit; b- Stem; c- Leaf; d- Leaflet; e- Flower; f- Fruit; g- Seed.



Fig.2. Morphological parameters of *Sesbania sesban* (a-g). a- Habit; b- Stem; c- Leaf; d- Leaflet; e- Flower; f- Fruit; g- Seed.



INSTITUTIONAL COMMITMENT OF THE SECONDARY SCHOOL TEACHERS IN RELATION TO ORGANISATIONAL CLIMATE AND LEADERSHIP STYLE OF THE HEAD OF THE INSTITUTION: A STUDY

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DOI No: 10.36713/epra14632

ABSTRACT

The present study has aimed to explore the relationship among Institutional Commitment of secondary school teachers, Organizational Climate and Leadership Style of the Head of the Institutions of West Bengal. For this present study, the investigators have followed multi-stage and stratified random sampling method. 400 secondary school teachers 40 head of the institutions who can read and speak Bengali language are selected from 40 secondary schools of West Bengal and are engaged in this study. The data was analysed with SPSS (version 26.0).

The study reported that institutional commitment does not differ significantly between male and female secondary school teachers. This means that gender is not a determining factor for institutional commitment of school teachers. Again, the study revealed there is a significant difference existing between different levels of Institutional Commitment and different levels Organizational Climate. But there is no significant difference found between different levels of institutional commitment and leadership style.

KEYWORDS: *Institutional Commitment, Leadership Style, Organisational Climate, School Teacher*

INTRODUCTION

The internal environment or the environment around the organisation can both be used to describe the organisational climate. Every organisation, corporation, or institute has its own distinct personality, characteristics and atmosphere, known as the organisational climate, just as every person has a distinctive personality (Kirti & Saini, 2019). Looking at the socio-educational perspectives (Adhikari, 2023b) organizational climate is very essential for a positive outcome of an organization and required for social adjustment (Ansary et al., 2022; Khatun et al., 2022; Halder et al., 2022). Employees are keenly interested in the organization's values, aims and objectives. In addition, organisational commitment entails more than simply official membership because it also entails a favourable attitude towards the organisation and a readiness to exert a lot of work for its success (Nahak & Ellitan, 2022). It is also very evident that Organizational Climate and Institutional Commitment are related (Gayen et al., 2023).

From the early Greek philosophers like Plato to the modern management analysts and writers, whose books fill bookshops, leadership has been a subject of great interest for ages. The ability of an individual or a group of people to persuade and direct individuals or a team towards a desired objective has been the subject of practical expertise and research (Mohanta & Saha, 2021). Communication, a relationship between an individual and a group, sometimes a group with a particular common interest, is the foundation of leadership. A mutual engagement and understanding that is clearly expressed between the leader and the followers determines whether or not leadership is successful (Kar & Saha, 2021a). According to Nel et al. (2004), leadership is the process by which one person persuades others to focus their efforts and skills voluntarily and joyfully towards the accomplishment of specified group or organisational goals (Kar & Saha, 2021b).

Presently educational statistics aims to reach a very broad spectrum while introspecting the relationship, similarity, correlation through various other analysis and measuring dimensions like Mahalanobis Distance (Mohanta et al., 2023a; 2023b; Sen et al., 2023; Adhikari, 2023a; Adhikari et al., 2023a; 2023b), and Cluster Analysis (Sen et al., 2023a; 2023b; Adhikari & Sen, 2023a; 2023b). This paper aims to explore Institutional Commitment of the Secondary School Teachers in Relation to Organisational Climate and Leadership Style of the Head of the Institution using t-test (Adhikari et al., 2023c; 2023d) and chi-square test.



LITERATURE REVIEW

Review on Organisational Climate

According to a study by Mohanta et al. (2023), there is no significant correlation among the dynamic nature of the six main dimensions of Organisational Climate of secondary school teachers in West Bengal. In a study on Organisational Climate utilising cluster analysis, Mohanta et al. (2023) discovered that four clusters are identified based on the instructors' opinions of the institutional climate. Male teachers in rural and urban areas both respond similarly to the institutional climate. In order to understand and pinpoint trends in the different research and approaches used to examine school climate and student outcomes, Mohanta and Saha (2022) conducted a study on Organisational Climate in school education. The role institutional climate plays in establishing a value is critically examined. In a selected private university in South West Nigeria, Adeniji et al. (2018) conducted a study to ascertain the relationships between organisational climate and job satisfaction among academic staff members. The outcome showed that the success of these universities relied on their ability to influence the motivation, support, and level of job satisfaction of academic staff members.

Review on Institutional Commitment

In their study on Institutional Commitment, Mohanta et al. (2023) discovered that there was no discernible change in the dynamic nature of the dichotomous groupings when the four different dimensions of Institutional Commitment (affective commitment, professional commitment, commitment to the learner, and academic commitment) were gathered as a branch. Artatanaya et al. (2023) conducted a study and revealed that organisational commitment is positively and significantly influenced by perceived organisational support. The findings of this study have consequences for XYZ Denpasar management, who should focus more on markers of perceived organisational support to boost employee organisational commitment. In a study on Institutional Commitment, Mohanta et al. (2023) discovered that the clusters created during the research work tended to group themselves into female of rural institutions, female of urban institutions, male of rural institutions and male urban institutions in order to advance specific ideas about the institutional climate. Ranawaka et al. (2022) made a study on organizational commitment and found a strong correlation between organisational commitment and individual characteristics like gender, income, and working history. Additionally, organisational commitment was highly impacted by job characteristics and physical working circumstances. Nahak and Ellitan (2022) performed a study on institutional commitment and found that Managers should involve staff in strategic planning to increase staff commitment to strategy implementation. Staff involvement in strategic planning can increase member commitment, which will carry over into programme implementation.

Reviews on Leadership Styles

Abasilim, Gbrevbie & Osibanjo (2019) undertook a study on Leadership Styles and Employees' Commitment: Empirical Evidence from Nigeria. The goal was to investigate the connection between management practises and team commitment. The findings showed a minor negative association between transactional leadership style and employee commitment and a medium positive relationship between transformational leadership style and employee commitment. Khajeh (2018) to investigate the effects of various leadership styles on organisational performance, a study titled Impact of Leadership Styles on Organisational Performance was taken up. According to the report, every organisation should employ leadership that will improve the employing company's skills. Cook (2014) made a study on Sustainable School Leadership: The Teachers' Perspective. The findings demonstrated that sustainable leadership plays a role in both teacher and staff professional development and student academic success. It became clear that by taking on leadership responsibilities, teachers can improve and elevate sustainable school leadership. Kiranh (2013) did a study on Teachers' and School Administrators' Perceptions and Expectations on Teacher Leadership to learn what primary school teachers and principals thought about and expected from teacher leadership. The outcome showed that primary school teachers' and principals' expectations regarding teacher leadership are higher than perceptions. Larkin et al. (2009) took a study on Implementing and Sustaining Science Curriculum Reform: A Study of Leadership Practises Among Teachers Within a High School Science Department was conducted. The study's findings showed that the instructors' philosophical goals, attention to public perceptions, staff stability, responsibility distribution, and instructional coherence were all crucial factors in their leadership behaviour.

OBJECTIVES OF THE STUDY

- To compare the Institutional Commitment of the secondary school teachers in relation to the Organizational Climate of the institution.
- To compare the Institutional Commitment of the secondary school teachers in relation to the leadership style of the head of the institution.
- To compare the institutional commitment of the secondary school teachers in relation to gender.

HYPOTHESES OF THE STUDY

H₀1: There is no significant difference among different levels of Organizational Climate and institutional commitment.

H₀2: There is no significant difference between different levels of Institutional Commitment and Leadership Styles of Head of the institutions.



H₀₃: There is no significant difference between male and female teachers regarding their Institutional Commitment.

OPERATIONAL DEFINITIONS

Institutional Commitment: Institutional commitment can be understood as a liability, accountability dedication and psychological attachment of each member of the institution towards the betterment and all-round success of the institution. In this current study the investigator examines the institutional commitment of the secondary school teachers, i.e. the level of their oneness with the institution.

Organizational Climate: Organizational climate is said to be the environment of an institution that may affect or influence the employees' performance and action; thereby productivity in large. Institutional climate is perceivable directly or indirectly and also measurable with proper instruments. The present research focuses on measuring the institutional climate of secondary schools by self-reporting scale for teachers.

Leadership Styles: Leadership is the performance of a leader to inspire, support, motivate, manage and guide followers in the changing situations to cope up with the problems and progression to the ultimate success. It can also be understood as a driving force for a group of people or an organization to achieve desired goals. And a leadership style is the behavioural characteristics of the leader in helping the group of followers or an organization to achieve the anticipated goals. In the present study the researcher used the term 'leadership styles' for understanding the very characteristics of the heads of the secondary schools in achieving excellence.

METHODOLOGY OF THE STUDY

Method: The descriptive survey method has been used to carry out the current investigation.

Population: The population of the current study has been defined as all secondary school teachers in West Bengal

Sample & Sampling of the study

In this present study stratified random sampling method has been used for selecting sample. The researcher has collected 400 samples from secondary school teachers and 40 samples from the head of the institutions.

Tools used in the study

For the present study, the researcher has chosen to use the following tools:

1. Institutional Commitment Inventory
2. Organizational Climate Inventory &
3. Leadership Style Scale

RESULT AND DISCUSSION

Descriptive Analysis of Data

	N	Min	Max	Mean		SD	Var	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Institutional Commitment	400	106	218	190.97	.593	11.857	140.588	-.819	.122	5.651	.243
Organizational Climate	400	162	256	216.87	.707	14.137	199.856	-.158	.122	.954	.243

Table 1: Descriptive statistics for Institutional Commitment and Organizational Climate

Institutional Commitment of secondary school teachers and Organizational Climate of schools are presented in table 1. There were 400 responses recorded by applying Institutional Commitment Inventory and Organizational Climate Inventory.

For Institutional Commitment, minimum and maximum values obtained by applying this inventory are 106 and 218 with a mean score of 190.97. The distribution is widely distributed. Standard error of the distribution is small (.593). The distribution for Institutional Commitment is negatively skewed (-0.819) and leptokurtic (5.651>1) in nature.

For Organizational Climate, minimum and maximum values obtained by applying this inventory are 162 and 256 with a mean score of 216.87. The distribution is widely distributed. Standard error of the distribution is small (.707). The distribution for Institutional Commitment is negatively skewed (-0.819) and mesokurtic (0.954<1) in nature.



Descriptive Statistics											
	N	Min	Max	Mean		SD	Var	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Leadership Style	40	155	246	210.20	2.998	18.959	359.446	-.626	.374	1.674	.733

Table 2: Descriptive statistics for Leadership Style

For Leadership Style, Table 2 showing minimum and maximum values obtained by applying this inventory is 155 and 246 with a mean score of 210.20. The distribution is widely distributed. Standard error of the distribution is medium (2.998). The distribution for Institutional Commitment is negatively skewed (-.626) and leptokurtic (1.674>1) in nature.

Hypotheses wise Data Analysis

H₀₁: There is no significant difference among different levels of Organizational Climate and Institutional Commitment.

	Observed (Low)	Expected (Low)	Observed (Medium)	Expected (Medium)	Observed (High)	Expected (High)	Total
Institutional Commitment	54	29.5	275	256	71	114.5	400
Organizational Climate	5	29.5	237	256	158	114.5	400
Total	59		512		229		800

observed (o)	expected (e)	o-e	(o-e) ² =x	x/e
54	29.5	24.5	600.25	20.34746
5	29.5	-24.5	600.25	20.34746
275	256	19	361	1.410156
237	256	-19	361	1.410156
71	114.5	-43.5	1892.25	16.5262
158	114.5	43.5	1892.25	16.5262
Chi-square =				76.56763

Table 3: Calculation of chi-square for table for different levels of Organizational Climate and Institutional Commitment

To test the hypothesis, scores of Institutional Commitment of teachers and Organizational Climate of the institutions are divided into three categories viz. Low (Score below M-SD), Medium (Score between M-SD and M+SD) and High (Score above M+SD). Number of teachers are counted and listed in the table 4. By Chi-Square test we get calculated value of Chi-Square = 76.56763. Critical values for degree of freedom 2 at .05 and .01 level of significances are 5.991 and 9.210 respectively. So, there is a significant difference between different levels of institutional commitment and Organizational Climate. As a result, it may be opined that null hypothesis H₀₁ is rejected.

H₀₂: There is no significant difference between different levels of Institutional Commitment and Leadership Styles of Head of the institutions.

	Low (Score below M-SD)	Medium (Score between M-SD and M+SD)	High (Score above M+SD)	Total
Institutional Commitment	54	275	71	400
Leadership Style	3	31	6	40
Total	57	306	77	440



Table 4: Contingency table for different levels of Institutional Commitment Leadership Style

observed (o)	expected (e)	o-e	(o-e) ² =x	x/e
54	51.81818	2.18182	4.760338512	0.091866
3	5.81818	-2.81818	7.942138512	1.365055
275	278.1818	-3.1818	10.12385124	0.036393
31	27.81818	3.18182	10.12397851	0.363934
71	70	1	1	0.014286
6	7	-1	1	0.142857
Chi-square =				2.014391

Table 5: Calculation of chi-square for different levels for Institutional Commitment and Leadership Style

To test the hypothesis, scores of Institutional Commitment of teachers and Leadership Style of head of the institutions are divided into three categories viz. Low (Score below M-SD), Medium (Score between M-SD and M+SD) and High (Score above M+SD). Number of teachers and head of the institutions are counted and listed in the table. By Chi-Square test we got calculated value of Chi-Square = 2.01. Critical values for degree of freedom 2 at .05 and .01 level of significances are 5.991 and 9.210 respectively. So, there is no significant difference between different levels of institutional commitment and leadership style. As a result, it may be concluded that null hypothesis H₀2 fails to reject.

H₀3: There is no significant difference between male and female teachers regarding the institutional commitment

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Institutional Commitment	Male	218	191.15	12.066	.817
	Female	182	190.76	11.631	.862

Table 6: Sample is statistics of Male and Female regarding the Institutional Commitment

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Institutional Commitment	Equal variances assumed	6.310	.012	.330	398	.742	.393	1.192	-1.950	2.736
	Equal variances not assumed			.331	389.853	.741	.393	1.188	-1.942	2.729

Table 7: t-test between Male and Female regarding the Institutional Commitment

To test the difference between Male and Female regarding the institutional commitment, t-test has been carried out by the researcher and it is found that there is no significant difference between male and female teachers regarding the institutional commitment. So, it may be opined H₀3 is failed to reject.

CONCLUSION

It is found that Organizational climate and Institutional commitment showed significant difference among levels low, median and high. So Organizational climate and Institutional commitment have significant level difference for complexities of other variables associated with Organizational climate and Institutional commitment.



On the other hand, Institutional commitment and Leadership style of the Head of the Institution agrees well with three levels low, medium and high. So, quality of leadership style of Head of the Institution compatible with Institutional commitment of the teachers. Another important aspect is found that Institutional commitment is gender independent. So, it may be opined that male and female teachers equivalently committed to their institutions.

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HARMONIZING SILENCE: AYURVEDIC INTERVENTIONS AND HOLISTIC APPROACHES IN ENHANCING THE WELL-BEING AND MENTAL HEALTH OF TEENAGERS WITH HEARING IMPAIRMENT

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ABSTRACT

In this study, we examined a holistic approach for enhancing the mental health and well-being of teenagers with hearing impairments, a group that is often underrepresented in existing studies. As part of the study, Ayurveda treatments, yoga practices, and psychological counseling are integrated into a multidisciplinary methodology. A comprehensive intervention for two months was provided to a number of 30 participants, selected from a specialized school for the deaf. The holistic interventions fostered emotional stability, enhanced focus, and increased self-confidence among the participants. Re-analyses of psychological scales demonstrated noteworthy reductions in anxiety-related scores and substantial improvements in various behavioral measures. This study not only highlights the efficacy of ancient healing practices like Ayurveda and yoga but also emphasizes the importance of creating supportive environments within educational institutions. Providing valuable insights into the unique challenges faced by hearing-impaired teenagers by bridging the gap between audiological treatments and holistic approaches, this research offers valuable insights for addressing them in a way that is more inclusive and compassionate, ultimately improving their psychological well-being.

KEYWORDS: *Ayurveda, yoga, counselling, hearing-impaired, mental health.*

INTRODUCTION

The well-being and mental health of teenagers with hearing impairment are paramount concerns that warrant specialized attention and tailored interventions. In the pursuit of ameliorating these complex health challenges, the conventional approach to treatment has, understandably, largely focused on audiological interventions, such as hearing aids and cochlear implants. While these technological advancements have revolutionized the lives of many hearing-impaired individuals¹, they do not address the totality of their experiences. The existing body of research has often overlooked the potential benefits of holistic and multidisciplinary interventions that encompass both traditional and complementary approaches to healthcare. This gap becomes particularly evident when considering the utilization of Ayurveda, an ancient system of medicine with a comprehensive perspective on well-being. Ayurveda, despite its rich history and potential relevance, remains underexplored in the context of hearing-impaired mental health. As a result, this research paper seeks to bridge the existing gap by exploring the integration of Ayurveda treatments within a multidisciplinary framework aimed at enhancing the total well-being of the deaf population. While previous studies have laid foundation by identifying the problems faced by this population², our research endeavors to expand the horizons of hearing difficulty and mental health research by investigating the untapped potential of Ayurveda as a holistic healing modality. Through this exploration, we aspire to unveil promising avenues for the improved quality of life and psychological well-being of those who navigate the world with the hearing impairment.

PARTICIPANTS AND METHODS

The participants for this study were selected from higher secondary classes (age b/w 16&17) of CSI special school for the deaf, valakom, kollam district. The 30 subjects who had been surveyed using SCARED and CBCL scale were included in this study. Exclusion criteria were applied to individuals who were already undergoing treatment for serious psychological illnesses and had physical limitations that hinder their participation in the yoga and pranayama sessions of the intervention. Following the exclusion criteria, the same 30 students could include to participate in the treatment. Among them 18 were females and 12 were males. An introductory session was conducted, aided by an interpreter, to provide the students with information about the nature and purpose of study. Written consent was obtained from each student. Subsequently, a timetable was arranged in collaboration with the school management, allocating one hour in the



morning and afternoon session daily for the implementation of the procedures. The students were then exposed to the interventions for duration of 2 months (8 weeks). The following interventions were employed.

1. Physical health assessment through medical camp

A medical camp was organized in collaboration with Healthymed Ayurveda clinic within the school premises. Three experienced Ayurveda doctors were available in the camp, making their expertise useful to all students at the school. To focus on the selected participants, a dedicated list was created to document and address their specific physical health concerns. Main health issues reported were headache, allergic rhinitis and tiredness.

Table1: Treatments given for the physical and mental ailments

EXTERNAL TREATMENT	Medicine used	Indication
Sadyo vamana(purgation) ³	Avipathichoorna ⁴	Pitha predominant diseases, gastritis, migraine. Here used to induce sudden purgation
Pratimarsa nasya (nostril instillation) ⁵	Anutaila ⁵	Strengthen sensory organs, migraine etc.
Karnapoorana (filling ear with medicine) ⁶	Ksharataila ⁷	All ear diseases including tinnitus & deafness
Siro Pichu ⁴	Ksheerabala ³ + Kachooradi choorna ³	Headache, migraine, induce sleep, improve memory & other psychological illnesses
INTERNAL MEDICINES		
	Ashtachoorna ³	Improve digestion
	Aswagandharishta ³	Depression, anxiety, insomnia

2. Yoga Practice

Yoga, an ancient practice rooted in the traditions of India, has garnered global recognition for its holistic approach to well-being. In the context of this study, yoga serves as a vital component of our intervention for individuals with hearing impairment. Beyond its physical postures, yoga encompasses techniques that promote relaxation, concentration, and body awareness. Its historical significance, dating back centuries and its widespread cultural relevance make it a compelling addition to our research. For the study, 6 yogasana and 2 pranayama techniques were selected after analyzing its therapeutic effects. Each asana were shown to them step by step using power point presentation to understand clearly. The instructor also demonstrated and helped to do each one. The subjects were encouraged to include yoga in their daily routine.

Table 2: Yogasana module adapted

Procedure	Therapeutic indication	Duration
Sukshma vyayamas	loosening exercises to relax muscles	10 minutes
YOGASANAS⁸		
Sukhasana (easy pose)	easy pose for meditation, relax mind & body, reduce stress, anxiety, improves focus & attention	
Vajrasana (thunderbolt posture)	improves digestion, calms mind, reduce anxiety & Stress, improve lung function & blood circulation.	
Vakrasana (half spinal twist)	implied effect on stress & anxiety, improve spine- texture	
Bhujangasana (Cobra stretch)	stimulate abdominal organs, relieves stress & fatigue	
Tadasana (mountain pose)	improves stability of body & mental awareness, boosts energy level	
Savasana (corpse pose)	best to reduce anxiety & stress, mental tiredness, calms nervous system, improve sleep pattern	
PRANAYAMA⁹		
Naadisudhi (alternate nostril breathing)	effects on nervous system, allows mind & body to relax	10 minutes
Sheetali (cooling breath)	kindles digestive fire, provide mental tranquility	
MEDITATION	relaxation	5 minutes



3. Psychological Counselling

Counseling session was done for the selected group once in a week with the help of clinical psychologist. Individual and group counselling sessions were conducted once in a week to address the insecurities and anxieties surrounding future prospects and career trajectories. A nurturing and supportive environment was fostered, allowing participants to share their concerns openly and embark on a journey towards greater self- assurance.

1. Awareness class for teachers.

An awareness class targeting teachers in the school was organized to raise consciousness about the critical subject of mental health within the deaf community. The class aimed to empower teachers with the knowledge and tools required to provide more effective support and care to their students.

RESULT AND ANALYSIS

30 subjects participated in the study, successfully completed the two month training and treatment. All the participants were thoroughly monitored during the selected time period and active participation was ensured. After 8 weeks, a re-assessment was done through subjective analysis and using the same SCARED¹⁰ and CBCL¹¹ scale questionnaire.

Subjective Analysis

Most of the subjects responded that they could feel considerable improvements in their physical and mental health issues. Through the external and internal treatments done, ailments like headache, allergic rhinitis etc. showed decreased intensity in its appearance. And the medicines also helped to improve their mental well-being. All of them felt a positive change in their lives and an increased energy level. Many participants reported feeling more emotionally stable, displaying enhanced focus and expressing a renewed sense of hope and optimism. In comparing their current state to the period before the interventions, participants noted a remarkable difference, emphasizing their increased ability to cope with daily challenges and navigate social interactions more confidently. Before, many participants exhibited challenging behaviour in various situations, particularly in social and academic settings. In classroom environments, some teenagers showed signs of extreme restlessness and an inability to concentrate, leading to disruptive behavior that affected their own learning and as well as that of their peers. Additionally, in social interactions, heightened anxiety often led to withdrawal and difficulty in forming meaningful connections with others. Following the interventions, a noticeable transformation in behavior was observed. In academic settings, participants displayed improved focus and concentration, leading to more active participation in class activities. Teachers reported reduced instances of disruptive behavior, indicating enhanced self-regulation and improved attention spans. In social situations, participants exhibited greater confidence and willingness to engage with their peers. This newfound confidence not only improved their social skills but also positively influenced their self-esteem. Regular practice of these asana produced notable results in the study group. Through Yoga techniques, they experienced a profound shift in their emotional well-being. By counselling, many individuals experienced a noticeable boost in self- confidence and they began to believe in their abilities and talents.

Table 3: SCARED Scale Re-Analysis

Subscale	New mean score		Previous mean score		Cut-off
	M	F	M	F	
Panic/somatic anxiety	5.75	7	6.25	6.25	7
Generalized anxiety	7.30	10	8.41	12.56	9
seperation anxiety	2.25	6.25	3.58	8.89	5
Social anxiety	7.56	8.30	8.33	9.44	8
School avoidance	2.80	1.75	3.25	2.33	3

Table 4: CBCL Scale Re-Analysis

Subscale	New T score		Previous T score	
	M	F	M	F
Withdrawn	35	78	40	84
Somatic problems	22	56	30	66
Social problems	60	60	67	70
Attention problems	55	52	60	58
Aggressive disorder	75	80	82	91
Depression/anxious	56	60	65	66
Delinquent	34	40	40	48



The re-analysis pointed out that there were prominent differences in the behaviour and mental status of the study group after the implemented interventions. SCARED scale assessment conclude that even though the mean scores of females are still above the cut off, there can be seen a reduction in previous scores with a mean of 1.52 within a short period of 8 weeks. In case of males the mean score difference is 0.83 and notably the mean score of social anxiety came under the threshold score. CBCL scale also revealed considerable changes in the T scores. The mean differences in previous and after score for males are 6.71 and that of females are 8.14.

CONCLUSION

The research provides a valuable insight into the often-overlooked dimension of holistic interventions, specifically within the context of teenagers with hearing impairment. With the integration of Ayurveda treatments, yoga practices, and psychological counseling into a comprehensive multidisciplinary framework, significant progress has been made in enhancing the well-being and mental health of participants. Observations of the results indicate that both physical and mental health issues have significantly improved, demonstrating the potential of ancient healing practices like Ayurveda and yoga to address the unique challenges facing hearing-impaired individuals. Besides experiencing reduced symptoms of anxiety, depression, and somatic problems, participants demonstrated a greater level of emotional stability, focus, and self-confidence as well. As further evidence of these positive changes, re-analyses of SCARED and CBCL scales showed substantial reductions in anxiety-related scores and significant improvements in various behavioral measures. Additionally, the findings of this study emphasize the importance of not only providing individual interventions, but also fostering awareness and support systems within educational institutions, involving teachers in the process of promoting mental health. By bridging the gap between conventional audiological treatments and holistic approaches, this research not only enriches our understanding of mental health among the hearing-impaired but paves the way for a more inclusive, compassionate, and effective approach to addressing the diverse needs of this community, thereby enhancing their psychological wellbeing and quality of life.

RECOMMENDATIONS

- 1) Integrate holistic approaches to regular educational curriculum of schools catering to hearing-impaired students. These practices can be incorporated to physical education and mental health awareness program which help to promote an overall well-being from an early age.
- 2) Conduct awareness and training sessions for teachers and school staffs to raise awareness about the unique challenges faced by the deaf community and equip them with basic knowledge to handle the situations.
- 3) Involve parents and caregivers in workshops that educate them about holistic approaches and its benefits. Encourage them to practice those with their children to strengthen the family bonding and further to increase the effects of these therapies.
- 4) Conduct long term studies to assess the sustained benefits of holistic interventions on the mental health of hearing-impaired students.

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CURRENT STATE OF PRODUCTIVITY OF TUGAY VEGETATION OF THE LOWER REACHES OF THE AMU DARYA UNDER CONDITIONS OF ANTHROPOGENIC DESERTIFICATION

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ABSTRACT

The article deals with the issues of productivity and current state of the main plant communities of tugay in conditions under the influence of direct and indirect anthropogenic factors, on the floodplains and deltas of the Amudarya river. The paper considers the significance of anthropogenic and natural factors affecting the processes of changing the productivity of the main plant communities of tugay of the Amudarya delta. On the basis of ecological monitoring of tugay of the Amudarya lower reaches it is possible to obtain reliable information on changes in the natural productivity of woody-shrub vegetation and to predict the main direction of successional changes.

KEYWORDS: *Vegetation, aridization, ecosystem, lower reaches of the Amudarya, desertification, tugay, biodiversity, haloxerophytase, degradation, succession, community ecology, anthropogenic factors, productivity, monitoring, biomass.*

At present, the natural environment of the Amudarya delta is characterised by increased dynamism, development of such negative processes as desertification and aridisation of the territory. This is caused, on the one hand, by a sharp increase in water withdrawal from the river and regulation of its flow, on the other hand, by increasing direct and indirect anthropopressing and changing climatic conditions, which together caused changes in the composition, structure and dynamics of phytocenoses of tugay in the Amudarya delta [1,2,8, 13].

Preservation of tugay flora and vegetation under conditions of regional aridisation and desertification is one of the most important problem of the Aral ecological crisis. The steps taken in this direction are of willful casual nature, are not based on scientifically theoretical ideas about the ways of solving this problem, and are certainly doomed to failure. According to our ideas, in order to solve this problem it is necessary to combine, on the one hand, understanding of the ecology of species and communities, regularities of their spatial and temporal dynamics, and, alternatively, knowledge of the regularities of the evolution of delta landscapes, understanding of their current dynamic state in order to maintain or recreate processes that allow to preserve flora and vegetation of tugay type as a single ecological-dynamic system [1, 3, 4, 8, 14].

In this regard, according to our ideas for rational solution of this problem it is necessary to combine, on the other hand, understanding of ecology of species and communities, regularities of their spatial and temporal dynamics, and on the other hand, knowledge of regularities of evolution of delta landscapes, understanding of their current dynamic state in order to maintain or recreate processes that allow to preserve flora and vegetation of tugay type as a single ecological-dynamic system. Due to changes in hydrological conditions in the lower reaches of the Amudarya and regulation of river flow, directly affected the current state of plant communities, resulting in the violation of ecological stability of phytocenoses and the development of negative processes of anthropogenic desertification and reduction of productivity of vegetation cover. These direct and indirect factors primarily caused the transformation of the composition, structure and functioning of ecosystems. All ecological types of vegetation represented in the lower reaches of the Amudarya River were affected. The most significant changes in delta ecosystems were first of all in tugay-type vegetation communities. The composition and structure of plant communities changed radically, and successional changes occurred.

In the course of formation and development of tugay plant communities, ecological conditions of habitats change, which in turn affect the communities. This mutual influence occurs during the whole period of their existence, reflecting on the accumulation of biological mass. In this regard, it is extremely interesting to consider the dynamics of changes in productivity of riparian



communities in the lower reaches of the Amudarya.

Our studies provide an opportunity to trace the accumulation of biomass in different communities of riparian ecosystems, reflecting changes in environmental conditions during the formation of phytocenoses, and comparative analysis allows us to identify the main dynamics of changes in biological productivity in different plant communities.

In the early 30s of the last century, the total area of riparian massifs in the lower reaches of the Amudarya river was over 300 thousand ha, and in the 60s 120 thousand ha, now 35 thousand ha [1, 8]. They grew on alluvial-meadow riparian soils of streamside embankments, at groundwater table 1-2.5m. According to degree of salinity salinisation medium and weakly saline varieties. Under these ecological conditions, turang, willow, elk, turang-willow, turang-elk, turang-elk, turang-shrub, mixed herb-turang-elk communities were formed on the levees. At that time, anthropogenic impacts on the formation and development of riparian communities were minimal and did not play a determining role as they do now [1, 4, 5, 7, 9, 10, 14, 15].

Table 1
Estimation of stages of desertification of tugai vegetation in the lower reaches of the Amudarya river

Stages of desertification	The nature of the desertification of successions	Area occupied by desert and halophilic species, %	Assessment of desertification in points
Initial	Episodic penetration of desert and halophytic species into the tugai vegetation	0-10	1
Weakly expressed	Regular presence of desert and halophyte species in meadow plant communities, mainly in atypical microecotopes.	10-20	2
Moderately pronounced	Formation of elements of microphytocenoses of desert and halophyte species	20-35	3
Strongly pronounced	The emergence of elements of desert and halophytic plant communities	35-50	4
Very pronounced	Expansion of desert and halophyte plant communities (increase in the area occupied by desert and halophyte species)	50-75	5
Transformation of tugai vegetation into halo-xerophytic deserts	Gradual displacement of tugai vegetation by desert and halo-xerophyte associations.	>75	6

In the process of desertification of the landscapes of the ecosystems of the Amudarya deltas, when they entered the semi-hydromorphic stage of development, characterized by the absence of flood watering and the occurrence of the groundwater level close to the surface (up to 3 m), water-soluble salts accumulated in soils [3, 5, 9, 11, 14]. Salinization of meadow-tugai takyr soils is very minimal on subconditional ramparts. In interchannel depressions and lacustrine depressions, solonchaks form in place of marsh soils. As can be seen from Table 1, the main stages of desertification are established as a result of field studies of plant communities of the tugai of the Amudarya delta. At present, due to the absence of surface flooding of the tugai of the lower reaches of the Amu Darya, the total area of desertified and haloxerophyte plant communities is expanding, and succession changes are taking place; mixed tree-shrub plant communities appear in place of typical tree tugai.

The main cause of anthropogenic degradation of riparian forests in the lower reaches of the Amudarya is the regulation of river flow, which leads to changes in the regime of flood inundation, changes in the nature and intensity of soil formation (increased salinisation and loss of natural regeneration of riparian tree and shrub communities).

In connection with reduction of flood regime, there was a change in ecological conditions of growing places. Hydromorphic soils are replaced by automorphic soils and there is a widespread xerohalophytisation of riparian plant communities, these processes have affected productivity.

Tugai trees and shrubs are the most highly productive of all plant communities growing in Central Asia. According to S. E. Treshkin (2011), the average phytomass in tugai trees is 91 t/ha, its fluctuations in individual communities are from 70-120 t/ha. Phytomass fluctuations in tugai plant communities are largely due to changes in the environmental conditions of their habitats.



Thus, with a change in water supply, accompanied by an increase in soil salinity, the share of root biomass increases [1, 7, 8, 9, 10, 14]. Our research makes it possible to trace the formation of biological productivity in the main plant communities of the tugay lower reaches of the Amu Darya, reflecting the main changes in environmental conditions during the formation of tugay phytocenoses, and a comparative analysis allows us to identify the dynamics of biological productivity.

Table 2
Productivity of typical woody tugay of the Amudarya delta (tonnes/ha)

Indicators	Above Ground Mass	Underground Part
Wood tugay	34,7	18,8
Shrub tugay	41,9	33,6
Total phytomass	76,6	52,4

As can be seen from table 2, the average amount of biomass of typical tree tugay is 76.6 t/ha, of which 41.9 t/ha is the underground part, and the average phytomass of shrub tugai is 52.4 t/ha, of which the underground part is 33.6 t/ha, and shrub tugai it is 52.4 t/ha, of which the root system is 33.6 t/ha.

Table 3
Productivity of desertified woody tugay of the Amudarya delta (tonnes/ha)

Indicators	Above Ground Mass	Underground Part
Wood tugay	30,7	14,8
Shrub tugay	39,8	29,6
Total phytomass	69,5	44,4

As can be seen from table 3, the average biomass of deserted woody tugai is 69.5 t/ha, of which 39.8 t/ha is underground part, and shrub tugay average phytomass is 44.4 t/ha, of which 29.6 t/ha is underground part.

Planning of rational nature management in the riverine belt and Amudarya delta should be based on a comprehensive analysis of the ecological and socio-economic state of the region, taking into account, first of all, the interests of environmental protection, and then the requirements of regional economic development. In order to implement long-term planning of rational nature management, it is also necessary to have a comprehensive and accurate forecast assessment of the consequences of the proposed plans of economic development and environmental protection measures. If there is an inevitability of the development of negative consequences, it is necessary to provide measures to mitigate and minimize them.

The critical condition of riparian ecosystems in the Amudarya floodplain and delta emphasises the need to organise integrated monitoring on the basis of existing riparian protected areas, as not only the vegetation and soil cover of the areas, but also the entire faunal riparian complex is subject to changes. In connection with the situation in the lower reaches of the Amudarya, it is necessary to organise protected areas of different protection status throughout the Amudarya floodplain and delta [6 11, 12, 15].

At present, direct and indirect anthropogenic interference has a significant impact on the productivity and changes in the composition and structure of the main plant communities. At present, as a general pattern we can state that if earlier the main edifying species determining the productivity of the main plant communities of tugay of the Amudarya delta were those of introzonal type, then unfortunately today it is more and more often determined by species of zonal type, which is another confirmation of intensive development of desertification and aridisation processes, in which there is also a progressive increase in underground biomass above the soil [1,8,13]. In this connection, in our opinion, only rational water use in the whole Aral Sea basin can be a guarantee of restoration of natural riparian ecosystems and preservation of biodiversity of riparian species and communities. Changing the hydrological regime of the Amudarya delta territory leads to successional change of species composition of the main plant communities, which, in turn, affects the dynamics, structure and productivity of riparian forests.

Thus, after analyzing the collected material on the dynamics of the productivity of trees and shrubs in the tugays of the Amudarya delta, we can conclude that at present it is significantly complicated by direct and indirect anthropogenic interference, which in turn affects biological productivity.

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EXPRESSION OF NASIRIDDIN TUSI'S IDEAS ON EDUCATION

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ABSTRACT

Nasiriddin Tusi's service in "safety of virtues and knowledge" is incomparable. Educating morally perfect and pure citizens means strengthening the foundations of our society. His scientific-philosophical works became an example for later scientists and philosophers.

KEYWORDS: *Virtue, ability, intelligence, emanation, insight, Sufism, dignity, outlook, moral, intellectual, idea, philosophy, religious, secular, social, political.*

During his time, Nasiriddin Tusi was renowned for his exceptional intelligence and abilities. Abu-Nasr Farabi, the creator of Eastern Peripatism, presented the doctrine of "ten minds" in his theory of emanation, where the tenth and final active mind belonged to the Moon sky. Nasiriddin Tusi was referred to as the "eleventh mind" indicating his unparalleled understanding. His valuable treatises on religious and worldly sciences served as an example for his students and later thinkers. In his work "Akhloqi-Nasiri" Nasiriddin Tusi attempted to combine Aristotle's "Nicomachean ethics" with Ghazali's ethical views on Sufism and wrote "the first systematic ethical book".

Nasiriddin Tusi's worldview – philosophy and ethical, social and political views have been relevant in all eras with their dignity. The thinker creatively continued the ideas of his predecessors, based on the direction of Eastern peripatism. Ibn Sina's book "Danishnama" has been the focus of attention of philosophers and thinkers in different periods. Commentators' reactions to this book in a certain sense represented their place in the history of philosophy. Scholastics mainly tried to deny this valuable work, while peripatetic philosophers stood on the side of scientific philosophy and did not allow it to distort advanced ideas. The opinions of the scientist Fakhriddin Razi and the philosopher Nasiriddin Tusi represented the leading directions of the struggle of these ideas.

It is interesting that Fakhriddin Razi wrote this tafsir in the month and year when Nasiruddin Tusi was born, that is, in February 1201 (jumad al-ula 597). The Uzbek philosopher later wrote his interpretation against this interpretation. He worked on his tafsir on Hints and Notes for nearly twenty years and finished it in 1246 while he was in a sort of prison in the Alamut Fortress. Under Nasiriddin Tusi, Ibn Sina's advanced philosophical ideas were boldly defended and developed from the attacks of fanatical Islamic ideologues.

Nasiriddin Tusi completed his Persian work "Iktibas asoslari" ("Fundamentals of Quotation") in 1244 (642). The Turkish scholar Hilmi Ziya Ulken assessed the work "Iktibas" as "the largest logical book written in Persian with very detailed details". Nasiriddin Tusi is mentioned in the sources as a prominent representative of the Imami (imamate) order of Shia. In the work of the philosopher himself, the topic of imamate occupies a large place. His works "Tajrid al-Kalam" ("Grading of words"), "Fusul Nasiriyya" ("Prose chapters") and especially "Risala fi-l-imama" ("Imam's treatise") are a vivid example of this. In addition to his philosophical works, he is also an encyclopedic scientist who works on various specific sciences. Among these are: "Kismat-ye maujudat va aqşam-ye an" ("Asset distribution and its parts"), "Isbat al-vojib" ("Proof of substance"), "Tahqiq al-ilm" ("Research of Science") [1].

Nasiriddin Tusi was influenced by Sufism and Ishraic ideas in his philosophical teachings, especially in the theory of knowledge, and he enjoyed some of the ideas of those teachings, as well as the holy book of Islam, the Qur'an. However, this influence sometimes has a terminological, external character. For example, in the expressions used by the philosopher, the color of Sufism and the expression of logical intuition with mystical content are also evident. Nasiriddin Tusi's socio-political meetings are a continuation of unique moral meetings. Here the relationship between man and society is studied, issues of family and state management are analyzed, and theoretical ideas are put forward.

"The longevity of the country depends on how much it is built on the foundation of justice. Therefore, he asserts that the economic prosperity of the state is inconceivable unless the government treats the different classes of members of the society fairly" [2].



The philosopher's theory of management deals with the management of a person himself, his family and the state. In this matter, the thinker first of all turns to his predecessors. "Davani describes his utopian dream about the state in his work "Akhlaqi Jaloli". Like Ibn Miskavayh, Farobiy and Nasiriddin Tusi, he divides the city (country) into the virtuous and the ignorant. Describing the city of Fazil, Davani says, "It is a city whose rule consists in achieving happiness and eliminating events that lead to unhappiness." Virtuous city should be governed by smart, fair and brave people. The inhabitants of the city, regardless of their social class, obey the rules without question. Ignorant city dwellers are on the path of misfortune and disaster, and such city mayors are ignorant and arrogant" [3].

The representatives of the philosophical school of Nasiriddin Tusi, like their teachers, created their own schools along with scientific creativity and continued the "master-disciple" tradition. For example, "faylasuf bi-l-haqq" ("correct philosopher"), "hakim mutlaq" ("absolutely wise"), "al-maula al-azam" ("the greatest teacher"), "mazhar al-haqq" ("A place where truths are revealed"), "mubdi ad-daqq" ("subtle artist"), "ustad al-bashar" ("master of mankind"), the legacy of Nasiriddin Tusi became an example for creative intellectuals. On the basis of that valuable heritage, it has been taught in madrasahs for centuries with full interpretations, explanations. The fact that he created the necessary conditions for his work in the Maroga observatory, and that he established more than a hundred representatives of different nationalities there, is an expression of his humanitarianism and free thinking tendencies.

In general, the philosophy followed by most of the famous philosophers of the time was famous for promoting the ancient worldview created by Aristotle and partly by Plato. These Peripatetic philosophers, who gained wide fame not only in the East but also in the Western world, supported Aristotle's metaphysics. Nasiriddin Tusi also joined this trend and followed the philosophical outlook of the "first teacher". In fact, it divides all existing things into two parts, necessary and possible, and relies on the interpretation of possible existence, not necessary existence. According to Nasiriddin Tusi, the cause of all existence, surrounding world, nature and thought is necessary existence. This necessary existence, which creates the actual world, results in possible existence. Necessary existence has neither a creator nor an effector.

In 1235, Tusi prepared the work "Akhloqi-Nasiri", which gained great fame throughout the East. Copies of the work spread in the Caucasus, Iran, Central Asia, India and other countries in a short time. Jalaluddin Humayi, who conducted a special study on Tusi's work "Akhloqi-Nasiri", names some of the imitation books and notes that they are at a very low level compared to "Akhloqi-Nasiri". Among them, he mentions "Akhloqi-Jalali", "Akhloqi-Mohsini", "Akhloqi-Mansuri" and "Akhloqi-Jamali" and says that they are not books of this type created in the last seven hundred and fifty-five years. "Akhloqi-Nasiri" could not rise to the level of one percent. "Akhloqi-Nasiri" work "Introduction to the book and the reason for its writing", "Department of first notes and sciences", It consists of 3 articles and 30 chapters. In the first article of the work, Tusi expresses his deep thoughts "On the Purification of Morals". It should be noted that thoughts about moral education and moral concepts are found in different parts and chapters of the work [4].

Tusi expressed valuable opinions about the influence of the environment and conditions on a person, especially during childhood and youth, and expressed his personal opinions and famous people's opinions about the extremely important role of education and training.

Nasiriddin Tusi considered morality to be wealth and emphasized that it is not innate. "If character was innate, intellectuals would not give advice on educating their children, purifying, strengthening and forming the morals of young people, they would not be engaged in it themselves," he said. Tusi, who attached great importance to moral purity, conscience purity, and spiritual purity, recommends first of all to engage in the spiritual and moral education of children and young people, to teach them honesty, truthfulness, correctness, and to engage in the spiritual and moral education of every person. And then engage in other educational activities. The second article of the work, "Rules for the care and education of children", is full of ideas reflecting moral education. Tusi recommends that after weaning a child, it is necessary to start training and educating him before he has time to spoil his morals. "Since there are congenital defects in the child's nature, it is necessary to prevent him from becoming prone to bad habits, to purify his morals and to improve them, taking into account his nature, that is, which pure force is first manifested in the child" [4].

Tusi emphasizes that as a basic condition in the process of education, the child should not be allowed to play with people and things that spoil his nature, because the child's soul is simple and he quickly learns the character of those around him. "It is necessary to educate the child in virtues that arouse kindness and love, especially through explanation that affects his mind, consciousness, perception; not with things related to genealogy, giving money, seduction" [5].

Understanding simplicity as an indicator of intelligence, Tusi considered it appropriate not to eat too much in front of the child, to avoid drinking too much, to wear expensive, fashionable clothes, to prevent alcoholism, fashion and other similar characteristics from entering the child's heart. Emphasizing that elegant dresses belong to women, it is necessary to explain to her that intelligent and grown-up men wear simple clothes. The famous thinker found it necessary to form hatred for bad habits and bad deeds in



children. Tusi writes: "...In the first moments of development, a child makes many mistakes, does bad things, is often a liar, jealous, thief, informer, stubborn, makes a fool of himself, does not give up anything, says and forces others to do harmful and unpleasant things. Therefore, it is necessary to educate the child from infancy" [4]. In this work, Tusi, who expressed valuable opinions about the need for a growing child to have a culture of behavior, moral purity and spiritual perfection, talks about "Rules of Speaking", "Rules of Sitting, Movement and Silence", "Food Rules", "Drinking Rules" and other great ideas.

The pedagogic views of Eastern thinkers of the 10th-11th centuries were closely related to the cultural, historical, literary and religious traditions of the past. Tusi continued to improve in various fields of science. He had an enviable knowledge, he was well versed not only in Eastern thinkers, but also in the works of ancient Greek scholars, in particular Plato and Aristotle. "The ancient Greek thinker Aristotle and his follower, the encyclopedist Abu Ali Ibn Sina from Bukhara, were prominent scholars in the world of philosophy for Nasiriddin Tusi" [7].

At an early age, Tusi was addicted to reading, and his excellent memory allowed him to remember everything he read, saw and heard. A deep mind helped him to illuminate the most important thing, the essence of the matter, to get rid of unnecessary things. His hobbies were inventing new charades, formulating theorems, designing and manufacturing all kinds of instruments and devices. Despite the fact that Tusi was the author of more than a hundred serious works on mathematics, physics, medicine, philosophy, ethics, logic and astronomy, researchers believe that he was primarily a mathematician.

Tusi's work "Akhloqi Nasiri" consists of "Introduction to the book and the reasons for its writing", "The first notes and sections of science", "Three articles and thirty chapters". In this work, Tusi showed himself as a skilled teacher and pedagogue. Speaking about the innate abilities of a person, the influence of the environment on its formation and development, he notes the important role of education and training in this matter.

Tusi entered the history of Eastern peoples as a scientific pedagogue, teacher and moral theorist with his work "Akhloqi Nasiri". The historical review of Tusi's moral views in the field of moral education shows his awareness of the development of Islamic thought, the stages of development and evolution of human culture and world knowledge.

Tusi's idea of changing the education and training system played its historical role in the life of the peoples of Central Asia. Tusi sees education as the birth of an angel in a person through habits. In this book, he notes the following: "Education is a virtue that must follow nature, so that man can perfectly show the grace of events. Nature is a unique teacher, and nature's product is a student. Tusi is convinced that in order to practice a certain discipline or enjoy the pleasures of knowledge, he must direct power to that area. In fact, Tusi concretizes the role of education and training and finds its essence in the right choice of profession, otherwise all the work done in education and training will be in vain and useless [1].

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DESIGN AND EVALUATION OF HYDRALAZINE MOUTH DISSOLVING TABLET

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ABSTRACT

Hydralazine is the first-line therapy for hypertension in pregnancy. Hydralazine is used to treat severe hypertension, but it is not a first-line therapy for essential hypertension. Tablet dosage form is the most popular among all existing conventional dosage forms because of its convenience of self administration, compactness and easy manufacturing. Many patients find it difficult to swallow tablets and capsules. Mouth Dissolving Tablets is a solid dosage form that dissolves or disintegrates within a minute in the oral cavity without the need of water and has a pleasant taste. MDT is also known as orally disintegrating tablet, fast-dissolving tablet, fast-melting tablet, mouth melting tablet or fast-disintegrating tablet. The formulas were evaluated for compatibility and Precompressional studies. The formulations were evaluated for weight variation, thickness, hardness, friability, content uniformity, disintegration time, wetting time, water absorption ratio and release profile.

KEY WORDS- *Hydralazine, Hypertension, Mouth Dissolving Tablet, orally disintegrating tablet, Precompressional studies, disintegration time.*

INTRODUCTION

Tablet dosage form is the most popular among all existing conventional dosage forms because of its convenience of self administration, compactness and easy manufacturing. Many patients find it difficult to swallow tablets and capsules. The difficulty is experienced in particular by pediatric and geriatric patients, but it also applies to people who are ill on bed and to those active working patients who are busy or traveling, especially those who have no access to water.

Mouth Dissolving Tablets are designed to disintegrate or dissolve rapidly on contact with saliva, thus eliminating the need for chewing the tablet, swallowing an intact tablet, or taking the tablet with water. Although no water is needed to allow the drug to disperse quickly and efficiently, most technologies utilize the body's own salivation. This mode of administration was initially expected to be beneficial to pediatric and geriatric patients, to people with conditions related to impaired swallowing, and for treatment of patients when compliance may be difficult.

Hydralazine is the first-line therapy for hypertension in pregnancy, with methyldopa. Hydralazine is used to treat severe hypertension, but it is not a first-line therapy for essential hypertension. Hydralazine is not used as a primary drug for treating hypertension because it elicits a reflex sympathetic stimulation of the heart (the baroreceptor reflex). The sympathetic stimulation may increase heart rate and cardiac output, and in patients with coronary artery disease may cause angina pectoris or myocardial infarction. Hydralazine may also increase plasma renin concentration, resulting in fluid retention. In order to prevent these undesirable side-effects, hydralazine is usually prescribed in combination with a beta-blocker (e.g. propranolol) and a diuretic.

MATERIALS AND METHODS

The drug Hydralazine Hydrochloride was obtained from GlaxoSmithKline Pharmaceuticals Ltd., Mumbai. Ac-di-sol, Lactopress, Micro crystalline cellulose (MCC), Sodium starch glycolate (SSG) was obtained from Qualigens® fine chemicals, Navi Mumbai. Crospovidone from ACS chemicals. Dihydrogen ortho phosphate from Rankem (New Delhi). Ethanol, Hydrochloric acid, Methanol, Sodium hydroxide was obtained from Himedia, media india. and Dextrose and Talc from Central Drug House(P) Ltd., New Delhi and all other excipients used were analytical grade.



Preformulation Studies

Preformulation studies such as physical appearance, solubility, melting point, hygroscopicity and drug excipient compatibility were performed to confirm the suitability and stability of drug and excipient for the formulation of mouth dissolving tablets.

Formulation and Development

Precompressional studies

Precompressional parameters like bulk density, tapped density, compressibility index and hausner ratio, Angle of Repose and Determination of *in-vitro* Drug Release resinate was performed as per the standard procedures.

Preparation of Hydralazine Mouth Dissolving Tablet by Using Superdisintegrants

The critical parameters to formulate a mouth dissolving tablet are the choice of superdisintegrant and optimization of concentration of superdisintegrant. The main criterion for mouth dissolving tablets is to disintegrate or dissolve rapidly in the oral cavity within 15 seconds to 1 minute. The mouth dissolving tablets of hydralazine were prepared by using superdisintegrants in different ratios. The ingredients were mixed homogenously and co-grounded in a glass mortar and pestle (except talc and magnesium stearate). Finally talc and magnesium stearate were added and mixed for 5 minutes. The mixed blends of hydralazine with other excipients were compressed using single punch tablet machine.

Evaluation of Hydralazine hydrochloride mouth dissolving tablets

The compressed tablets were evaluated for the tests such as weight variation, thickness hardness, friability, *in vitro* disintegration and *in vitro* dissolution rate as per the pharmacopoeia standards and also specific tests for the evaluation of mouth dissolving tablets like wetting time and water absorption ratio were performed. *In vitro* drug release profile were fitted with various kinetic equations like Higuchi, Hixson and Crowell model and Korsmeyer and Peppas equation to understand the drug release kinetics from the dosage form.

Results: Hydralazine hydrochloride appeared white, odourless, amorphous, and soluble in water with a melting point of 273 ± 0.1 °C.

Determination of *in-vitro* Drug Release from Resinate

Table no. 1: *in-vitro* Dissolution of Drug Release in pH 1.2, 6.8, 7.4

Time (min)	% Drug Release from Resinate		
	pH 1.2	pH 6.8	pH 7.4
0	0	0	0
5	12.03	9.90	2.24
10	21.68	18.48	5.65
15	30.32	24.97	8.88
20	40.08	31.50	11.06
30	49.88	43.39	12.19

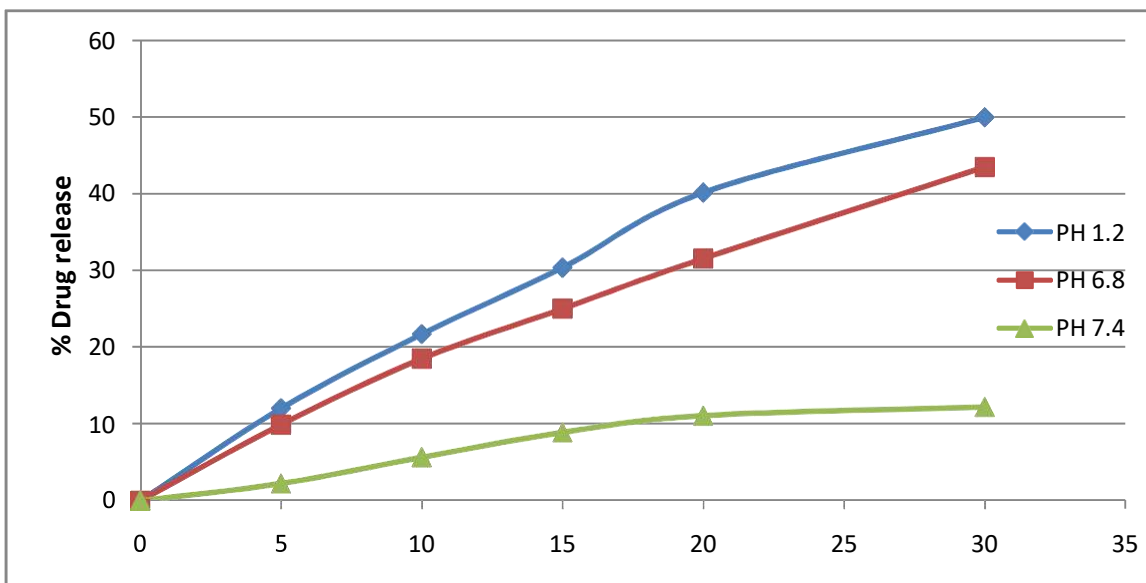


Figure no. 1: *in-vitro* Dissolution of Drug Release in pH (a) 1.2 □, (b) 7.4 ▲, (c) 6.8■

Table 2: Preparation of Hydralazine HCl Mouth Dissolving Tablet
Table no. 3: Formulation of Mouth Dissolving Tablets with Resinate

Ingredients	FDT1	FDT2	FDT3	FDT4	FDT5	FDT6
Drug resinsates equivalent to 5 mg of hydralazine HCl	35 mg	35 mg	35 mg	35 mg	35 mg	35 mg
Crospovidone	3 mg	4 mg	-	-	-	-
Ac-Di-Sol	-	-	3 mg	4 mg	-	-
SSG	-	-	-	-	3 mg	4 mg
MCC	26	26	26	26	26	26
Dextrose	15	15	15	15	15	15
Lactopress	15	15	15	15	15	15
Talc	2	2	2	2	2	2
Magnesium Stearate	2	2	2	2	2	2



Evaluation of Tablet Blend

Table no. 3: Evaluation of Tablet Blend

Ingredients	FDT1	FDT2	FDT3	FDT4	FDT5	FDT6
Bulk Density (gm/cm ³)	0.584± 0.009	0.625± 0.007	0.611± 0.006	0.627± 0.006	0.633± 0.005	0.574± 0.012
Tapped Density (gm/cm ³)	0.666± 0.007	0.718± 0.008	0.711± 0.010	0.714± 0.011	0.715± 0.011	0.649± 0.003
Compressibility Index (%)	12.212± 0.005	12.952± 0.005	14.051± 0.010	12.220± 0.004	11.447± 0.015	11.499± 0.004
Hausners Ratio	1.126± 0.392	1.134± 0.544	1.136± 0.765	1.112± 0.795	1.129± 1.233	1.117± 0.782
Angle of Repose	22.713± 0.953	22.931± 0.268	23.189± 0.553	23.756± 0.434	23.282± 0.754	24.231± 0.725

Characterization of Mouth Dissolving Tablets

Table no. 4: Characterization of Mouth Dissolving Tablets

Ingredients	FDT1	FDT2	FDT3	FDT4	FDT5	FDT6
Thickness(mm)	2.313± 0.022	2.076± 0.121	2.329± 0.089	2.415± 0.025	2.361± 0.061	2.295± 0.066
Weight (mg)	99.133± 0.665	98.466± 0.737	99.4± 0.264	100.833± 1.450	97.233± 0.602	97.733± 0.321
Hardness (kg/cm ³)	2.713± 0.156	2.913± 0.200	3.043± 0.150	3.003± 0.090	2.800± 0.191	2.990± 0.101
Friability (%)	0.823± 0.051	0.64± 0.05	0.536± 0.030	0.626± 0.045	0.653± 0.081	0.856± 0.041
<i>in-vitro</i> Disintegration time(s)	51.66± 2.51	20.66± 2.08	62.66± 2.516	38.00± 3.00	66.33± 3.05	41.66± 1.52
Wetting time (s)	47.33± 6.02	18.66± 2.51	57.66± 3.51	32.33± 3.51	55.66± 6.11	38.33± 2.08
<i>in vitro</i> Dispersion Time (s)	57.33± 1.52	26.33± 2.08	63.63± 2.08	31.33± 2.51	68.66± 2.08	46.00± 2.64



Content Uniformity

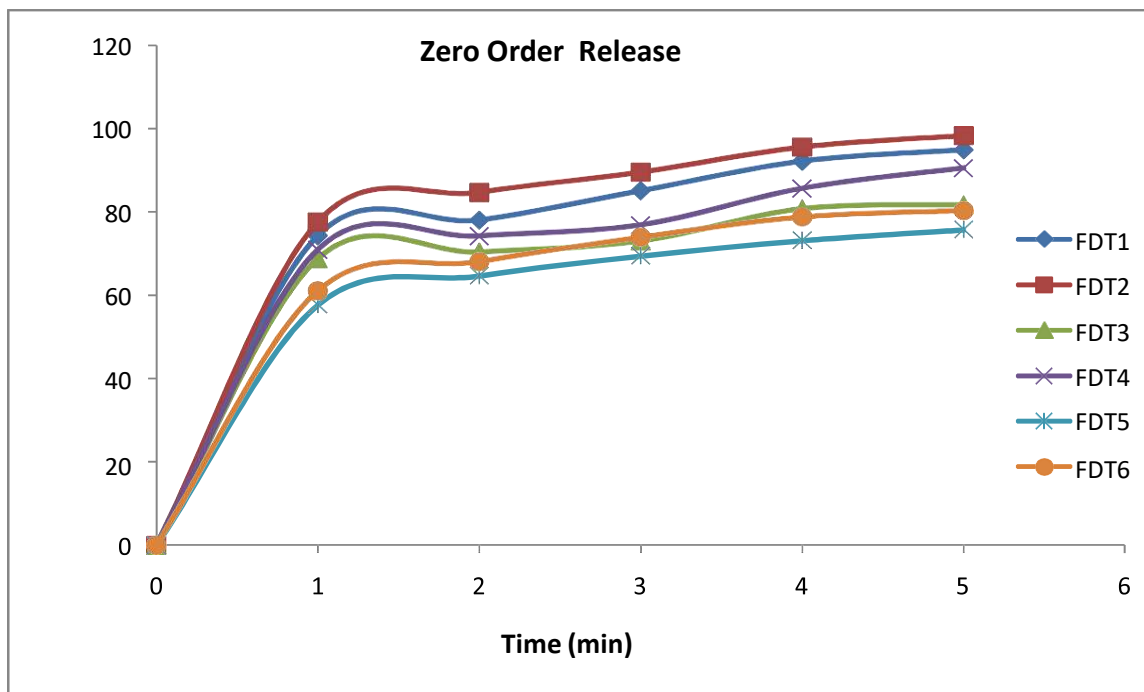
Table no. 5: Drug Content in the Mouth Dissolving Tablet of Hydralazine HCl

Formulations Code	Parameters	
	Drug Content (mg per Tablet)	Drug Content (%)
FDT1	4.86±0.25	97.2
FDT2	4.93±0.35	98.7
FDT3	4.83±0.30	96.7
FDT4	4.96±0.42	99.2
FDT5	4.94±0.25	98.8
FDT6	4.97±0.31	99.4

In-Vitro Dissolution Studies

Table no. 6: In-Vitro Release Data of Hydralazine HCl Tablet

Time (min.)	Cumulative Percent Drug Released					
	FDT1	FDT2	FDT3	FDT4	FDT5	FDT6
0.000	0.000	0.000	0.000	0.00	0.000	0.000
1.000	74.27	77.58	68.75	70.96	57.72	61.03
2.000	77.99	84.63	70.33	74.22	64.66	67.99
3.000	85.04	89.51	72.98	76.89	69.43	73.88
4.000	92.13	95.52	80.73	85.66	73.12	78.70
5.000	94.84	98.25	81.67	90.54	75.72	80.23



**Figure no. 2: in-vitro Release curve of Hydralazine HCl Tablet-Zero Order Release
Log % Drug Retained Data of Hydralazine HCl Tablet**



Table no. 7: *in-vitro* Log % Drug Retained Data of Hydralazine HCl Tablet

Time (min.)	Log Cumulative Percent Drug Retained					
	FDT1	FDT2	FDT3	FDT4	FDT5	FDT6
0	2	2	2	2	2	2
1	1.410	1.350	1.494	1.462	1.626	1.590
2	1.342	1.186	1.472	1.411	1.548	1.505
3	1.174	1.020	1.431	1.363	1.485	1.416
4	0.895	0.651	1.284	1.156	1.429	1.328
5	0.712	0.243	1.263	0.975	1.385	1.296

Comparison of Release with Marketed Tablets

Table no. 8: *in-vitro* Release Profile of Hydralazine HCl Marketed Tablets

Time (min)	Cumulative % Drug Release (Marketed)	Log Cumulative %Drug Retained (Marketed)
0	0	2
1	9.53	1.95
2	18.46	1.91
3	24.64	1.88
4	28.74	1.85
5	38.33	1.79
30	43.73	1.75
60	46.37	1.73

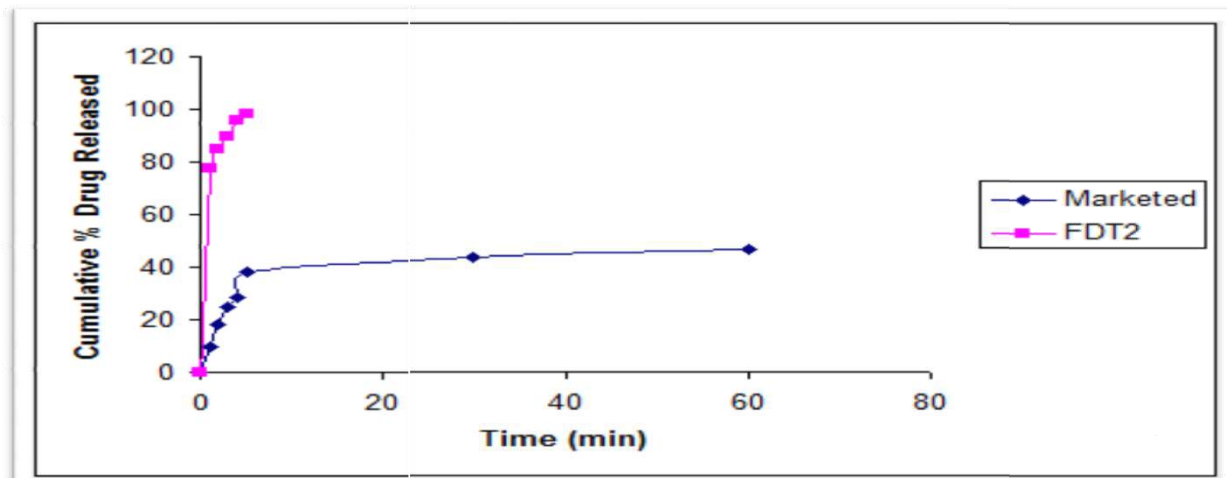


Fig. no.3: *in-vitro* Zero Order Release Curve of FDT2 and Hydralazine HCl Marketed Tablets

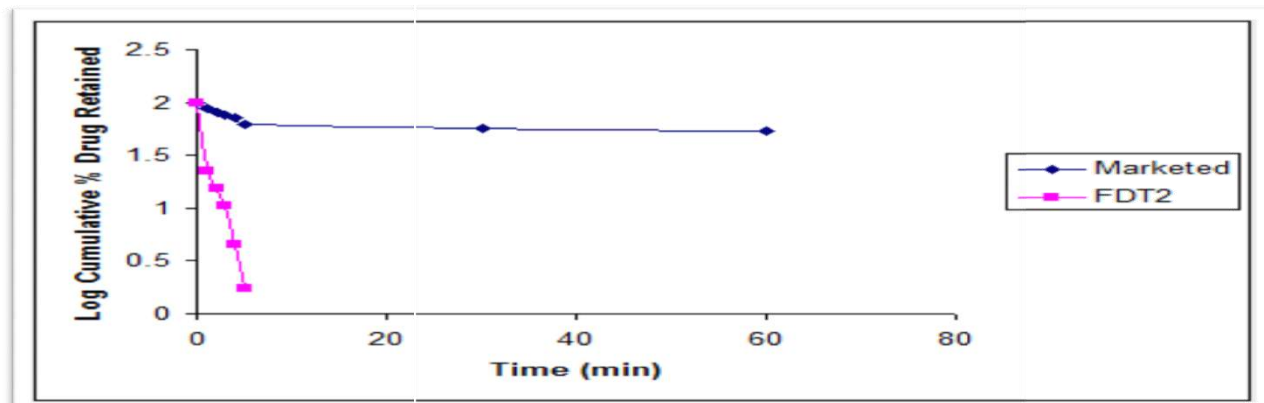


Fig. no. 4: *in-vitro* First Order Release Curve of FDT2 and hydralazine HCl Marketed Tablets

DISCUSSION

In this study, novel mouth dissolving taste masked tablets of hydralazine HCl with adequate mechanical strength were prepared, optimized and evaluated for various *in-vitro* and *in-vivo* parameters.

The obtained sample of hydralazine HCl was identified by various organoleptic, physicochemical and spectrophotometric methods. The sample of hydralazine HCl possesses similar color, odor, taste and texture as given in officials.

The drug content of all formulations was determined spectrophotometrically at 220 nm. It varied from 4.86 ± 0.25 to 4.97 ± 0.35 mg per tablet. The uniformity of drug content was also shown the uniformity of tablet punching process. *in-vitro* drug release experiments were performed at $37 \pm 0.5^\circ\text{C}$ in paddle type dissolution apparatus. The results showed that all the formulations release the drug within 6 to 7 minutes. The maximum drug release was found in formulation FDT2 (98.747%).

The order of drug release was found to be:

FDT2 > FDT1 > FDT4 > FDT3 > FDT6 > FDT5

CONCLUSION

In the present study mouth dissolving tablets of hydralazine HCl were designed, prepared and evaluated. These tablets can disintegrate or dissolve rapidly once placed into the oral cavity. The feofenadine was analyzed for its organoleptic, physicochemical and spectral (IR, UV) properties. The disintegration properties of tablet were observed as Crospovidone > Ac-Di-Sol > Sodium starch glycolate. On applying zero order and first order dissolution kinetic treatments, it was found that all the prepared tablets followed first order kinetics.

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A STUDY TO ASSESS THE EFFECTIVENESS OF SELF-INSTRUCTIONAL MODULE ON KNOWLEDGE REGARDING SIDE EFFECTS OF CHEMOTHERAPY AMONG STAFF NURSES IN SELECTED HOSPITALS AT BHOPAL

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ABSTRACT

Cancer is a global health challenge characterized by abnormal cell growth and potential metastasis. In India, it claims over 1300 lives daily, making it a significant public health issue. This article provides an overview of cancer statistics and an update on incidence, mortality, and survival rates, projecting data for the year 2009. Various treatment modalities for cancer are explored, emphasizing the need for comprehensive understanding and management.

This study evaluates the effectiveness of a self-instructional module on chemotherapy side effects' knowledge among staff nurses in Bhopal hospitals. The objectives are to assess current knowledge, measure the module's impact, and explore associations with demographic variables. Hypotheses suggest differences in pre-test and post-test knowledge scores and significant associations with demographic variables.

This research employs an evaluative approach with a one-group pretest-posttest design. Data collection utilized a structured questionnaire. Findings will inform nursing practice and enhance chemotherapy knowledge among nurses, contributing to better patient care.

KEYWORD: Cancer, Chemotherapy, Staff Nurses, Knowledge, Self-instructional Module, Effectiveness, Demographic Variables

INTRODUCTION

Cancer, a collective term encompassing a spectrum of diseases characterized by abnormal cell growth and the potential to infiltrate and spread to other regions of the body, presents a global health challenge. Notably, not all tumors are cancerous; certain tumors do not possess the capacity to metastasize. The impact of cancer is particularly pronounced in India. According to the National Cancer Registry Program established by the India Council of Medical Research (ICMR), more than 1300 lives are lost to cancer daily. Alarming, between 2012 and 2014, there was an approximate 6% surge in cancer-related mortality. In 2012 alone, India reported 478,180 cancer-related deaths out of 2,934,314 diagnosed cases.

Background of the Study

Cancer stands as a pervasive and pressing public health concern not only in India but also in the United States and numerous other parts of the world. Within the United States, the impact of cancer is striking, with one in four deaths attributed to this disease. The significance of understanding the intricacies of cancer, from incidence and mortality rates to survival statistics, is paramount. This article delves into a comprehensive overview of cancer statistics, providing updated data on incidence, mortality, and survival rates, as well as projections for the number of new cancer cases and deaths in the year 2009.

In addressing cancer, various treatment modalities come into play. The primary methods encompass surgery, radiation therapy, chemotherapy, immunotherapy, targeted therapy, hormone therapy, stem cell transplantation, and precision medicine. Recognizing the multifaceted nature of this formidable adversary, the study at hand seeks to shed light on the evolving landscape of cancer, its impacts, and the treatment options that are instrumental in the ongoing battle against this complex disease.

STATEMENT OF THE PROBLEM

“A study to assess the effectiveness of self instructional module on knowledge regarding side effects of chemotherapy among staff nurses in selected hospitals at Bhopal”

OBJECTIVES OF THE STUDY

1. To assess the current knowledge of chemotherapy drug side effects among staff nurses in selected Bhopal hospitals.



2. To determine the impact of a self-instructional module on the knowledge of chemotherapy drug side effects among staff nurses.
3. To explore any associations between pre-test knowledge scores on chemotherapy drug side effects and demographic variables among staff nurses.

PROJECT OUTCOME (HYPOTHESIS)

At a significance level of 0.05: H1: There is a significant difference between pre-test and post-test knowledge scores regarding chemotherapy drugs among staff nurses. H2: There is a significant association between pre-test knowledge scores and demographic variables.

DELIMITATIONS

- The study is limited to nursing staff.
- The research focuses on staff nurses in selected hospitals in Bhopal, Madhya Pradesh.
- The sample size is limited to 50 participants.

REVIEW OF LITERATURE

The literature review is a comprehensive and critical analysis of scholarly publications and materials related to the knowledge of chemotherapy and its side effects among staff nurses. The review is organized into three main categories:

1. Studies on staff nurses' knowledge regarding chemotherapy.
2. Studies on the effectiveness of information booklets on chemotherapy.
3. Studies on the effectiveness of various teaching programs on chemotherapy.

RESEARCH METHODOLOGY

Research methodology outlines the approach, design, data collection methods, and ethical considerations of the study. It follows an evaluative approach and employs a one-group pretest-posttest design to assess the effectiveness of the self-instructional module.

RESEARCH APPROACH: The evaluative approach is used to assess staff nurses' knowledge of chemotherapy, with the primary goal of evaluating the module's effectiveness.

RESEARCH DESIGN: The research design is structured to collect and analyze data that combines relevance to the research's purpose with an efficient procedure. A one-group pretest- posttest design is chosen to assess the impact of the self-instructional module on knowledge.

VARIABLES UNDER STUDY

- **Independent Variable:** The independent variable in this study is the "information booklet regarding chemotherapy."
- **Dependent Variable:** The dependent variable in this study is "knowledge regarding chemotherapy."

EXTRANEOUS VARIABLES: Several extraneous variables have been identified, including age, gender, educational status, years of experience, area of experience, previous information regarding chemotherapy, and the source of previous information.

Research Setting: The study was conducted at Hamidia and Jay Prakash Hospital and Research Centre in Bhopal, Madhya Pradesh.

DEVELOPMENT OF THE TOOL

- A structured knowledge questionnaire with multiple-choice questions was developed by the investigator to assess the knowledge of staff nurses regarding chemotherapy.
- The questionnaire was reviewed with inputs from experts to ensure content validity.
- The final draft of the questionnaire was used in the study.

Description of Tool: The questionnaire had two sections:

- Section A: Demographic data
- Section B: Knowledge questionnaire regarding chemotherapy among staff nurses, consisting of 25 items.

RELIABILITY OF THE TOOL

- The reliability of the questionnaire was assessed using the Spearman-Brown split-half method and found to be $r = 0.84$ for the knowledge questionnaire.

PREPARATION OF INFORMATION BOOKLET

- An information booklet on chemotherapy was developed by the investigator, incorporating suggestions from experts.



PILOT STUDY

- A pilot study was conducted at J.P. Hospital with 10 staff nurses to assess feasibility.
- The pilot study involved a pre-test with the knowledge questionnaire, followed by administering the information booklet on the same day.
- On the 3rd day, a post-test using the same questionnaire evaluated the effectiveness of the information booklet.

DATA COLLECTION PROCEDURE

- Permission was obtained from the directors, and data collection was planned according to the convenience of the nurses.
- Data collection occurred from 15/03/2017 to 21/03/2017.
- A pre-test with the knowledge questionnaire was administered, followed by the information booklet.
- The post-test with the same questionnaire was conducted on the following day to evaluate the booklet's effectiveness.

ETHICAL CONSIDERATIONS

- Research objectives were approved by the research ethical committee.
- Permission for the study was obtained from the nursing superintendent of Metro Hospital.
- Informed consent was obtained from the respondents, ensuring confidentiality and the right to withdraw from the study at any point.

In summary, this chapter detailed the research approach, design, population, sample, tools, information booklet development, and data collection procedure. The study employed a pre-experimental design, using pre-tests and post-tests, and data analysis involved statistical tests like the t-test to assess the effectiveness of the information booklet on chemotherapy knowledge among staff nurses.

DATA ANALYSIS AND INTERPRETATION

This chapter focuses on the process of data analysis and the interpretation of findings from the study. Analysis is the systematic organization of data, facilitating the answering of research questions and testing of hypotheses. It is essential for drawing meaningful conclusions from collected data. Interpreting the findings represents the creative and challenging step in research that translates data into valuable insights.

ORGANIZATION OF THE FINDINGS

The findings are structured in a way that aligns with the objectives of the study. The data is categorized into several sections for a systematic presentation:

DATA ON BACKGROUND FACTORS OF STAFF NURSES

- The majority (58%) of staff nurses in the study are in the age group of 20-24 years.
- 20% of staff nurses fall into the age group of 25-29 years.
- 18% of staff nurses are in the age group of 30-34 years.
- 4% of staff nurses are in the age group of >34 years.

This section provides an overview of the age distribution among the staff nurses, which is an important demographic factor. The remaining sections of the data analysis and interpretation chapter would likely follow a similar structure, presenting and analyzing the data in relation to the study's objectives, knowledge regarding chemotherapy, the effectiveness of the information booklet, and the association between knowledge and demographic variables.

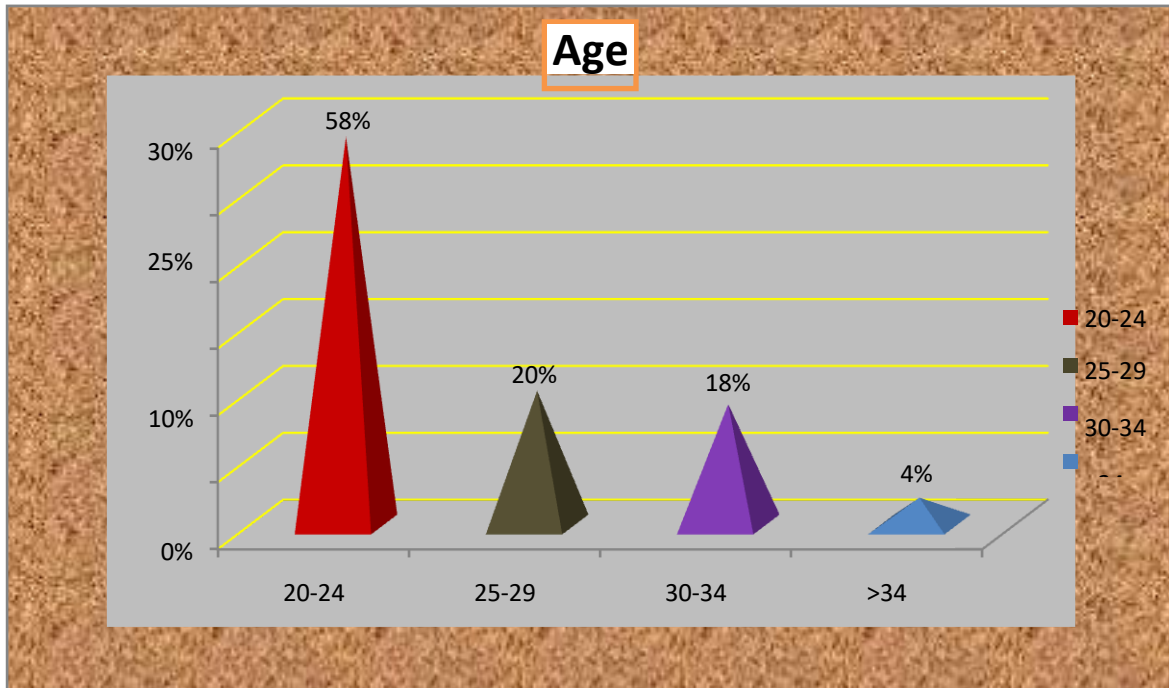
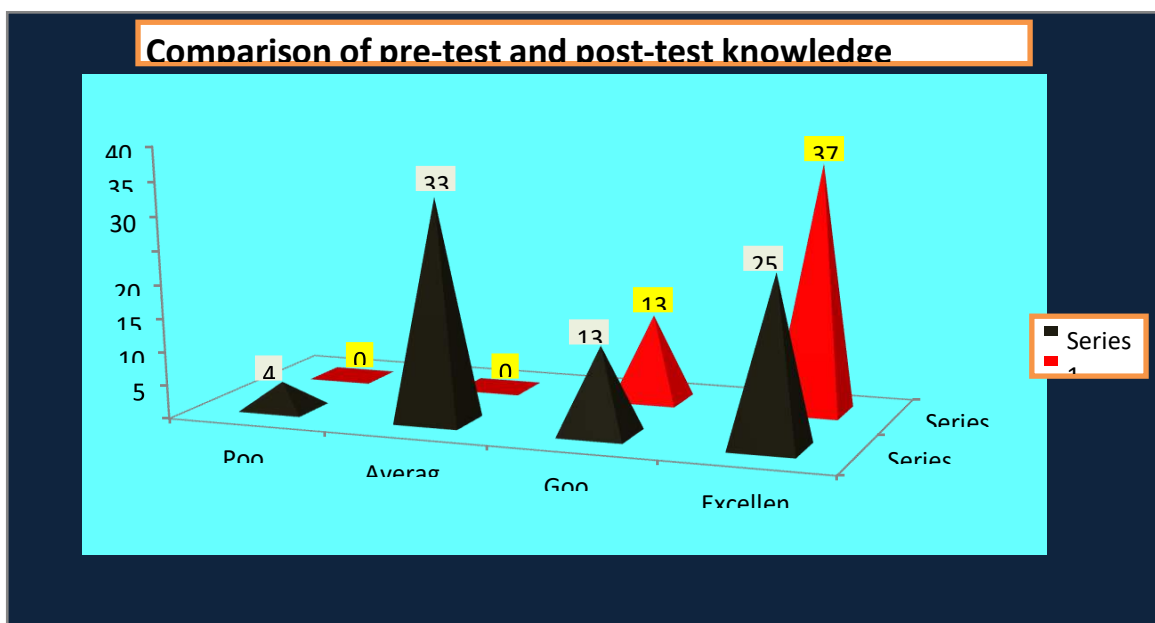


Figure:-1 Pyramid diagram reveals percentage distribution of staff nurses age.

DATA ON PRE-TEST AND POST-TEST KNOWLEDGE

Group	Level of knowledge	Pre -test	Post -test
Staff nurses of JAY PRAKASH hospital Bhopal	Poor (0-6)	4	0
	Average (7-12)	33	0
	Good (13-18)	13	13
	Excellent (19-25)	0	37

Table shows in pre-test 4(8%) staff nurses had poor knowledge, 33(66%) staff nurses had average knowledge and 13(26%) staff nurses had good knowledge. In post-test 13(26%) staff nurses had good knowledge and 37(74%) staff nurses had good knowledge.





DATA ON EFFECTIVENESS OF INFORMATION BOOKLET ON STAFF NURSES.

For the purpose of the study the following null hypothesis was stated.

H01: There is no significant difference between pre-test and post-test knowledge score.

Table : Mean, standard deviation, mean difference, t value regarding pre -test and post-test knowledge among staff nurses. n = 50

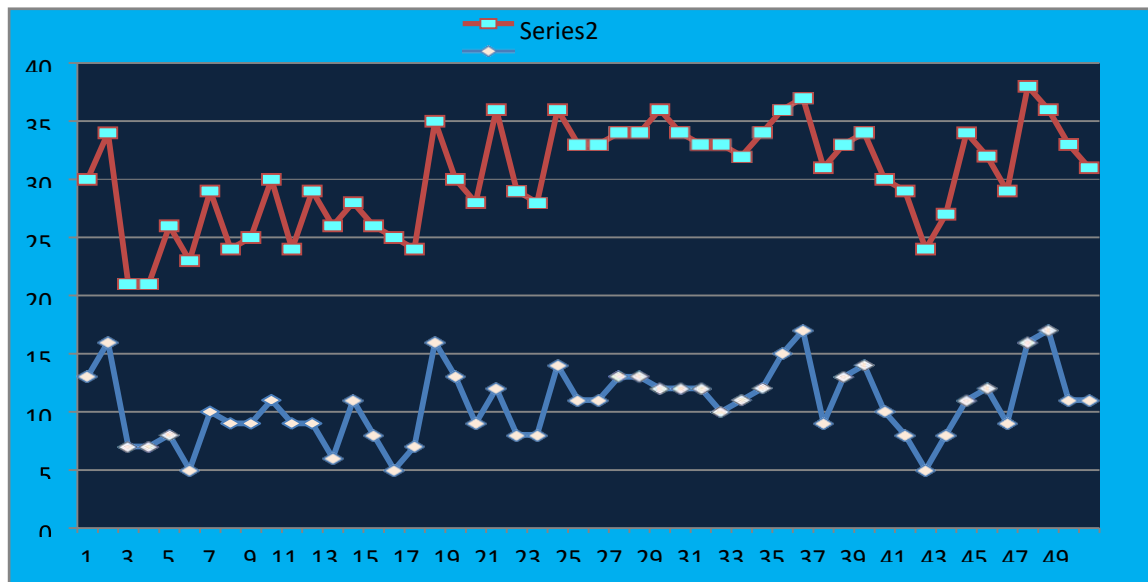
Group	Pre -test		Post-test			Paired t testvalues
	Mean	SD	Mean	SD	MD	
Staff nursesof Hamidiaand Jay prakash hospital	10.7	3.09	19.7	2.39	9	t = -19.4 t table value =49p = 0. 0001 S

S: Significant, SD: standard deviation, MD: mean deviation, level of significance =0.05

The obtained post-test mean value (19.7) was higher than pre -test mean value(10.7). The mean difference value is (9) and the obtained" test value is -19.4 which is found to be greater than the,"t" table value (). Since the obtained t value is not significant at p < 0.05 level therefore null hypothesis is rejected. It is inferred that there is significant difference in knowledge among staff nurses after information booklet on chemotherapy.

Line graph shows post-test scores are higher than pre-test scores regardingchemotherapy among staff nurses.

Figure:-3 Line graph shows overall comparison of pre -test and post-testknowledge



scores among staff nurses.

Data on association between knowledge regarding chemotherapy and demographic variables. at 0.05 level of significance

H02: There is no significant association between pre- test knowledge score and theirdemographic variables.



Table3:- Data on association between pre-test knowledge and demographicvariables. N 50

Sl.No	Demographicvariables	Categories	Total Number	<Median11	>Median	Result
1.	Age	20-24	29	17	12	Chi square=1.940 P=0.585 Df=3 NS
		25-29	10	5	5	
		30-34	9	6	3	
		>34	2	2	0	
2.	Gender	Male	6	4	2	Chi square=0.126 P=0.722 Df=3 NS
		Female	44	26	18	
3.	Education status	G.N.M.	27	15	12	Chi Square=0.six94 P=0.707Df=2 NS
		B.sc	21	14	7	
		Post B.sc	2	1	1	
		M.sc	0	0	0	
4.	Year of experience	< 2 year	26	16	10	Chi square=0.401 P=0.818 Df=2 NS
		2-4 year	16	10	6	
		>4 year	8	4	4	
5.	Area of experience	General ward	13	10	3	Chi Square=1.82SI P=0.11Df=3 NS
		ICU	17	10	7	
		Cancer ward	6	4	2	
		Other ward	14	7	7	
6.	Previous information regarding chemotherapy	Yes	35	18	17	Chi square=1.72 P=0.1 Df=1NS
		No	15	12	3	
7.	Source of previous information	In service education	11	5	6	Chi Square=11.152 P=0.011Df=3 S*
		Mass medias	4	4	0	
		Journals & books	9	6	3	
		Others	11	2	9	

SUMMARY

This study aimed to assess the effectiveness of an information booklet on chemotherapy among staff nurses in HAMIDIA and JAY PRAKASH Hospitals in Bhopal. The research employed a one-group pre-test post-test design with an evaluative approach. Data were collected from 50 participants before and after the booklet's administration.

MAJOR FINDINGS

1. The mean pretest knowledge score was 10.7, while the mean post-test score was 19.7. This indicates a substantial increase in knowledge after the administration of the information booklet.
2. The mean difference between pretest and post-test scores was 9, further underscoring the positive impact of the booklet.
3. The t-test value, which was -19.4, was not statistically significant at the 0.05 significance level. This suggests that the intervention was effective in improving knowledge.
4. An analysis of the association between pretest knowledge and various background variables showed that, with the exception of the sources of previous information, there was no significant association. The chi-square value for sources of previous information was 11.152, with a p-value of 0.0109, which is less than 0.05. Therefore, the alternative hypothesis was accepted, indicating a significant association between this variable and knowledge.

In conclusion, the information booklet on chemotherapy was effective in enhancing the knowledge of staff nurses. The study also highlighted the importance of the source of previous information in influencing knowledge levels among caregivers



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EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON MOTHERS' KNOWLEDGE TOWARDS THE PREVENTION AND HOME-BASED MANAGEMENT OF DIARRHEAL DISEASE AMONG UNDER-FIVE CHILDREN IN RURAL COMMUNITY IN REWA, MADHYA PRADESH

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ABSTRACT

Under-five age group is one of the vulnerable age group for developing the infectious disease . Globally, diarrhoea is the second most common cause of morbidity and mortality among them, following acute respiratory infection, and is also an important cause of malnutrition (WHO- 2 005) .Diarrhoea continues to plague the developing world resulting in more than 3 million deaths annually (WHO) 2008. Diarrhoeal infections are the fifth leading cause of death worldwide and continue to take a high toll on child health. The Government of India through its National CDD programme (Diarrhoeal Disease Control Programme) planned to reduce the infant mortality rate from 95 to 50 and pre-school mortality from 41.2 to 10 per 1000 by the year 2000 A.D.in India, National diarrhoea control program (CDD) was implemented from 1980 as a part of Sixth Five Year Plan (1980-85) with the primary thrust of improving the knowledge and practices of appropriate case management among caretakers and health care providers and primary objective of preventing deaths due to dehydration.

KEYWORDS: *Diarrheal disease, Under-five children, Structured teaching program, Rural communities, Mother's knowledge, Prevention and home-based management*

INTRODUCTION

The under-five age group is particularly vulnerable to infectious diseases, with diarrhoea ranking as the second most common cause of morbidity and mortality, following acute respiratory infections. This prevalent condition also plays a significant role in malnutrition, further exacerbating the health challenges faced by young children (WHO-2005). Despite medical advancements, diarrhoea continues to pose a considerable threat in the developing world, leading to more than three million deaths each year (WHO-2008). Diarrhoeal infections hold the unfortunate distinction of being the fifth leading cause of death globally, with children being disproportionately affected. Recognizing the critical need to address this issue, the Government of India initiated the National CDD programme (Diarrhoeal Disease Control Programme) with the goal of reducing infant mortality rates from 95 to 50 and pre-school mortality from 41.2 to 10 per 1000 by the year 2000.

In India, the National Diarrhoea Control Program (CDD) was introduced in 1980 as part of the Sixth Five-Year Plan (1980-85). Its primary focus was to enhance knowledge and encourage appropriate case management practices among caregivers and healthcare providers. The primary objective was to prevent deaths caused by dehydration due to diarrhoea

PROBLEM STATEMENT

“Effectiveness of structured teaching programme on mothers’ knowledge towards the prevention and home-based management of diarrheal disease among under-five children in rural community in Rewa, Madhya Pradesh.”



OBJECTIVES

- To assess the knowledge on management of diarrhoea disease among the mothers of under children.
- To evaluate the effectiveness of teaching programme on management of diarrhoea among the mothers of under five children in pre-test and post-test.
- To associate between the level of knowledge on management of diarrhoea among the mothers of under five children with selected demographic variables.

HYPOTHESIS

- ❖ H1: There is a significant difference between pre and post test level of knowledge, of mothers regarding prevention and home-based management of diarrhoeal disease among under-five children before and after structured teaching programme.
- ❖ H2: There is a significant association of selected demographic variables and health related variables with pre and post test level of knowledge, practice and attitude regarding prevention and home-based management of diarrhoeal disease among under-five children.

ASSUMPTION

- ❖ Mother will have inadequate knowledge about management of diarrhoea.
- ❖ Teaching programme will enrich mother's knowledge in management of diarrhoea.
- ❖ Knowledge regarding management of diarrhoea will help to prevent the incidence of diarrhoea

CONCEPTUAL FRAMEWORK

The study is based on modified Pender's Health promotion model (1984). The study seeks to increase on individual level of wellbeing. The model focuses on aspects to individual cognitive perception factors, and participation on health promoting behaviours.

In this modified model the community nurse interacts to assess the level of knowledge on management of diarrhoea among the mothers of under five children.

MAJOR FINDING OF THE STUDY

- ❖ It is seen that among 60 mothers, 4(7%) were the age group of b/w (18-21) years. 23(38%) were between the age group of (21-24 years), 27 (45%) were the age group of 24-27 year, 6(10%) were between the age group of above 27 years.
- ❖ Regarding family type, out of 60 mothers, 18(30%) had nuclear family, 42(70%) belong to joint family.
- ❖ Occupation being next factor 58(97%) of them were home maker, 2(3%) of them were government employed and none of them was private employee.
- ❖ Regarding educational status, out of 60 mothers 18(30%) had primary education, 28(47%) had secondary education, 5(8%) had graduation and 9 (15%) was illiterate.
- ❖ Family income helps to find out of the economic status of the mothers. Among 60 mothers, 19(32%) of them had less than 3000 rupees, 26(43%) between 3001-4000 rupees, 10(17%) of them between 4001-5000 rupees and 5(8%) of them above 5000 rupees.
- ❖ Regarding type of house, out 60 mothers 28(47%) were having kutcha house, and 32(53%) were having concrete house.
- ❖ Source of water being next factor, 7(12%) of them were using well water, 11(11%) were using tap water and 42(70%) them were using hand pump.
- ❖ Regarding number of children in the family, 19(32%) had one child, 28(47%) of them had two children, 9(15%) had three children and 4(7%) of them had above three children.
- ❖ Regarding solid waste disposal, 3(5%) of them were disposing the waste in waste bin, 57(95%) of them were disposing the waste in open field.
- ❖ Next factor concerned with disposal of human excreta, 38(63%) used only open field and 22(37%) used sanitary latrine

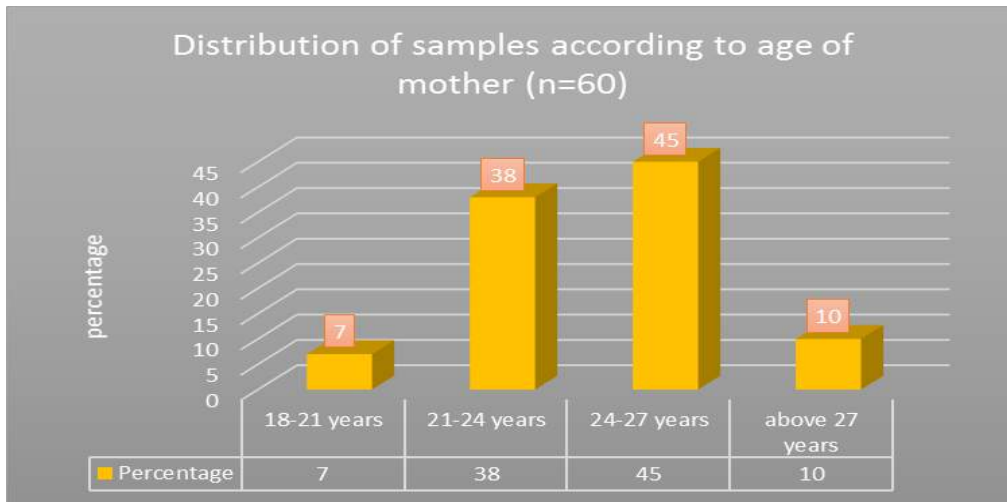


Figure 1 : bar diagram showing Distribution of samples according to age of mother (n=60)

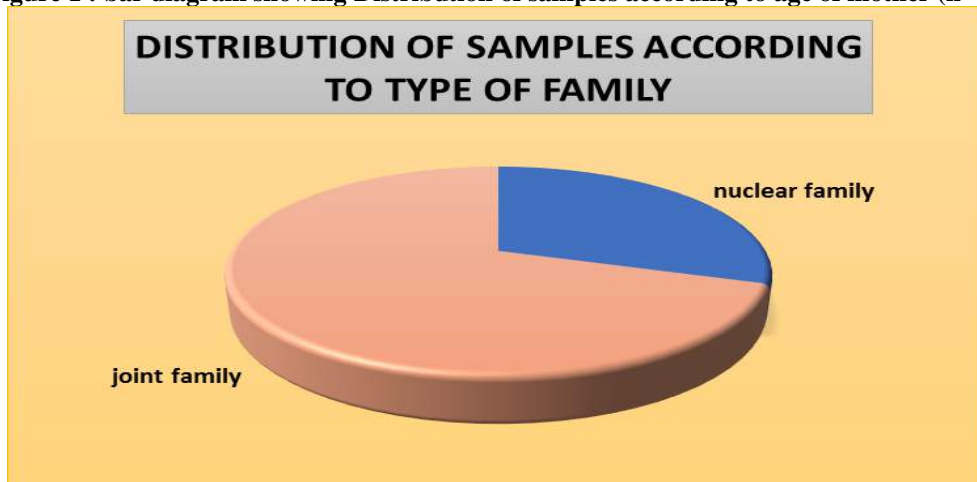


Figure 2 : Pie diagram showing Distribution of samples according to type of family (n=60)

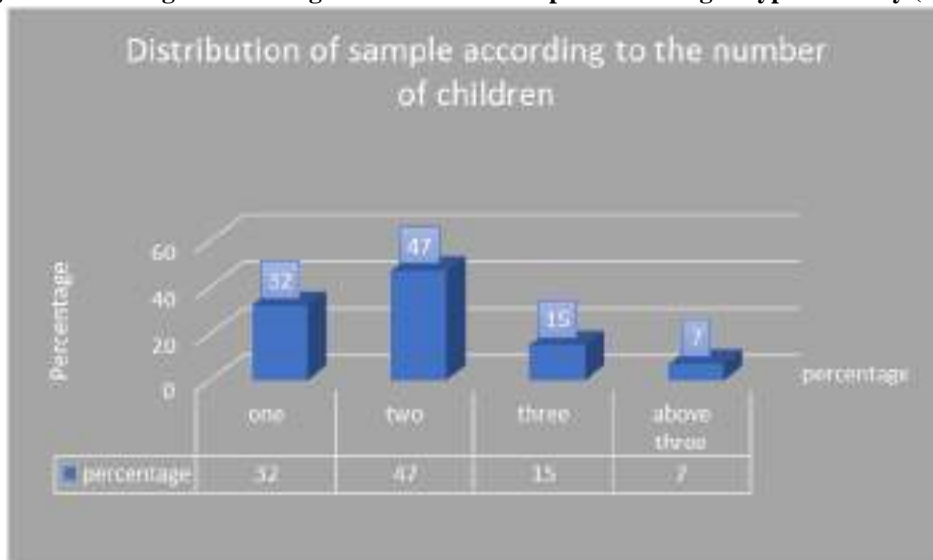


Figure 3 : Bar diagram showing Distribution of samples according number of children (n=60)



FINDING RELATED TO THE PRE INTERVENTIONAL LEVEL OF KNOWLEDGE SCORE

Pre interventional level of knowledge, 62% mothers had inadequate knowledge, 38% of the mothers had moderately adequate knowledge. The mean value in the pre interventional scores of the mothers of the under five children was 15.76 and the standard deviation was 3.65.

FINDING RELATED TO THE POST-INTERVENTIONAL LEVEL OF KNOWLEDGE SCORE.

The post-interventional level of knowledge score 78% have moderately adequate knowledge .22% had acquired adequate knowledge and no one had inadequate knowledge.

The mean value in the post interventional scores the mothers of under five children was 24.98 and the standard deviation was 3.82.

The mean post intervention knowledge score (24.98) (S.D 3.82) is apparently higher than the pre-intervention knowledge score (15.76) (S.D.3.65) which reveals that there was increase in knowledge level among mothers of under five children regarding prevention and home-based management of diarrheal disease among under-five children.

IMPLICATIONS OF THE STUDY

The study gives knowledge among Nurses in identifying the problem and complaints at an early stage, nurses have major role in any health care setting. So, Nurses should through knowledge about the assessment of dehydration, fluid calculation and should take up the important role of education and reinforcing the parents, family members, care takers about importance of knowledge on management of diarrhoea.

The implication of study can be seen in areas nursing practice, nursing education, Nursing administration, and Nursing research.

NURSING PRACTICE

The important role of nurses is to provide care and comfort to carry out specific Nursing function, the planned teaching programme, are to be scheduled in the community set up in fixed date, time for the mothers and care taker (Or) family members

The study implies that nurse should help the mothers to regain knowledge through teaching programme, although teaching skill that promote knowledge about management of diarrhoea which are important to mothers of under five children. It indicates the need for change that has to be introduced by nursing professional.

Before nurses can utilize, they practice they needed to have strong foundation in terms of education, not only as a role of student but also give importance to the newly appointed auxiliary Nurses, Midwife, Multipurpose Health Worker and village health workers who have close contact with the rural population.

- Orientation programme for new staff to acquire the concept and management of diarrhoea
- The present trend in health care delivery system emphasizes on preventive as well as curative measures.
- Updating the knowledge of Auxillary Nurse Midwife, Multipurpose health worker by proper and relevant in-service education about knowledge programme, refreshment course, workshop and seminar, emphasizing diarrhoea management.

NURSING ADMINISTRATOR

- Nurse administrators play an important role in plan and organize continuing nursing education programme for nursing personnel and motivate them in conducting programme on management of diarrhoea and it will be beneficial to community.
 - Nurse administrators can promote efficient team work, plan for manpower, money, material and methods to conduct education programme.
1. Finding of the study help nurse administrator to allocate resources to do further studies in nursing care of under five children with diarrhoea. It may include all ancillary personnel who provide supportive patient care services.
 2. The study finding will serve as a background for further study regarding management of diarrhoea among the mothers of under five children.
 3. The study gives knowledge among Nurses in identifying the problem and complication regarding diarrhoea.

NURSING EDUCATION

The study emphasizes on the encouragement of the staff Nurse to undergo continuing nursing programme, specialized courses (or) training regarding the care of diarrhoea to update their Knowledge. The leader in nursing care confronted to undertake the health needs



of the most vulnerable by effective organization and management. The nurse administrator should take active part in health policy, developing protocol, procedure and standing orders related to cure of diarrhoea.

- The nurse educator, whenever plan to provide instruction regarding care of under five years children with diarrhoea should provide opportunity to develop skill and attitude in handling the children with diarrhoea.
- The nursing educator can prepare the student to utilize teaching according to needs community. Nursing Administrator can arrange a mass health education programme to public to create Knowledge regarding prevention and management of diarrhoea.

NURSING RESEARCH

The present study provides scope for further study for further study for future researchers. Usage of research finding should become a part of the quality assurance evaluation to enhance individual performance as a whole.

RECOMMENDATIONS

Based on the research finding the following recommendations can be made.

- Similar study can be done with larger number of samples.
- A comparative study can be conducted between urban and rural community.
- A similar study can be carried out using different teaching strategies.

CONCLUSION

In pre-test, level of knowledge on mothers of under five children showed that 62% mothers had inadequate knowledge, 38% mothers had moderately adequate knowledge and none of mother had adequate knowledge. In post-test evaluation showed that 78% of mother had moderately adequate knowledge, 22% of mother had adequate knowledge and none of the mothers had inadequate knowledge. There was statistically $P < 0.05$ significant improvement in knowledge could be found in relation effectiveness of teaching programme.

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A COMPARATIVE STUDY OF EMOTIONAL MATURITY OF PROSPECTIVE TEACHERS IN RELATION TO GENDER AND LOCALITY

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ABSTRACT

The emotional development of prospective teachers has been examined in the current article in connection to gender and location. The "descriptive survey" research methodology was employed. Being emotionally mature is an important quality for those who want to become teachers since it has a big impact on how effective they are in the classroom and on the learning environment as a whole. In this comparison study, gender and location are two important demographic factors that will be used to analyse the emotional maturity of prospective teachers. The study's population consisted of prospective instructors in the Sonipat area, and 120 prospective teachers were chosen at random. By examining these elements, we hope to learn more about how emotionally prepared future educators are as well as any prospective differences in emotional maturity across different groups. Singh and Bhargava's (2005) "Emotional Maturity Scale" was utilized to gather the data. Data analysis techniques include the use of the mean, S.D. and t-test. The study's findings indicate that there are no appreciable genders or geographic differences in the emotional maturity of prospective teachers.

KEYWORDS: Emotional Maturity, Prospective Teachers, gender and locality

INTRODUCTION

We are aware of the significance of emotion in education because it influences attention, which influences learning and memory. However, because we don't fully comprehend our emotional system, we don't know how to control it in college beyond categorizing excessive or insufficient feeling as inappropriate behavior. Rarely have we successfully brought emotion into the curriculum and the classroom. Additionally, our profession has not adequately addressed the crucial link between a mentally and emotionally stimulating learning environment and both staff and students' general well-being. The mysteries of how and where our body and brain process emotion are being revealed by recent advancements in the cognitive sciences. This novel blending of emotion biology and psychology promises to offer significant educational implications. Research and theory on emotions today raise more questions than they do answers. Nevertheless, educators should gain a fundamental understanding of the psychobiology of emotion so they can assess novel instructional applications.

EMOTIONAL MATURITY

The magical word of emotion is what gives human life its dynamic quality and turns him into a multi coloured shell on the coast of civilization. The word "emotion" comes from the Latin verb "remover," which meant to stir up or move out. A condition that is stirred up and involves both internal and outward changes in the body is called emotional. Humans naturally experience emotions, and we can all remember times when we were happy, excited, or afraid.

Different people exhibit their emotions in different ways and to varying degrees of awareness of their sentiments. When we are experiencing intense emotion, we may act immaturity or act like a child who is not getting what they want. When we refer to someone as "mature," we are describing their adult-like characteristics. This has essentially evolved into the reverse of the word "childish." Being mature means understanding how the world functions from experience and having made the necessary adjustments. A mature person won't attack someone they disagree with or cry when they don't get what they want, unlike a toddler. To have emotionally maturity, then is to have a specific control over one's emotion. An emotionally mature person has experienced the spectrum of emotions, understands the consequences of each, and knows what kinds of things sets of different emotion in them, and they know, how to identify each emotion clearly. They don't fall in to a panic trying to determine what they feel, and how they should react. They know, and they manage themselves accordingly.



One of the things that stand in most people’s way from reaching emotionally maturity is learning how to deal with stress.

SIGNIFICANCE OF THE STUDY

The capacity to comprehend and control one's emotions is known as emotional maturity. In addition to being crucial for problem-solving and character assessment, it also aids in regulating an individual's development. Teachers must have the necessary training to work in the world's schools and educational institutions, which are now seeing the fastest growth. How can a teacher help a pupil develop harmoniously if they themselves do not comprehend emotional maturity? Since the teacher serves as a role model for their pupils, the pupils are also impacted directly or indirectly by the teacher's working methods and performance. A healthy person must be emotionally developed; full physical development alone cannot define this. As a result, there is a necessity to carry out this investigation.

LITERATURE REVIEW

Ditto [2009] studied emotional maturity of the student-teacher and effectiveness of the intervention program and found that all the cases have shown decrease in emotional immaturity. Although the difference in pre-test and post-test is not constant in all the cases there is difference in all the cases pre and post invention. **Mahmoudi [2012]** carried out a study on “Emotional maturity and Adjustment level of college students” and high positive correlation was obtained between emotional maturity and overall adjustment. **Subbarayan and Vishvanath [2011]** in their study on “A study on emotional maturity of college students” found that the emotional maturity of college students is extremely unstable.

OBJECTIVES OF THE STUDY

1. To Compare Emotional Maturity of prospective teachers in relation to male and female.
2. To compare Emotional Maturity of prospective teachers in relation to urban and rural.

HYPOTHESIS OF THE STUDY

1. There is no significant difference in the Emotional Maturity of prospective teacher in relation to male and female.
2. There is no significant difference in the Emotional Maturity of prospective teachers in relation to urban and rural.

METHODOLOGY

The investigator has adopted **Descriptive Survey Method** to collect the data from the students. Therefore, after scoring data, mean, S.D, t-test were employed as statistical techniques in the present study.

DEPENDENT VARIABLE

Emotional Maturity of prospective teacher

INDEPENDENT VARIABLE

Gender and Locality

TOOL USED

Emotional maturity scale [EMS] by Singh and Baraga [2010]

DATA ANALYSIS AND INTERPRETATION

Collected data was subjected to statistical analysis. Mean, SD, t-test of significance and were calculated. Analysis of the data was taken objective wise:

Hypothesis 1: There is no significant difference in the emotional maturity of prospective teachers in relation to male and female.

Table 1:

Variable	Group	N	Mean	S.D	‘t’ value
Emotional Maturity	Male	100	60	15	0.71
	Female	100	61.5	14.9	

The observation of Table- 1 indicates that the mean score of Emotional Maturity of male prospective teachers is 60 with S.D is 15 the mean score of Emotional Maturity of female prospective teacher is 61.5 with S.D 14.9. The t-value comes out to be 0.71 which is not significant even at 0.05 level of significant so, it can be concluded that there is no significant difference between male and female prospective. Teachers in context to Emotional Maturity are this sample. Thus Hypothesis No. [1] stating that “**there is no significant difference between male and female prospective teachers in relation to Emotional Maturity**” is accepted.



Hypothesis 2: There is no significant difference in the emotional maturity of prospective teachers in relation to Urban to Rural.

Table 2:

Variable	Group	N	Mean	S.D	't' value
Emotional Maturity	Urban	100	77.45	7.42	0.568
	Rural	100	76.60	6.90	

The observation of Table-2 indicates that the mean score of Emotional Maturity of urban prospective teachers is 77.45 with S.D is 7.42 the mean score of Emotional Maturity of rural prospective teachers is 76.60 with S.D 6.90. The t-value comes out to be 0.568 which is not significant even at 0.05 level of significant so, it can be concluded that there is no significant difference between urban and rural prospective. Teachers in context to Emotional Maturity is this sample. Thus Hypothesis No. [2] stating that “**there is no significant difference between urban and rural prospective teachers in relation to Emotional Maturity**” is accepted.

RESULT AND DISCUSSION

The study is concluded that there is no significant difference of emotional maturity of prospective teachers between gender and locality. It means that different level of emotional maturity (mature or immature) of prospective teachers does not necessarily determine their gender and locality. Here the null hypothesis was accepted at the both level of significance (0.5% and 0.01%). However, there is some more evidence that supports the findings of the current study in terms of emotional maturity of prospective teachers in urban and rural area. A study conducted by J. Jyoti (2018) found that there is no significant interaction effect of gender and locality of the teachers on emotional maturity is found, which is nearest to the finding of the research in hand. But Parumal & Rajaguru (2015) found no significant differences between the male and female students teachers in their emotional level irrespective of their level of locality. Also, they found no significant differences in rural and urban students teachers in their emotional level irrespective of their level of gender.

CONCLUSION

The emotional development of prospective teachers has been examined in the current article in connection to gender and location. The "descriptive survey" research methodology was employed. The study's population consisted of prospective instructors in the Sonipat area, and 120 prospective teachers were chosen at random. By examining these elements, we hope to learn more about how emotionally prepared future educators are as well as any prospective differences in emotional maturity across different groups. Singh and Bhargava's (2005) "Emotional Maturity Scale" was utilized to gather the data. Data analysis techniques include the use of the mean, S.D. and t-test. The study's findings indicate that there are no appreciable genders or geographic differences in the emotional maturity of prospective teachers.

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AHA (AT-HOME ASSESSMENT) APPROACH: USING AUTHENTIC ASSESSMENT AS PERFORMANCE TASKS IN ARALING PANLIPUNAN 10

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ABSTRACT

This action research focused on the challenges of assessing student in printed modular distance learning. The main challenges identified by the teacher in assessment were dishonesty in answering the modules and commitment of students to submit output. To be able to minimize this, preparing varied authentic assessment might be the best approach. It may be good if the teacher can present activities that will fit the students' abilities so that they are encouraged to give their own answers. The researcher used one rubric appropriate in all types of authentic assessment. The researcher utilized one – group pretest and posttest research design. Forty (40) Grade 10 students were purposively selected by the researcher to be the respondents of the study. The students were given a hard copy of the work text that contains seven (7) activities focusing on the topics covered in the 3rd quarter. A paired T – test was used to determine whether there is a significant difference between the pretest and posttest scores of the students. Result of the study showed that there is a significant difference in the problem-solving skills of the students after using AHA (At-Home Assessment) Approach. The researcher recommended that AHA (At-Home Assessment) Approach be used as an instructional intervention in improving the performance skills among the Grade 10 students.

KEYWORDS: *at-home assessment approach, authentic assessment, performance task*

INTRODUCTION

The English term 'authentic' is often associated with words as real, actual, original, and reliable. The term "authentic assessment" was first coined in 1989 by Grant Wiggins in K–12 educational contexts. According to Wiggins (1989, p. 703), authentic assessment is "a true test" of intellectual achievement or ability because it requires students to demonstrate their deep understanding, higher-order thinking, and complex problem solving through the performance of exemplary tasks.

Authentic assessment is considered to be a new approach in assessment. This approach associates learning with real and complicated situations and contexts (Olfos & Zulanta, 2007). It is an assessment based on student practices in which real world performances are repeated (Svinicki, 2004). According to Eby (1998), authentic assessment is a task that mostly enables students to use their cognitive processes besides showing them what they have learnt and what they do. Authentic assessments refer to assessments wherein students are asked to perform real-world tasks that demonstrate meaningful application of what they have learned. It is believed that authentic assessment provides students many alternatives/ways to demonstrate best what they have learned; offers a wide array of interesting and challenging assessment activities.

The COVID-19 pandemic has brought challenges in all sectors and education is no exception. As what DepEd Secretary Leonor Briones said, "Education cannot wait,". And to maintain the education of millions of Filipino students, the government implemented a distance learning approach. Distance learning is a form of education where there is little or no face-to-face interaction between students and their instructors.

This type of modality has three categories. In which, one of the highly convenient for most of the typical Filipino students is the Modular Distance Learning (MDL). The MDL, which is for learners who do not have internet connectivity, consists of three modules and one of them is the Printed or Digital Modules (PDM) in which Mamplasan National High School is using as a learning modality in general. In PDM, modules are delivered to the homes of learners or picked up by their parents or guardians at designated places within coordinated schedules. Printed modules refer to learning packets (work sheets, activity sheets, self-learning materials)

But how is the assessment in this type of learning modality? The truth is assessment is a critical step in the learning process. It determines whether or not the learning objectives have been met.

Based on a survey the researcher conducted with her co -teachers in Social Studies, they all agreed that it is difficult if the teacher will just base the student's grade at the self-learning module itself. In their experience with checking of submitted work of students in first grading period, they noticed that there are students who mostly just copied their answers to their classmates, students do not become honest in answering the test. According to them, students are not that serious about answering questions in the activities and some answers are too shallow. This is probably due to their lack of ability to answer tasks. It may be good if the teacher can present activities that fit the students' abilities so that they are encouraged to give their own answers.



OBJECTIVES

This study will be deemed important in improving the academic performance of the Grade 10 students through varied authentic assessment.

This research intended to use varied authentic assessments as performance tasks in improving the academic performance of Grade 10 students in Araling Panlipunan at Mamplasan National High School for the school year 2020-2021.

Specifically, it sought answers to the following questions:

1. What are the performance tasks mean scores of the students in:
 - 1.1 experimental group; and
 - 1.2 control group?
2. Is there any significant difference between the mean scores of the two groups after using varied authentic assessments?
3. the significant effect of differentiated instruction on the students' performance in terms of their pre-test and post-test.

SAMPLING DESIGN

The purposive type of sampling technique was utilized for this study. This sampling technique is appropriate for the conduct of this research as the researcher was also the teacher who handled the two groups to be used as the respondents. The effectiveness of the proposal was more keenly observed as the researcher had the first-hand experience with the process.

RESEARCH DESIGN

This research utilized both quantitative and qualitative method to determine the effectiveness of the proposed pedagogical tool After collecting the data, the researcher will analyze them by using statistical analysis. The researcher will record the result of the pretest and posttest and will be subjected to appropriate statistical treatment.

STATISTICAL DESIGN

To analyze and complete the data needed, statistical procedures was used in the study. To solve the mean score of both pretest and posttest, the Average Weighted Mean (AWM) was used through Microsoft Excel and to check the significance difference of the Performance Task scores of the students after using authentic assessment, the t – test was used with the help of the computer software Statistical Package for Social Sciences (SPSS).

RESULTS

After the thorough analysis, the following results are discussed below:

Group		Mean	Mean Difference
Experimental	Pretest	14.30	4.75
	Posttest	19.05	
Controlled	Pretest	13.62	3.43
	Posttest	17.05	

The table revealed the performance tasks mean scores of the students in experimental and controlled group. The experimental group was able to get a mean score of 4.75 while the controlled group got a mean score of 3.43.

Based on the given mean difference, it can be concluded that the students in experimental group significantly improved after the used of varied authentic assessment.

		Mean	Mean Difference	t - value	Verbal Interpretation
Posttest result	Experimental	19.05	2	7.608	Significant
	Controlled	17.05			

The students in experimental group were able to get a mean score of 19.05 in the posttest result while the students in the controlled group got a mean score of 17.05. The mean difference of 2 showed that there was an increase in the performance of the select Grade 10 students after they answered the varied authentic assessment.

CONCLUSION

It was concluded that there was an increase in the performance of the select Grade 10 students after they answered the AHA (At-Home Assessment) Approach: Using Authentic Assessment.

And there is significant difference the mean scores of the two group after using varied authentic assessment..

AREAS FOR FURTHER RESEARCH

It is recommended especially now that our school is adapting the modular print learning modality. Make used of authentic assessment in order to avoid dishonesty in answering activities and encouraged them to submit their output religiously. Future researchers may conduct similar studies about the use varied authentic assessment in improving performance skill of the students not just in Araling Panlipunan but in other subjects too and to use other variables aside from those considered in this study.

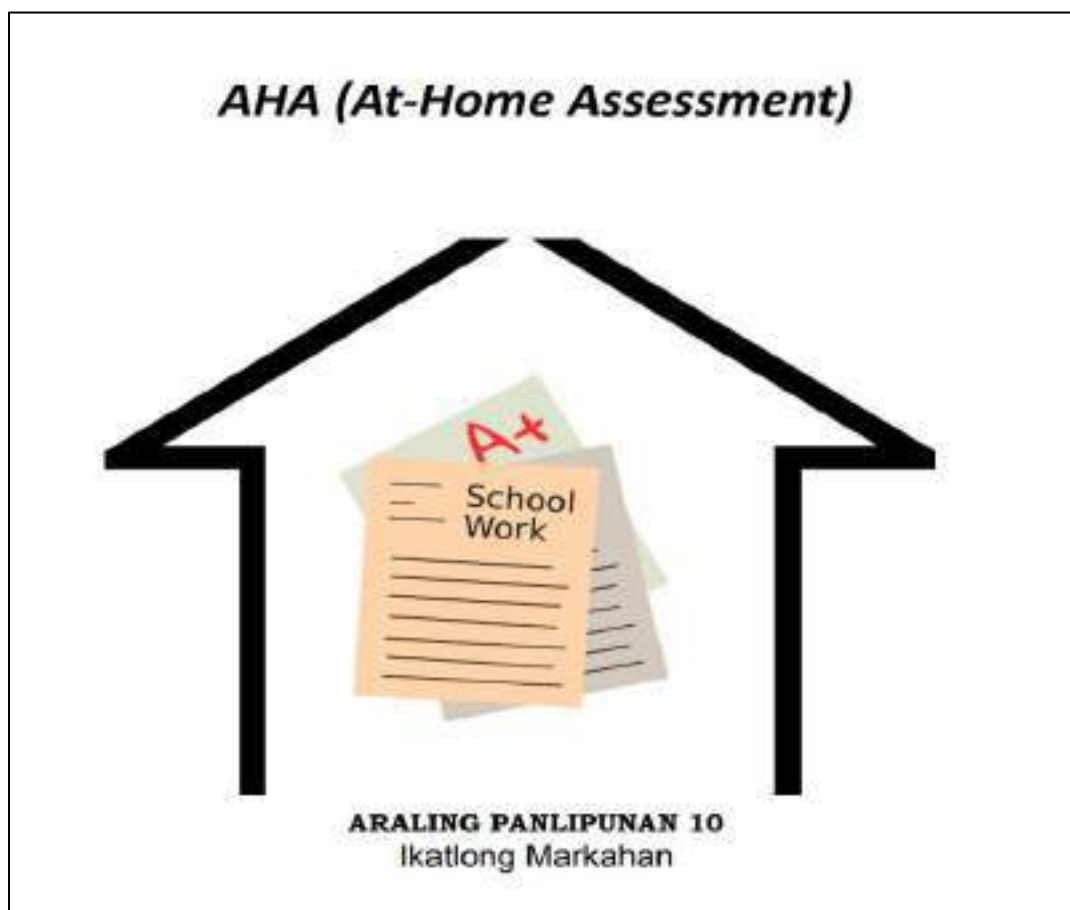


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APPENDIX SAMPLE MATERIAL





MODYUL 3: MGA ISYU AT HAMONG PANGKASARIAN

Pinakamahalagang Kasanayang Pampagkatuto (MELC)	(12) [Nasusuri ang mga uri ng kasarian gender] at sex
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BALIKAN:

- Nalaman mo na magkaiba ang kahulugan ng gender at sex. Ang **sex** ay tumutukoy sa kasarian – kung lalaki o babae. Ito rin ay maaaring tumukoy sa gawain ng babae at lalaki na ang layunin ay reproduksiyon ng tao. Samantalang ang **gender** naman ay tumutukoy sa mga panlipunang gampanin, kilos, at gawain na itinatakda ng lipunan para sa mga babae at lalaki.
- Ipinaliwanag din na ang salitang **oryentasyong sekswal (sexual orientation)** ay tumutukoy sa iyong pagpili ng iyong makakatalik, kung siya ay lalaki o babae o pareho. Ang oryentasyong sekswal ay maaaring maiuri bilang heterosekswal, homosekswal, at bisekswal. Bukod sa lalaki at babae, may tinatawag tayo sa kasalukuyan na lesbian, gay, bisexual, at transgender o mas kilala bilang LGBT.
- Ang **pagkakakilanlang pangkasarian (gender identity)** ay kinikilala bilang malalim na damdamin at personal na karanasang pangkasarian ng isang tao, na maaaring nakatugma o hindi nakatugma sa sex niya nang siya’y ipanganak, kabilang ang personal na pagtuturing niya sa sariling katawan (na maaaring mauwi, kung malayang pinipili, sa pagbabago ng anyo o kung ano ang gagawin sa katawan sa pamamagitan ng pagpapaopera, gamot, o iba pang paraan) at iba pang ekspresyon ng kasarian, kasama na ang pananamit, pagsasalita, at pagkilos.

AHA I-AKO ITO!

PANUTO :Kilalanin ang sarili.Punan ng angkop na mga impormasyon.Maging matapat sa pagsasagot.

Ako ay isang _____ (sex)

Bilang isang _____ (sex) taglay ko ang mga sumusunod na katangian:

-
-
-
-

(maaaring dagdagan)

At bilang isang _____ may mga gampanin ako na naisasabuhay na aking ipinagmamalaki tulad ng mga sumusunod:

-
-
-
-

(maaaring dagdagan)



AHA 4-USAPANG PAMPAMILYAI

Panuto:Pasagutan sa miyembro ng inyong pamilya ang mga sumusunod na tanong.Ang mga tanong na ito ay tungkol sa diskriminasyon at karahasan.Maging magalang sa pagtatanong lalo na sa nakakatanda sa iyo.

A.PARA SA MAGULANG

1. Paano po ninyo itinuturo o isinasabuhay ang kawalan ng diskriminasyon at karahasan sa inyong asawa at inyong mga anak ?

2. May anak po ba kayo na nabibilang sa LGBT?Ano po ang inyong pananaw tungkol sa LGBT?



HIGHER EDUCATION SYSTEM OF MEKONG-GANGA COOPERATION COUNTRIES: A COMPARISON

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ABSTRACT

This paper compares the higher education systems of Mekong-Ganga Cooperation countries based on global competitiveness indicators. It highlights India's current status and suggests suggestions to make its higher education system more competitive. The study uses a qualitative approach and comparative research method to analyze data and make recommendations for improving India's higher education system. All six nations have begun reforming their higher education systems in the 21st century, but lack quality assurance bodies. India and Thailand have experienced faster quality change, while Myanmar ranks lower. To improve, India should adopt Cambodian PAIs, Thailand's apex body, and Vietnam's removing of line ministry system.

KEYWORDS: Higher Education, Mekong-Ganga Cooperation, Comparative analysis.

INTRODUCTION

Higher education plays a crucial role in sustainable social and economic development, with a massive scope for knowledge application and endless pursuit of knowledge. It is often recognized as the driving force of a country, playing a major role in the economy. International education is increasingly welcomed in the world today, with primary and secondary schools gradually turning into international schools. This concept has found presence even in regional areas within education, as primary and secondary schools are gradually turning into international schools.

The Mekong-Ganga Cooperation, established in 2000, is a multidimensional organization of an international standard that collaborates six countries for the development of international relations and mutual growth. The cooperation focuses on four main aspects: Tourism, Culture, Education, and Transport and Communication. The rivers Mekong and Ganges are major civilization rivers flowing through these countries, and they share a linkage in their cultural and commercial aspects.

This research paper is a comparative study analysing the various aspects of higher education in India and other Mekong-Ganga countries, focusing on the state of higher education in India compared to other member countries. The study also highlights the strengths and weaknesses of Indian higher education and provides an image of the higher education system based on the Global Competitive Index.

DESIGN OF THE STUDY

The paper has been broken down into several sections and then discussed to give it a proper shape. In Section 1, the objectives and the methodology of the research paper have been clearly stated. Section 2 is divided into 3 sub-sections. The first sub-section is connected to the concept of Participation in Education and it shows the Government Expenditure in education and the Gross Enrolment of the countries. The second sub-section reveals the ranks of the countries of global competitiveness in terms of higher education and training, the stages of development and in terms of Human Development Index. Third sub-section is about presenting a picture of outbound and inbound mobility of students. Section 3 states the findings of the research work and recommends the suggestions. The section 4 is the Annexure section where there are tables which are made out of the data to make the comparative study between the countries. And the last section provides the References that have been taken help of to make the research work.

SECTION 1

Objectives

1. To compare the state of Higher Education scene of India with that of the other 5 member countries of Mekong-Ganga Cooperation i.e., Cambodia, Lao PDR, Myanmar, Thailand and Vietnam.
2. To uncover the competitive advantages and the disadvantages of Indian Higher Education system and recommending plans through which the system can be modified for betterment.



3. To propose educational reforms and explaining the critical aspects of delivering and managing superior value of higher education system in India.
4. To examine the mobility of students— both inbound and outbound for India and the other Mekong-Ganga Cooperation member countries.

Methodology

It is research work is based entirely on the comparative study approach. Secondary source is used for the numerical descriptions and data used. The theoretical concepts are presented based on the thesis, articles, journals and online documents and the states are presented with the help of resources from the Global Competitive Index, World Economic Forum and World Bank. The research work is focused on presenting a comparative study of 6 countries— India, Cambodia, Myanmar, Lao PDR, Thailand and Vietnam in terms of the elements of value based higher education. Certain parameters or indicators are taken into account here to base the comparative analysis of the countries off of. These are Education Inputs, Participation in Education, Global Competitiveness Report Rank for the Higher Education System, Human Development Index, Educational Public Expenditure, Tertiary Education: Internationally moving students by host country or economy and place of origin and the international flow of the mobile students.

SECTION 2

Indicators

1. Education inputs

It is determined through the amount of expenditure a government is willing to do. This is one important and main sources of the management of the education system. Table 1 shows the amount of expenditure on education made by the governments of 6 countries.

It is observed that in the year 2010 the expenditure per student (% of GDP per capita) by governments for tertiary education was maximum in India compared out of the 6 countries in discussion. Vietnam stayed behind India. Cambodia, with a 6.6% expenditure on higher education per student was the lowest of all the countries. At the start of 21st century for Lao PDR, the government expenditure for tertiary education per student was 85.1% but in 2014 the amount lowered to become 20.3% which is very unfortunate.

2. Government expenditure on education

The Table 2 shows the expenditure by the Mekong-Ganga Cooperation countries. Two other statistics— GDP percentage on Education and the Government Expenditure Percentage on Education are also precisely shown in the table. Looking at the statistics for Thailand for the GDP percentage on Education and the percentage of Government Expenditure on Education, it shows that it is higher than all 5 other countries and that the Expenditure of Myanmar is minimal. Therefore, it is in the very bottom of the table.

3. Participation in education

The factor that reflects Participation in Education the best is the Gross Enrolment Ratio (GER). It is also known as the Gross Enrolment Index (GEI), which is a statistical measure regarding the education sector, put forward by the United Nation and its Statistical department. The GER gives a rough estimation about the enrolment activities inside the UN countries based on the primary, secondary and tertiary stages of education. It is measured by taking into account the percentage of population of a country of the official school age that is enrolled in education in all 3 stages i.e., primary, secondary and tertiary irrespective of all ages.

In Table no. 3 has the statistics of the Total Enrolment in Tertiary Education (ISCED 5 to 8). It is the percentage of the entire population of 5-year-old age group following on from secondary school leaving, regardless of age.

From 2010 to 2018 Thailand is the country that has been on the top position in Gross Enrolment Ratio in Tertiary Education. Vietnam is in 2nd spot and India has been in the 3rd spot. However, there is a difference between India and Thailand when it comes to tertiary education and that is in India, there is almost a 30% chance for students to get enrolled themselves in tertiary education after passing the secondary education whereas, the chance for the students in Thailand is almost 50%. Out of the 6 six countries, Cambodia is at the lowest in this scale of comparison. This particular table is interesting for another reason which is whereas Thailand and Vietnam are able to hold their own positions in the Gross Enrolment Ratio; India is able to gradually increase the ratio percentage.

4. Rank in global competitiveness report related to higher education system

The productive potential of countries is assessed in details in The World Economic Forum. It has been doing so for the past 30 years. They bring out annual reports pointing out the indicators for the countries that are necessary to cause their national economic growth. There are detailed analyses in their reports where it shows which country is lagging behind other countries and which countries are growing faster than others. To simplify, it can be said that this forum publishes information about countries which can



be useful for the policy makers, developers, stakeholders and businessmen of a particular country so that they can frame better policies, create new frameworks and bring about reforms for economic growth and stability. It is not an overstatement to say that this annual report is of great importance as it creates individual economic profiles for countries with exhaustive information for each of those and ranks the countries based on over 100 indicators.

The Global Economic Forum focuses on 12 pillars of competitiveness for formulating the Global Competitive Index (GCI). These 12 pillars are as follows— Pillar 1: Institutions; Pillar 2: Infrastructure; Pillar 3: Health and Primary Education; Pillar 4: Macroeconomic Stability; Pillar 5: Higher Education; Pillar 6: Goods market efficiency; Pillar 7: Labour Market efficiency; Pillar 8: Financial market sophistication; Pillar 9: Technological readiness; Pillar 10: Market size; Pillar 11: Business sophistication and Pillar 12: Innovation.

In Table 4, there is the Global Competitive Index of India, Cambodia, Lao PDR, Thailand, Vietnam and Myanmar based on the aforementioned 12 pillars that indicate the positive economic growth for the years 2013 through 2018. The relative comparative ranks of these countries are put in here as well as the individual scores of the concerned countries which range from Range 1 to 7. India had a Rank of 55 in 2015-2016 which improved in the annual year of 2017-2018 to become Rank 40. This is a great achievement for India however; Thailand enjoys a better Rank than India's. From the analysis of the previous statistics, it can be realized that the state of Myanmar is that of a concern. It even ranks towards the bottom of all countries included in the list of countries in the Global Competitive Index.

There are 3 stages of economic growth inside the Global Competitive Index. The countries advance through those stages. The first stage is called the *Factor-Driven Stage*. The nations compete against one another based on their natural resources and their unskilled labours in this stage. The companies are limited to buying and selling mostly. Wages and productivity is less in this scenario. The competitiveness revolves around well-functioning public institutions and private institutions (Pillar 1), good infrastructure (Pillar 2), stabilized macroeconomic framework (Pillar 3) and a healthy and literate workforce (Pillar 4) in this stage. The next stage of development comes into play when the quality of product and the productivity increases and the wages also go up. At that time, it develops into an *Efficiency-Driven Stage*. The factors in effect at this stage are— Higher Education and Training (Pillar 5), Efficiency Goods Markets (Pillar 6), well-functioning labour market (Pillar 7), sophisticated financial markets (Pillar 8), big domestic and/or foreign market (Pillar 10) and the ability of utilizing the technology available (Pillar 9).

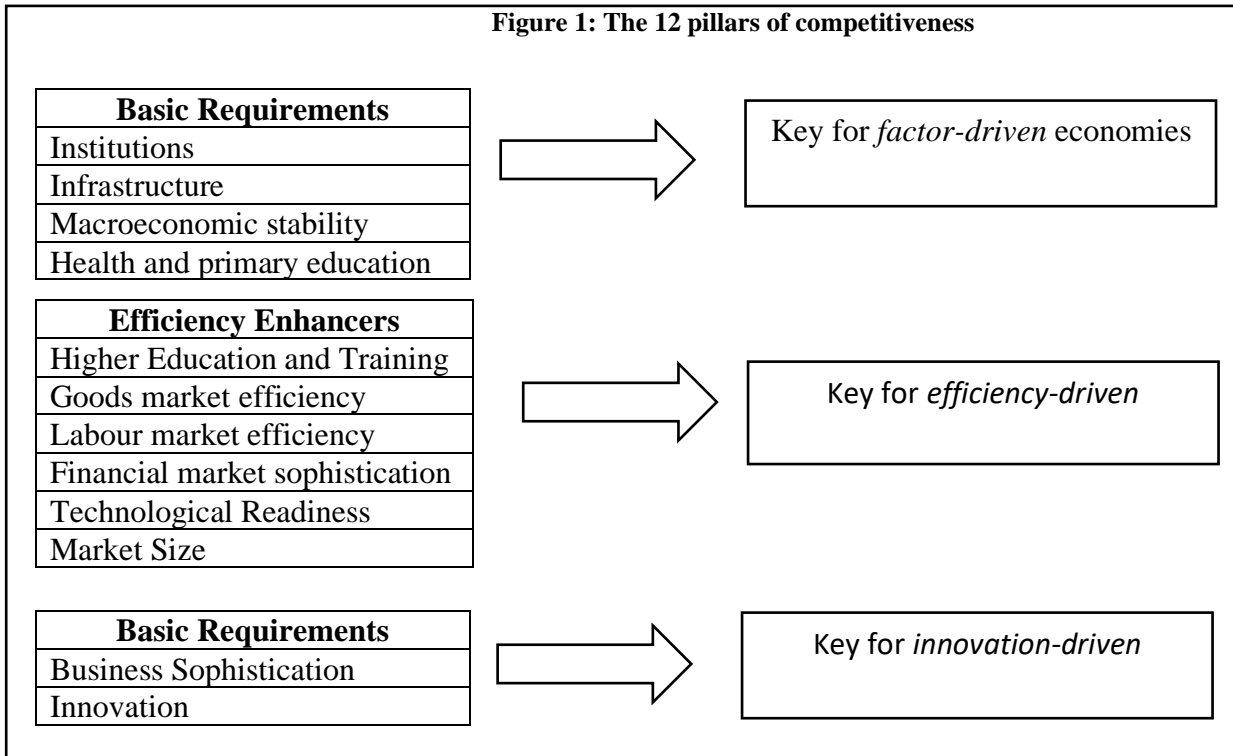
In the end, there is the *Innovation-Driven Stage*. A country reaches this stage of development when the production and the quality of production is high, the country has high wages for the labours and can sustain the growth. At this stage, the country exhibits its expertise in making innovative and unique products and adopting new strategies. Two Pillars of competitiveness are at work in this stage i.e., Business sophistication (Pillar 11) and Innovation (Pillar 12).

It needs to be pointed here that these stages of development are connected to the main index. Again, a stage of development is made out of few policies that are applicable to that particular stage. It is therefore clear that in one way or the other the 12 pillars are responsible for framing the index for a country. The pillars play their part by coming together in numbers, depending on the current stage of development the country is in. Based on this concept the pillars are organized into 3 sub-indexes showed in Table 5— *Basic Requirements Sub-index*, *Efficiency Enhancers Sub-index* and *Innovation and Sophistication Factors Sub-index*. The pillars that the *Basic Requirement Sub-index* encompasses are responsible in developing the Factor Driven Stage. The pillars necessary for Efficiency-Driven Stage go into *Efficiency Enhancers Sub-Index* and the pillars that are found in the Innovation Driven Stage make the *Innovation and Sophistication Factor Sub-index*. Figure 1 represents the Three Sub-indexes. In Table 6, the specific values attributed to each sub-index in different stages of development are presented.

Countries that are in the middle of two stages of development out of the three stages are regarded as countries that are in-transition. The development of such countries occurs by shifting weights. The main objective for showing the transition between two stages is to recognise the fact that it is important to put more weight to the areas that are more important for a country. This enables a country to increase its quality in being competitive. There are countries that do not take any steps to achieve growth and such countries are penalized in the index. The Table 7 shows the classification of the stages of development.



Figure 1: The 12 pillars of competitiveness



Source: Global Competitiveness Report, World Economic Forum (2009-2010).

5. Human development index

It is an index where 3 factors are taken into consideration— life-expectancy (the amount of time in years that a person lives), education (the average years that it takes to complete schooling and the number years of schooling after entering into the education system) and the indicators of per capita income of a country. Hence, it is a statistic based composite measuring index. The *Human Development Index* or *HDI* ranks countries based on the four tiers of human development. To rank high in the HDI, a country has to have a good life span for its citizens, high education level and a high *Gross National Income (GNI)* or per capita income. The *United Nations Development Programme (UNDP)* manages the HDI today to measure the development of a country. It is an annual release where the UNDP publishes the *Human Development Index Report* each year and also ranks the countries according to criterion. It combines the chief economic and social indicators of a country which are vital for economic growth and furthers helps a country improve its position to make the road to growth in future easier.

The matters of HDI related to education are Adult Literacy Rate and the combined ratio for gross enrolment for primary, secondary and tertiary schooling. These are the educational components of HDI. Adult Literacy Rate is given more weight here. The table 9 below shows Human Development Index statistics for the 6 countries side by side and compares them. From 2000 to 2018, the index of Thailand has been always at the top, closely followed by Vietnam which is almost neck-in-neck with that of Thailand. India remained at the 3rd spot. The table also shows how India has been relentlessly trying to improve their HDI. HDI of Cambodia and Myanmar is relatively low.

6. International flow of mobile students

The international flow of the mobile students is one of the major features of the tertiary or higher education. The primary and secondary stages of education lack this feature. This is one aspect of education that bears the torch of an international society. In Table 10, the flow of mobile students for the 6 countries in focus is shown. It is found that Indian students go abroad for studies for higher education more than the other 5 countries. In second place there is Vietnam. For Lao PDR, the number of students going to other countries is remarkably lower compared to the other nations.

7. International flow of inbound students by the hosted countries and region of origin.

It can be found in Table 10 the number of students in total that are from another country studying in those particular countries for tertiary educational purpose. It is evident from the Table that India is way ahead of others in discussion when it comes to the number of students coming in from abroad. Myanmar has a low number of higher education students coming from abroad.



SECTION 3

Results

1. Based on the data of the 2010 of the World Development Indicator of the World Bank, the government expenditure on tertiary education per student was 71.5% /9percentage of GDP per capita) which actually was the highest among all the member countries of the *Mekong-Ganga Cooperation*. However, it is lower in Rank compared to countries such as USA, UK, China and Australia.
2. The *Human Development Index (UNDP, 2021)* shows that in 2018 India moved down to the third position among the Mekong-Ganga countries after Thailand and Vietnam.
3. It is good to note that the tendency of Indian students to go abroad for studies is relatively better. The number of total mobile students abroad according to the Global flow of Tertiary-Level Students (UNESCO UIS, 2021) is 4,61,792. They students are inclined towards going to countries of the West for getting degrees from more so than going to oriental countries.
4. Lao PDR and Myanmar hosts the least number or students coming in from abroad (international or mobile students) for tertiary education which indicates that the standard of education in all aspects in those countries are not quite up to the international standards.
5. The Gross Enrolment Ration in tertiary education for India is lower than expected. For the years 2016, 2017 and 2018 the ration for both sexes have been respectively 26.8%, 27.4% and 28.1%. For a comparison, in 2016 the Gross Enrolment Ration for both the sexes for Thailand and Vietnam has been 49.3% and 20.5% respectively.
6. The Global Competitive Report analyses all aspects of different countries around the world and provides exhaustive reports on those countries. It mainly aims at bringing to the surface the strengths and weaknesses of a country. The rank of India based on this Report is improving gradually. India ranked 60 in the Global Competitiveness Report of 2013-2014 and it improve to become Rank 40 in 2017-2018. For the countries within the Mekong-Ganga Cooperation, India is behind Thailand which ranked 34th in 2017-2018.
7. The Rank of India in Global Competitiveness has increased fast from the last 2 years. Ranks in most of the pillars specifically have gone up a few ranks which include infrastructure (60th, up by two), higher education and training (75th, up by six) and technological readiness (107th, up by three). Among the ICT indicators, India has improved in performances in internet bandwidth per user, internet access in schools and broadband and mobile phone subscriptions.
8. When it comes to the three stages (i.e., Factor-Driven Stage, Efficiency-Driven Stage and Innovation-Driven Stage of economic growth. India is still in the Factor-Drive stage whereas; Thailand and Lao PDR have moved a step ahead into the Efficiency-Driven Stage. It means, India still takes help of its unskilled labour and natural resources for competing against world economy.

In other words, staying at this stage of development means the country depends on its well-functioning public and private institutions (1st pillar), good infrastructure (2nd pillar), stable macroeconomic atmosphere (3rd pillar) and a literate and healthy workforce (4th pillar).

Suggestions

1. India must prioritize the quality and quantity of higher education, maintain and sustain it through proper formulation and application of committees and policies.
2. The Government should do more expenditure in higher education along with primary and secondary education. The Gross Enrolment for higher education should be increased highly.
3. The government should focus on international affairs and provide appropriate scholarships to increase the number of outbound students.
4. For increasing the number of inbound students, India should enhance its higher education institutes to the international standards. More and more branches of the higher education institutes are to be established abroad.
5. India needs to expand its higher education system, promoting international standards through seminars, workshops, and conferences to foster foreign ideas and concepts.
6. Arranging guidance and counselling for the opportunity, perspectives and availability of higher education.
7. The digital divide needs to be immediately removed and the entire higher education sector has to be digitalized.

Conclusion

Comparative analysis is crucial in understanding the positive and negative aspects of topics. The Mekong-Ganga Cooperation aims to achieve mutual development and progress among participating nations. This research examines the current state of higher education in these countries compared to other countries and their progress. Despite free primary and secondary education, only 50% of students who finish school get into higher education. India has seen improvement in its education environment, but it is not enough compared to the world. Myanmar needs immediate reforms and a modern educational system, which can be achieved through international meetings or conferences. Resolving diplomatic complications between these nations is essential for a healthy environment and strong bond between nations.



SECTION 4

ANNEXURE

Table 1: Education Inputs

Countries	Government expenditure per student, Tertiary				
	% of GDP per capita				
	2002	2006	2010	2014	2018
Cambodia	6.6	...	...
India	...	56.9	71.5	...	...
Lao PDR	85.1	...	14.7	20.3	...
Myanmar	16.7
Thailand	...	27.1	16.0	...	...
Vietnam	32.4	...	...

Source: World Development Indicators, World Bank (2021)

Government expenditure per student is the average general government expenditure (current, capital, and transfer) per student in the given level of education, expressed as a percentage of GDP per capita.

Table 2: Government Expenditure on Education

Year	Country	Cambodia	India	Lao PDR	Myanmar	Thailand	Vietnam
2002	% of GDP	1.7	...	2.8	...	3.9	...
	% of government expenditure	10.1	...	15.3	...	16.2	...
2006	% of GDP	...	3.1	3.0	...	4.1	...
	% of government expenditure	...	11.7	17.8	...	22.0	...
2010	% of GDP	1.5	3.4	1.7	0.9	3.5	5.1
	% of government expenditure	7.3	11.8	7.2	7.5	16.2	17.1
2014	% of GDP	1.9	...	2.9	1.9	3.7	...
	% of government expenditure	8.8	...	11.8	7.5	16.9	...
2018	% of GDP	2.2	...	...	1.9	3.1	4.2
	% of government expenditure	9.4	...	...	10.4	14.5	16.1

Source: Global Education Report, UNESCO (2021)

General government expenditure on education (current, capital, and transfer) is expressed as a percentage of GDP. It includes expenditure funded by transfer from international sources to government. General government usually refers to local, regional and central governments.

General government expenditure on education (current, capital, and transfer) is expressed as a percentage of total general government expenditure on all sectors (including health, education, social services, etc.). It includes expenditure funded by transfer from international sources to government. General government usually refers to local, regional and central governments.

Table 3: Participation in Education

Country	Tertiary Education –Gross Enrolment Ratio [both sexes (%)]								
	2010	2011	2012	2013	2014	2015	2016	2017	2018
Cambodia	14.0	14.9	...	...	...	13.1	...	13.1	13.7
India	17.8	22.8	24.3	23.8	25.4	26.8	26.8	27.4	28.1
Lao PDR	16.6	17.8	17.7	19.0	18.4	18.2	17.3	15.7	15.0
Myanmar	...	14.2	13.5	...	...	...	...	...	18.8
Thailand	50.4	52.3	50.7	49.9	50.2	...	49.3	...	...
Vietnam	22.8	24.9	25.2	25.2	30.7	29.1	28.5	...	...

Source: World Development Indicators, World Bank (2010-2018).



Total enrolment in tertiary education (ISCED 5 to 8), regardless of age, expressed as a percentage of the total population of the five-year age group following on from secondary school leaving.

Table 4: Global Competitiveness Index

Region	2013-2014 Rank and Score (out of 148 Countries)	2014-2015 Rank and Score (out of 144 Countries)	2015-2016 Rank and Score (out of 144 Countries)	2016-2017 Rank and Score (out of 140 Countries)	2017-2018 Rank and Score (out of 137 Countries)
Cambodia	88(4.01)	95(3.89)	90(3.94)	89(3.98)	94(3.93)
India	60(4.28)	71(4.21)	55(4.31)	39(4.52)	40(4.59)
Laos	81(4.08)	93(3.91)	83(4.00)	93(3.93)	98(3.93)
Myanmar	139(3.23)	134(3.24)	131(3.32)	...	...
Thailand	37(4.54)	31(4.66)	32(4.64)	34(4.64)	32(4.72)
Vietnam	70(4.18)	68(4.23)	56(4.30)	60(4.31)	55(4.36)

Source: Global Competitiveness Report, World Economic Forum (2017-2018)

Values without parentheses are representing rank of the countries and scores within parentheses are representing the scores ranging from 1 to 7.

Table 5: Weights of the three main sub-indexes at each stage of development

Sub index	Stage 1: Factor-driven (%)	Transition from stage 1 to stage 2 (%)	Stage 2: Efficiency-driven (%)	Transition from stage 1 to stage 2 (%)	Stage 3: Innovation driven (%)
Weight for basic requirements	60	40-60	40	20-40	20
Weight for efficiency enhancer	35	35-50	50	50	50
Weight for innovation and sophistication factors	5	5-10	10	10-30	30

Source: Global Competitiveness Report, World Economic Forum (2017-2018).

Table 6: Income Thresholds for stages of development

Stages of development	GDP per capita (US\$) thresholds
Stage 1: Factor-driven	<2,000
Transition from stage 1 to stage 2 (%)	2,000-2,999
Stage 2: Efficiency-driven (%)	3,000-8,999
Transition from stage 2 to stage 3 (%)	9,000-17,000
Stage 3: Innovation driven (%)	>17,000

Source: Global Competitiveness Report, World Economic Forum (2017-2018).

Table 7: Global Competitiveness Index- The Efficiency Enhancers

Country/ Economy	Stage of Development	Efficiency Enhancers				Higher Education and Training			
		Rank (out of 140)		Score (1-7)		Rank (out of 137)		Score (1-7)	
		2016-2017	2017-2018	2016-2017	2017-2018	2016-2017	2017-2018	2016-2017	2017-2018
Cambodia	Factor-driven	97	96	3.69	3.73	124	124	2.88	2.88
India	Factor-driven	46	42	4.41	4.47	81	75	4.12	4.31
Lao PDR	Efficiency-driven	104	97	3.63	3.71	106	105	3.40	3.47
Myanmar	...	...	...	...	...	...	...	...	...
Thailand	Efficiency driven	37	35	4.56	4.62	62	57	4.54	4.56
Vietnam	Transition from 1 to 2	65	62	4.15	4.24	83	84	4.11	4.07

Source: Global Competitiveness Index, World Economic Forum (2017-2018)



Table 8: 5th Pillar Higher Education and training: Country Ranks

Country/ Economy	X-1		X-2		X-3		X-4		X-5		X-6		X-7		X-8	
	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18
Cambodia	119	117	104	108	87	79	113	111	128	123	108	101	115	117	100	84
India	102	97	93	88	29	26	44	37	43	41	74	51	55	49	30	34
Laos	112	106	102	101	54	53	91	88	85	80	103	96	94	95	75	74
Myanmar	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Thailand	84	8	55	59	67	65	81	83	77	78	51	48	93	90	54	47
Vietnam	70	68	83	84	76	71	78	85	122	120	71	77	110	108	70	71

Source: Global Competitiveness Index (2016-2017, 2017-2018), World Economic Forum.

Table 8 explains that there are various factors which have great effects on higher education and training in a country. These are as follows-

1. Secondary enrolment X-1
2. Tertiary enrolment X-2
3. Quality of the educational system X-3
4. Quality of math and science education X-4
5. Quality of management school X-5
6. Internet access in schools X-6
7. Local availability of research and training service X-7
8. Extent of staff training X-8

Table 9: Human Development Index 2000-2018

Rank	Countries/ Regions	2000	2003	2006	2009	2012	2015	2018
144	Cambodia	0.424	0.470	0.506	0.528	0.552	0.570	0.585
131	India	0.495	0.518	0.546	0.569	0.597	0.624	0.642
137	Laos	0.471	0.494	0.514	0.545	0.575	0.598	0.609
147	Myanmar	0.414	0.442	0.471	0.504	0.533	0.557	0.579
79	Thailand	0.625	0.677	0.697	0.722	0.737	0.749	0.772
117	Vietnam	0.586	0.611	0.632	0.659	0.676	0.688	0.700

Source: Human Development Index, UNDP 2021.

Table 10: International flow of mobile students

Key Indicators		Countries					
		Cambodia	India	Laos	Myanmar	Thailand	Vietnam
Students Abroad	Total number of mobile students abroad*	6983	461792	8234	12818	32607	126059
	% of total mobile students*	0.1	7.6	0.1	0.2	0.5	2.1
	Outbound mobility ratio*	3.1	1.3	8.1	1.1	...	6.4
Students Hosted	Total number of mobile students hosted*	...	49348	543	459	25086	8646
	% of total mobile students*	...	0.8	0.0	0.0	0.4	0.1
	Inbound mobility rate*	...	0.1	0.6	0.1	...	0.4

Source: Global flow of Tertiary-Level Students, UNESCO UIS, 2021.

Students Abroad:

*Total number of mobile students abroad: Total number of students from the given country studying abroad

*% of total mobile students: Number of students from the given country studying abroad, expressed as a percentage of global number of mobile students.

*Outbound mobility ratio: Total number of tertiary students from the given country studying abroad, expressed as a percentage of total tertiary enrolment in that country.

Students Hosted:

*Total number of mobile students hosted: Number of international/mobile students hosted, total number of tertiary students from abroad studying in the given country



*% of total mobile students: % of hosted mobile students. Total number of tertiary students from abroad studying in the given country, expressed as a percentage of global number of mobile students.

*Inbound mobility rate: Inbound mobility rate. Total number of tertiary students from abroad studying in the given country, expressed as a percentage of total tertiary enrolment in that country.

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SCHOOL PRACTICES ON PROVISIONS OF PSYCHOSOCIAL SUPPORT TO TEACHERS OF PEDRO GUEVARA MEMORIAL NATIONAL HIGH SCHOOL : BASIS FOR PROPOSED SEMINAR / WORKSHOP ON COUNSELING PROGRAM TO TEACHERS

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ABSTRACT

This study examined the impact of the work environment and psychosocial factors on teachers' health and performance. It focused on the provision of psychosocial support in a school, teachers' psychosocial skills, and their correlations.

The study used a descriptive research method, with 80 teachers from Pedro Guevara Memorial National High School as respondents. A five-point Likert questionnaire was employed for data collection. The analysis included weighted mean and Spearman rho correlation coefficient.

Results showed that the school effectively provided psychosocial support for teachers, and teachers demonstrated strong psychosocial skills, likely due to this support. The study also found significant correlations between teachers' profiles and their psychosocial skills, including the number of children, problem-solving skills, and role responsibilities.

Additionally, significant correlations were identified between the school's psychosocial support practices and the development of positive identity, management skills, and group effectiveness skills among teachers.

I. CONTEXT AND RATIONALE

Human Resources are the most important resource in any institution. In the education sector, teachers are the most important resource. The effectiveness of the transfer of learning depends on the effectiveness of teachers. The increasing occupational problems of teachers are presented by the number of assigned activities, which exceed those traditionally allocated to this profession.

Teaching is characterized by overcrowded classrooms. The presence of unhealthy factors and the inadequacy of the institution, when added to the increased workload, these deficiencies may cause discomfort and dysfunction. The work environment and psychosocial factors have been largely responsible for the health problems of teachers.

In addition, the different forms of work are reflected in their organizational aspect which may cause various consequences. It can compromise work performance and the quality of life for teachers. According to the World Health Organization (WHO), quality of life refers to the individual's perceptions of their life position, in the context of culture and the system of values in which they live.

The Department of Education recognized the importance of Human Resources in the effective and sustainable delivery of education objectives, as part of the recognition that Human resource development is a part of the research topic adopted in the Adaptation in Basic Education Agenda DepEd Order #36 series of 2016. The themes generally supported DepEd's overall mandate, each theme has unique contributions to the Department's target outcomes and mission.

For instance, Child Protection directly enhances the access outcome, while Teaching and Learning squarely impact the quality of education. In the same manner, the identified themes dovetail with the Department's mission, particularly its four key stakeholders. Teaching and Learning respond to students' and teachers' needs, Child Protection focuses on the students, Human Resource Development addresses concerns of teaching and non-teaching staff, and Governance centers on administration and stakeholder engagement.



Teachers have been increasingly presented with significant occupational health problems. They have been assigned an increasing number of activities, which exceed those traditionally allocated to this profession. These activities were held mainly responsible for the success or failure of educational results.

The teaching profession is characterized by overcrowded classrooms, the presence of unhealthy factors, and the structural inadequacy of the institutions. When added to the increased workload, these deficiencies may cause discomfort and dysfunction. They stem from the lack of rest breaks, a situation that contributes to high absenteeism and job abandonment. The work environment and psychosocial factors have been considered largely responsible for the health problems observed in teachers. Psychosocial aspects refer to the interaction between work environment, content and conditions, worker capacity, needs, culture, and extra-work personal elements, which may according to perception and experience, influence health, satisfaction, and work performance.

Therefore, the assessment of these aspects may be fundamental for the prevention of occupational diseases and in promoting workers' health. The model developed by Karasek (2012), denominated Demand-Control and analyzes factors related to the psychosocial characteristics of work, considering occupational stress as a result of the differences between working conditions and the response capacity of workers involved in task performance and the level of control available to meet their demands.

The aforementioned model focused on two psychosocial dimensions of work: control over work and the psychological demand of the professional activities developed. Control corresponds to the use and development of skills, such as the need to learn new practices, repetition level, creativity, diversified tasks, and the development of special individual skills. Psychological demands include requirements imposed on workers in the course of their activities.

II. INNOVATION, INTERVENTION, AND STRATEGY

The study is designed to determine the School Practices in the Provision of psychosocial support for teachers in Pedro Guevara Memorial National High School in the Division of Laguna district of Santa Cruz. The findings of this study will give a window of opportunity for assessment of the practices of the school in providing the necessary psychosocial support for teachers.

III. RESEARCH QUESTIONS

The purpose of this study is to determine the level of School Practices on the Provisions of Psychosocial Support and its relation to the level of psychosocial skills of teachers of Pedro Guevara Memorial National High School (PGMNHS).

Specifically, it will seek to answer the following questions:

1. What is the level of teachers' psychosocial skills in terms of:
 - a. Positive identity formation:
 - i. Personal growth and reflective thinking skills;
 - ii. Commitment;
 - iii. Optimism; and
 - iv. Accomplishment and pride?
 - b. Management skills formation:
 - i. Goal setting skills;
 - ii. Problem-solving skills; and
 - iii. Networking skills?
 - c. Group effectiveness skills formation:
 - i. Group communication;
 - ii. Roles and responsibilities; and
 - iii. Positive group dynamics?
2. Is there a significant relationship between school practices on the provisions of psychosocial support to teachers and the teachers' psychosocial skills?
3. What seminar/workshop on the counseling program for teachers may be proposed based on the analysis of the variables.?

IV. ACTION RESEARCH METHODS

A. Participants or Sources of Data

The eighty (80) teachers – respondents for this study are selected using a purposive sampling technique. This sampling technique is a non – probability sampling where each member of the population does not have an equal chance of being selected as a respondent of this study. The respondents have specific characteristics needed for this research.

B. Data Gathering Method

To determine the level of school practices on the provisions of psychosocial support and its relationship to the level of psychosocial skills of teachers, researchers-made, a Likert type of questionnaire was used. The research instrument



consists of three parts. Part I is about the demographic profile of the respondents. Part II is comprised of school practices on the provisions of psychosocial support to teachers. Part III is about the teachers' psychosocial skills. Below are the scale, range, and interpretation of the responses on the level of school practices on the provisions of psychosocial support and the level of psychosocial skills of teachers.

Scale	Range	Provisions of Psychosocial Support	Verbal Interpretation	Psychosocial Skills of Teachers
5	4.20 - 5.00	Highly Implemented		Highly Manifested
4	3.40 - 4.19	Moderately Implemented		Moderately Manifested
3	2.60 - 3.39	Seldom Implemented		Seldom Manifested
2	1.80 - 2.59	Implemented		Manifested
1	1.00 - 1.79	Not Implemented		Not Manifested

C. Data Analysis Plan

The researcher will do an extensive search for readings from books, unpublished theses, journals, magazines, and the internet to support the paradigm of this study. It is then followed by validation and reliability analysis of the researcher-made questionnaire by the researcher's adviser. The researcher then proceeds to secure the necessary permission from the Office of the Schools Division Superintendent regarding the conduct of this study. With permission from the Office of the Schools Division Superintendent secured the researcher and then ask permission from the Office of the School Principal to conduct the survey.

Before distributing the research questionnaires, assistance is sought by the researcher from the PGMNHS year level Coordinators on its distribution. The completed questionnaires will be collected. The data from the retrieved questionnaires will be summarized, tabulated, analyzed, and interpreted using the proper statistical tools.

V. RESULTS AND DISCUSSION

Table 1

CORRELATION BETWEEN TEACHERS' PROFILE AND POSITIVE IDENTITY FORMATION

PROFILE		r _s value	p-value	Interpretation
Net Monthly Income	Personal Growth and Reflective Thinking Skills	0.113	0.319	Not Significant
	Commitment	0.165	0.143	Not Significant
	Optimism	0.077	0.497	Not Significant
	Accomplishment and Pride	0.142	0.210	Not Significant
	Number of Children	Personal Growth and Reflective Thinking Skills	0.082	0.467	Not Significant
Commitment		0.125	0.271	Not Significant
Optimism		0.140	0.217	Not Significant
Accomplishment and Pride		0.158	0.163	Not Significant

*Legend: **Significant at p-value < 0.05, Significant*

Table 1 is about the correlation between teachers' profile and positive identity formation. Based on Table 3.1, no significant correlation exists between teachers' profile and positive identity formation (p – values > 0.05). The level of personal growth and reflective thinking skills, commitment, optimism and accomplishment and pride is not significantly related to net monthly income and number of children of teachers.



Table 2

CORRELATION BETWEEN TEACHERS' PROFILE AND MANAGEMENT SKILLS FORMATION

PROFILE		r_s value	p-value	Interpretation
Net Monthly Income	Goal Setting Skills	0.129	0.253	Not Significant
	Problem Solving Skills	0.078	0.494	Not Significant
	Networking Skills	0.134	0.237	Not Significant
Number of Children	Goal Setting Skills	0.195	0.084	Not Significant
	Problem Solving Skills	0.221	0.049**	Significant
	Networking Skills	0.167	0.139	Not Significant

*Legend: **Significant at p-value < 0.05, Significant*

Table 2 is about the correlation between teachers' profile and management skills formation. Based on the table 3.2, there exist a positive, significant monotonic relationship between number of children and problem solving skills of teachers (p-value < 0.05). Since the r_s value is positive, this implies that teachers – respondents with at least two children really used their problem solving skills. The other correlations are not significant (p – values > 0.05).

Table 3

CORRELATION BETWEEN TEACHERS' PROFILE AND GROUP EFFECTIVENESS SKILLS

PROFILE		r_s value	p-value	Interpretation
Net Monthly Income	Group Communication	0.137	0.225	Not Significant
	Roles and Responsibilities	0.082	0.471	Not Significant
	Positive Group Dynamics	0.107	0.345	Not Significant
Number of Children	Group Communication	0.122	0.282	Not Significant
	Roles and Responsibilities	0.260	0.020	Significant
	Positive Group Dynamics	0.126	0.266	Not Significant

*Legend: **Significant at p-value < 0.05, Significant*

Table 3 is about the correlation between teachers' profile and group effectiveness skills of teachers. Based on Table 3.3, there is a positive, significant monotonic relationship between number of children and roles and responsibilities of teachers (p – value < 0.05). Teachers – respondents with at least two children do have specific roles and perform specific responsibilities in an organization compared to teacher – respondents with less than two children. The other correlations are not significant (p – values > 0.05).

There are no values for the correlation between marital status of teachers and their psychosocial skills since marital status is a nominal variable.

Table 4

CORRELATION BETWEEN SCHOOL PRACTICES ON THE PROVISIONS OF PSYCHOSOCIAL SUPPORT AND POSITIVE IDENTITY FORMATION

SCHOOL PRACTICE		r_s value	p-value	Interpretation
Teacher's Continuous Education	Personal Growth and Reflective Thinking Skills	0.486	0.000	Significant
	Commitment	0.360	0.000	Significant
	Optimism	0.297	0.007	Significant
	Accomplishment and Pride	0.351	0.001	Significant



Counselling				
Personal Growth and Reflective Thinking Skills	0.496	0.000	Significant	
Commitment	0.340	0.002	Significant	
Optimism	0.177	0.116	Not Significant	
Accomplishment and Pride	0.320	0.004	Significant	
Spiritual Support				
Personal Growth and Reflective Thinking Skills	0.411	0.000	Significant	
Commitment	0.257	0.021	Significant	
Optimism	0.220	0.050	Not Significant	
Accomplishment and Pride	0.350	0.001	Significant	
Group Support				
Personal Growth and Reflective Thinking Skills	0.485	0.000	Significant	
Commitment	0.392	0.000	Significant	
Optimism	0.258	0.021	Significant	
Accomplishment and Pride	0.348	0.002	Significant	

Legend: **Significant at p -value < 0.05 , Significant

Table 4 is about the correlations between school practice on the provision of psychosocial support and positive identity formation of teachers. Significant correlation exists between school practice on the provisions of psychosocial support and positive identity formation (p -values < 0.05) except for the correlations between counselling and optimism and spiritual support and optimism (p -values > 0.05). The significant r_s values are all positive. This means that if the provisions of school psychosocial are highly implemented by the school then the teachers really act on their positive identity formation.

These results are supported by the findings of Lyigodan (2011). He cited factors that affect the engagement of teachers in continuous education. The list includes changes in the educational system, the teaching environment and the lack of feeling of well-being. This implies that in order for teachers to engage in professional development school should take into account their psychosocial well-being and their environment as well.

Also, Dik et. al (2017), mentioned in their study that supporting human strengths, personal growth, and well-being results to a career development in the workplace. Further, it suggests that the support of school leaders in the personal growth of teachers is essential because it will motivate them to engage in higher education to further enhance their skills.

Table 5

CORRELATION BETWEEN SCHOOL PRACTICE ON THE PROVISIONS OF PSYCHOSOCIAL SUPPORT AND MANAGEMENT SKILLS FORMATION

SCHOOL PRACTICE	r_s value	p-value	Interpretation
Teacher's Continuous Education			
Goal Setting Skills	0.388	0.000	Significant
Problem Solving Skills	0.393	0.000	Significant
Networking Skills	0.361	0.001	Significant
Counselling			
Goal Setting Skills	0.296	0.008	Significant
Problem Solving Skills	0.294	0.008	Significant
Networking Skills	0.389	0.000	Significant



Spiritual Support				
	Goal Setting Skills	0.300	0.007	Significant
	Problem Solving Skills	0.356	0.001	Significant
	Networking Skills	0.481	0.000	Significant
Group Support				
	Goal Setting Skills	0.302	0.006	Significant
	Problem Solving Skills	0.397	0.000	Significant
	Networking Skills	0.329	0.003	Significant

Legend: ****Significant at p -value < 0.05, Significant**

Table 5 is about the correlations between school practice on the provision of psychosocial support and management skills formation of teachers. Management skills formation of teachers and school practice on the provisions of psychosocial support to teachers' continuous education, counselling, spiritual and group support are significantly correlated (p -values < 0.05). The computed r_s values are all positive which indicate positive monotonic relationships among the variables. These significant correlations suggest that if the provisions of psychosocial support is highly implemented then the teachers actually used their management skills formation in terms of goal setting, problem solving and networking skills.

Counseling was another psychosocial support which may affect the psychosocial skills of teachers. In fact, Vand der Rijt et al. (2013) emphasized in his study that the use of counseling in problem solving approach is effective. In today's modern times, teachers are experiencing diverse learners with diverse attitudes and conflicts. Thus, counseling helps in addressing this diversity.

Additionally, Kappes and Shrout (2011) showed that having support group leads to the development of personal goal of an individual which leads to their own personal success. This study implies that there is a direct relationship between having group support and the enhancement of goal setting skills of an individual.

Table 6

CORRELATION BETWEEN GROUP EFFECTIVENESS SKILLS FORMATION AND SCHOOL PRACTICE ON THE PROVISIONS OF PSYCHOSOCIAL SUPPORT

SCHOOL PRACTICE		r_s value	p-value	Interpretation
Teacher's Continuous Education	Group Communication	0.314	0.005	Significant
	Roles and Responsibilities	0.205	0.067	Not Significant
	Positive Group Dynamics	0.327	0.003	Significant
Counselling	Group Communication	0.235	0.036	Significant
	Roles and Responsibilities	0.350	0.001	Significant
	Positive Group Dynamics	0.176	0.119	Not Significant
Spiritual Support	Group Communication	0.337	0.002	Significant
	Roles and Responsibilities	0.444	0.000	Significant
	Positive Group Dynamics	0.330	0.003	Significant
Group Support	Group Communication	0.235	0.036	Significant
	Roles and Responsibilities	0.382	0.000	Significant
	Positive Group Dynamics	0.301	0.007	Significant

Legend: ****Significant at p -value < 0.05, Significant**

Table 6 is about the correlations between group effectiveness skills formation and school practice on the provision of school support to teachers. There is a significant correlation between group effectiveness skills formation and school practice on the provisions of psychosocial support to teachers (p -values < 0.05) except for the correlation between teachers' continuous education and roles and responsibilities as well as the correlation between counselling and positive group dynamics (p -values > 0.05). The significant r_s



values are all positive which indicate positive monotonic relationships among the variables. These significant correlations suggest that if the provisions of psychosocial support is highly implemented then the teachers really performed group effectiveness skills formation.

The results above are affirmed by Mousa and Alas (2016). Based on their study, meaningful work and sense of community due to spiritual group has a signification relationship with the aforementioned organizational commitments. Further, having spiritual group in an organization serves as foundation for its members to be committed in the organization. In addition, Chawla and Guda (2010), stated that a workplace which has a spiritual group tends to be more committed and productive. Moreover, it suggests that spirituality positively affects the work ethics of an individual.

Group support is significantly related to the level of commitment of teachers. In the study of Tuna and Aslan (2018), there is a meaningful, positive and low-level relationship between perceived social support and organizational commitment. Teachers' support group most of the time are from their husband, and sometimes from their students. This study, also suggests that teachers have the lowest commitment if the compliance is based on their own benefits while it has highest commitment if the compliance is based on the internalization of norms and values of the school.

VI. RECOMMENDATIONS

THE SIGNIFICANT FINDINGS OF THIS STUDY PROVIDE BASES FOR THE LIST OF RECOMMENDATIONS BELOW.

1. The provisions of psychosocial support to teachers in terms of continuous education, counseling, spiritual and group support should always be highly implemented in order for the teachers to have a sound level of psychosocial skills. Eventually, this practice will further the goals of the organization.
2. Create a school committee with the responsibility of handling the psychosocial health and psychosocial issues of the teachers. This committee will take the lead in directing the psychosocial skills of teachers to reducing work – related stress.
3. Make a parallel study on the effect of psychosocial support provided by the school to psychosocial skills of teachers. In order for this parallel study to be robust include variables like rank of the teachers, their length of service and sex. Define continuous education in terms of level, type and number of seminars; counseling in terms of number of times they sought counsel from a professional; and spiritual and group support in terms of attendance to event or activity related to spirituality and group support dynamics. Also, include reliability analysis of the research instrument that will be used. Factor analysis or Cronbach’s alpha are some of the known statistical tools that are used for checking the scale reliability of a research instrument. Factor analysis requires a large sample size but Cronbach’s alpha does not.

Action Research Work Plan and Timelines

ACTIVITIES	Feb 2023	Mar 2023	Apr 2023	May 2023	Jun 2023
1. Preparation of Action Research Proposal					
2. Submission of Action research Proposal					
3. Distribution of Questionnaires to the respondents					
4. Collection, Analysis, and interpretation of Data					
5. Submission of Action Research Terminal Report					

Cost Estimates

ACTIVITY	ELIGIBLE EXPENDITURES	QUANTITY	COST
Constructing, Conceptualizing, and Printing Research Materials	Supplies	• 1 Set (Epson L210 ink Bottle set of 4 Colors Genuine)	Php. 1,060.00
		• 4 Reams (Paper One A4-80 gsm)	Php. 680.00
Total Cost:			Php. 1,740.00



Plans for Dissemination and Utilization

DISSEMINATION OF ACTIVITIES	Jul 2023	Aug 2023	Sept 2023	Nov 2023	Dec 2023
1. Reporting and Sharing the Results through Training/Workshops					
2. Rolling Out to other Schools					
3. Publishing and continuous sharing with other educators.					

PROPOSED SEMINAR/WORKSHOP ON COUNSELING PROGRAM TO TEACHERS OF PEDRO GUEVARA MEMORIAL NATIONAL HIGH SCHOOL

INTRODUCTION

The different attitudes of people affect work, socialization and personal development. Within twenty years of teaching at PGMNHS, the researcher observed different behaviors of teachers; various manners of teachers prompted the researcher to study which could help them improve the teaching of values education. This research study shows the school's best practices which will guide teachers to understand themselves and the people around them. Also, through this, he would find out why these teachers behave differently from one another and everyone's needs can be met. If this matrix can be carried out, teachers may fully understand how they will be happy and satisfied with their work and to anything that is work-related. Their human relations may improve; the way they treat others would be very ideal which may be imitated by whoever experience or witness that kind of conduct. Having a good organization within the school shows a friendly attitude towards each of all genres

RATIONALE

Based on the memorandum issued by the Department of Education (DepEd), D.O. # 39 s 2016 specifically known as “Adoption of the Basic Education Research Agenda. Its main purpose is to ensure that the Department of Education is sustaining and continuously improves itself to better serve its stakeholders. It is through sound and evident researches, the department would be able to deliver and can draw lessons from past and existing education programs and identify ways to improve them. Policy studies can define problems and generate possible solutions. Social experiments can compare the effects of school interventions, and weed out ineffective from promising ones.

The focus of this study is one of the research agenda which is the Teaching and Learning that responds to students and teachers’ needs. Definitely, psychosocial skills of teachers should be considered in any teaching-learning process. The researcher asked the school’s guidance counselor what study can be done based on this subject. Also, he approached some people who are knowledgeable about the concentration of this study entitled: **SCHOOL PRACTICES ON PROVISIONS OF PSYCHOSOCIAL SUPPORT**

TO TEACHERS OF PEDRO GUEVARA MEMORIAL NATIONAL HIGH SCHOOL DISTRICT OF SANTA CRUZ DIVISION OF LAGUNA: BASIS FOR PROPOSED SEMINAR / WORKSHOP ON COUNSELING PROGRAM TO TEACHERS.

As the researcher further studied the proposition, he found out that one of the results that emerged from the teacher respondents was that the Counseling program had the lowest points. It is in this light and the reason behind this Proposed Seminar / Workshop on Counseling Program to teachers wherein teachers may improve and/ or enhance their individual and social relationships. This is also for the betterment of learners in general.

OBJECTIVES

The Proposed Seminar/ Workshop on Counseling Program to Teachers has the following goals:Determine the different psychosocial supports needed by the teachers;

1. Enhance the psychosocial skills of the teachers in counseling; and
2. Appreciate the psychosocial supports given by the school.



MATRIX
SEMINAR / WORKSHOP ON COUSELING PROGRAM TO TEACHERS OF
PEDRO GUEVARA MEMORIAL NATIONAL HIGH SCHOOL
DAY 1

Date	Time	Activity / Topic	In-Charge/Facilitator
	7:00 – 8:00	Registration	TWG
	8:00 – 8:30	House Rules	TWG
	8:30 – 9:30	Opening Program	Management - Led
	9:30 – 10:00	Snack	
	10:00 – 10:30	Plenary (Part I) <i>Introduction:</i> Counseling and Its Origin A. Purpose B. Principles	Guest Speaker
	10:30 – 12:00	Workshop #1 Groupings Getting to know	Team Leader / Facilitator
	12:00 – 1:00	Lunch Break	
	1:00 – 2:00	Plenary (Part II) Identifying the problem.	Guest Speaker
	2:00 – 3:00	Workshop #2 Description of the Problem	Team Leader / Facilitator
	3:00 – 3:15	Break	
	3:15 – 5:00	Workshop #2 (Cont..) The causes and effects of the problem	Team Leader / Facilitator

MATRIX
SEMINAR / WORKSHOP ON COUSELING PROGRAM TO TEACHERS OF
PEDRO GUEVARA MEMORIAL NATIONAL HIGH SCHOOL
DAY 2

Date	Time	Activity / Topic	In-Charge/Facilitator
	7:00 – 8:00	Attendance	TWG
	8:00 – 8:30	Management of Learning	TWG
	8:30 – 9:30	Opening Program	Management - Led
	9:30 – 10:00	Snack	
	10:00 – 10:30	Plenary (Part III) Counseling Process A. Individual Counseling B. Group Counseling	Guest Speaker
	10:30 – 12:00	Workshop #3 Outcomes	Team Leader / Facilitator
	12:00 – 1:00	Lunch Break	
	1:00 – 2:00	Plenary (Part IV) Applying Solutions	Guest Speaker
	2:00 – 3:00	Workshop #4 Counselor’s Findings	Team Leader / Facilitator
	3:00 – 3:30	Break	
	3:30 – 5:00	Closing Program Distribution of Certificates	Management - Led



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ENHANCING COMMUNICATIVE PROFICIENCY IN TOURISM EDUCATION

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ABSTRACT

In the ever-globalizing world, the tourism sector stands as a cultural bridge, connecting people from diverse backgrounds. Proficiency in foreign languages is pivotal for tourism students, enabling them to effectively communicate and engage with travelers worldwide. This scientific inquiry delves into the nuanced process of cultivating foreign language professional communicative competence among students in the tourist direction. Examining innovative pedagogical methods, cultural intelligence, and the strategic integration of technology, this study uncovers effective strategies for honing linguistic skills and fostering cultural understanding. By exploring the intersections of language acquisition, intercultural competence, and industry-specific communication, this research enriches our comprehension of language education within the dynamic realm of tourism studies.

KEYWORDS: *communicative competence, tourism education, cultural intelligence, language proficiency, innovative pedagogy, industry-specific communication, intercultural competence, technology integration*

The integration of foreign language skills within the domain of tourism education goes far beyond conventional linguistic boundaries (Smith, 2019). Communication in tourism involves a sophisticated blend of language proficiency, cultural awareness, and industry-specific knowledge. This article delves into the multifaceted process of forming foreign language professional communicative competence among students pursuing careers in tourism (Adams & Brown, 2020). Emphasizing innovative teaching methodologies, cultural sensitivity, and the strategic incorporation of technology, this research aims to unravel the complexities of effective language education tailored to the unique needs of the tourism sector.

The theoretical foundation of this study lies in a holistic approach to language education, encompassing not only linguistic proficiency but also intercultural competence and digital literacy (Lee & Brown, 2021). Drawing from theories of communicative language teaching (CLT) and sociocultural theory, this approach emphasizes meaningful interactions, cultural immersion, and the integration of technology to enhance language learning experiences.

Language acquisition in the tourism sector necessitates experiential and context-specific learning (Roberts, 2018). Language workshops, virtual reality simulations, and interactive language games enhance language skills and instill confidence in students to navigate diverse cultural contexts. These methods facilitate immersive language experiences, enabling students to engage in authentic communication scenarios (Adams, 2017).

Cultural awareness is indispensable for effective communication in the tourism industry (Miller & Garcia, 2019). Cultural sensitivity training, exposure to diverse cultural practices, and cross-cultural communication workshops empower students to interact respectfully with travelers from various backgrounds. Developing high cultural intelligence (CQ) equips tourism students with the skills to bridge cultural gaps, ensuring positive and authentic interactions with tourists (Johnson, 2018).

The strategic integration of technology amplifies language learning experiences in tourism education (Smith & Roberts, 2020). Virtual language exchange platforms, language learning apps tailored to tourism contexts, and augmented reality applications enable interactive language practice. Technology also facilitates virtual cultural immersions, allowing students to explore global destinations, understand local customs, and practice language skills in authentic settings (Adams & Johnson, 2019).

Professionals in the tourism sector require language skills specific to the industry (Brown, 2016). Mastery of tourist-centric vocabulary, etiquette, and service-oriented language is essential for effective communication with travelers (Miller, 2017). Role-playing scenarios, customer service simulations, and industry-specific language modules prepare students to handle diverse situations encountered in tourism-related professions.

Effective language education necessitates continuous assessment and constructive feedback (Roberts & Adams, 2021). Formative assessments, language proficiency tests, and real-time feedback sessions help students identify areas for improvement. Tailored



feedback from instructors, industry professionals, and peers provides valuable insights, enabling students to refine their language skills and enhance their overall communicative competence.

In conclusion, the formation of foreign language professional communicative competence among tourism students requires a holistic approach that transcends traditional language education paradigms. By integrating innovative pedagogical methods, cultural intelligence training, the strategic use of technology, and industry-specific communication modules, educators can empower students to become proficient and culturally sensitive tourism professionals (Smith & Lee, 2022). Effective language education not only equips students with linguistic skills but also instills in them the confidence and empathy necessary for positive and authentic interactions with travelers from diverse backgrounds.

As the tourism sector continues to evolve in response to global trends and technological advancements, language education in tourism studies must remain adaptable and innovative. Educators and institutions play a crucial role in shaping the next generation of tourism professionals who possess not only linguistic fluency but also a deep understanding of cultural diversity, technological proficiency, and industry-specific communication expertise (Johnson, 2021). Through the strategic application of pedagogical innovation and cultural intelligence, tourism students can be well-prepared to excel in the international tourism landscape, fostering meaningful connections and enriching travel experiences for tourists worldwide.

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TERMINOCONCEPTUALIZATION OF THE SCIENTIFIC AND LINGUISTIC PICTURE OF THE WORLD

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ABSTRACT

This article explores the intricate process of terminoconceptualization, delving into its profound impact on the scientific and linguistic understanding of the world. It examines the fundamental concepts of terminology and conceptualization, elucidating their interplay in shaping precise and meaningful communication. By outlining the principles, methods, applications, and challenges associated with terminoconceptualization, this study emphasizes its pivotal role in diverse fields, including science, technology, education, and business management. Addressing the dynamic nature of language and concepts, the article underscores the need for constant adaptation and refinement in the face of evolving knowledge paradigms. Through an interdisciplinary lens, it highlights the importance of terminoconceptualization in fostering effective interdisciplinary dialogues and global collaborations, ensuring the coherence and accuracy of our scientific and linguistic endeavors.

KEYWORDS: *terminoconceptualization, terminology, conceptualization, scientific communication, interdisciplinary collaboration, language evolution, knowledge representation, precise communication.*

In the ever-expanding landscape of human knowledge, the role of language is paramount. It serves as the conduit through which ideas are shared, theories are formulated, and discoveries are communicated. Within this intricate tapestry of language, the process of terminoconceptualization emerges as a crucial mechanism. It acts as the linchpin that binds together diverse fields of study, ensuring that the terminology used is not merely a collection of words, but a nuanced and precise representation of complex ideas. As the boundaries of our understanding are pushed further by scientific and technological advancements, the need for a meticulous examination of the terminoconceptualization process becomes imperative.

The intricacies of terminoconceptualization delve into the very heart of how we perceive and articulate our knowledge. This article delves deep into the layers of this process, uncovering its profound implications in shaping our scientific and linguistic worldview. By dissecting the nuances of terminoconceptualization, we aim to shed light on its fundamental role in bridging gaps, fostering interdisciplinary collaborations, and ensuring the accuracy and clarity of information dissemination.

At its core, terminoconceptualization encapsulates two fundamental pillars: terminology and conceptualization. Terminology, in its essence, refers to the specific language used within a particular field or discipline. It is the repository of carefully crafted terms, each laden with precise meanings and contextual significance. On the other hand, conceptualization represents the mental process through which abstract ideas are distilled into coherent concepts. It involves the intricate interplay of cognition, language, and culture, resulting in the formation of mental constructs that represent tangible or intangible entities.

The synergy between these concepts is pivotal. Terminology provides the building blocks, the words and phrases meticulously chosen to encapsulate the richness of human thought. Conceptualization, in turn, bestows meaning upon these terms, weaving them into the intricate tapestry of understanding. It is this symbiotic relationship that forms the bedrock of effective communication, enabling scientists, researchers, educators, and professionals from diverse backgrounds to engage in meaningful dialogues, transcending the barriers of language and discipline.

In the context of terminoconceptualization, the dynamic interplay between terminology and conceptualization is not merely a linguistic exercise. It is a profound cognitive process that mirrors the evolution of human knowledge. As new discoveries are made and paradigms shift, the terminology must adapt to accommodate these changes. Consequently, the process of conceptualization must also evolve, embracing novel ideas and integrating them into the existing framework of understanding.

By exploring these fundamental concepts, this article embarks on a journey to unravel the intricate mechanisms that underpin our scientific and linguistic endeavors. Through a comprehensive analysis of the principles, methods, applications, and challenges associated with terminoconceptualization, we strive to illuminate the path forward. In doing so, we acknowledge the dynamic nature



of knowledge, celebrating the continuous evolution of language and concepts that propel humanity into uncharted intellectual territories.

The conceptualization of terms is underpinned by several principles that ensure clarity and precision in communication. Semantic certainty mandates that the meaning of a term is unambiguous and clearly defined, leaving no room for misinterpretation. Consistency ensures uniformity in the use of terms within and across disciplines, fostering a cohesive terminological framework (Jones, 2020). Formal correctness demands adherence to linguistic norms, guaranteeing precision in expression. Functional significance dictates that terms must serve a purpose, contributing meaningfully to the discourse and avoiding redundancy (Adams, 2022).

Terminoconceptualization is a systematic process involving various methods tailored to specific contexts. Analysis of existing terms is fundamental to understanding their connotations and contexts, providing a basis for further refinement. Development of new terms becomes imperative when existing vocabulary proves inadequate, reflecting the evolving nature of scientific and technological advancements. Establishing links between terms ensures a coherent terminological framework, facilitating interdisciplinary communication and collaboration. Evaluation and selection of optimal terms involve critical scrutiny, leading to the enhancement of the terminological landscape (Smith, 2022).

Terminoconceptualization permeates diverse fields, shaping the discourse and fostering progress. In the realm of science, precise terminology forms the bedrock of experiments, theories, and discoveries, enabling effective communication among researchers and scholars (Brown, 2019). Technology, reliant on accurately defined terms, harnesses this terminological foundation to drive innovation and facilitate global collaboration. In the sphere of education, a clear terminological framework enhances learning experiences, enabling educators to convey complex concepts with clarity and coherence (Garcia, 2017). Business and management thrive on well-defined terms, ensuring effective communication, strategic decision-making, and fostering a shared understanding among stakeholders.

Despite its pivotal role, terminoconceptualization encounters challenges arising from the dynamic nature of language and societal contexts. Interdisciplinarity blurs the boundaries between fields, leading to terminological ambiguity and the need for nuanced definitions (Miller, 2020). Cultural differences introduce linguistic variations, necessitating cross-cultural adaptations to ensure effective communication in a globalized world (Jones, 2021). Temporary changes in language and societal norms mandate constant terminological updates, reflecting the evolving nature of concepts and expressions (Smith, 2021). These challenges underscore the dynamic nature of language and the continuous evolution of concepts, necessitating a proactive approach in addressing terminological ambiguities and variations.

In conclusion, the terminoconceptualization of the scientific and linguistic picture of the world is indispensable for the progress of knowledge. By providing a robust framework for communication and understanding, clear and precise terminology forms the cornerstone of scientific and linguistic endeavors (Adams, 2022). Embracing the principles and methods of terminoconceptualization enables researchers, educators, and professionals to navigate the complexities of their respective fields effectively. Moreover, recognizing and addressing the challenges associated with terminoconceptualization is essential to foster meaningful interdisciplinary dialogues and global collaborations.

The importance of terminoconceptualization in shaping the scientific and linguistic landscape cannot be overstressed. Its role in facilitating cross-disciplinary collaborations, enhancing educational practices, and driving technological innovations is pivotal. As we continue to advance in an increasingly interconnected world, the need for constant updating and improvement of terminology becomes apparent (Smith, 2023). Embracing the dynamic nature of language and concepts, researchers and scholars must remain vigilant, adapting their terminological frameworks to reflect the evolving nuances of their fields. In this way, the scientific and linguistic community can ensure that the terminoconceptualization process remains vibrant, relevant, and responsive to the ever-changing demands of the modern world.

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ROLE OF VICHARCHIKARI TAIL AND LAGHU MANJISTHADI KWATH

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ABSTRACT

Eczema, also known as atopic dermatitis, is a common chronic skin condition that can lead to recurrent disease, and poor quality of life if left untreated. Genetic as well as environmental factors are thought to play a part in the pathogenesis. Eczema is most commonly seen in children but can be seen in adults. People with the disease tend to have dry, itchy skin that is prone to infection. Eczema is commonly known as the "itch that rashes" due to dry skin that lead to a rash as a result of scratching or rubbing. the most important treatment of eczema is skin hydration followed by topical steroids for flare-ups. The clinical presentations of Vicharchika is similar to Eczema in modern dermatology.

Therefore to identify an alternative, the study entitled entitled "ROLE OF VICHARCHIKARI TAIL AND LAGHU MANJISTHADI KWATH IN VICHARCHIKA" was undertaken in 40 Vicharchika patients. All selected patients were randomly assigned to two groups, Group A (Vicharchikari Tail) & Group B (Laghu Manjisthadi Kwath). Total duration of study was 45 days along with a follow up period of 15 days. Assessment was done on the basis of subjective and objective parameters. Result-overall response was In Group A, Excellent improvement was seen in 50% of patients and 40% patients shows marked improvement. In Group B showed Excellent improvement was seen in 40% of patients shows Marked improvement in 40% patients. The overall effect of Group A was better than Group B in relieving the symptoms.

KEYWORDS: Eczema, Vicharchika, Mahakushtha, KshudraKushtha, Shodhan, Shaman Atopic dermatitis.

INTRODUCTION

The body's largest organ of defence is the skin. A healthy skin is the mirror image of good health. The unbroken skin is the natural dressing over the body. It effectively serves as a barrier to prevent the spread of illnesses.

In Ayurvedic texts, all skin diseases were included under the term 'Kushtharoga' which is classified into two main divisions i.e., Mahakushtha and Kshudrakushtha. Vicharchika is a type of Kshudra Kushtha often encountered by Ayurvedic dermatologists characterized with symptoms namely Kandu, Srava, Pidika. Main line of treatment for Vicharchika in Ayurveda is Shodhan and Shaman.

In contemporary dermatology, the clinical manifestations of Vicharchika are comparable to Eczema. Eczema (also called atopic dermatitis) is characterized by dry itchy skin with areas of poorly demarcated erythema and scale⁽¹⁾.

In the acute phase eczema may be vesicular and oozing, in the chronic phase it may become hyper pigmented and lichenified (thickened). Excoriations (scratch marks) are frequently seen. The most prevalent type of dermatitis is eczema, sometimes referred to as atopic dermatitis. It is thought that the etiology is influenced by both hereditary and environmental factors. Although it can affect adults, eczema is more frequently found in youngsters. People with the condition frequently have infected, dry, and itchy skin. Eczema is frequently referred to as the "itch that rashes" because of the dry skin that causes a rash when scratched or rubbed. The lifetime prevalence of atopic dermatitis is about 15 – 30% in children and 2 – 10% in adults. About 60% of cases will develop within the first year of life. In contrast to metropolitan settings, atopic dermatitis is more prevalent in rural ones. This incidence emphasizes the link to lifestyle and environment factors in the mechanisms of Atopic dermatitis. Atopic dermatitis is a part of the triad known as the 'Atopic march'. This relates to the association between patients with atopic dermatitis, asthma and allergic rhinitis. About 50% of patients with severe atopic dermatitis will develop asthma, and 75% will develop allergic rhinitis.

Ayurveda believe that all Dosha in balance is essential for well-being Ayurveda offers treatment for the root of eczema by cleansing vitiated Dosha and balancing the Dosha and Dhatus.



According to *Charaka*, the ancient medical authority Ayurveda is characterized by skin eruption with dark discoloration, itching and profuse discharge. Authors like *Vagabhatta*,

Madhavkara and *Bhavmishra* are in agreement with him whereas *Sushruta*, the father of surgery' has mentioned the symptoms as dryness of the skin with intensive itching and marked innings⁽²⁾.

Herbal medicine has a long history that predates human civilization. *Vedas* are the oldest record of human civilization and we can find description of many plants used as medicines in the *Vedas*. Plants were used as medicines not only in India, but also in China, Egypt and Greece before the Christian era. Nature has provided a complete storehouse of remedies to treat all ailments of mankind. Around 3,35,000 plant species are known to be used by humans in some capacity around the world, however only a very small portion of these are actively employed as medicines. Recent studies have shown that the demand for herbal products is increasing all over the world, because of increasing adverse effects of synthetic products. Increasing population, health awareness and increasing side effects of modern medicine are the other factors which have increased the demand of *Ayurvedic* medicines all over the world. In this era, drastic development in the field of science and technology is going on. Scientists are discovering a lot to make our life better. In life is very fast and competitive. Everyone wants to be best. Because of this, persons of this era compromise with their food habits and routine life schedule. The 21st Century has rendered man the primary victim of various ailments due to its constant changes in life styles, the environment, and dietary practices⁽³⁾.

AIMS AND OBJECTIVE

- To evaluate the efficacy of *Vicharchikari Tail* with *Laghu Manjisthadi Kwath* on *Vicharchika*.
- To provide a reliable, cost effective *Ayurvedic* treatment for *Vicharchika*.

MATERIAL AND METHODS

Selection Of Patients:- Patients with clinical features of the *Vicharchika* attending the OPD of *kaya Chikitsa* department of "Rishikul campus" Hospital, Uttarakhand Ayurved University Haridwar. Will be selected randomly for this clinical study, irrespective of sex, religion, occupations, etc. A detail proforma will be prepared on the basis. The patients fulfilling the Inclusion and Exclusion criteria will be registered on this proforma and scoring of the different clinical feature will be done on the assessment criteria.

- **TYPE OF STUDY-** Open Randomised Trial
- **LEVEL OF STUDY-** OPD and IPD level
- **PERIOD OF STUDY-** 18 month (1^{1/2})
- **DURATION OF TREATMENT-** 45 days

METHOD OF TREATMENT/ INTERVENTION

SELECTION OF DRUG:- The two drugs selected for the present study

1. *Vicharchikari Tail*
2. *Laghu Manjisthadi Kwath*

DRUG TRIAL SCHEDULE: The selected patients for trial were randomly divided into following 2 groups.

1. **GROUP 1:-** Patients were treated with "*Vicharchikari Tail*".
2. **GROUP 2:-** Patients were treated with "*Laghu Manjisthadi Kwath*".

FORM OF MEDICINE – Tail, Kwath

DRUG DOSAGES

1. *Vicharchikari Tail* - Applied on affected area twice a day for 45 days.
2. *Laghu Manjisthadi Kwath* - 40 ml before meal twice a day for 45 days.

ROUTE OF ADMINISTRATIONS – Local Application, Oral

ASSESSMENT CRITERIA: The assessment was done at an interval of 15 days.



INGREDIENTS

Group 1

Table no 1: The Ingredients of Vicharchikari tail

S.NO.	DRUG	PART USED	PART
1.	<i>Chameli</i>	Leaf	1 Part
2.	<i>Nimba</i>	Leaf	1 Part
3.	<i>Arka</i>	Leaf	1 Part
4.	<i>Kutaja</i>	Stem bark	1 Part
5.	<i>Dronpushpi</i>	Leaf	1 Part
6.	<i>Haridra</i>	Rhizome	1 Part
7.	<i>Vatsnaabha</i>	Root	1 Part
8.	Vyosha	<i>Shunthi</i>	1 Part
		<i>Maricha</i>	
		<i>Pippali</i>	
9.	<i>Kuchala</i>	Seed	1 Part
10.	<i>Kaner</i>	Root	1 Part
11.	<i>Manahshila</i>		1 Part
12.	<i>Hartaala</i>		1 Part
13.	<i>Kashisa</i>		1 Part
14.	<i>Shunthi</i>	Rhizome	1 Part
15.	<i>Sarshpa</i>	Oil	1 Part

Group 2

Table no 2: The Ingredients of Laghu Manjisthadi Kwath

S.NO.	DRUG	PART USED	PART
1.	<i>Manjistha</i>	Stem bark	1 Part
2.	<i>Vibhitaki</i>	fruit	1Part
3.	<i>Haritiki</i>	fruit	1 part
4.	<i>Amalaki</i>	fruit	1 part
5.	<i>Kutaki</i>	Root	1 part
6.	<i>Vacha</i>	Root	1 part
7.	<i>Daruharidra</i>	Stem bark	1 part
8.	<i>Haridra</i>	Rhizome	1 part
9.	<i>Guduchi</i>	Stem	1 part
10.	<i>Nimba</i>	leaf	1 part

SUBJECTIVE PARAMETER

Table no 3: Grading of Subjective Parameters

Subjective Parameters	Grade 0	Grade 1	Grade 2	Grade 3
Kandu (Itching)	No itching	Mild/infrequent itching	Moderate (tolerable)	Very severe itching disturbing sleep and other activity
Vedana (Pain)	No pain	Mild pain	Moderate (tolerable)	Very Sever pain
Daha (Burning sensation)	No burning sensation	Mild burning sensation after itching	Moderate burning sensation with no disturbance in sleep	Sever burning sensation with disturbed sleep
Vivarnata (Discolouration)	Normal skin colour	Brownish red discoloration	Blackish red discoloration	Blackish discoloration
Srava (Discharge)	No discharge	Slightly discharge	Moderate discharge	Extremely discharge
Rukshata (Dryness)	No dryness	Slightly dryness	Dry	Extremely dry
Thickness	No Thickness	Slightly raised	Thick	Very thick



OBJECTIVE PARAMETER

Table no 4: Grading of Objective parameters

Objective Parameters	Grade 0	Grade 1	Grade 2	Grade 3
No. of <i>Mandala</i>	No. of <i>Mandala</i>	1 to 3 <i>Mandala</i>	4 to 6 <i>Mandala</i>	> 7 <i>Mandala</i>
Area occupied by the <i>Mandala</i>	Zero cm ²	< 25 cm ²	25 to 50 cm ²	> 50 cm ²

FOLLOW UP

The follow up was done at the interval of 15 days after completion of trial.

INCLUSION CRITERIA

1. Patients having the signs & Symptoms of *Vicharchika*.
2. Age group between 20 to 60 years.
3. Patient willing to participate in above mentioned trial with informed consent.

EXCLUSION CRITERIA

1. Age group less than 20 year and more than 60 year.
2. Pregnancy and lactations.
3. Patient known case of Psoriasis, leprosy, local burn etc.
4. Any other secondary skin diseases.
5. Uncontrolled Diabetic & Hypertension patients.

CRITERIA FOR WITHDRAWAL

1. Personal matters
2. Intercurrent illness
3. Aggravation of complaints.
4. Leave against medical advice (LAMA).

INVESTIGATIONS

- HB%
- T.L.C
- D.L.C
- E.S.R
- Blood sugar (random)
- SGOT, SGPT
- Blood urea, Serum creatinine.
- Serum cholesterol.
- Urine - routine and microscope.

OBSERVATION AND RESULTS

Statistical Analysis

- **Wilcoxon signed rank test** was applied on the subjective parameters.
- **Paired ‘t’ test** was applied on objective parameters.
- The test were carried at the level of 0.05, 0.01, 0.001 level of p.
- For inter group comparison of subjective parameters, **Mann Whitney ‘U’ test** was used.
- For inter group comparison of objective parameters **Unpaired ‘t’ test** was used.

Assessment of overall effect of the Therapy

All the B.T. score of the above-mentioned symptoms & objective parameters of the patient were added.
All the A.T. score of the above-mentioned symptoms & objective parameters of the patient were added.
Overall percentage improvement of each patients was calculated by the following formula;

$$\frac{\text{Total BT}-\text{Total AT}}{\text{Total BT}} \times 100$$



Over-all assessment of therapy

The result thus obtained from individual patient was categorized according to the following grades:

- Excellent $\geq 75\%$ relief
- Marked Improvement $\geq 50\%$ up to 74% relief
- Mild improvement $\geq 25\%$ up to 49% relief
- No improvement $\leq 24\%$ relief

Table no 5: Shows Status of The 40 Patients of Vicharchika

S.NO.	GROUP	TOTAL REGISTERED	LAMA	COMPLETED
I	<i>Vicharchikari Tail</i>	20	0	20
II	<i>Laghu Manjisthadi Kwath</i>	20	0	20

Table no 6: Demographic Distribution of patients

S.No.	Features	No. of patients	Percentage
1.	Age (31-40)	16	40%
2.	Sex (Male)	22	55%
3.	Religion (Hindu)	35	87%
4.	Marital (Married)	32	80%
5.	SES(Middle class)	29	73%
6.	Occupation(housewives)	13	33%
7.	Agni (Mandagni)	21	52%
8.	<i>Deha prakriti</i> (Kapha-pitta)	16	40%
9.	Bowel (regular)	26	65%
10.	Sleep (disturbed)	25	62%
11.	Area (Urban)	28	70%
12.	Chronicity (< 6 months)	16	40%
13.	Nature Of Allergens(winter)	19	47%
14.	Type Of Disease (<i>Shushka</i>)	22	55%
15.	Area Of Involvement (Lower Extremities)	18	45%
16.	Addiction (TEA(>2times/day))	19	47%
17.	<i>Jarana Shakti</i>	26	65%

Table no 7: Sign and Symptoms Wise Distribution of 40 patients of Vicharchika

SIGNS & SYMPTOMS	Group I	Group Ii	Total	Percentage
<i>Kandu</i> (Itching)	20	20	40	100%
<i>Vedana</i> (Pain)	09	10	19	47.5%
<i>Daha</i> (Burning sensation)	20	19	39	97.5%
<i>Vivaranata</i> (Discolourations)	20	20	40	100%
<i>Srava</i> (Discharge)	04	17	21	52.5%
<i>Mandala</i>	18	17	35	87.5%

Table no 8: Efficacy Study of Group 1 On Subjective Parameters in Vicharchika

Group-A Sub.	MEDIAN		MEAN		SD	SE	Wilcoxon W	P-Value	% Effect	Result
	BT	AT	BT	AT						
<i>Kandu</i> (Itching)	2	0	2	0.15	0.587	0.131	-210	<0.001	92.5%	HS
<i>Vedana</i> (Pain)	1	0	1	0	0	0	-28	<0.01	100%	S
<i>Daha</i> (Burning sensation)	1	0	1.4	0	0.502	0.112	-210	<0.001	100%	HS
<i>Vivaranata</i> (Discolouration)	3	1	2.25	0.6	0.745	0.166	-190	<0.001	73.33%	HS
<i>Srava</i> (Discharge)	1	0	1	0	0	0	-10	>0.05	100%	NS
Thickness	2	0	1.8	0.4	0.502	0.112	-210	<0.001	77.77%	HS



Table no 9: Efficacy Study of Group 1 On Objective Parameters in Vicharchika

Group B Obj.	N	MEAN		D	Paired t test	SD	SE	P-Value	% Effect	Result
		BT	AT							
No. of Mandala	20	1.15	0.65	0.50	4.359	0.513	0.115	<0.001	43.47	HS
Area of Mandala	20	1.35	0.8	0.55	4.819	0.510	0.114	<0.001	47.82%	HS

Table no 10: : Efficacy Study of Group 2 On Subjective Parameters in Vicharchika

Group-B Sub.	MEDIAN		MEAN		SD	SE	Wilcoxon W	P-Value	% Effect	Result
	BT	AT	BT	AT						
<i>Kandu</i> (Itching)	2	0.5	1.8	0.55	0.550	0.123	-190	<0.001	69.4%	HS
<i>Vedana</i> (Pain)	1	0	1.4	0.42	0.378	0.142	-21	<0.01	60%	S
<i>Daha</i> (Burning sensation)	1	0	1.2	0.4	0.410	0.091	-136	<0.001	66.6%	HS
<i>Vivaranata</i> (Discolouration)	3	1	2.1	0.85	0.638	0.142	-171	<0.001	59.52%	HS
<i>Srava</i> (Discharge)	1	0	1.06	0.46	0.507	0.130	-45	<0.01	56.2%	S
Thickness	1	1	1.4	0.6	0.600	0.145	-91	<0.001	62.5%	HS

Table no 11: Efficacy Study of Group 2 On Objective Parameters in Vicharchika

Group B Obj.	N	MEAN		D	Paired t test	SD	SE	P-Value	% Effect	Result
		BT	AT							
No. of Mandala	20	1.1	0.7	0.4	3.559	0.503	0.112	<0.01	36.36%	S
Area of Mandala	20	1.1	0.75	0.35	2.854	0.470	0.105	<0.01	31.81%	S

Table no 12: Intergroup Comparison of Subjective Parameters

Variable	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	P-Value	Result
<i>Kandu</i>	Group A	20	1.85	420.0	508.5	<0.01	S
	Group B	20	1.25	400.0			
	Total	40					
<i>Vedana</i>	Group A	7	1	56	56.00	>0.05	NS
	Group B	7	0.857	49			
	Total	14					
<i>Daha</i>	Group A	20	1.4	514	514.0	<0.01	S
	Group B	20	0.8	306			
	Total	40					
<i>Vivaranata</i>	Group A	20	1.65	469.5	468.5	>0.05	NS
	Group B	20	1.25	353.5			
	Total	40					
<i>Srava</i>	Group A	4	1	52.8	52.0	>0.05	NS
	Group B	15	0.6	139.8			
	Total	19					
Thickness	Group A	20	1.4	453.2	251.0	<0.01	S
	Group B	17	0.882	252.1			
	Total	37					



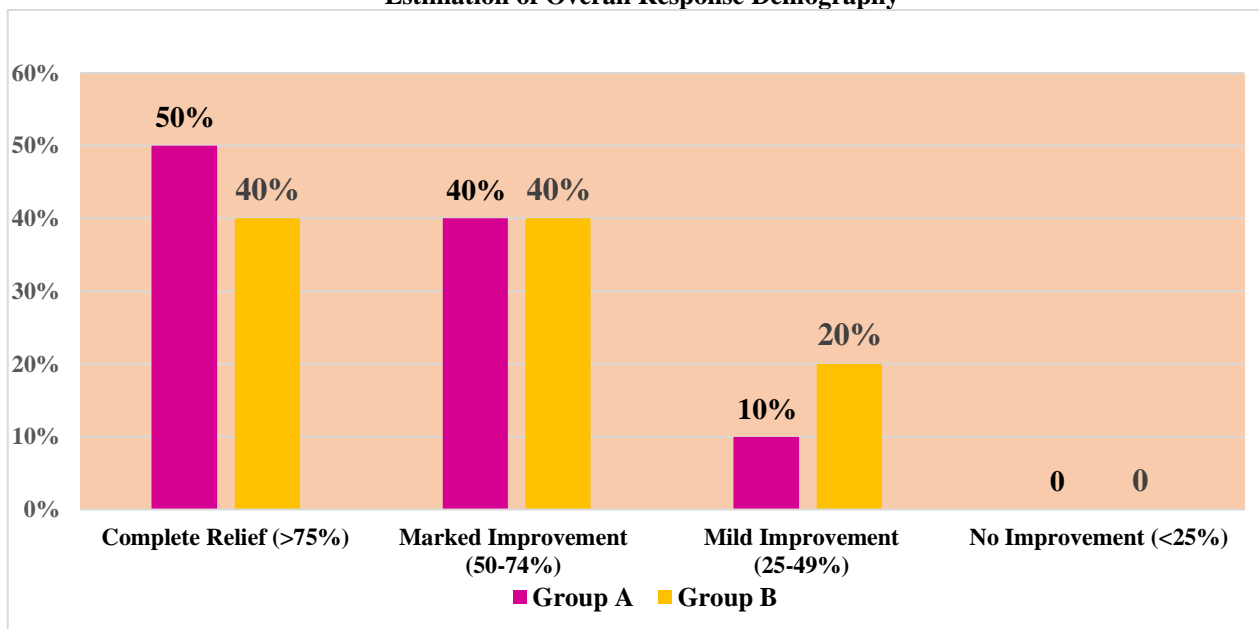
Table no 13: Intergroup Comparison of Objective Parameters

Variable	Group	N	Mean difference	SD	T-Value	P-Value	Result
No. of Mandala	Group A	20	0.550	0.510	0.936	>0.05	NS
	Group B	20	0.400	0.503			
	Total	40					
Area of Mandala	Group A	20	0.650	0.489	1.939	>0.05	NS
	Group B	20	0.350	0.489			
	Total	40					

Table no 14: Estimation of Overall Response in Each Group

Overall effect	Group 1		Group 2	
	No	Percentage %	No	Percentage %
Complete relief (>75%)	10	50%	8	40%
Marked Improvement (50-74%)	9	40%	8	40%
Mild Improvement (25-49%)	1	10%	4	20%
No Improvement (<25%)	0	00%	0	00%

Estimation of Overall Response Demography



DISCUSSION

Discussion on Observation

It was found that majority of patients (40%) were in the age group of 31-40 years. This data indicates of younger age group people, it may be due to hectic life style and dietary disturbances. It was found that maximum patients were male (55%). In our study, 33% of patients were housewife, it may be stressful condition aggravates the disease.

In this study maximum patients i.e.(73%) were from Middle class, As stated, earlier patients were selected from government hospital, which provides free medication.

In this study Maximum number of patients i.e. (70%) were from Urban area. Urban lifestyle which is full of polluted air, irregular and unhygienic dietary habits and stressful routine can be one of the causes.

Maximum number of patients i.e. (70%) were from Urban area. Urban lifestyle which is full of polluted air, irregular and unhygienic dietary habits and stressful routine can be one of the causes. Apart from this location of hospital in Urban region is also significant. out of 40 patients, (62%) were having disturbed sleep. Disturbed sleep was perhaps a result of the disease because itching is symptoms of the disease.



maximum i.e., (40%) patients were having <6 months chronicity. This observation shows chronic nature of the disease. In this study Majority of the patients (50%) were addicted to tea/coffee. . Excessive intake of tea vitiate *Pitta Dosha* which increased risk of *Vicharchika*. that lead to excessive burning in *Vicharchika*. Maximum no. of patients (65%) were of *Madhyama Jarana Shakti*, *Jarana Shakti* indicates towards the *Bala* (strength) of the *Agni* of the patients. Thus decrease strength of *Agni* may lead to formation of *Ama* and *Annavish* which causes *Mandagni* and *Tridosha Prakopa*. Also indigested food produces free radical which is cause of *Vicharchika*.

DISCUSSION ON EFFECT OF THERAPY

In Group 1 (*Vicharchikari Tail*)

- statistically high significant result found in **subjective parameters** like *Kandu, Daha, Vivarnata, thickness* ($P<0.001$).
- statistically significant result found in **subjective parameters** like *Vedana* as value of ($P<0.01$).
- statistically non-significant result found in **subjective parameters** like *Srava* as value of (>0.05).
- statistically high significant result found in **objective parameters** like *No of Mandala* and *Area of Mandala* as value of ($P<0.001$).

In Group 2 (*Laghu Manjisthadi Kwath*)

- statistically high significant result found in **subjective parameters** like *Kandu, Daha, Vivarnata, Thickness* ($P<0.001$).
- statistically significant result found in **subjective parameters** like *Vedana, Srava* as value of ($P<0.05$).
- statistically significant result found in **objective parameters** like *No of Mandala* and *Area of Mandala* as value of ($P<0.05$).

ASSESSMENT OF TOTAL OUTCOME

- Overall response in **Group A** was **Excellent** improvement in **50%** patients, **Marked** improvement in **40%** patients. and **Mild** improvement in **10%** patients whereas **0%** patients showed no improvement.
- While **Group B** showed **Excellent** improvement in **40%** patients, **Marked** improvement in **40%** patients and **Mild** improvement in **20%** whereas **0%** patients showed no improvement.

PROBABLE MODE OF ACTION OF VICHARCHIKARI TAIL

- *Vicharchikari tail* is described the *Bhaisajya-Ratnavali* (*B.R 54/325-327*)
- All these have *Vicharchikari tail* with the properties like- *Ushna, Tikshna, Laghu, Madhura, Lekhana Guna, Ushna Virya & Katu Vipaka*. This *Tail* is also having *Sukshma* properties. Pharmacologically all the ingredients of tail have an Anti-microbial, Anti-fungal, anti-inflammatory, anti-allergic action hence can effectively reduce the infection and prevent its recurrence by improving the immunity of skin by its antioxidant property.
- *Vicharchikari Tail* has been selected because of its *Kushthaghna, Kaphavatahara, and Rasayana* (Rejuvenation) effect on *Twak* (Skin), and its ingredients have the properties to restore the natural functions of *Bhrajaka Pitta*. *Tail* having the property of deep penetration helps to remove inflammatory substances and promote the regeneration of new tissue.
- These drugs are having *Katu, Tikta, Kashya rasa* which makes the drugs to act as *Kapha shamaka, Ama Dosha hara* drugs.
- *Katu Rasa* removes the obstruction and and thus correct the *Srotoshodhana*.
- *Vishaghna, Krimighna, Dahaprashamana, Kandughna, and Kushthaghna* are among the properties that belong to *Tikta Rasa*.
- Most of the ingredients are of *Ushna Virya*, which has *Vata-kapha shamaka* and *Ashupaka* property through which it works quickly at minute channels.
- *Shodhana* of *Srotas* (Removal of blockage in microchannels) can be helped by *Katu Vipaka*.

PROBABLE MODE OF ACTION OF LAGHU MANJISTHADI KWATH:

- *Laghu manjishthadi Kwath* is described in *Bhaishajya Ratnakara* (*B.R. 54/66-67*).
- The contents such as *Manjishta, Katuki, Haridra, Giloy* and *Nimba* having *Rakta Shodhaka* property removes the *Ama* (Advanced glycation end products and toxic substances) from blood and helps to maintain moisture and pH of the skin.
- The contents of *Laghu manjishthadi Kwatha* such as *Vibhitaki* and *Amalaki* having *Deepana, Pachana* activities (Improving digestion and metabolism) result in correction of functions of *Agni*, and thus prevents a further vitiation of blood, skin hydration, and pH, as well as the formation of *Ama* (Advanced Glycation End Products and Toxic Substances).



- *Laghu Manjishthadi Kwatha* such as *Manjistha*, *Amalaki*, and *Haritaki* possess Antiproliferative, Antifungal, Antimicrobial, And Anti-Inflammatory activities.
- *Laghu Manjishthadi Kwatha* mentioned in *Bhaishajya Ratnakara* has been selected because of its efficient mode of action in *Rakta Dushti* (Blood impurities), *Twak Vikara* (Skin related disorders), easy availability, and cost-effectiveness, *Laghu Manjishthadi Kwath* without producing any side effects.
- Most of drugs are *Deepana*, *Pachana*, *Laghu*, *Ruksha*, *Ushna* and *Tikshna*. So they do *Aampachan*. So the *Srotorodha* is removed and *Sroto Vishodhana* is done.

CONCLUSIONS

- *Vicharchika* being a *Kshudra Kushtha* has *Kapha* dominance.
- Contrary to previous belief that its increased incidence is found in elderly patients it has been studied that it is significantly prevalent in middle aged persons.
- *Vicharchika* in modern medical science has similarity with Eczema.
- Maximum number of patients had the chronicity of more than 6 months but some were suffering from few years also had previously undergone allopathic treatment.
- Maximum patients had the history of tea addiction and *Virudha Ahara* which clearly shows the role of *Ama* formation in pathogenesis of *Kushtha*.
- Family history was not reported in maximum patients which suggests that the disease is not hereditary.
- From this study it is concluded that the effect of *Vicharchikari Tail* is much better than effect of *Laghu Manjishthadi Kwath* only in managing the patients of *Vicharchika*.
- Overall effect of *Vicharchikari Tail* can be summarized as *Tridosha Shamaka* (mainly *kaphaja*). *Kushthaghna*, *kandughna*, *krimighna*, *rakta-shodhana*, *deepana*, *pachana*.
- Remission of treatment which leads to fact that *Vicharchika*, is a *Yapya* disease.
- No adverse drug reaction was found during the course of treatment in both the groups.

RECOMMENDATION

Vicharchikari Tail reveals admirable results when given to the patients of Mild to Moderate stages of *Vicharchika* but further evaluation is to be done as:

- Study should be repeated by taking large sample with longer duration to see better of drug and to know its efficacy the recurrence of disease in follow ups has decreased or not.

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ANALYSIS OF THE EFFECT OF TURMERIC (CURCUMA LONGA) ETHANOL EXTRACT IN WOUND HEALING AFTER TOOTH EXTRACTION

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ABSTRACT

Tooth extraction will cause a wound in the form of exposed alveolar bone in the oral cavity. The wound healing process can be divided into three main phases, namely, the inflammatory phase, the proliferation phase, and the remodeling phase. Curcumin is a bright yellow spice derived from the rhizome of *Curcuma longa* Linn. Scientific studies have shown the beneficial pharmacological effects of curcumin. This study aims to analyze the impact of administering turmeric (*Curcuma longa*) extract 35% with 65% in accelerating wound healing time after tooth extraction in Wistar rats. This experimental laboratory study uses a randomized controlled design with a post-test-only control group design pattern, March 2023. The experimental animals used in this study were Wistar rats, 32 males, physically healthy, 2-3 months old, with a body weight between 200-250 grams. There was a significant relationship between the number of fibroblast tissue per field of view in Wistar rats after tooth extraction by administering Turmeric Extract (*Curcuma Longa*) with a concentration of 35%, and Turmeric Extract (*Curcuma Longa*) with a concentration of 65%, $p = 0.002$ ($p < 0.05$). Conclusion Based on the results and discussions in this study, it can be concluded that turmeric extract (*Curcuma Longa*) effectively accelerates wound healing time after tooth extraction of Wistar rats. The more sections given increase the effectiveness of healing in the wounds of experimental animals.

KEYWORDS: *Curcuma longa* Linn, Wound healing, Tooth Extraction

I. INTRODUCTION

In dentistry, tooth extraction is one of the most common surgical procedures worldwide (1). The ideal tooth extraction is a painless extraction of one whole tooth or tooth root with minimal trauma to the supporting tissues of the tooth so that the extraction site can heal completely and there are no postoperative prosthetic problems in the future (2). Tooth extraction will cause a wound in the form of exposed alveolar bone in the oral cavity (3). Wounds are anatomical damage or destruction of some tissues due to trauma (4). Routine wound healing is a complex and dynamic process (5). The wound healing process can be divided into three main phases, namely, the inflammatory phase, the proliferation phase, and the remodeling phase (6).

The World Health Organization (WHO) recommends using traditional medicine, including herbs, to maintain public health and prevent and treat diseases, especially chronic diseases, degenerative diseases, and cancer (7). Herbal products have been used since ancient times in the medical world. Nowadays, herbs are starting to be widely used for various treatments. Modern research results also show that herbal medicines are effective for health and cause fewer side effects than chemical drugs (2); (8). The roots of *Curcuma longa* L. have been used as medicine for thousands of years. The plant has several pharmacological properties, including anti-inflammatory actions (9); (10). Curcumin is a bright yellow spice derived from the rhizome of *Curcuma longa* Linn. It has been shown that curcumin is a highly pleiotropic molecule that can be a modulator of intracellular signaling pathways controlling cell growth, inflammation, and apoptosis (11). Scientific studies have shown the beneficial pharmacological effects of curcumin. This study aims to analyze the impact of administering turmeric (*Curcuma longa*) extract 35% with 65% in accelerating wound healing time after tooth extraction in Wistar rats.

II. RESEARCH METHODS

This experimental laboratory study uses a randomized controlled design with a post test only control group design pattern, March 2023. The experimental animals used in this study are Wistar rats, 32 males, physically healthy, 2-3 months old, with a body weight between 200-250 grams. The rats will be divided into two groups, namely, 16 treated with 35% turmeric extract (*Curcumin Longa*) and 16 treated with 65% turmeric extract (*Curcumin Longa*) to see the comparison of accelerated wound healing after tooth extraction. The sample size was determined by the Federer formula, namely: $(t - 1)(r - 1) \geq 15$. Where t = several treatments; (2 treatments) r = several replications. Thus, the minimum sample size for each treatment was 16 rats.



$$\begin{aligned} &= (t-1)(r-1) \geq 15 \\ &= (2-1)(r-1) \geq 15 \\ &= (r-1) \geq 15 \\ &= (r-1) \geq 15 \\ &= r \geq 15 + 1 \\ &= r \geq 16 \end{aligned}$$

Materials used in the study

1. Turmeric (Curcumin Longa) Extract 30%
2. Turmeric Extract (Curcumin Longa) 60%
3. Ketamine.
4. Formalin 10%.
5. Histology preparation material with Hematoxylin Eosin (HE) staining.
6. 70% alcohol as sterilization material.
7. Cotton pellet.

Treatment of Wistar Rats

1. Before treatment, 32 rats were divided into 35% turmeric extract and 65% turmeric extract. After that, all rats were adapted for one week. Then, animals were put into cages, with five rats in each cell in the same environmental conditions, given the same food, and monitored for health.
2. Rat tooth extraction will be performed using a modified needle holder under the anesthetic effect of ketamine 1000 mg/10 ml at a dose of 20 mg/kg bw intraperitoneally.
3. One incisor tooth will be extracted from every five rats daily.
4. After tooth extraction, observe the extraction wound and apply a tampon (cotton pellet) to stop bleeding in the wound for 5 minutes.
5. Dropped turmeric extract (Curcumin Longa) 35% in treatment group I and dropped turmeric extract (Curcumin Longa) 65% in treatment group II shortly after tooth extraction as much as 0.05 ml every day.
6. After extraction and treatment, the test animals (rats) were fed fine porridge with attention to the health of the test animals.
7. On the 5th day after tooth extraction, rats from each group were physically sacrificed by neck dislocation. The rat's tail was held and then placed on a surface it could reach. The rat will stretch its body; when the rat's body extends, a holder held by the left hand is placed on the nape of the neck. The right hand pulls the tail hard so the rat's neck will be dislocated. Then the jaw of the rat is taken out.
8. Then the tissue was fixed with 10% formalin for 24 hours at room temperature, then the decalcification process was carried out using Ethylene Diamine Tetra Acetic Acid (EDTA 10%) solution at room temperature.
9. Tissue dehydration was then performed using alcohol. First, the specimen was put into toluol alcohol solution (1:1) using pure toluol, then into a paraffin-saturated toluol solution.
10. The following process is infiltration in the oven by inserting the specimen into liquid paraffin.
11. The embedding process is carried out (inserting the tissue into paraffin) and then labeled/coded. After the embedding stage, the tissue is sliced in series with a thickness of approximately 6 microns using a microtome.
12. Evaluating fibroblast cell response using Hematoxylin Eosin (HE) staining. The procedure that must be done is deparaffinization using xylol and alcohol solution, then continued with the rehydration process with alcohol. After that, it is washed with running water, rinsed with distilled water, and then wiped. The glass slide was then placed in Meyer's hematoxylin solution, washed with running water, and then rinsed with distilled water, after which the staining was assessed under a light microscope. If the staining has been considered good, proceed to the next step, namely the dehydration process with alcohol in stages, and then wipe.
13. The next step, put it into xylol solution, and the object glass was covered with deck glass and observed using a light microscope.
14. Fibroblast density was assessed by counting the fibroblasts in 5 fields of view.

Histopathology Scoring Parameters for Fibroblast Counts

Histopathology scoring parameters to determine the distribution of fibroblast tissue is done based on the field of view is:

1. (-) = no fibroblast tissue found
2. (+) = small number of fibroblasts (less than 10% per field of view)
3. (++) = moderate amount of fibroblast tissue (10%-35% per field of view)
4. (+++) = large amount of fibroblast tissue (35%-65% per field of view)



Research Variables

The variables in this study consist of:

1. Independent variable: Turmeric Extract (Curcumin Longa) 35% and 65%.
2. Dependent variable: Wound healing process after tooth extraction.

Data Analysis Method

Data analysis using the SPSS 16 program. Research using a pure experiment with a nonparametric Chi-Square Test, after testing, showed that ($p < 0.05$) means there is a significant difference between groups.

III. RESULTS AND DISCUSSION

Table 1. Distribution and Frequency Data of Fibroblast Tissue Counts Per Field of View After Tooth Extraction

NO	Number of Fibroblasts	Turmeric (Curcuma Longa)			
		Concentration 35%		Concentration 65%	
		n	%	n	%
1	No fibroblast tissue found	0	0	0	0
2	A small number of fibroblasts (less than 10% per field of view)	9	28	2	9
3	Moderate amount of fibroblast tissue (10%-35% per field of view)	4	16	7	19
4	A large amount of fibroblast tissue (35%-65% per field of view).	3	6	7	22

From Table 1. it can be seen that all samples found fibroblast tissue in the administration of turmeric extract (Curcuma Longa) 35% and 65% after tooth extraction of Wistar rats. The number of fibroblasts found in the small category (less than 10% per field of view) in the administration of turmeric extract (Curcuma Longa) 35% after tooth extraction of Wistar rats was 9 (28%) and in the administration of turmeric extract (Curcuma Longa) 65% was 3 (9%). The number of fibroblasts found in the moderate category (10%-35% per field of view) in the administration of turmeric extract (Curcuma Longa) 35% after tooth extraction of Wistar rats as many as 5 (16%) heads and in the administration of turmeric extract (Curcuma Longa) 65% as many as 6 (19%) heads. The number of fibroblasts found in the large category (35% - 65% per field of view) in the administration of turmeric extract (Curcuma Longa) 35% after tooth extraction of Wistar rats as many as 2 (6%) heads and in the administration of turmeric extract (Curcuma Longa) 65% as many as 7 (22%) heads.

Table 2. Relationship between the number of tissue fibroblasts per field of view in Wistar rats after tooth extraction with turmeric extract concentrations of 35% and 65%

Number of Fibroblasts	Turmeric (Curcuma Longa)		p
	Concentration 35%	Concentration 65%	
1. No fibroblast tissue was found	0	0	0,002*
2. A small number of fibroblasts (less than 10% per field of view)	9	2	
3. Moderate amount of fibroblast tissue (10%-35% per field of view)	4	7	
4. A Large fibroblast tissue (35%-65% per field of view).	3	7	

Significant $p < 0.05$. Chi Square Test

From Table 2. it can be seen that there is a significant relationship between the number of fibroblast tissue per field of view in Wistar rats after tooth extraction by administering Turmeric Extract (Curcuma Longa) with a concentration of 35% and Turmeric Extract (Curcuma Longa) with a concentration of 65%, $p = 0.002$ ($p < 0.05$).

IV. DISCUSSION

This study's results obtained a P-value of $0.002 \leq 0.05$, which states that there is an effect of giving turmeric extract with an accelerated healing process after extraction in experimental animals. The results of this study are supported by research by Budiman et al. in 2015 on the effect of Turmeric (Curcuma Longa) on incision wound closure time in mice (9). This study showed that Turmeric (Curcuma Longa) influences the closing time of incision wounds on the oral mucosa of Wistar rats. Wounds in Wistar rats given Turmeric (Curcuma Longa) closed faster than Wistar rats that were not given Turmeric (Curcuma Longa). Active substances such as mannose, glucomannan, chrysophane acid, acemannan, flavonoids, saponins, tannins, vitamin A, vitamin C, vitamin E, and enzymes contained in Turmeric (Curcuma Longa) are beneficial in the wound healing process (12); (13); (2).



Tannin contains astringents to stop bleeding, accelerate wound healing, reduce mucous membrane inflammation, and regenerate new tissue. In addition, tannin content has antibacterial ability (2). The tannin content accelerates wound healing by several cellular mechanisms, namely scavenging free radicals and reactive oxygen, enhancing wound closure, and increasing the formation of capillary blood vessels and fibroblasts (14). Flavonoids in Turmeric (*Curcuma Longa*) function as antioxidants, antimicrobials, and anti-inflammatories in wounds (15). Flavonoids can help wound healing by increasing collagen formation, reducing tissue edema, and increasing the number of fibroblasts (16). The examination results showed that the total flavonoid content in 65% Turmeric (*Curcuma Longa*) extract was 2.39%, and the entire flavonoid content in 35% Turmeric (*Curcuma Longa*) extract was 1.19%, so it was found that 65% Turmeric (*Curcuma Longa*) extract was more effective in accelerating wound healing.

From the results of this study, it can be seen that 65% Turmeric (*Curcuma Longa*) extract is more effective in the wound healing process than 35% Turmeric (*Curcuma Longa*) extract because the higher the concentration of the section, the content in the Turmeric (*Curcuma Longa*) extract is also higher so that the wound healing process is faster.

V. CONCLUSION

Based on the results and discussion that has been done in this study, it can be concluded that turmeric extract (*Curcuma longa*) is effective in accelerating wound healing time after tooth extraction of Wistar rats. The more sections given increase the effectiveness of healing in the wounds of experimental animals.

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NAVIGATING THE CROSSROADS: HOW HOSPITAL NARCOTIC DRUG POLICIES SHAPE NURSING PRACTICE AND PATIENT OUTCOMES

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ABSTRACT

This comprehensive article explores the multifaceted and dynamic impact of hospital narcotic drug policies on nursing practice. The administration of narcotic drugs within healthcare facilities is a vital aspect of patient care, and the policies governing this process play a pivotal role in shaping the responsibilities and practices of nursing staff. Understanding how these policies affect the workflow, decision-making, and overall job satisfaction of nurses is essential, as it significantly influences patient outcomes. This article delves into the policies, their influence on nursing practice, the ultimate impact on patient care, as well as the challenges and potential improvements in the system.

KEYWORDS: *Narcotic drug policies, nursing practice, healthcare policies, patient care, opioids, nursing workflow, policy impact, patient safety, pain management, drug administration.*

INTRODUCTION

The management and administration of narcotic drugs within a hospital setting are integral aspects of patient care. The complexities surrounding this process necessitate detailed hospital policies and guidelines. These policies play a crucial role in ensuring the safety of patients, preventing substance abuse, and maintaining ethical and legal standards within healthcare facilities. However, the policies also influence the nursing practice, affecting the workflow, decision-making processes, and job satisfaction of nursing staff. This, in turn, significantly influences patient outcomes.

In this article, we aim to provide a comprehensive understanding of how hospital narcotic drug policies impact nursing practice. We will discuss the standard policies and guidelines, their ethical and legal framework, and their role in ensuring patient safety. We will also delve into the consequences for nursing practice, the influence of policies on pain management strategies, and the challenges nurses face when adhering to these policies. Furthermore, we will explore the correlation between nursing practice and patient outcomes, examining the role of narcotic drug policies in maintaining patient comfort and addressing potential barriers. Finally, we will discuss the impact of these policies on job satisfaction, nurse burnout, and strategies for improving the overall work environment.

HOSPITAL NARCOTIC DRUG POLICIES

Hospital narcotic drug policies provide the foundation for the safe and responsible administration of narcotic medications within healthcare facilities. These policies are shaped by a

combination of legal, ethical, and practical considerations. They serve as a guide for healthcare professionals, including nurses, to ensure that narcotic drugs are used appropriately, safely, and effectively. These policies outline the protocols for ordering, storing, administering, and monitoring narcotic medications, and they emphasize the importance of maintaining accurate records.

- **Legal and Ethical Framework:** Hospital narcotic drug policies are grounded in both legal and ethical frameworks. The legal aspect involves compliance with federal and state laws related to controlled substances. Ethical considerations include ensuring that narcotic drugs are used solely for medical purposes, and that the rights and dignity of patients are preserved.
- **Ensuring Patient Safety:** One of the primary objectives of hospital narcotic drug policies is to ensure patient safety. These policies help prevent medication errors, overdoses, and diversion of narcotics. They also aim to protect patients from potential addiction and misuse of these potent drugs.

IMPACT ON NURSING PRACTICE

The influence of hospital narcotic drug policies on nursing practice is profound and multifaceted. Nurses are at the forefront of administering medications to patients, including narcotic drugs. These policies shape the responsibilities, practices, and challenges faced by nurses.

- **Changes in Workflow:** Hospital narcotic drug policies often necessitate changes in the workflow of nursing staff. Nurses must follow a set of protocols when handling narcotic medications, which can include double-checking



the medication with another nurse and carefully documenting the administration. These additional steps can impact the speed and efficiency of nursing tasks.

- **Influence on Pain Management Strategies:** Effective pain management is a cornerstone of nursing care, and narcotic drugs play a crucial role in achieving this goal. Hospital policies can influence the choice of pain management strategies and the administration of narcotics. Nurses must carefully assess patient pain levels and administer medications within the guidelines set by hospital policies.
- **Minimizing Drug Diversion and Misuse:** Hospital narcotic drug policies are designed to minimize drug diversion and misuse, which can have serious consequences for both patients and healthcare providers. Nurses are responsible for monitoring and safeguarding these medications to prevent unauthorized access.
- **Challenges for Nurses:** Nurses often face significant challenges in adhering to hospital narcotic drug policies. These challenges can include tight time constraints, complex documentation requirements, and the need for precise calculations when administering medications. Additionally, nurses must strike a balance between addressing patient pain effectively and ensuring narcotic drug safety, which can be a delicate task.

PATIENT OUTCOMES

The impact of hospital narcotic drug policies on nursing practice has a direct and substantial effect on patient outcomes. Patient care quality is intricately linked to nursing practice, which is in turn influenced by these policies.

- **Pain Management and Patient Comfort:** Effective pain management is essential for patient comfort. Hospital policies can shape the approach to pain management, which can influence how comfortable patients are during their hospital stay. The policies guide nursing decisions regarding when and how narcotic medications are administered to alleviate patient pain.
- **Addressing Potential Barriers:** Hospital narcotic drug policies can pose potential barriers to patient care. These policies can create bottlenecks and slow down nursing tasks, potentially affecting the timeliness of pain relief. Addressing these barriers requires careful consideration of policy implementation and potential modifications.

JOB SATISFACTION AND BURNOUT

Job satisfaction among nursing staff and the risk of burnout are significant concerns in healthcare settings. The impact of hospital narcotic drug policies on nursing practice can influence these factors.

- **Relationship with Job Satisfaction:** Nurses who are satisfied with their job are more likely to provide high-quality care to patients. The impact of narcotic drug policies on nursing practice, including changes in workflow, the complexity of documentation, and the potential for conflicts between pain management and safety, can influence nurses' job satisfaction.

- **Influence on Burnout:** Burnout is a common issue among healthcare professionals. The additional responsibilities and complexities imposed by hospital narcotic drug policies can contribute to nurse burnout. Burnout can lead to decreased job satisfaction, increased turnover, and potential lapses in patient care.
- **Strategies for Improvement:** To mitigate these challenges and improve job satisfaction while adhering to strict hospital narcotic drug policies, healthcare organizations can implement various strategies. These strategies may include providing additional training and resources to nurses, streamlining documentation processes, and fostering a culture of open communication and support.

SUGGESTIONS FOR IMPROVEMENT

To ensure that hospital narcotic drug policies strike the right balance between patient safety and quality of care while minimizing the challenges faced by nursing staff, several recommendations can be considered:

- **Enhanced Training and Education:** Hospitals can offer ongoing training and education programs for nursing staff to ensure they are well-informed about the policies and procedures for administering narcotic drugs. This can help nurses feel more confident and competent in their roles.
- **Streamlined Documentation:** Hospitals can evaluate and potentially simplify the documentation requirements associated with narcotic drug administration. Reducing paperwork can help nurses allocate more time to patient care.
- **Interdisciplinary Collaboration:** Collaboration between nursing staff and other healthcare professionals, including pharmacists and physicians, can lead to a more cohesive approach to pain management and narcotic drug administration.
- **Balancing Act:** Hospitals should continually evaluate and update their policies to ensure they strike the right balance between patient comfort and safety. Flexibility within the policies can accommodate individual patient needs while maintaining high standards of care.

CONCLUSION

In conclusion, the impact of hospital narcotic drug policies on nursing practice is significant, affecting not only the nursing workflow and job satisfaction but also patient outcomes. It is essential to recognize the complexities and challenges that these policies present to nursing staff while striving to provide optimal patient care. By considering recommendations for improvement and fostering a supportive and collaborative environment, hospitals can create policies that effectively balance patient safety with high-quality care. Understanding the intricate relationship between policies, nursing practice, and patient outcomes is fundamental to ensuring the best possible healthcare delivery.

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A STATISTICAL STUDY OF BLUE BUSINESS AND WOMEN IN IT

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ABSTRACT

Identifying the problem points is the first step towards discovering opportunities to jointly develop appropriate measures and solutions to address the challenges faced by the fairer sex in their career development in the maritime industry, with the aim of determining which are the best and most powerful solutions for the inclusion of women seafarers in order to make their careers at sea more attractive in the future. By disseminating this report, the aim is to raise awareness of the main challenges facing women who choose a career in the maritime industry, and not least to identify sustainable solutions.

KEYWORDS: *Statistical Study, Blue Economy, Women Seafarers, Educational And Qualification, Perspectives*

1. INTRODUCTION

The selection of women in the maritime industry in Bulgaria is carried out according to general rules and with a set of outstanding personal qualities and a strong desire. There are no obstacles in the legislation of Bulgaria for accepting women even among the command staff of ship crews, and all applicants are accepted under common, non-gender specific conditions, including a psychological test, a job-interview, etc. There are no gender specific conditions and requirements for women for their work at sea - no such requirements are provided regarding their working conditions, nor regarding their employment contracts, and the work activities are carried out according to non-gender specific rules and according to a common pay scale.

Women's difficulties in achieving professional success at sea are related to the perception that they are less competent than their male counterparts. Systemic challenges are tied to social relations on board ship, as women experience isolation and lack of support because of their gender. A problem of extreme importance for women is the lack of family planning options such as maternity leave.

2. PROBLEM

In Bulgaria, legislation regarding women in the shipping industry is based on the Maritime Labor Convention (MLC) and the Convention for the Safety of Life at Sea (SOLAS) and the international treaties that Bulgaria has ratified. This law guarantees gender equality in maritime labor and prohibits discrimination on the basis of sex, including in the field of employment and working conditions. Specifically, the law sets out the rights of women working on ships, including the right to equal pay for equal work, the right to pregnancy and maternity leave, the right to leave of absence and other social and trade union achievements. In line with international standards, the law requires employers to provide special conditions and care for pregnant women and mothers working on ships. Bulgaria has ratified the International Labor Organization Maritime Labor Convention, which prohibits discrimination based on gender in maritime labor and promotes gender equality in the professional field [2,3].

The maritime profession is the most preferred among the ladies in Varna and Sofia, but it is clear that it is preferred not only by those living in the seaside cities of Bulgaria. It has been confirmed that most of the representatives of the fairer sex are employees of the State Enterprise "Port Infrastructure", who work in the Head Office in Sofia and in the territorial division in Varna.



Table 1: Students admitted at VVMU for the period 2018 – 2022, distributed by gender, specialities and form of study
 *PT – Part Time Education
 FT – Full Time Education

	2018			2019			2020		
	Total	M	F	Total	M	Ж	Total	M	F
Fleet and Port Operation	23	11	12	31	10	21	26	11	15
Bachelor - PT*	0			0			0		
Bachelor - FT	23	11	12	31	10	21	26	11	15
Logistics	76	29	47	85	39	46	119	46	73
Bachelor - PT	11	4	7	10	2	8	15	12	3
Bachelor - FT	30	8	22	41	18	23	65	19	46
Master (MA) - PT	35	17	18	34	19	15	39	15	24
Management of Water Transport	71	12	59	62	14	48	69	21	48
Bachelor - PT	9	2	7	11	4	7	7	2	5
Bachelor - FT	52	6	46	40	5	35	48	14	34
Master (MA) - PT	10	4	6	11	5	6	14	5	9
Cruise Ship Management	0	0	0	0	0	0	30	9	21
Bachelor - FT	0	0	0	0	0	0	30	9	21

	2021			2022		
	Total	M	F	Total	M	F
Fleet and Port Operation	25	12	13	11	7	4
Bachelor - PT*	0			0	0	0
Bachelor - FT	25	12	13	11	7	4
Logistics	133	58	75	162	80	82
Bachelor - PT	15	4	11	33	18	15
Bachelor - FT	74	32	42	94	51	43
Master (MA) - PT	44	22	22	35	11	24
Management of Water Transport	90	26	64	80	29	51
Bachelor - PT	13	8	5	11	7	4
Bachelor - FT	56	8	48	45	16	29
Master (MA) - PT	21	10	11	24	6	18
Cruise Ship Management	40	13	27	48	16	32
Bachelor - FT	40	13	27	48	16	32

The increased number of women who are interested in maritime professions is also clearly visible. To a large extent, this is attributed to increasing gender equality. As gender equality increases, women have greater access to professional opportunities and can choose to pursue occupations that have traditionally been predominantly male. This is due to a change in the culture and attitude of the ladies, as well as the diversification of professional opportunities for them, for example, providing many different specialties that they would like to pursue.

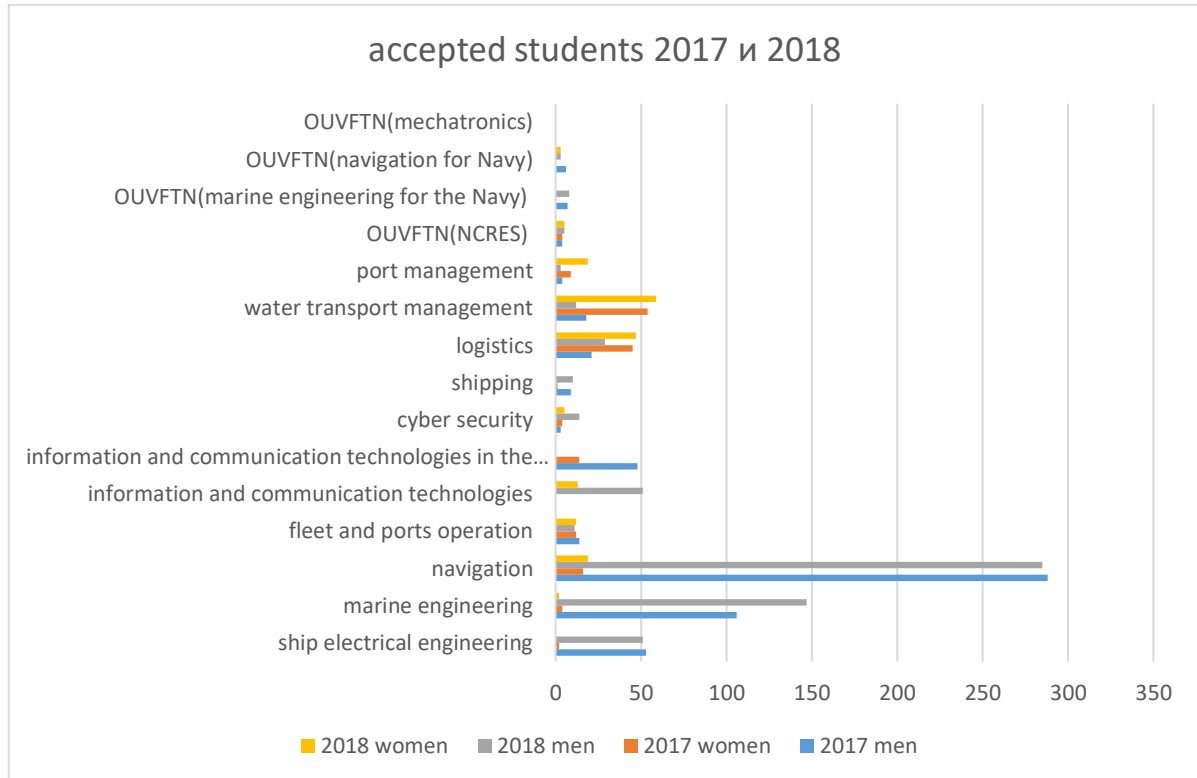


Figure 1: Students admitted at Nikola Vaptsarov Naval Academy for the period 2017-2018, distributed by gender and by speciality

- OUVFTN Organization and management of military formations at the tactical level (Mechatronics)
- OUVFTN Organization and management of military formations at the tactical level (Navigation for Navy)
- OUVFTN Organization and management of military formations at the tactical level (Medical insurance of the Armed Forces)
- OUVFTN Organization and management of military formations at the tactical level (Marine engineering for the Navy)
- OUVFTN Organization and management of military formations at the tactical level (cyber operations)
- OUVFTN Organization and management of military formations at the tactical level (NCRES - Naval Communication and Radio Engineering Systems)
- Port management
- Water transport management
- Logistics
- Fleet and ports operation
- Passenger ships' management
- Shipping
- Navigation
- Marine engineering
- Ship electrical engineering
- Inland waters navigation
- Ships communications and navigation system
- Intelligent system in transportation (Mechatronics)
- Cyber security
- Information and communication
- Integrated Remote Monitoring and Control Systems
- Information and Communication Technologies in the Maritime Industry
- National Security Management
- National and regional maritime security [1].

Both economic and social factors influencing the trend in 2017-2018 are the reason for the growing number of ladies in specialties such as Water Transport Management, Logistics, Fleet and Port Operation. It is an essential fact that for Bulgaria tourism and the



maritime industry in general are important economic activities and port management can be considered an attractive and well-paid profession, therefore women are encouraged to train in these specialties. There is an increase in institutions and organizations that encourage women to engage in this field, offering special programs or scholarships, thus aiming to increase perspectives and ideas within the structure, improve the working environment and culture, and encourage innovation and more effective solutions.

3. CONCLUSION

The encouragement of women in the maritime professions must be initiated from universities and then by shipowners. The role of the state and the role of the non-governmental sector in encouraging young girls in their career development in the maritime industry to become more inclusive and more attractive to women seafarers is crucial.

At the moment, the Naval Academy offers more educational opportunities for women and men in the field of navigation and engineering such as courses and trainings, helping to develop the necessary skills and knowledge. In the Republic of Bulgaria, about 70-80% of all qualification activities (in the full spectrum of IMO-model courses and STCW-requirements) take place at the Nikola Vaptsarov Naval Academy. The data shows that about 80% of all trainees undergo training in Basic Safety Training, Proficiency in Security Awareness, Specialized Training for Passenger Ship Crews (including Ro-Ro passenger ships) - Specialized Training for Personnel on Passenger Ships (Including Ro-Ro Passenger Ships) and Marine Environmental Awareness. These are the minimum training requirements for work at sea that manning companies set when selecting support level staff to work on board passenger ships. Fewer ladies undergo advanced training - required for officers on passenger and merchant ships. These are courses Proficiency in Survival Craft and Rescue Boats other than Fast Rescue Boats, Advanced Training in Fire Fighting and Proficiency in Medical First Aid, as well as some more specific courses required by shipowners. The specialization courses that the officers undergo are:

- IMO Model Course 7.01 Master and Chief Mate
- Bridge Team and Resource Management
- Preparatory Course for Management Level for Navigational Officers
- Operational Use of ECDIS
- IMO Model Course 7.02 "Chief Engineer Officer and Second Engineer Officer"
- Preparatory Course for Ship Engineer Officers at Management Level
- Training in Engine Room Resource Management and Teamwork
- Training in Safe Operation and Maintenance of Power Systems in Excess of 1000 Volts
- Monitoring of the Main and Auxiliary Machinery Operation and Associated Control Systems;

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- [3] <https://www.marad.bg/bg>



WOMEN IN BLUE ECONOMY - PERSPECTIVES AND EXPECTATIONS

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ABSTRACT

The present report sets out the results of a study conducted by a team from Nikola Vaptsarov Naval Academy, which identifies key challenges faced by women employed in the maritime industry. The global spread of the idea of a "blue economy" gives a new impulse to reconsider the policies in Bulgaria, as well as the ways to develop and support the professional orientation of women in the maritime sector.

KEYWORDS: *Blue Economy, Women Seafarers, Educational And Qualification, Perspectives*

1. INTRODUCTION

The results are based on an analysis of interviews conducted and on a document study of Bulgaria's legal framework as of 2023, as well as a study of the available support policies addressing the challenges faced by women oriented to making their careers in the maritime industry. This report is one of the first made on the territory of Bulgaria, whose work results aim to explore how it can collectively happen so that the career at sea is more diverse, encompassing and attractive to a wide range of representatives of the fairer sex.

The national statistics in Bulgaria does not take into account the number of women employed in the maritime industry, nor are there any data regarding their financial status and sustainability, but despite this, there is an increased number of women who graduate from maritime specialties and seek realization in this direction. Since the maritime profession is seen as a "male profession", the actual number of women employed in the industry is relatively low, because the challenges faced by women are greater and are related to having a lot of qualities and skills through which to succeed in gaining trust among male colleagues. It is the will and persistence, in addition to the motivation and desire to develop in the maritime industry, that are among the key factors for successful realisation in the structures of the maritime industry.

Nikola Vaptsarov Naval academy is the most preferred educational and qualification institution among ladies employed in the maritime (and not only) industry in Bulgaria [1].

Table 1: Students admitted at the Naval Academy for the period 2018 – 2022, divided by gender, specialities and form of study

PT – Part Time education
FT – Full Time education

	2018			2019			2020		
	Total	M	F	Total	M	F	Total	M	F
Ship electrical engineering	51	51	0	46	45	1	48	37	1
Bachelor - PT*	12	12	0	10	10	0	10	10	0
Bachelor -FT	32	32	0	36	35	1	36	25	1
Master (MA) - PT	7	7	0				2	2	0
Marine Engineering	149	147	2	138	138	0	116	113	3
Bachelor - -PT	13	13	0	15	15	0	16	16	0
Bachelor - FT	126	125	1	113	113	0	89	86	3
Master (MA)- PT	10	9	1	10	10	0	11	11	0
Navigation	304	285	19	319	304	15	246	230	16
Bachelor - -PT	20	19	1	21	18	3	20	19	1
Bachelor - FT	268	252	16	274	263	11	209	194	15
Master (MA)- PT	16	14	2	24	23	1	17	17	0
Total	504	483	21	503	487	16	410	380	20



	2021			2022		
	Total	M	F	Total	M	F
Ship electrical engineering	41	39	2	23	22	1
Bachelor - PT*	7	6	1	4	3	1
Bachelor -FT	25	25	0	18	18	0
Master (MA) - PT	9	8	1	1	1	0
Marine engineering	78	78	0	84	84	0
Bachelor - -PT	16	16	0	8	8	0
Bachelor - FT	55	55		57	57	0
Master (MA) - PT	7	7	0	19	19	0
Navigation	256	238	18	239	222	17
Bachelor - -PT	16	13	3	16	16	0
Bachelor - FT	223	209	14	198	182	16
Master (MA)- PT	17	16	1	25	24	1
Total	375	355	20	346	328	18

2. PROBLEM

During the observed period at the Nikola Vaptsarov Naval Academy there has been an increase in the number of newly admitted students, including ladies. Despite the huge number of young ladies admitted to the Naval Academy, they expect professional realisation in the maritime industry ashore, with the most desirable by the "sea" girls speciality being that of Water Transport Management. Other most frequently preferred specialties for study are the specialties - Logistics, Operation of water transport, Port Management. The reasons for this are rooted in the context and the situation in the country. In Bulgaria, there are policies for gender equality and encouraging women to join male-dominated professions.

In recent years, there has been a noticeable trend towards an increase in women's interest in specialties such as Information and Communication Technology and also Cyber Security, as information and data security become of paramount importance in all walks of life, including business, government, healthcare, education, etc., and in addition, the speciality of career opportunities in cyber security do not require physical strength or other masculine qualities, making this professional field accessible to women.

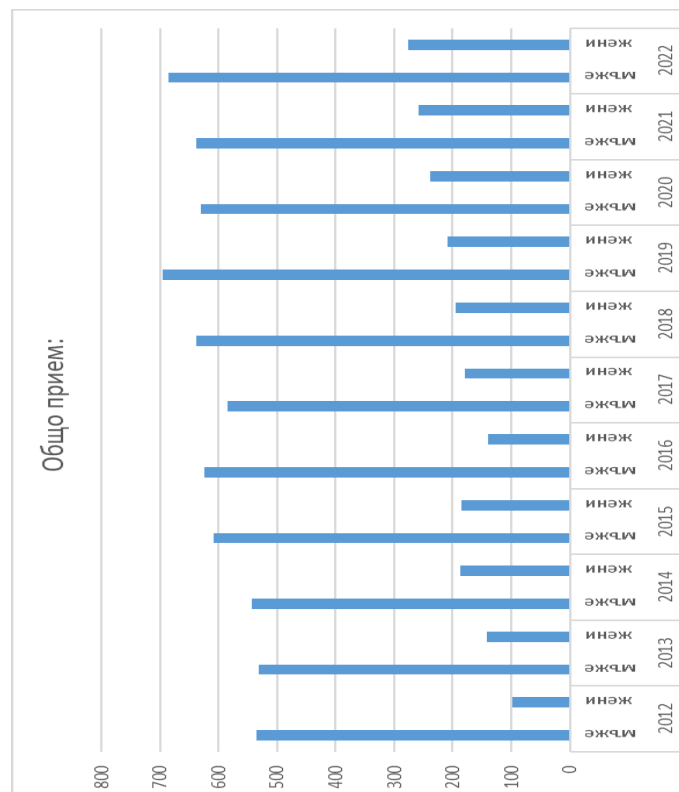


Figure 1: Students admitted at VVMU for the period 2012 – 2022, distributed by gender мен/мъже, women/жени



The data shows the growing number of admitted students at the Naval Academy, the latter seeking to respond to the increased interest in maritime professions and the general increase in interest in life at sea. This trend is directly related to the growing attention of more and more people in active age to be interested in professions related to the sea and simultaneously aimed at environmental protection and sustainable development. The increase in the number of newly admitted students at Naval Academy can also be attributed to the increase in the quality of the education it offers, as the Academy has introduced new courses in the last ten years, improved the qualification of its teaching staff and provided better teaching and research resources.

Although too low, the absolute number of ladies studying the specialty of Navigation shows an increase for 2018 compared to 2017. The question revealing the reasons for this growth does not imply a single answer. The question is not supposed to be answered without considering the economic environment in the country, as well as the social factors affecting the increased interest, related to changing the culture and public opinion in terms of supporting women in reaching full equality between the sexes. This increase also continues in the next observed period, despite the low rates.

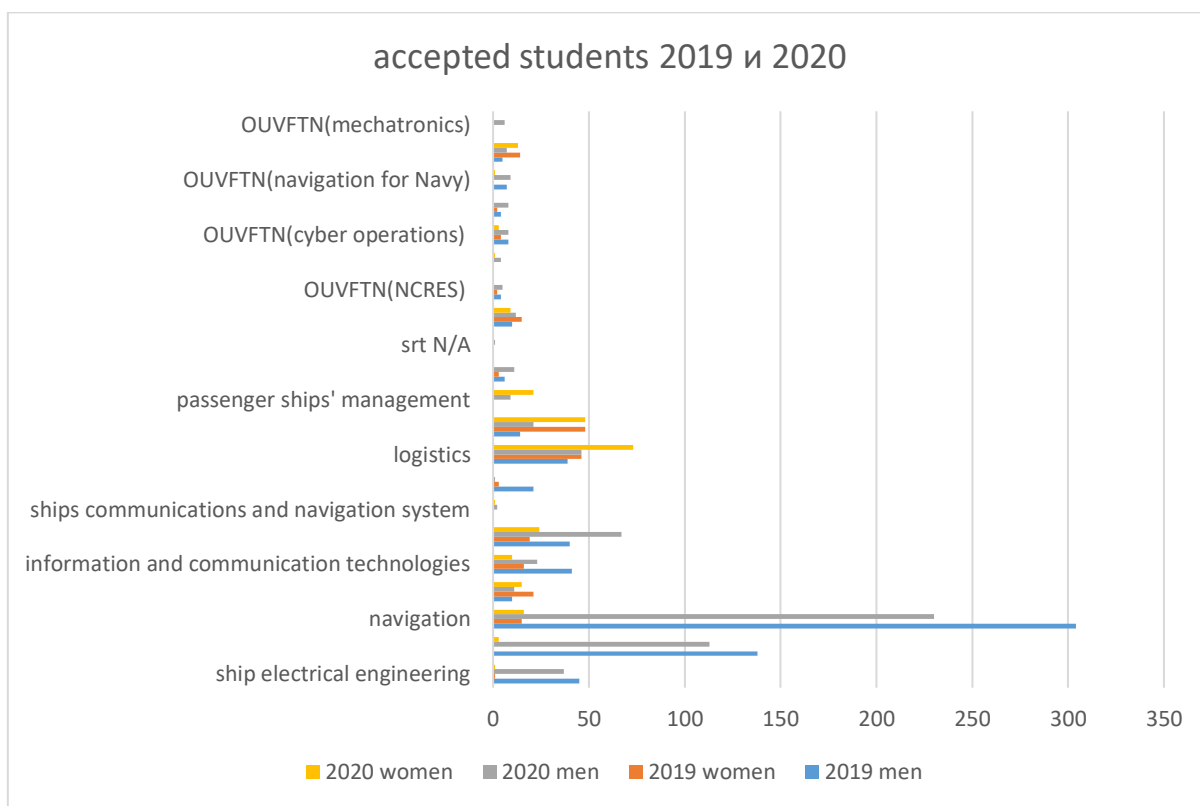


Figure 2 Students admitted at the Naval Academy for the period 2019-2020, distributed by gender and by speciality

The increased number of women studying Logistics during the observed period is clearly noticeable, as this field has a wide application in business and economy related to the management of the flows of goods, information and services from one place to another, thus optimizing processes and minimizing costs. The reason for the increased number of students preferring the Logistics speciality is the increase in the exchange in international trade, the globalization of the economy, and at the same time the development of e-commerce. In this international environment, more and more companies need logistics experts to manage the delivery of goods, and logistics is an industry that continues to develop and grow, offering a variety of career opportunities, including transportation, warehousing, shipping and supply chain management [2,3].

3. CONCLUSION

Specialties in the navigation spectrum, as well as in the engineering one, involve intense and physically demanding work requiring strength and endurance, qualities that men tend to possess to a greater extent than women. Therefore, the presence of ladies in these specialties is very limited compared to the male gender, but is increased with a continuing upward trend in the economically oriented maritime specialties.



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PATHOMORPHOLOGY OF CHONDROMATOUS HAMARTOMA OF THE LUNGS

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ASMI

RESUME

This article provides information on the incidence, localization and pathomorphology of pulmonary chondromatous hamartoma. As a material Republican Pathological Anatomy Center of the Ministry of Health of the Republic of Uzbekistan biopsy diagnosis in the room during the last 10 from inspection won 24 hamartomas from biopsies condition separate receive. It was found that 13.4% of chondromatous hamartomas of the respiratory system were located in the walls of large bronchi, 56.2% in the front segments of the lungs, and the rest in the back cells of the lungs (30.2%). It was found that the hamartoma developed in the wall of the large bronchi consists of multifocal and irregularly located chondromatous tissue nodules, and around them, the soft tissues of the bronchial wall and the mucous membrane have grown in a disreenerative manner. It was observed that in the hamartoma developed from the bronchi in the lung tissue, chondromatous foci appeared both in the wall of the bronchi and in the alveolar tissue.

KEY WORDS : lung, bronchus, alveolar tissue, hamartoma, chondromatosis, pathomorphology

RELEVANCE OF THE TOPIC

Chondromatous hamartoma of the respiratory system was first recorded in 1845 by the German doctor German Lebert. Later, the macroscopic and microscopic changes of this tumor were described by Rudolph Virchow in 1863, in 1903 by A.I. Abrikosov described. Eugene Albrecht, a Nemetz pathologist, was the first to use the term "hamartoma" in 1904 when analyzing cases of organ and tissue dysembryoplasia. Today, due to the widespread practice of thoracic surgery, the detection of pulmonary hamartoma has increased[1,2,3,4]. Today, hamartomas, which are benign tumors of various organs, account for 60-64% of all benign tumors. Chondromatous hamartoma of the respiratory system is detected in 20 percent of cases, of which 2-4 times more women than men have been confirmed. Endobronchial hamartoma of large bronchi is more common, peripheral hamartoma of the lung is 3 times more common in the anterior segments than in the posterior segments.

A hamartoma actually results from the abnormal proliferation of a single mutated cell in a local tissue. A hamartoma is a benign, slow-growing tumor that proceeds by the spontaneous reproduction of certain mutated cells. Hamartoma occurs in the embryonic period due to a violation of the development of core tissues. Often, hamartoma develops from mesenchymal tissue, with a mixture of fat, fibrosis, fat and blood vessels growing together [5,6,7]. Chondromatous hamartoma of the lung can often develop from a hyaline tumor and in some cases from an elastic tumor, around which fibrous connective tissue, fat and myxoid tissue grows and surrounds it. Sometimes, smooth muscle cells, lymphoid cells can increase [8,9]. Gaps appear between the pieces of chondromatous tissue and can turn into a cyst.

The purpose of this research is to analyze the level, location, and morphological types of chondromatous hamartoma of the respiratory system.

MATERIAL AND METHODS USED

On the way to Maysad, chondromatous hamartomas of the lungs, which have been examined for the last 10 years in the Department of Biopsy Diagnostics of Republican Pathological Anatomy Center of the Ministry of Health of the Republic of Uzbekistan, were isolated. As a result of the clinical-morphological analysis, it was found that lung hamartomas were found in 24 cases in total, 79.2% (19) of them were found in women and the rest in men. It was found that the age of women with hamartoma is more than 25 years, the average is 48 years. According to location of hamartoma, it was observed that 13.4% of hamartomas were located in the wall of the bronchial tubes, 56.2% were located in the front segments of the lungs, and the rest were located in the rear segments of the lungs (30.2%). It was confirmed that lung hamartomas macroscopically look like a nodule with an average size of 3-4 cm, with a smooth outer surface, and in some cases, a lumpy structure. The 1.5x1.5 cm slices obtained from these hamartomas were fixed in a 10% solution of formalin prepared in phosphate buffer for 72 hours. Then, they were washed in running water, dehydrated in



alcohols of increasing concentration, and embedded in paraffin with wax, and blocks were prepared. Histological sections with a thickness of 5-7 μm were taken from paraffin blocks and stained with hematoxylin and eosin dyes. The preparations were studied under a light microscope, and the necessary areas were photographed.

RESEARCH RESULTS AND THEIR DISCUSSION

The results of the microscopic examination showed that the hamartoma grown from the large bronchi was observed to be located in the endobronchial tissue structures of the bronchi. In this case, it is determined that the nodules of the chondromatous tissue of the hamartoma, which have changed in the bronchial wall, have an atypical structure, and only morphologically, the chondromatous tissue structures are composed of one, two, and many chondrocyte cells that are randomly located and are randomly located (Fig. 1). It is observed that the cytoplasm of chondrocyte cells is strongly vacuolated. Around abnormally shaped chondromatous tissue structures, it was found that smooth muscle cells characteristic of bronchial wall tissue structures, unformed connective tissue tufts, single-layer prismatic epithelium covering the mucous membrane of bronchial tubes grew. Therefore, it is determined that between the pieces of chondromatous tissue, cavities and cystic structures have appeared between the bundles of soft tissue of the bronchial wall. In the adjacent areas of chondromatous tissue nodules, it is observed that fibrocytes and fibroblasts, which have turned into stem cells and metaplasia, are surrounded in an elongated shape (Fig. 2). These fibrocytic tissue structures are found to form thin and sparse fibrous tissue in association with surrounding connective, adipose tissue. It is determined that the chondromatous hamartoma tissue developed in and around the wall of large bronchi consists of chondromatous structures of different sizes and different shapes. In most cases, it is observed that fibrous fibrous tissue grows around oblong chondromatous nodules, and myxomatosis and fat tissue grow and occupy large areas around them. Among these tissues, there are areas of myxomatous tissue that have turned into adipose tissue and, conversely, areas of adipose tissue that have turned into myxomatous tissue.\

Microscopic examination of the chondromatous hamartoma developed in the wall of the relatively small bronchi within the lung tissue revealed that the chondromatous tumor tissue formed nodules of various sizes in both the wall of the bronchioles and the alveolar tissue. It is observed that in these chondromatous tissue nodules, stem cells are randomly located and have various levels of cell concentration. Around these nodules of chondromatous tissue, pulmonary alveolar tissue is found to be morphofunctionally dense, forming airless tufts. In some places, it is observed that the alveolar tissue is concentrated and gathered in one place, forming a nodular structure, and in this focus, fibrocytes and fibroblasts of the connective tissue metaplasia into chondrocyte cells (Fig. 3). Rough fibrous connective tissue and fat cells are also found to grow around these tissue structures.

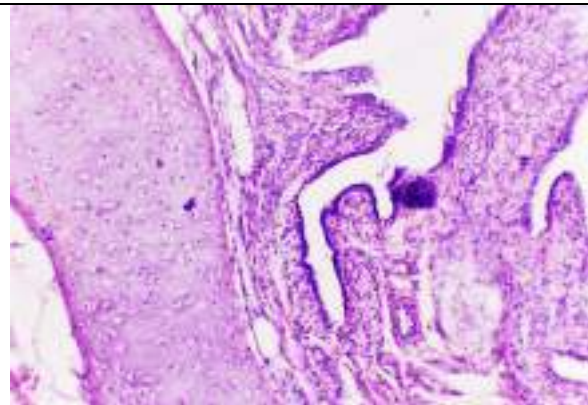


Figure 1. Chondromatous hamartoma of the wall of large bronchi, chondromatous tissue of various forms surrounded by soft tissues characteristic of the bronchial wall. Paint: G-E. Floor: 10x10.

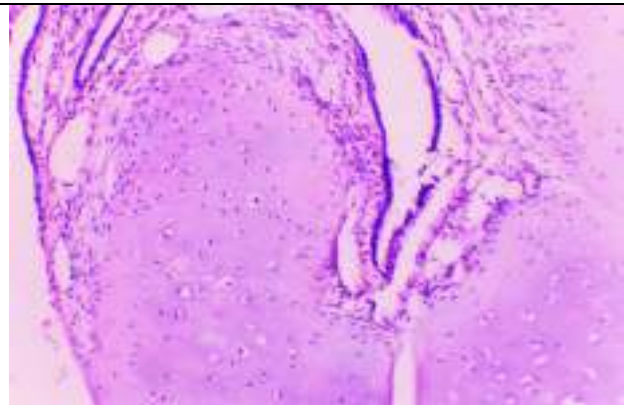


Figure 2. The chondromatous tissue of hamartoma is immediately surrounded by metaplastic fibromatous cells and sparse connective tissue. Paint: G-E. Floor: 10x40.

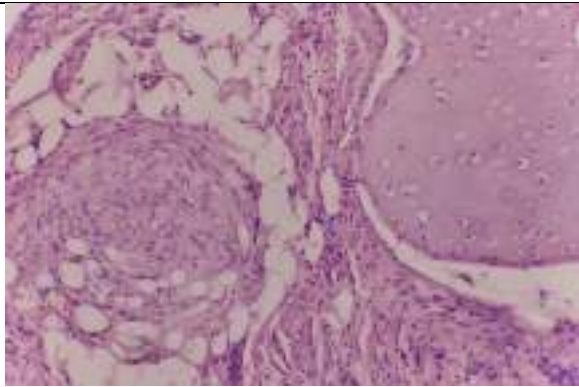


Figure 3. Chondromatous hamartoma around the bronchioles within the lung tissue, with irregular placement of alveolar tissue and metaplasia into chondromatous tissue. Paint: G-E. Floor: 10x10.

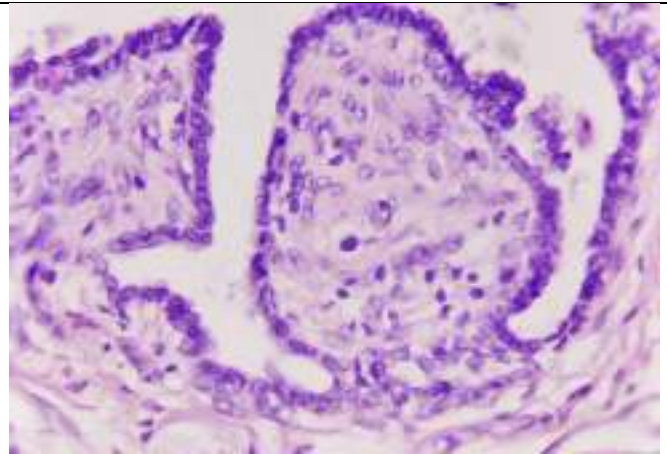


Figure 4. Hamartoma of the wall of the bronchi in the lung tissue, the appearance of suckers in the mucous membrane of the bronchi. Paint: G-E. Floor: 10x40.

It is determined that dysregenerative changes have developed in parallel in the soft tissue of the bronchial wall and the mucous membrane around the chondromatous hamartoma, which grew from the wall of the bronchioles in the lung tissue. In this case, it is observed that the nuclei of the cylindrical epithelial cells covering the mucous membrane of the bronchi become larger, the size of the cytoplasm decreases, and it becomes prismatic. A private plate of unformed connective tissue under the covering epithelium is found to grow, forming papillae of all sizes and shapes (Fig. 4) and containing young connective tissue cells and lymphoid cells. In the submucosa layer, it is determined that the fibrous tissue, the fibers of which have formed coarse tufts, and fat cells have also appeared among them.

It is determined that other mesenchymal tissues have grown simultaneously in and around the chondromatous hamartoma developed in the lung tissue. In particular, it is determined that formed and unformed connective tissue, fat tissue, myxomatous tissue and blood vessels grow from mesenchymal tissue. It was found that more myxomatous tissue grew around the hamartoma within the lung tissue we studied. It was observed that this myxomatous tissue grew in the bronchial wall, between the lung segments and in the alveolar tissue, and the presence of myxomatous tissue foci consisting of round foci of various sizes and scattered tissue tufts. Myxomatous tissue is found to consist of a histotopographically arranged, stellate-shaped reticular tissue surrounded by areas of edema and myxomatosis (Figure 5). In the center of myxomatous tissue nodules, it is determined that myxoid cells metaplasia into chondrocyte cells.

When the chondromatous hamartoma tissue was studied under a microscope, the following information was revealed, that is, in the structure of the chondromatous tumor tissue, the tumor cells are normally arranged in pairs, while in the tumor tissue, individual chondrocytes were randomly located. The nuclei of these chondrocytes are irregularly shaped, and the cytoplasm is found to be highly swollen. It is determined that chondrocytes are relatively small and densely located in the peripheral parts of chondromatous tendon tissue, and adjacent to them, elongated fibrocytes and fibroblasts are densely located. In another case, it is observed that poorly developed chondrocytes are densely and randomly located in the peripheral parts of chondromatous ankle tissue, and some of them have become dense with each other and become multinucleated giant cells (Fig. 6). It is determined that the nuclei of giant cells are elongated and densely located. It is observed that they are surrounded by bundles of coarse fibrous connective tissue. If the chondromatous tissue in the chondromatous hamartoma is well-differentiated, it is determined that it is surrounded by dense fibrous fibrous tissue and blood vessels. The presence of hyperchromic connective tissue cells and lymphoid cells in the fibrous tissue is determined. It is observed that blood vessels consist of thin-walled veins.

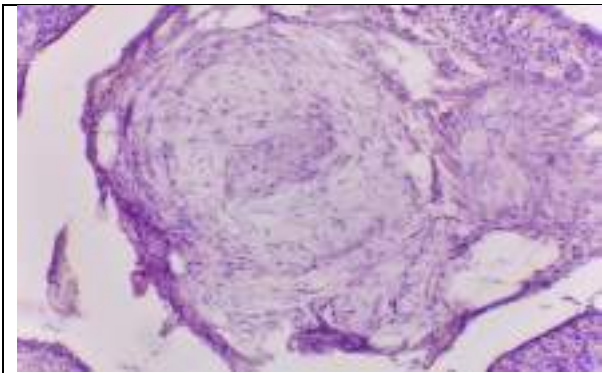


Figure 5. Foci of myxomatous tissue around intrapulmonary hamartoma. Paint: G-E. Floor: 10x40.

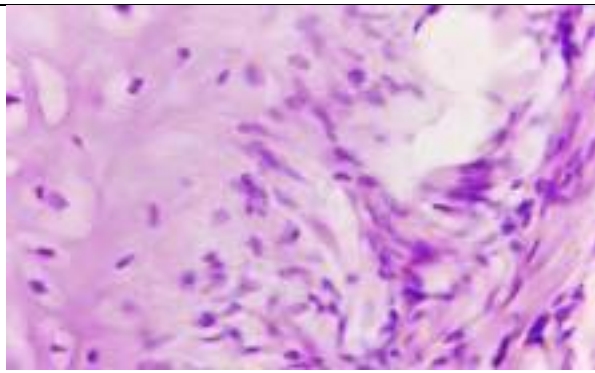


Figure 6. Placement of young chondrocytes and appearance of multinucleated giant cells in the peripheral parts of chondromatous tissue of hamartoma. Paint: G-E. Floor: 10x40.

CONCLUSIONS

It was found that 13.4% of chondromatous hamartomas of the respiratory system were located in the walls of large bronchi, 56.2% in the front segments of the lungs, and the rest in the back cells of the lungs (30.2%).

It was found that the hamartoma developed in the wall of the large bronchi consists of multifocal and irregularly located chondromatous tissue nodules, and around them, the soft tissues of the bronchial wall and the mucous membrane have grown in a disreenerative manner.

It was observed that in the hamartoma developed from the bronchi in the lung tissue, chondromatous foci appeared both in the wall of the bronchi and in the alveolar tissue.

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A STUDY ON SELF ESTEEM OF B.Ed. COLLEGE STUDENTS IN VELLORE DISTRICT

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ABSTRACT

This study examined the study on self confidence of B.Ed. college students in Vellore district. The tools used for the present study are Self Esteem Inventory by M.S.Prasad and G.P. Thakur. The study comprises of 150 B.Ed. students (50 male and 100 female students) from Government and self finance colleges of Education in Vellore district. Simple random method of sampling was adopted to collect the data. There is no significant difference between male and female B.Ed. college students with respect to their self confidence.

KEY WORDS: *Self Esteem, B.Ed. College Students*

INTRODUCTION

"Self-esteem is a set of attitudes and beliefs that a person brings with him or herself when facing the world. It includes beliefs as to whether he or she can accept success or failure, how much effort should be put forth, whether failure at a task will hurt and whether he or she will become more capable as a result of different experiences. In psychological terms, self-esteem provides a mental set that prepares the person to respond according to expectations of success, acceptance and personal strength" (Cooper smith, 1981).

"The term *self-esteem* refers to the evaluation a person makes and customarily maintains with regard to him or herself. *Self-esteem* expresses an attitude of approval or disapproval and indicate the extent to which a person believes him or herself capable, significantly successful and worthy." "Self-esteem is not something separate from performance in reading math, social and physical skills. It is an important and integral part of performance. Studies indicate that students who are unsure of themselves or who expect to fail are inclined to stop trying and just give up. These studies support the conclusion that feelings of confidence and self-respect are as important in school performance as they are in other areas of life."

SIGNIFICANCE OF THE STUDY

One of the most important aspects of the self-concept is our self-esteem the personal evaluation of ourselves and the resulting feeling of worth associated with our self-concept. Self-esteem exerts a powerful influence on people's expectations their judgements about themselves and other and their behavior people with high self-esteem are willing to test the validity of their inferences about themselves. Having a high level of self-acceptance, they tend to be accepting of others, including those with different opinions than themselves and enjoy satisfying relationships with other people. They also expect to do well in accomplish their try hard and tend to be successful in their careers. They are inclined to attribute their success to their abilities and to make due allowance for circumstances in interpreting their failure. As a result, people with high self-esteem generally enjoy a great deal of self-confidence and have a realistic assessment of their strengths and weaknesses. Since self-confidence is one of the important factors affecting overall personality of the individual the researcher is keen to study the self-esteem among B.Ed. College students.

TITLE OF THE STUDY

The researcher has been titled as "A Study on Self Esteem of B.Ed. College Students in Vellore District".

OBJECTIVES OF THE STUDY

The following are the objectives of the study

1. To find the difference in the self esteem of B.Ed..college students between male and female students.
2. To find the difference in the self esteem of B.Ed. college students between rural and urban students.
3. To find the difference in the self esteem of B.Ed. college students between Government and self financing college students.
4. To find the difference in the self esteem of B.Ed. college students between students living in rural and urban areas.
5. To find the difference in the self esteem of B.Ed. college students between first year and second year students.
6. To find the difference in the self esteem of B.Ed. college students between under graduate and post graduate students.



HYPOTHESIS OF THE STUDY

Suitable hypothesis framed

POPULATION AND SAMPLE

The total sample selected for the study comprises of 150 B.Ed. students (50 male and 100 female students) from Government and self financed colleges of Education in Vellore district. The researcher has used stratified random sampling technique to select B.Ed. colleges for the study and these colleges consisted of different types of management namely Government and self finance in Rural and Urban locality of colleges. Simple random method of sampling was adopted to collect the data.

TOOLS USED IN THE PRESENT STUDY

- Self Esteem Inventory by M.S.Prasad and G.P. Thakur, Psychology Department, University of Bihar, Muzaffarpur.

Differential Analysis -Self Esteem

Table - 1
Mean, SD and “t” Values on Gender towards Self Esteem

Gender	N	Mean	SD	‘t’ Value	Level of Significance
Male	50	134.94	28.71	0.813	NS
Female	100	138.23	20.20		

It is evident from the Table -1 the calculated ‘t’ value is 0.813, which is not significant at 0.05 level. Hence, the framed null hypothesis is accepted and research hypothesis is rejected. It is found that there is no significant difference between male and female B.Ed. college students with respect to their self esteem. It is inferred from the above analysis that both boys and girls do feel proud about their B.Ed. course.

Table - 2
Mean, SD and “t” Values on Locality of College towards Self Esteem

Locality of College	N	Mean	SD	‘t’ Value	Level of Significance
Rural	120	137.02	24.30	0.113	NS
Urban	30	137.56	19.37		

It is evident from the Table - 2 the calculated ‘t’ value is 0.113, which is not significant at 0.05 level. Hence, the framed null hypothesis is accepted and research hypothesis is rejected. It is found that there is no significant difference between rural and urban B.Ed. college students with respect to their self esteem. It is inferred that whether the B.Ed. College is situated in rural areas or urban areas, the way the B.Ed. students study the true feel great.

Table - 3
Mean, SD and “t” Values on Type of Management towards Self Confidence

Type of Management	N	Mean	SD	‘t’ Value	Level of Significance
Government	69	136.36	19.27	0.372	NS
Self finance	81	137.79	26.42		

It is evident from the Table - 3 the calculated ‘t’ value is 0.372, which is not significant at 0.05 level. Hence, the framed null hypothesis is accepted and research hypothesis is rejected. It is found that there is no significant difference between government and self financed of B.Ed. college students with respect to their self esteem. It implies that there will be much difference in the self esteem between students in Government B.Ed. colleges and students in self financing B.Ed. colleges.

Table - 4
Mean, SD and “t” Values on Student Residence towards Self Esteem

Student Residence	N	Mean	SD	‘t’ Value	Level of Significance
Rural	103	140.53	23.23	2.696	S
Urban	47	129.68	22.02		

It is evident from the Table - 4 the calculated ‘t’ value is 2.696, which is significant at 0.05 level. Hence, the framed null hypothesis is rejected and research hypothesis is accepted. It is found that there is significant difference between rural and urban of B.Ed. college students with respect to their self esteem.



Table - 5
Mean, SD and “t” Values on Year of Study towards Self Esteem

Year of study	N	Mean	SD	‘t’ Value	Level of Significance
First	40	127.72	22.85	3.059	S
Second	110	140.55	22.66		

It is evident from the Table - 5 the calculated ‘t’ value is 3.059, which is not significant at 0.05 level. Hence, the framed null hypothesis is rejected and research hypothesis is accepted. It is found that there is significant difference between first and second year of study of B.Ed. college students with respect to their self esteem. It implies that first year B.Ed. students will have low self esteem and the second year B.Ed. students will have high self esteem.

Table - 6
Mean, SD And “t” Values on Degree Qualified Towards Self Confidence

Degree Qualified	N	Mean	SD	‘t’ Value	Level of Significance
Under graduate	108	135.72	22.12	1.189	NS
Post graduate	42	140.76	26.15		

It is evident from the Table - 6 the calculated ‘t’ value is 1.189, which is not significant at 0.05 level. Hence, the framed null hypothesis is accepted and research hypothesis is rejected. It is found that there is no significant difference between under graduate and post graduate of B.Ed. college students with respect to their self esteem. It implies that both B.Ed. students with basic degree and B.Ed. students with basic PG degree will have same level of self esteem.

FINDINGS OF THE STUDY

1. There is no significant difference between male and female B.Ed. college students with respect to their self esteem. It is inferred from the above analysis that both boys and girls do feel proud about their B.Ed. course.
2. There is no significant difference between rural and urban B.Ed. college students with respect to their self esteem. It is inferred that whither the B.Ed. College is situated in rural areas or urban areas, the way the B.Ed. students study the true feel great.
3. There is no significant difference between government and self fiancé of B.Ed. college students with respect to their self esteem. It implies that there will be much difference in the self esteem between students in Government B.Ed. colleges and students in self financing B.Ed. colleges.
4. There is significant difference between rural and urban of B.Ed. college students with respect to their self esteem.
5. There is significant difference between first and second year of study of B.Ed. college students with respect to their self esteem. It implies that first year B.Ed. students will have low self esteem and the second year B.Ed. students will have high self esteem.
6. There is no significant difference between under graduate and post graduate of B.Ed. college students with respect to their self esteem. It implies that both B.Ed. students with basic degree and B.Ed. students with basic PG degree will have same level of self esteem.

CONCLUSION

It can be concluded on the basis of the present study that the level of self-esteem increases with increase in the age. So appropriate strategies must be adopted by the teacher educators to develop and improve self-esteem among B.Ed. teacher trainees

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ASSESSMENT OF THE QUALITY OF LIFE OF CHILDREN WITH NATAL SPINAL INJURY AND OPTIMIZATION OF REHABILITATION MEASURES

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ABSTRACT

*The purpose of this study was to compare upper limb function and quality of life in preschool children with complications of birth injuries to the cervical spinal cord and spine. **Research methods:** the study used a clinical neurological examination and the results of the Pediatric Outcomes Data Collection Instrument (PODCI) scale, neurofunctional (electroneuromyography - ENMG), neuroimaging (ultrasound - ultrasound of the cervical spinal cord and spine) research methods. **Results and discussion.** Upper extremity dysfunction is an area that primarily reduces quality of life in children with HSDD. This result highlights how difficult it is to manipulate objects with the upper limbs during certain activities, such as lifting heavy books, pouring milk, opening a previously opened can, using cutlery, combing hair, buttoning clothes, putting on a coat, and writing with a pencil. All of these may be related to the limited range of motion in these children, which is impaired by muscle weakness, simultaneous activation of antagonists, differences in the length of the affected limb, and contractures. Subsequently, children with HSDD demonstrate limitations in performing functional tasks that are necessary for independence in daily activities and quality of life, as well as tasks requiring fine motor skills. **Conclusion.** Thus, the quality of life of preschool children before treatment was reduced on all scales. When the results for each domain were analyzed separately, both groups showed poor results in the domain that reflects hand activity among all domains. Impaired hand function is the main area that reduces the quality of life in children with complications of PTSD. This domain has the lowest score compared to other domains, which has also been confirmed by other studies. As a result of the course of rehabilitation measures, a positive statistically significant dynamics of quality of life indicators was noted*

KEYWORDS. Children, natal spinal injury, the quality of life, rehabilitation measures.

1. INTRODUCTION

In domestic pediatrics, the concept of studying the quality of life (QoL) of a child was developed at the beginning of the 21st century. This concept, on the one hand, allows us to return to the most important principle of clinical practice, to treat not the disease, but the patient, on the other hand, it offers a well-developed methodology that allows us to obtain reliable data on the quality of life of children both in clinical practice and in scientific research. The use of the QOL assessment method will make it possible to comprehensively solve a wide range of problems in children's healthcare in our country, among which we should note the high incidence of morbidity and disability, the increase in neuropsychiatric disorders and social maladaptation of school-age children (Volodin N.N., 2001; Novik A.A., 2008; Razumov A.N., 2009).

In the world, special attention is paid to a wide range of scientific research aimed at studying the modern approach to early rehabilitation of children and improving the quality of life with complications of birth injury of the cervical spinal cord and spine (COFBIOTCSCAS). Romanova L. A. et al. (2014) assessed the dynamics of the quality of life of school-age children with natal cervical spine injury (CSI) against the background of complex spa treatment including manual therapy. It turned out that the quality of life of school-age children before treatment was reduced on all scales. As a result of the course of rehabilitation measures using manual therapy, positive statistically significant dynamics of quality of life indicators were noted. During the follow-up study after a year, the achieved results of improved quality of life were maintained in the main group.

The main problem in the rehabilitation of patients with complications of this pathology is the lack of a unified concept, strategy for developed rehabilitation technologies and criteria for assessing the effectiveness of treatment. In addition, it should be particularly noted that the subjective assessment of parents showed that, in their opinion, children with COFBIOTCSCAS have worse general functions and a lower quality of life. In this regard, it is important to identify the causes of PTSD, prevent the occurrence of complications, and also resolve issues related to predicting the possible consequences of this pathology. For this reason, of particular



importance is the search for more effective methods of rehabilitation and prediction of the consequences of the disease, based on an in-depth study of clinical-neurological, neuroimaging and neurofunctional research methods, reflected in improving the quality of life of these children and aimed at reducing the complications of the disease in children with consequences of COFBIOTCSCAS.

All of the above prompted us, in order to obtain our own opinion on this matter, to study the effectiveness of rehabilitation measures for children with the consequences of COFBIOTCSCAS.

2. THE PURPOSE OF THE RESEARCH

The purpose of this study was to compare upper limb function and quality of life in preschool children with complications of birth injuries to the cervical spinal cord and spine.

3. METHODS

The study used a clinical neurological examination and the results of the Pediatric Outcomes Data Collection Instrument (PODCI) scale, neurofunctional (electroneuromyography - ENMG), neuroimaging (ultrasound - ultrasound of the cervical spinal cord and spine) research methods.

The Pediatric Outcomes Data Collection Instrument (PODCI) was created to assess functional status, therapeutic needs, and post-treatment changes in children and adolescents aged 2 to 18 years with orthopedic problems. PODCI has three forms; parent form for children, parent and self-report forms for adolescents. The instrument includes 86 items assessing "upper limb and physical function", "transfer and basic mobility", "sports and physical function", "pain/comfort", "happiness", "general functioning" and "expectations from treatment domains".

Depending on the treatment, the patients were divided into two groups: the main group (n=46) - patients with COFBIOTCSCAS, who received standard therapy in combination with modeling of the musculoskeletal system using complex rehabilitation methods, namely electromyostimulation and kinesiotaping; comparison group (n=44) - patients with COFBIOTCSCAS who received basic standard therapy. The control group (n=32) consists of practically healthy children who underwent a medical examination at their place of residence in a family clinic.

To assess the quality of life of children with complications of COFBIOTCSCAS aged from 2 to 17 years, according to the PODCI survey, patients were divided into two groups: group 1 - preschool children (n=28), group 2 - school-age children (n=29).

4. RESULTS AND DISCUSSION

Upper extremity dysfunction is an area that primarily reduces quality of life in children with HSDD. This result highlights how difficult it is to manipulate objects with the upper limbs during certain activities, such as lifting heavy books, pouring milk, opening a previously opened can, using cutlery, combing hair, buttoning clothes, putting on a coat, and writing with a pencil. All of these may be related to the limited range of motion in these children, which is impaired by muscle weakness, simultaneous activation of antagonists, differences in the length of the affected limb, and contractures. Subsequently, children with HSDD demonstrate limitations in performing functional tasks that are necessary for independence in daily activities and quality of life, as well as tasks requiring fine motor skills (for example, writing).

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Upper extremity dysfunction is known to be the area that primarily reduces quality of life in children with HSDD. This result highlights how difficult it is to manipulate objects with the upper limbs during certain activities, such as lifting heavy books, pouring milk, opening a previously opened can, using cutlery, combing hair, buttoning clothes, putting on a coat, and writing with a pencil. All of these may be related to the limited range of motion in these children, which is impaired by muscle weakness, simultaneous activation of antagonists, differences in the length of the affected limb, and contractures. Subsequently, children with HSDD demonstrate limitations in performing functional tasks that are necessary for independence in daily activities and quality of life, as well as tasks requiring fine motor skills (for example, writing).



Table 1
Quality of life questionnaire results PODCI in preschool children

Domains	Before rehabilitation		After rehabilitation	
	Main group (M±m)	Comparison group (M±m)	Main group (M±m)	Group comparisons (M±m)
Upper limb function	56.98±3.25	51.18±3.7	91.95±2.19 *	69.92±3.13 ^ °
Basic mobility and transmission	56.95±1.54	53.77±3.35	92.87±0.66 *	77.55±2.63 ^ °
Sport	68.96±2.25	70.7±2.25	91.53±1.77 *	77.92±2.11 ^ °
Comfort/pain	52.09±2.21	55.53±2.35	93.76±1.20 *	73.86±2.58 ^ °
Happiness function	68.9±1.27	68.12±3.55	96.71±0.71 *	72.5±3.09 ^ °
Global function	58.75±1.56	59.94±2.05	92.64±1.0 *	67.5±1.82 ^ °

Note: * reliability of data before and after treatment in the main group (* - P <0.05)

^ - reliability of data before and after treatment in the comparative group (^ - P <0.05)

° - reliability of the difference after rehabilitation between the main and comparative groups (° - P <0.01).

Table No. 1 presents the results of data on quality of life in preschool children according to the questionnaire PODCI. In children with COFBIOTCSCAS, there was a decrease in the function of the upper extremities. It was found that the data of the children of the compared groups before rehabilitation did not have a statistically significant difference, which indicates the equivalence of the groups. It should be noted that the rehabilitation measures carried out had a significant positive trend in the studied indicators. In particular, the function of the upper limbs in children of the main group improved significantly: 56.98±3.25 and 91.95±2.19, respectively. Although this function also significantly improved in children of the control group - 51.18±3.7 and 69.92±3.13, it was significantly lower (P<0.01) than in children of the main group.

The domain “Basic mobility and transfer” in children of the compared groups also had its own characteristics. The treatment contributed to a significant improvement in performance. Thus, if in children of the main group this parameter was 56.95±1.54, then after treatment it increased to 92.87±0.66 (P <0.05). Despite the improvement in this indicator in children of the control group, it was still significantly lower than in children of the main group - 77.55±2.63 and 92.87±0.66, respectively.

It is known that children with COFBIOTCSCAS participate little in sports activities. The Sports and Physical Functions domain covers tasks such as walking, running, stair climbing and cycling, as well as participation in non-competitive sports and games compared to competitive sports with other children of the same age. That’s why we decided to highlight “Sports” on the domain. As can be seen from the table, after the rehabilitation measures were taken, this indicator increased significantly. So, if before rehabilitation this domain was equal to 68.96±2.25, then after treatment it significantly increased and became equal to 91.53±1.77.

The treatment also contributed to an increase in this indicator in the comparison group (70.7±2.25 and 77.92±2.11, respectively), but a significantly smaller increase than in the main group (P<0.01). Consequently, it can be noted that the rehabilitation measures carried out to the children of the main group turned out to be more effective.

The indicators for the Comfort/Pain domain turned out to be even more clear than the previous indicators. Thus, in the children of the main group, before rehabilitation measures, the domain was equal to 52.09±2.21 and during treatment it increased to 93.76±1.20. The treatment contributed to a significant increase in the children of the comparison group - 55.53±2.35 and 73.86±2.58, respectively, but still significantly lower than in the main group.

Children with COFBIOTCSCAS may be less happy than children with typical development. COFBIOTCSCAS reported lower scores in the happiness domain of the PODCI, which asked about children's satisfaction with their appearance, body, clothes and shoes, ability to do the same things as their peers, and general health. It turned out that the lowest scores in this area could be associated with feelings of irritation and distress, which are often found in children due to differences in the level of performance of the same tasks as their normal peers. Our research on the “Happiness Function” domain also yielded interesting data. It was found that treatment significantly increased the value of this parameter. Before treatment in children of the main group it was 68.9±1.27, and after treatment - 96.71±0.71. Despite the increase in this indicator in children of the comparison group, it was still significantly lower than in children of the main group (P<0.01).



Rehabilitation measures had a more pronounced increase in the “Global Function” domain in the main group. Thus, before treatment, this indicator in children of the main group was 58.75 ± 1.56 and did not differ significantly from that in the comparison group - 59.94 ± 2.05 . After treatment, this domain increased in both the main and comparison groups - 92.64 ± 1.0 and 67.5 ± 1.82 , respectively. However, in the main group, as the figures show, the improvement was more significant.

Thus, the studies showed that rehabilitation measures significantly improved the quality of life in preschool children. According to all parameters of the questionnaire PODCI, a more significant increase in all domains, without exception, was noted in children of the main group.

We also conducted a study of the dynamics of the function of the upper limbs in preschool children.

Table 2
Dynamics of upper limb function in preschool children

Domains	Main group		Comparison group	
	Before treatment (M±m)	After treatment (M±m)	Before treatment (M±m)	After treatment (M±m)
Lift heavy books?	49.68±4.09	87.5±3.95	47.91±4.82 *	68.75±4.48 ^ °
Pour a half gallon of milk?	45.31 ±5.69	78.12±8.18	47.91±4.82 *	64.58 ±4.82 ^ °
Open a jar that has been opened before?	53.12 ±6.4	89.06±6.44	50.0 ±5.33 *	68.33 ±7.1 ^ °
Use a fork and spoon?	52.37 ±3.86	90.62 ±3.12	54.16 ±2.8 *	68.33 ±3.55 ^ °
Comb his/her hair?	59.37 ±3.12	93.75 ±2.79	58.33 ±3.55 *	74.58 ±3.71 ^ °
Button up ?	39.06 ±7.55	65.62 ±11.6	38.2 ±9.23 *	45.0 ±9.23 ^ °
Put on his /her coat o?	50.0 ± 7.9	71.87 ±10.91	49.16 ±9.14 *	63.33 ±10.33 ^ °
Write with a pencil?	60.93 ±3.93	95.3 ±2.51	59.16 ±9.14 *	79.16 ±9.14 ^ °

Note: * - reliability of data before and after treatment in the main group (* - $P < 0.05$)

^ - reliability of data before and after treatment in the comparative group (^ - $P < 0.05$)

° - reliability of the difference after rehabilitation between the main and comparative groups (° - $P < 0.01$)

Table No. 2 presents the results of data on the dynamics of the function of the upper limbs in preschool children. It should be noted that the indicators of children in both groups - the main group (who received special rehabilitation measures) and the comparison group (children who received standard basic therapy) did not actually differ before treatment. A detailed analysis showed that special rehabilitation measures had a more significant positive effect than standard therapy. Thus, after treatment, the children of the main group began to do better work such as “lifting heavy books” than the children of the comparison group - 87.5 ± 3.95 and 68.75 ± 4.48 , respectively.

Such a function as “pouring half a liter of milk” improved in children of both groups, however, more significant positive dynamics were noted in children who received special rehabilitation measures (64.58 ± 4.82 and 78.12 ± 8.18 , respectively).

Children of both groups coped equally poorly with such a manipulation as “Open a jar that was opened earlier” - 53.12 ± 6.4 and 50.0 ± 5.33 , respectively. The therapeutic measures carried out contributed to the improvement of the children’s abilities, most significantly in the main group (68.33 ± 7.1 and 89.06 ± 6.44).

It has long been known that mastering a skill such as skillful use of kitchen utensils - a fork and a spoon - takes more time than other skills. Moreover, it takes even more time to restore these skills. The study of this fact in the observed groups showed that the restoration of the skill of “using a fork and spoon” occurred in a significantly larger number of children in the main group than in the comparison group. Thus, before treatment, this indicator was 52.37 ± 3.86 in children of the main group and 52.37 ± 3.86 in the comparison group. Treatment contributed to an increase in this trait by 90.62 ± 3.12 and 68.33 ± 3.55 , respectively.

Interesting data was obtained when studying such a domain as “Combing his/her hair.” Before treatment, the indicator was the same in both groups - 59.37 ± 3.12 and 58.33 ± 3.55 , respectively. Special exercises in children of the main group contributed to an increase in this indicator to 93.75 ± 2.79 , while in children in the comparison group it increased to 74.58 ± 3.71 .



The domain “ Button up ” significantly increased after treatment in children of the main group : 65.62 ± 11.6 , versus 45.0 ± 9.23 in the control group. Although before treatment this indicator did not differ significantly in the compared groups - 39.06 ± 7.55 and 38.2 ± 9.23 , respectively. These data once again prove the more pronounced positive impact of special treatment methods.

The next domain was “Put on his /her coat”. Special treatment methods administered to the children of the main group resulted in a more significant positive effect. Before treatment, the indicators of the main and comparison groups were 50.0 ± 7.9 and 49.16 ± 9.14 , respectively, and did not have a statistically significant difference. After treatment, this indicator increased to 71.87 ± 10.91 in children of the main group, versus 63.33 ± 10.33 in children of the comparison group.

The skill “Write with a pencil” in children of the main group increased to 95.3 ± 2.51 , against 60.93 ± 3.93 before treatment. Positive dynamics were also noted in children of the comparison group - 59.16 ± 9.14 and 79.16 ± 9.14 , respectively, but significantly lower than in children of the main group.

Thus, the studies showed that rehabilitation measures significantly improved the quality of life in children, especially in the form of positive dynamics in the function of the upper limbs in preschool children. For all parameters, the indicators of children who received special treatment methods were significantly higher than those of children who received standard treatment.

CONCLUSION

Thus, the quality of life of preschool children before treatment was reduced on all scales. When the results for each domain were analyzed separately, both groups showed poor results in the domain that reflects hand activity among all domains. Impaired hand function is the main area that reduces the quality of life in children with complications of PTSD. This domain has the lowest score compared to other domains, which has also been confirmed by other studies [Medeiros DL et al., 2020]. As a result of the course of rehabilitation measures, a positive statistically significant dynamics of quality of life indicators was noted.

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GESTURE-BASED HUMAN-COMPUTER INTERACTION

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ABSTRACT

This project explores touchless interaction with computers using gesture recognition technology. By combining computer vision and gesture recognition, users can control their computers using hand gestures. The system uses a webcam for input, processes images with OpenCV, tracks hand movements with MediaPipe, and controls mouse and keyboard actions with PyAutoGUI. Users can perform various gestures like clicks, scrolls, and custom "Open Paint" gesture to control their computer. The project integrates with a paint application, allowing users to create digital art using their hand gestures, enhancing the overall user experience. Users can seamlessly control their computers by executing predefined gestures in the air, eliminating the limitations of conventional input device like mice.

KEYWORDS - *Gesture-based interaction, Human-Computer Interaction, MediaPipe, OpenCV, Paint Application, PyAutoGUI, Virtual mouse.*

I. INTRODUCTION

In 2018, a method for capturing shape and position information using color detection was introduced[1]. This development primarily focused on utilizing distinct colors to perform specific functions. Fast forward to 2022, a groundbreaking innovation emerged: the virtual mouse [2]. This virtual mouse eliminated the need for color-coded hand accessories and expanded its utility beyond cursor control. However, its functionality was primarily limited to cursor operations.

Recognizing this limitation, we have embarked on a journey to enhance the versatility and functionality of the virtual mouse system by integrating it with a paint application. This integration promises to elevate the project's utility to new heights. Our approach in implementing the virtual mouse involves the detection of a user's hand movements within an image, which are then translated into mouse pointer movements [3]. We employ a hand gesture recognition system and webcam input to identify motion in images, effectively replacing the conventional mouse system that has been in use for decades. The system is not confined to merely replicating cursor movements; it extends to controlling standard mouse functions, such as left-clicking, through the use of a real-time digital camera [4].

The integration of a paint application into our system represents a significant step forward in enhancing user interaction. This process involves capturing video frames, detecting a specific colored marker, tracking its movements, and using it to draw on a digital canvas. Furthermore, the paint application seamlessly interfaces with the virtual mouse. When the virtual mouse detects a custom gesture signifying the desire to access the paint application, it triggers the paint program to open, further expanding the scope and possibilities of our innovative project.

II. OBJECTIVES

- Improve user-computer interaction by recognizing a wide range of hand gestures, offering a more immersive experience
- Empower users to express their creativity digitally by integrating a paint application with intuitive hand gesture controls.
- Enable seamless and intuitive mouse control through hand gestures detected by a webcam, providing a user-friendly and efficient replacement for traditional mouse systems.



III. METHODOLOGY

The project starts by initializing the video interface through webcam. The system uses OpenCV which is open source computer vision library to process the video. We are using cv2.VideoCapture() function to get a video capture object for the camera and will read the data from that object using GestureController.cap.read() for further processing.

```
GestureController.cap = cv2.VideoCapture(0)
```

Once the video has been processed, the system uses MediaPipe to detect and identify landmarks on the user's hand. Using the process() function, the system can detect the hand landmarks.

```
results = hands.process(image)
```

These landmarks represent key points on the hand. These landmarks are processed to recognize the gesture. Once the gestures are recognized, the system translates these gestures into cursor operations. Those cursor operations are performed with the help of PyAutoGui.

- pyautogui.moveTo() for cursor movement.
- pyautogui.click() for left click.

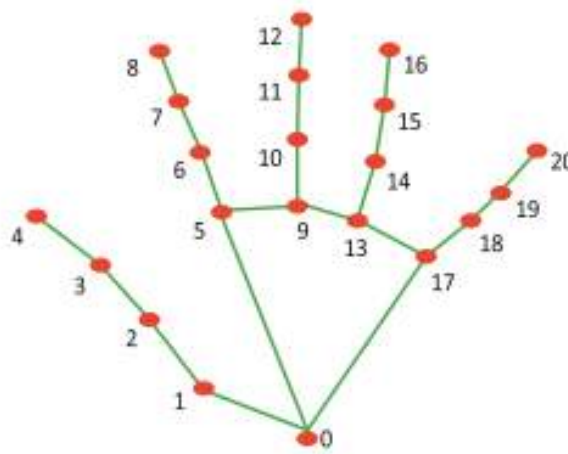


Fig.1: Landmark or Co-Ordinates in the Hand[6]

0.WRIST	11.MIDDLE_FINGER_DIP
1.THUMB_CMC	12.MIDDLE_FINGER_TIP
2.THUMB_MCP	13.RING_FINGER_MCP
3.THUMB_IP	14.RING_FINGER_PIP
4.THUMB_TIP	15.RING_FINGER_DIP
5.INDEX_FINGER_MCP	16.RING_FINGER_TIP
6.INDEX_FINGER_PIP	17.PINKY_MCP
7.INDEX_FINGER_DIP	18.PINKY_PIP
8.INDEX_FINGER_TIP	19.PINKY_DIP
9.MIDDLE_FINGER_MCP	20.PINKY_TIP
10.MIDDLE_FINGER	



Those operations include mouse movement , right click , left click, double click ,drag and drop and scrolling. When the system recognizes pinch gesture, then it triggers to art mode where users can paint using their hands as brushes. Users can seamlessly make transition between virtual mouse and paint application.

The paint application has functions like clearing the canvas and provides color selections for drawing. Users can interact with the paint application by moving their hands to paint in different colors. The code maintains several arrays for storing points of various colors effectively and provides a user interface so that users can choose colors.

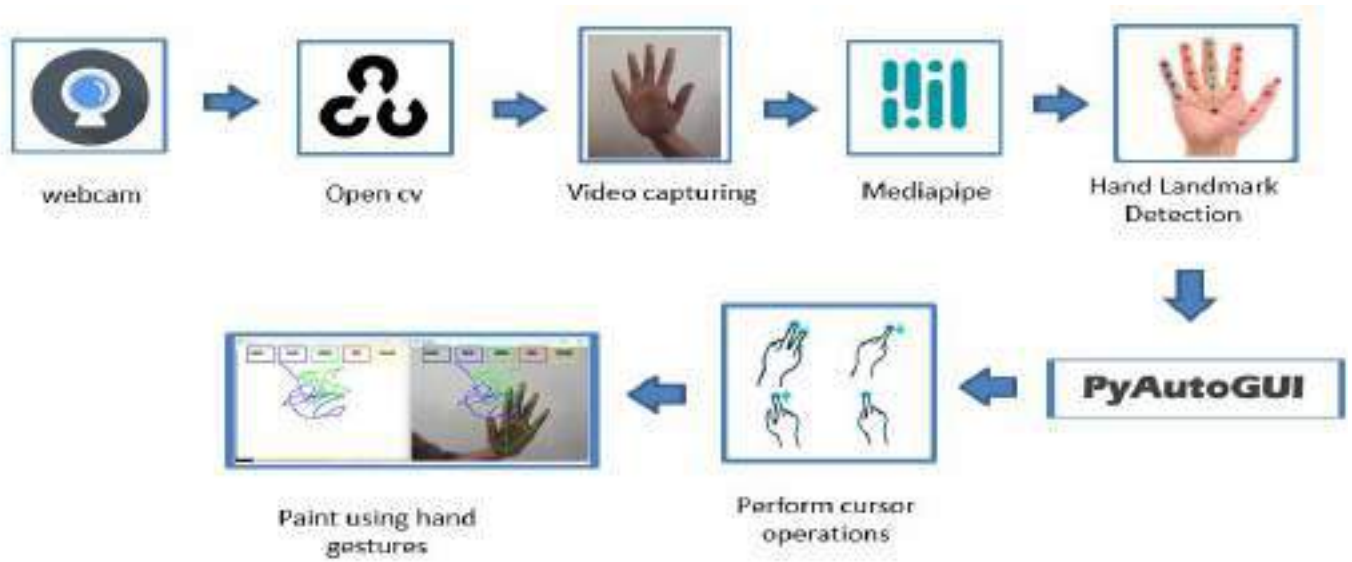


Fig.2: System Architecture

To develop the paint application, firstly the code create a canvas with different color options like blue, green, red and yellow for drawing. After that, the code will start the video capture through webcam and the video frames are captured. Those video frames are processed to detect the hand landmarks using the MediaPipe library. And then, the code can recognize the hand gesture for the detected hand landmarks. Then, the user can draw the different colors of lines on canvas based on their hand gestures. There will be specific gestures for selecting the colors and clearing the canvas. The user can exit the paint application by pressing the ‘q’ key.

IV. RESULTS



Fig.3: Mouse Movement



Figure 3 The system should precisely capture and respond to the hand gesture simulating mouse movement. Users should experience a smooth and accurate translation of hand movements into on-screen cursor actions, ensuring a fluid and intuitive interaction with the digital environment.



Fig.4: Right-Click

Figure 4 The system must reliably recognize the right-click hand gesture, enabling users to trigger context menus or other right-click functions within applications. The system should respond promptly and accurately to the gesture, providing an efficient alternative to traditional mouse interaction.



Fig.5: Drag And Drop

Figure 5 The system should accurately interpret the hand gesture to initiate and complete the drag operation. The object should follow the hand's movement during the drag, providing visual feedback. The release gesture should trigger the drop action, placing the object in the new location.



Fig.6: Paint



Figure 6 The system seamlessly interacts with the paint application and enables artistic expression through hand gestures, providing a user-friendly and engaging experience for creative tasks.

V. SUGGESTIONS

- **Gesture Vocabulary:** Enhance the system by adding more gestures to increase its functionality. Recognize a broader range of gestures for increased user convenience.
- **Multimodal Integration:** Explore the integration of voice commands to create a multimodal HCI system. This allows users to combine hand gestures with voice instructions for a richer interaction experience.
- **User Customization:** Develop features that enable users to customize gesture definitions, making the system more personalized.

VI. CONCLUSION

The Gesture-based Human-Computer Interaction (HCI) system introduced in this project has revolutionized the way people interact with computers. This system allows users to control digital interfaces using hand gestures, which is more natural compared to traditional input devices like a mouse. It overcomes the limitations of regular mouse interfaces and offers a smooth and effective solution for various tasks, including precise cursor movements and even creating digital art. The integration with paint applications takes this innovation a step further, enabling users to paint and be artistic using their hands. This project signifies a big advancement in the field of Human-Computer Interaction.

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CONFLICT BETWEEN MODERNIZATION AND TRADITIONAL VALUES IN ANITA RAU BADAMI'S "TAMARIND MEM"

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ABSTRACT

This research article explores the conflict between modernization and traditional values in Anita Rau Badami's novel, "Tamarind Mem." The novel portrays the struggles faced by the protagonist, Kamini, as she navigates the clash between her traditional Indian upbringing and the modern world she encounters in Canada. As they settle into their new surroundings, they grapple with the challenges of preserving their traditional values while adapting to a new culture. Through an analysis of key themes, character development, and narrative techniques, this article aims to shed light on the complex interplay between modernization and traditional values in the novel.

KEY WORDS: modernization, traditional values, encounters, complex interplay.

INTRODUCTION

Anita Rau Badami's "Tamarind Mem" delves into the conflict between modernization and traditional values through the experiences of Kamini, a young Indian woman who immigrates to Canada. The novel explores the challenges faced by Kamini as she attempts to reconcile her traditional upbringing with the realities of a rapidly changing world. This article aims to analyze the various ways in which Badami portrays this conflict, highlighting the tensions, dilemmas, and consequences faced by Kamini throughout her journey.

TRADITIONAL VALUES AND CULTURAL IDENTITY

One of the central conflicts in the novel is the tension between Kamini's desire to maintain her Indian cultural identity and her children's growing assimilation into Canadian society. Kamini struggles to pass on her traditions and values to her children, who are more influenced by Western culture. This generational divide highlights the challenges faced by immigrant families in preserving their cultural heritage. Through Kamini's character, Badami explores the importance of traditional values in shaping one's identity. Kamini's attachment to her Indian roots is deeply rooted in her sense of self, and she finds solace in the familiar customs and traditions of her homeland. However, as her children become more distant from their Indian heritage, Kamini is forced to confront the possibility of losing her cultural identity. The novel also delves into the complexities of cultural assimilation and the impact it has on individuals and families. Kamini's children, particularly her daughter Roopa, struggle with their dual identities and the pressure to conform to Canadian norms. This conflict between their Indian heritage and their desire to fit in highlights the challenges faced by immigrant children in navigating multiple cultural identities. Overall, "The Tamarind Mem" explores the themes of traditional values and cultural identity through the lens of an immigrant family. It raises important questions about the preservation of cultural heritage in the face of assimilation and the impact of these dynamics on individuals and their sense of self.

GENDER ROLES AND EXPECTATIONS

In the novel, the protagonist, Kamini, is expected to conform to traditional gender roles as a wife and mother. She is pressured to prioritize her family's needs over her own aspirations and desires. Kamini's mother-in-law, Saroja, represents the traditional mindset, enforcing strict gender roles and expecting Kamini to fulfill her duties as a wife and daughter-in-law. However, the novel also presents contrasting perspectives through other female characters. Kamini's sister-in-law, Roopa, rebels against societal expectations by pursuing a career and asserting her independence. Roopa challenges the traditional gender roles and becomes a symbol of empowerment for Kamini. Through these characters, Anita Rau Badami explores the complexities of gender roles and expectations in Indian society. The novel raises questions about the limitations imposed on women and the struggle to break free from societal norms. It sheds light on the internal conflicts faced by women as they navigate between tradition and modernity. Overall, "The Tamarind Mem" offers a nuanced



portrayal of gender roles and expectations, highlighting the challenges faced by women in Indian society while also showcasing their resilience and capacity for change.

GENERATIONAL DIVIDE

One of the main sources of the generational divide in the novel is the clash between traditional values and modernity. The older generation, represented by characters like Saroja, holds onto traditional customs and beliefs, while the younger generation, such as Kamini and Roopa, embraces more progressive ideas and challenges societal norms. This clash of values often leads to misunderstandings and strained relationships between parents and children. The older generation struggles to comprehend the choices and aspirations of the younger generation, while the younger generation feels restricted and stifled by the expectations placed upon them. The novel also explores the impact of cultural and societal changes on the generational divide. As India undergoes rapid modernization and globalization, the younger generation is exposed to new ideas and influences that challenge traditional ways of life. This creates a sense of disconnection and alienation between generations, as they struggle to reconcile their differing perspectives. Through the portrayal of these conflicts, Anita Rau Badami highlights the complexities of intergenerational relationships and the challenges faced by individuals trying to bridge the gap between tradition and modernity. The novel invites readers to reflect on the tensions that arise within families due to differing values, expectations, and experiences across generations.

CULTURAL ASSIMILATION AND LOSS OF IDENTITY

Cultural assimilation is a process in which individuals or groups adopt the customs, language, and values of the dominant culture, often at the expense of their own cultural identity. In the novel, Kamini and her family face pressure to conform to Canadian society and shed their Indian identity. They are encouraged to adopt Western practices, abandon their traditional customs, and even change their names. This assimilation is seen as a means of fitting in and achieving success in their new country. However, as Kamini and her family assimilate, they also experience a loss of their cultural identity. They find themselves caught between two worlds, feeling disconnected from their Indian roots while not fully accepted by the Canadian society. This loss of identity leads to a sense of displacement and a longing for their homeland. Through the characters' experiences, Anita Rau Badami highlights the complexities and challenges of cultural assimilation. She explores the tension between preserving one's cultural heritage and adapting to a new environment. The novel raises important questions about the price individuals and communities pay when they assimilate into a dominant culture, and the impact it has on their sense of self and belonging. Overall, "The Tamarind Mem" delves into the themes of cultural assimilation and the loss of identity, shedding light on the struggles faced by immigrants as they navigate their way through a new culture while trying to preserve their own.

NARRATIVE TECHNIQUES AND SYMBOLISM

In the novel author employs various narrative techniques and symbolism to enhance the storytelling and convey deeper meanings within the novel. One narrative technique used by Badami is the use of multiple perspectives and shifting timelines. The story is narrated from the viewpoints of different characters, allowing readers to gain a comprehensive understanding of the events and emotions from various angles. This technique adds depth to the narrative and provides insight into the complexities of cultural assimilation and identity loss experienced by the characters. Symbolism is also prevalent throughout the novel. The tamarind tree, for instance, serves as a powerful symbol of cultural heritage and connection to the characters' Indian roots. It represents the memories, traditions, and values that Kamini and her family carry with them as they navigate their new lives in Canada. The tamarind tree also symbolizes resilience and the ability to adapt, as it continues to grow and thrive despite being transplanted to a foreign land. Another symbol in the novel is the tamarind mem itself, which refers to Kamini's mother. The term "mem" is a respectful title used for married women in India. It represents the traditional role and expectations placed upon women in Indian society. Through the character of Kamini's mother, Badami explores the challenges faced by women in maintaining their cultural identity while adapting to a new culture. Additionally, the use of vivid imagery and sensory details in the novel helps to create a rich and immersive reading experience. Badami's descriptive language brings the settings to life, whether its the bustling streets of India or the quiet suburban neighborhoods of Canada. This technique allows readers to visualize the characters' surroundings and empathize with their experiences. Overall, Anita Rau Badami employs narrative techniques such as multiple perspectives, shifting timelines, symbolism, and vivid imagery to craft a compelling and thought-provoking narrative in "The Tamarind Mem." These techniques enhance the storytelling and deepen the exploration of cultural assimilation, identity loss, and the complexities of immigrant experiences.

CONCLUSION

Anita Rau Badami's "Tamarind Mem" presents a nuanced portrayal of the conflict between modernization and traditional values through the experiences of Kamini. The novel explores the challenges faced by individuals caught between two worlds, highlighting the tensions,



dilemmas, and consequences that arise from attempting to reconcile cultural heritage with the demands of a rapidly changing society. By analyzing key themes, character development, and narrative techniques, this research article has shed light on the complex interplay between modernization and traditional values in the novel.

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FLIGHT FARE PREDICTION USING MACHINE LEARNING

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ABSTRACT

The Flight Fare Prediction System is a comprehensive solution aimed at accurately forecasting flight ticket prices, providing travelers with valuable insights for better planning and decision-making. Nowadays, airline ticket prices can vary dynamically for the same flight. From the customer's perspective, they want to save money, so I have proposed a model that predicts the approximate ticket price. This system leverages machine learning algorithms and historical flight data to generate accurate fare predictions. The system utilizes a vast dataset comprising historical flight fares, including factors such as travel dates, destinations, airlines, departure times, and various other relevant variables. By analyzing this data using advanced machine learning techniques, the system learns patterns and relationships, enabling it to make reliable predictions about future flight fares. An ensemble of machine learning algorithms, including regression-based models like Random Forest, Gradient Boosting, and Support Vector Regression, is employed to capture complex patterns and relationships within the data. This system will give people an idea of the trends the prices follow and also provide the predicted value of the price, which they can check before booking flights to save money. This kind of system or service can be provided to customers through flight booking companies to help them book tickets.

KEYWORDS - Flight Fare Prediction, Machine Learning, Historical Flight data, Random Forest.

I. INTRODUCTION

Everyone knows that holidays always call for a much-needed vacation and planning the travel itinerary becomes a time-consuming task. The commercial aviation business has grown tremendously and has become a regulated marketplace as a result of the worldwide growth of the Internet and E-commerce. Hence, for Airline revenue management, different strategies like customer profiling, financial marketing, and social factors are used for setting ticket fares. When tickets are booked months in advance, airfares are often reasonable, but when tickets are booked in a hurry, they are often higher. But, the number of days/hours until departure isn't the only factor that decides flight fare, there are numerous other factors as well. Customers find it quite difficult to obtain a perfect and lowest ticket deal due to the aviation industry's complex pricing methodology. Machine Learning and Deep Learning-based technologies and models have been created to overcome this challenge, and substantial research is also happening. This study discusses a Machine Learning-based Flight Fare Prediction System that employs Random Forest Regression to predict airline ticket pricing. Various features that influence prices are also studied along with the system's experimental analysis. Section II included a literature review that looked at technical papers as well as some current models and systems. Differences in the features considered are also mapped down, In Section III, the proposed system is described in detail along with the workflow and its features. In Section IV, the results as well as various comparisons between findings are reported. In Section V, conclusions are provided. In Section VI, prospective advancements for further research.

II. RELATED WORK

The paper begins with some broad information regarding machine learning, after which the authors further proceed to the methodology. The methodology consists of four-phase process that influences flight prices, collection of data from flight fare prediction dataset by MH, selection and evaluation of an accurate ML Regression model. Key to its success is the integrity of the system where consumers accurately represent the segments for which prices have been differentially determined.



[2] Today, airlines price tickets “as much as the customer and market will bear,” according to consultant and former airline planning executive. Airlines also profile their customers to help them adjust prices.

[3] This often means placing passengers into one of two groups: leisure or business. And the way each group is priced is very different. Most studies on airfare price prediction have focused on either the national level or a specific market. Research at the market segment level, however, is still very limited. We define the term market segment as the market/airport pair between the flight origin and the destination.

[4] The airline dataset included the following eight characteristics: departure and arrival times, type of airline, number of stoppages, source, destination and additional information. The authors performed prediction using regression Machine Learning models that including, LGBM Regressor, Random Forest Regression Tree, and Decision Tree Regressor. Random Forest Regression is a supervised learning algorithm that uses ensemble learning method for regression. Ensemble learning method is a technique that combines predictions from multiple machine learning algorithms to make a more accurate prediction than a single model.

[5] All in present a review of deep learning and social media data-based Airline ticket price prediction model. The authors introduce the current airline ticket pricing situation with the factors that affect ticket prices. A Random Forest operates by constructing several decision trees during training time and outputting the mean of the classes as the prediction of all the trees. A Random Forest Regression model is powerful and accurate. It usually performs great on many problems, including features with non-linear relationships.

[6] Random Forest Model is used for development since it outperforms other models such as LGBM Decision Tree Regressor and Neural Network in terms of data performance with a R squared score of 0.91, this prediction framework has a good level of accuracy.

III. METHODOLOGY

The following steps are involved in the proposed architecture of our project.

3.1. Data Collection

The act of obtaining, acquiring, and combining the data that will be used to develop, test, and verify a machine learning model is known as data collection in machine learning. This step plays crucial role in implementation. Here data is collected from flight fare dataset which is imported from Kaggle. The dataset consists of both categorical data and numerical data. The categorical data includes source, destination, type of airline, additional info and numerical data includes arrival and departure dates, number of Stops. There are 11 columns (each represents a feature) and 10683 rows in this large dataset.

3.2. Data Preprocessing

Data preprocessing means nothing but cleaning data, which can be used for model training and testing. By this step we can make our data useful for model training purpose. Data preprocessing involves cleaning, transforming, and preparing the data for data analysis. The sub steps involved in the data preprocessing are:

Data Cleaning: In this step the null values are removed, missing values are removed and if any duplicates are present that are also removed.

Feature selection and engineering: In this step the features of our model are extracted and all the relevant features are used for model training. In dataset it contains date of journey, arrival date, departure date columns and all the numerical values are extracted as Departure hour, departure minutes, arrival hour, arrival minutes, journey day, journey month. As dataset contains both categorical and numerical features, by using 'On hot encoding' method for nominal categorical data and 'label encoding' for ordinal categorical data was used to convert the categorical values to numerical values. The dataset consists of categorical variables like airline, source, destination, route, total number of stops and additional info.

3.3 Data Splitting

This step involves splitting our data into two parts for training and testing purpose. For model training 80 percent of data was used by using Random Forest regressor model was trained. The machine learning algorithms are:

LGBM Regressor

LGBM stands for Light Gradient Boosted Machine. It is a gradient boosting framework based on decision trees that can be used for various machine learning tasks such as regression, classification and ranking. LGBM Regressor is a class in lightgbm package that can be used to train and predict regression models.



Decision Tree Regressor

Decision tree regressor is a class in Sklearn tree module that can be used to train and predict regression models. It is a decision tree-based algorithm that recursively partitions the input data based on the values of the input features, forming a tree-like structure. It initially chooses independent variable from dataset as decision nodes for decision making and then it divides the entire dataset into sub-sections and when test data is passed to the model the output is decided by checking the data point belongs to the decision tree will give output as the average value of all the datapoints in the sub-section.

Random Forest Regressor

Random Forest regressor uses multiple decision trees to perform regression tasks. It is an example of ensemble learning. Random forest is a Supervised Learning algorithm which uses ensemble learning approach for classification and regression. Decision trees are sensitive to the specific data on which they are trained. If the training data is changed the resulting decision tree can be quite different and in turn the predictions can be quite different. Also, Decision trees are computationally expensive to train, carry a big risk of overfitting, and tend to find local optimal because they can't go back after they have made a split to address these weaknesses, we turn to Random Forest.

3.4 Model evaluation

This is an important step in our project, as it helps us to measure the performance and accuracy of our model. Test data is used for model evaluation. Here, we employed Cross-validation for model evaluation. This method divides the data into k-subsets, called folds. the model is trained on k-1 folds and tested on the remaining fold. this process is repeated k times, so that each fold is used as a test set once. The average performance across all k-folds is reported as the final result. The metrics that are used for model evaluation purpose are:

Root Mean Squared Error (RSME): It gives the root of the average squared difference between the actual values and the predicted values for a regression problem.

Mean Absolute Error (MAE): It gives the absolute difference between the actual values and predicted values. The higher negative mean values indicate the better performance of model.

R-Squared: This metric measures how well the regression model fits the data, by comparing it to a baseline model that always predict the mean value. It shows how much variation in the data is explained by the model.

3.5 Model Architecture

The architecture is crafted with essential components to optimize prediction. Our proposed system analyses historical data to identify patterns, seasonal trends and additional information that influence flight fares.

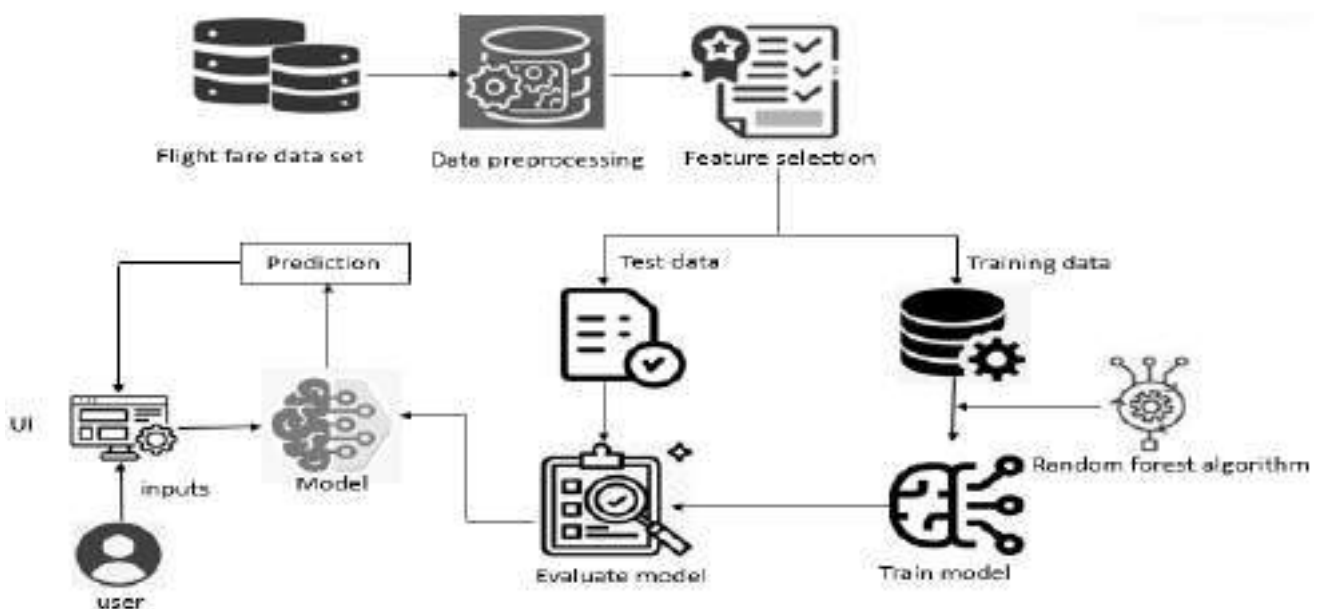


Fig.1: System Architecture



IV. IMPLEMENTATION AND RESULTS

1. Importing the required libraries.

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.preprocessing import StandardScaler
from sklearn.model_selection import train_test_split
from sklearn.model_selection import cross_val_score
from sklearn.model_selection import cross_validate
from sklearn.metrics import mean_squared_error as mse
from sklearn.metrics import r2_score
from sklearn.metrics import mean_absolute_percentage_error
from math import sqrt
from scipy.stats import randint as cp_randint
from sklearn.linear_model import Ridge
from sklearn.linear_model import Lasso
from sklearn.linear_model import LinearRegression
from lightgbm import LGBMRegressor
from xgboost.sklearn import XGBRegressor
from sklearn.tree import DecisionTreeRegressor
from sklearn.ensemble import RandomForestRegressor
from sklearn.preprocessing import LabelEncoder
from sklearn.model_selection import KFold
from sklearn.model_selection import train_test_split
from sklearn.model_selection import GridSearchCV
from sklearn.model_selection import RandomizedSearchCV
from prettytable import PrettyTable
```

2. Read the dataset:

Our dataset format might be in .csv, excel files, .txt, .json, etc. We can read the dataset with the help of pandas.

```
df = pd.DataFrame(pd.read_excel("Dataset_Bonus_project.xlsx"))
pd.pandas.set_option('display.max_rows',None)
pd.pandas.set_option('display.max_columns',None)
df.head()
```

	Airline	Date_of_Journey	Source	Destination	Route	Dep_Time	Arrival_Time	Duration	Total_Stops	Additional_Info	Price
0	IndiGo	24/03/2019	Banglore	New Delhi	BLR → DEL	22:20	01:10 22 Mar	2h 50m	non-stop	No info	3897
1	Air India	1/05/2019	Kolkata	Banglore	CCU → IXR → BBI → BLR	05:50	19:15	7h 25m	2 stops	No info	7662
2	Jet Airways	9/06/2019	Delhi	Cochin	DEL → LKO → BOM → COK	09:25	04:25 10 Jun	19h	2 stops	No info	13882
3	IndiGo	12/05/2019	Kolkata	Banglore	CCU → NAG → BLR	18:05	23:30	5h 25m	1 stop	No info	6218
4	IndiGo	01/03/2019	Banglore	New Delhi	BLR → NAG → DEL	16:50	21:35	4h 45m	1 stop	No info	13302

3. Data preprocessing:

The `df.isnull()` method is used to verify that no values are present. We employ the `sum()` function to add up those null values. Two null values were discovered in our dataset, we discovered. We thus start by investigating the data.

4. Using a Heat Map to check the correlation:

Here we are using a heat map to check the correlation in this instance. Using different colour combinations, it displays the data as 2-D coloured maps. Instead of numbers, it will be plotted on both axes to describe the relationship variables.



5. By comparing all the models (LGBM Regressor, Decision Tree Regressor, Random Forest Regressor), we can conclude that Random Forest Regressor performs the best.

Model Name	Tr. RMSE	Tr. R-Squared	Te. RMSE	Te. R-Squared
Decision Tree Regressor	1480.8751646292635	89.32359295988586	2050.6082679556803	75.17121421662682
Random Forest Regressor	1020.1904631776361	95.2064820543960	1594.1167309563911	81.01885135611701
LGBM Regressor	1320.1604980356983	91.1600067894266	1522.1882616825108	80.0739576571885

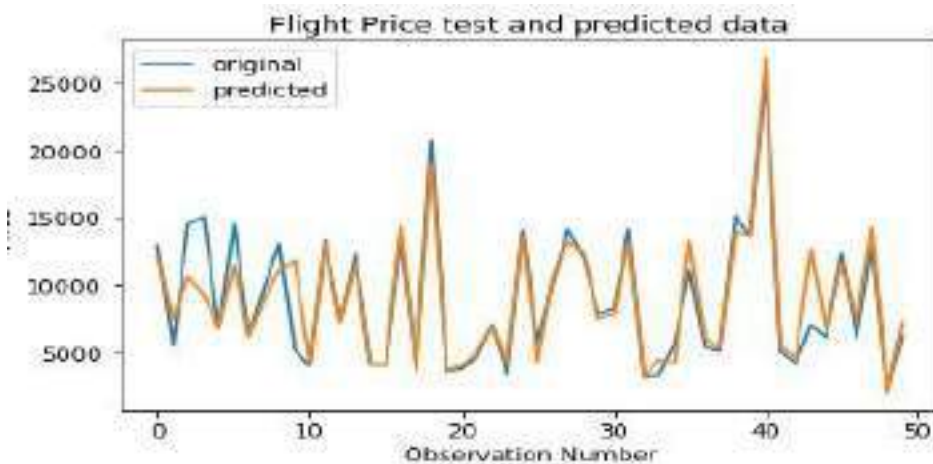


Fig 2: Flight Price Test and Predicted Data



Fig.3: Home Page

Figure 3 By using flask the machine learning model was deployed. Flask is a python web framework that allows you to build lightweight and flexible web applications quickly and easily. The web page collects information and it predicts the fare of ticket. It collects information like departure date, arrival date, source, destination, number of stops, type of airline and additional information (meal included or not, no info, change airports, etc).

V. FUTURE SCOPE

- Optimal date recommendation: It means suggesting the date to users on which date the flight prices will be minimum.
- Real-Time Updates: Dealing with real-time data for dynamic pricing adjustments based on factors like weather, demand, and airline policies.
- Integration: Partnering with airlines, travel agencies, and online booking platforms to provide pricing as a value-added service.

VI. CONCLUSION

In conclusion, the main aim of our project flight fare prediction using machine learning is to predict the prices. We have created a User Interface for the entire process which includes arrival date, departure date, source, destination, etc. Our flight fare prediction project using machine learning has successfully produced a reliable and user-friendly system. We collected, preprocessed, and extracted features from flight fare data, trained a robust random forest model and evaluated its performance. This web application we developed empowers travelers to make informed decisions by predicting flight prices based on their input.

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CONSTRAINTS FACED BY TEACHERS IN USING COMPUTERS TO MANAGE STUDENTS' ACADEMIC RECORDS IN PUBLIC SECONDARY SCHOOLS IN ROMBO DISTRICT, TANZANIA

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ABSTRACT

This study investigated constraints faced by teachers in using computers to managing students' academic records in public secondary schools in Rombo district, Tanzania. This study was guided by Venkatesh's Unified Theory of Acceptance and Use of Technology (UTAUT). Convergent parallel design under mixed research approach was adopted. Purposive and stratified simple random technique were used to obtain 122 respondents where by 108 were teachers, 10 were heads of schools and 2 district quality assurers. Instruments of data collection were questionnaires, Interview guide and observation guide. Quantitative data were analyzed descriptively using mean, standard deviation, frequency tables and percentages, while qualitative data were thematically analyzed. Research ethics were observed whereby sources of information and anonymity of respondents were strictly adhered. The study found out that teachers in public secondary schools in Rombo district are faced by number of limiting factors towards computer use for managing students' academic records. Such constraints are like teachers lack skills and knowledge on computers, resistance to change for teachers, shortage of funds for proper integration of computers in education at schools, lack of motivation for teacher to use computers, lack of interest for teachers on computer use for records management, insufficient technical support for teachers at schools, no relevant software especially in records management, unclear ICT policy in education and lack of time for teachers to use computer. The study conclude that the constraints identified in the study restrict teachers to use computer for proper usage of computers to manage students' academic records. The study recommended that, the Government should come up with practical strategies to ensure that teachers make use of computers to simplify and improve effectiveness in education especial in a crucial area of managing students' academic records.

KEYWORDS: *Computers, students' academic records management, public secondary schools.*

1. INTRODUCTION

The 21st century is often regarded as an era of technology. Computer Technology, today, plays a very important role in our life. It is seen as a basis of growth of many sectors and the economies of many countries (UNESCO, 2017). An economy which is poor in technology can never grow in today's scenario. This is because technology makes our work much easier and less time consuming (Ngeze, 2017). For example among new technology tools now days is computer. Computer is an electronic device that has the ability to manipulate data quickly and accurately as well as designed and organized to automatically receive and store input data, processes it, and produces output under the supervision of a step by step instruction program (Operating System) which is stored in the inside stored program (O'Regan, 2021).

Over the years, the official form of record keeping, storage, retrieval and utilization in schools were done manually. This manual system according to O'Regan (2021) may, however, pose some problems in schools system against school administrative flow for example in record keeping destruction of poorly kept academic records by termite, rain, flood, or storm, corruption of data by human interference, undue access to confidential information, inability or untimely supply of school information to mention but a few.

According to Henshall (2019) records management is the creation, distribution, maintains retention, preservation, retrieval and disposal of records for purpose of keeping the planners and decision-makers informatively in a business organization. Human memory is limited and cannot recapitulate the numerous activities taking place every day in education organizations. Besides documents relating to the students' academic matters must be kept for evidence to students' academic progress and discipline dealings. Every school decision is based on the basis of available data and information.

Among importance of computer technology in schools is to keep academic records. Academic records are vital documents that contain valuable information related to students' progress in schools. These records include students' admission files, electronic books, admission letters, payment records, medical records, continuous assessment records, examination results, accommodation records, end of semester academic progress report, (Shehu, 2017).



The government of Tanzania came up with a reform program so as to improve the effectiveness of records management in 1990 by laying down the appropriate procedures for carrying out such processes. The records and archive management Act No 3 of 2002 stated that all records should be kept legal for their entire life-cycle. According to this Act, the records department is supposed to ensure that all public offices represent true record keeping as well as the establishment and implementation of records keeping procedures (URT, 2017)

In recognizing the potential of computers as significant Information and communication Technology (ICT) tools for improving education system, the Government of Tanzania formulated its national ICT policy in 2003 (Swart & Wachira, 2018). Four years later, the Ministry of Education and Vocational Training (MoEVT) developed an ICT Policy for Basic Education in 2007. The Tanzania Vision 2025, the key national development strategy, also recognizes the role of computers as agent for transformation of the economy to a knowledge economy, and identifies the potential of computers to address most of the development challenges including those presented by education.

As Tanzania adopts Information and Communication Technology (ICT) in education, it faces the same challenges like most developing countries where unstable economy, poorly developed ICT infrastructure, high bandwidth costs, unreliable supply of electricity, general lack of resources etc, were found to be the central issues to meet a broad spectrum needs of the country (Henshall, 2019). Like other factors improper use of computer in records management is a very important factor to be considered in the educational context of Tanzania. Computers provides opportunities for teachers to operate, store, manipulate, and retrieve information, encourage independent and active learning, and self-responsibility for learning, motivate teachers to plan and prepare lessons, design materials and facilitate sharing of resources, expertise and advice.

According to Marikyan (2020), computer services are modern facilities devised to facilitate the reduction of record volumes and facilitate the retrieval of records for smart offices. They also have added advantage of reducing the space occupied by records kept in files and notebooks. This manual system of managing students' academic records, according to Morrow (2020) may however, pose some problems in schools system against school administrative flow for example destruction of poorly kept academic records by fire as reported by Nestory (2017) that Tanzania has been experiencing a number of fire incidents in schools that have caused losses of property and lives of students. Termite, rain, flood, or storm, corruption of data by human interference, undue access to confidential information, inability or untimely supply of school information to mention but a few. These problems end up with improper management of students' academic records in public secondary schools. In this regard there is a need to conduct a research to assess the constraints faced by teachers' in using computers to manage students' academic records in public secondary schools in Rombo district.

2. STATEMENT OF THE PROBLEM

Despite the fact that, students' records are very vital in the achievement of educational objectives, it is not well known if they are properly managed by some teachers and heads of schools in many public secondary schools in Tanzania particularly in Rombo district. The researchers (Katoba, 2017, Joy & Agala, 2019) have shown that, there have been series of complaints from parents, guardians, students even teachers and other educational stakeholders that, students' academic records management and retrieval in secondary schools are very porous, unsatisfactory, time consuming, space consuming and at times, not available. Studies done by (Adeleye, 2021, Njoka 2020, Kweka, 2018) were explaining the constraints of computer usage in teaching and learning and but constraints facing teachers in using computers to manage students' were not clearly established. Therefore the researcher thought it is necessary to assess the constraints faced by teachers in computers use to manage students' academic records in public secondary schools in Rombo district.

3. RESEARCH QUESTIONS

What constraints do teachers face in using computers for managing students' academic records in public secondary schools in Rombo District?

4. SIGNIFICANCE OF THE STUDY

The study findings provide useful information to public secondary schools, Education Officers at district level and other education stakeholders in Tanzania on Teachers' Use of computers in managing students' academic records. In relation to the education and training policy of 2014 as well as ICT policy for basic education of 2007, the study exposed how teachers in secondary schools can make use of computers to improve management of students' academic records in public secondary schools. Furthermore, the study provided new insight to researchers and academicians for further research work that involves the integration of computers for teachers and administrators in secondary schools for improving excellent record management. Finally but not least, this study intensified the researcher's knowledge and understanding on conducting research and general knowledge on use of computers in education practices.



5. THEORETICAL FRAMEWORK

This study was guided by Unified Theory of Acceptance and Use of Technology (UTAUT) proposed by Venkatesh et al., (2003). The theoretical model of UTAUT suggests that the actual use of technology is determined by behavioral intention. The perceived likelihood of adopting the technology is dependent on the direct effect of four key constructs, namely performance expectancy, effort expectancy, social influence, and facilitating conditions. The effect of predictors is moderated by age, gender, experience and voluntariness of use.

According to (Venkatesh et al., 2003), performance expectancy is defined as the degree to which an individual believes that using the computer system will help him or her to attain gains in job performance. Effort expectancy is defined as the degree of ease associated with the use of the system. Social Influence is defined as the degree to which an individual perceives that important others believe he or she should use the new system. Facilitating conditions is defined as the degree to which an individual believes that an organization's and technical infrastructure exists to support the use of the system.

As a product generated from experience of previous technology adoption theories, Unified Theory of Acceptance and Use of Technology is a comparably complete model. Its explanatory power in technology using behavior is up to 70%, a much higher rate than other technology acceptance theories (Williams et al., .2019). With such accuracy and broad application in explaining technology adoption behavior, UTAUT model surpassed other theories and became a better choice for researchers in the area of technology using behavior.

The limitation of Unified Theory of Acceptance and Use of Technology model is its inflexibility to adapt to different contexts. As Maity et al.(2016) reported in their research about information technology acceptance in Saudi Arabia, which is a middle-east country, cultural difference of Saudi Arabia from that of a typical western country became an obstacle for them to use UTAUT to analyze worker's adoption of computers in Saudi Arabia.

This study intended to investigate constraints faced by teachers' in using computers for managing students' academic records in public secondary schools. Venkatesh et al theory provide a better insight as to address acceptance and use of technology in education sector especially in managing students' academic records in secondary schools. In this modern era of technology teachers must be competent to accept and use modern technologies (Verhoef et al., 2021).

6. REVIEW OF EMPIRICAL STUDIES

Francom (2020) did a 3-year time-series survey study conducted in K-12 public schools in a North Midwestern US state to investigate teachers' perceptions of how barriers to technology integration change over time, and how barriers may not be the same in different settings including small and large districts. Results indicated that time was the most stable and persistent barrier to technology integration. Access to technology tools and resources increased, yet teacher beliefs, and training and technical support declined over time. Teachers from smaller districts reported higher access to technology tools and resources and higher administrative support. In terms of the environmental context of the study, there is a need to conduct a study to investigate constraints of using computers in managing students' academic records in public secondary schools in Rombo district.

Guillén (2021) conducted a non-experimental, ex post facto type of research with a study population of 81 teachers from the community of Madrid (Spain). The results have shown that there are statistically significant differences between the knowledge and use of digital tools and Moodle Modules. In addition, the results have found that the variables age and gender have an effect on the prediction of the level of pedagogical digital competence of the teaching staff, while the educational stage in which they teach has no effect. The conclusions derived from this study can help to develop educational interventions focused on improving the unfavourable digital competence of teachers. The study used only one type of sample (teachers) to collect data to justify the findings which limited generalization of the findings. Therefore the current study used the teachers, heads of schools and district quality assures to obtain a wide range of data for ease generalization of the findings.

Adeleye (2021) conducted a study to investigate the problems facing computerization of records in secondary Schools in JOS, Nigeria. The study looks into the issues that have arisen as a result of the computerization of records in selected secondary schools in Jos, as well as the vulnerability of the prevalent manual data processing to human errors. Information was gathered through observations made during physical visits to the schools' computer labs, questionnaires, and personal interviews with selected school Information and Communication Technology (ICT) employees. Administrators and information technology employees were among the people who took part in the survey. In Jos, Plateau State, Nigeria, seven private schools, one Federal Government College, one Federal Command Secondary School, one State Government owned school, and one Federal Government College were utilized. According to the findings, the most significant impediment to the computerization of academic records in the schools is a lack of funding. The study did not clearly indicate the number of teachers who were involved in the study. The current study used large



sample of teachers in order to conclude if teachers are facing other problems rather than funding problem as proposed by the reviewed study.

Njoka et al (2020) conducted a study to analyze the challenges facing integration of information communication technology (ICT) in the operations of public day and boarding secondary schools from the south rift region of Kenya. The study adopted the descriptive survey research design. The target population for the study comprised of all the 141 teachers from the public secondary schools in the south rift region of Kenya enrolled in the Strengthening of Mathematics and Science in Secondary Education (SMASSE) program. The study employed census sampling technique since the target population was small, easily accessible and manageable. Data was collected by means of a questionnaire. The study tested the hypothesis that there was no statistically significant difference in challenges facing integration of ICT in boys, girls and coeducational secondary schools from the south rift region of Kenya. To test this hypothesis the One way Analysis of Variance (ANOVA) statistics was computed which yielded p-value = .000 which was less than the alpha value $\alpha > 0.05$ indicating that the differences in challenges facing ICT integration in boys, girls and co-educational schools were statistically significant. Therefore the null hypothesis was rejected. This led to the conclusion that challenges facing ICT integration from the three categories of schools were significantly different. There is a need to adopt mixed methods approach with wide range of data collection methods which are lacking in the reviewed study to fill the gap.

Kweka et al (2018) studied on teachers' skills on ICT Integration in teaching and learning and constraints that hinder the adoption in Government owned secondary schools in Kateshi, Tanzania. The study employed a cross-section research design which guided the collection of both quantitative and qualitative data. Simple random sampling was employed in the selection of participants of which data were collected from 75 teachers in government secondary schools, 15 Heads of Schools, 1 DEO and 3 Quality Assurers. The findings revealed that, most of the secondary school teachers had minimal skills of integrating ICT in teaching and learning due to different challenges such as lack of ICT facilities, inadequate computer labs in schools, and inadequate pre-service and in-service teachers training. The study employed a simple random technique to obtain the sample while teacher are not homogeneous in characteristics. Thus there is a need to conduct a research to investigate the constraints of using computers in managing students' academic records in public secondary schools.

7. SUMMARY AND DEMONSTRATION OF KNOWLEDGE GAP

Most of empirical studies reviewed shows that most of the scholars explained the constraints faced by teachers in using computer for teaching and learning (Guillén (2021), Adeleye (2021), Njoka (2020), Kweka (2018)). The studies did not explain the constraints faced by teachers in using computers to manage students' academic records in secondary schools. Therefore, the study intends to investigate the constraints faced by teachers in using computers to manage students' academic records in public secondary schools in Rombo district, Tanzania by using interview, questionnaire and document analysis in data collection to get the valid information that will be useful not only in Rombo district but also to all people in a country in understanding the teacher's use of computers in managing students' academic records in public secondary schools to enhance academic performance and sustainability.

8. METHODOLOGY

The study adopted convergent design under the mixed method research approach. The mixed methods approach incorporates elements of both qualitative and quantitative approaches (Creswell & Creswell, 2018). The design guided the researcher in collecting and analyzing quantitative data from teachers through questionnaires on constraints faced them in using computers for managing students' academic records in public secondary schools. In addition, the researcher gathered qualitative data from heads of schools and district quality assurance officer using an interview guide. The study sampled 12 Heads of Schools, 102 teachers, and 1 district quality assurance officer to make a total of 122 respondents. This was equivalent to 10.8% of the 1127 targeted population. According to Mugenda & Mugenda (2012), a sample of 10–30% is considered to be representative for the social study. The acceptability and reliability of research instruments from pilot testing showed that the reliability of the questionnaire for teachers was 0.731. Hence, the obtained reliability from the instruments was acceptable as proposed by Creswell & Creswell, (2018) that reliability coefficient is considered reliable if it ranges from 0.7 – 0.9. The validity of the instruments was checked by three MWCAU experts.

9. FINDINGS AND DISCUSSION

Data on the constraints faced by teachers in using computers to manage students' academic records in public secondary schools in Rombo district, Tanzania were collected from district quality assurers, heads of schools and teachers. Teachers' filled questionnaires while heads of schools and district quality assures were interviewed through interview guide to give their comments about the constraints faced by teachers in using computers to manage students' academic records in public secondary schools. The results of the study are presented in the light of the research question as follows; the constraints faced by teachers in using computers to manage students' academic records in public secondary schools in Rombo district. The questionnaire was set to evoke participants' responses on constraints faced by teachers in using computers to manage students' academic records in public secondary schools.



The questionnaires were prepared having five point Likert scale range from Very Large Extent (=5) to Very Small Extent (=1). Mean was used to determine the average of respondents' responses. Within the five point ranges, three trisecting scores were used to make the analysis clear as suggested by Creswell & Creswell (2018); these scores were 2.49, 3.49 and 4.49. The Remark was reached upon the mean value, where by a mean value from ≤ 1.49 were to a strongly disagree, 1.5 to 2.49 were disagree, from 2.5 to 3.49 were undecided, from 3.50 to 4.49 were agree, and from 4.50 to 5.00 were strongly agree. Data collected from the respondents through questionnaire are presented in table 1.

Table 1. Teachers Responses on the constraints faced in using computers to manage students' academic records in public secondary schools (n=108)

Constraints faced by teacher in using computers	SA	A	U	D	SD	Mean
	f (%)	f (%)	F (%)	f (%)	f (%)	
Lack skills and knowledge on computers	27 (25)	47 (43.5)	13 (12)	9 (8.3)	12 (11.1)	3.63
Resistance to change	18 (16.7)	48 (44.4)	23 (4.3)	17 (15.7)	08 (1.9)	3.58
Shortage of funds for proper integration of computers in education at schools	47 (43.5)	31 (28.7)	13 (12)	9 (8.3)	8 (7.4)	3.92
Lack of motivation to use computes	16 (14.5)	51 (47.2)	25 (23.1)	13 (12.0)	3 (2.8)	3.59
Lack of interest on computer use for records management	27 (25.0)	42 (38.9)	25 (23.1)	11 (10.2)	3 (2.8)	3.73
Insufficient technical support at schools	34 (31.5)	44 (40.1)	20 (18.5)	6 (5.6)	3 (2.8)	3.98
No relevant software especially in records management	45 (41.7)	25 (23.1)	18 (16.7)	15 (13.9)	5 (4.6)	3.83
Unclear ICT policy in education	19 (17.6)	46 (42.6)	25 (23.1)	17 (15.7)	1 (0.9)	3.60
Lack of time to use computers	16 (14.8)	20 (18.5)	18 (16.7)	34 (31.5)	20 (18.5)	2.79
Unreliable power supply in public secondary schools	27 (25.0)	50 (46.3)	16 (14.6)	9 (8.3)	6 (5.6)	3.77
Grand Mean Score						3.64

KEY: SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree, F = Frequency, %= Percentage and mean value from 1 to 1.49 were to a strongly disagree, 1.5 to 2.49 were disagree, from 2.5 to 3.49 were undecided, from 3.50 to 4.49 were agree, and from 4.50 to 5.00 were strongly agree. Source: Field Data, (2022)

The data in Table 1 reflected the constraints faced by teachers in using computers for managing students' academic records in public secondary schools. The results summarized in Table 1 show that, out of 10 statements exposed to the respondents, 9 responses fall under the "agree" category (3.50-4.49), 1 response fall under the "undecided" category (2.5-3.49). None of the responses fall under strongly agree (4.50-5.00), disagree (1.50-2.49) and "strongly disagree" (1-1.49). The findings prove that there is a persistence of many constraints faced by teachers in using computers to manage students' academic records in secondary schools by a mean of 3.64. For instance, out of 10 statements rated, the highest mean score is on "Insufficient technical support for teachers at schools" (M=3.98), followed by "Shortage of funds for proper integration of computers in education at schools" (3.92), No relevant software especially in records management (M=3.83), unreliable power supply (M=3.77), lack of interest (M=3.73), lack of skills and knowledge on computers (M=3.63), unclear ICT policy in education (M = 3.60), lack of motivation to use computers (M = 3.59), resistance to change (M =3.58), lack of time to use computers (M=2.77) respectively. It is worthy to say that Insufficient technical support for teachers at schools followed by shortage of funds for proper integration of computers in education at schools, absence of relevant software especially in records management, unreliable power supply, lack of interest, lack of skills and knowledge on computers, unclear ICT policy in education, lack of motivation to use computers, resistance to change and lack of time to use computers are the most problems that teachers face in using computers to manage students' academic records in public secondary schools. In today's world, teachers need understanding of computers knowledge so that they can cope with the new innovations in various sectors including education.



These findings are supported by Francom (2020) who found that time was the most stable and persistent barrier to technology integration. Access to technology tools and resources increased, yet teacher beliefs, and training and technical support declined over time. This means that teachers need workshops and seminars related to technology so as to strengthen their computer usage. The findings also were supported by Adeleye (2021) who found that the most significant impediment to the computerization of academic records in the schools is a lack of funding. This means that if there was shortage of funds for technological investments in public secondary schools teachers were not able to manage effectively students' academic records in public secondary schools.

The interviews with the informants, revealed that, there are Lack of interest for teachers on computer use for records management which has been also the barrier for using computers to manage students' academic records in secondary schools. Most of schools did not have enough computers which can be used to manage students' academic records in public secondary schools. For instance on of district quality assurance officer had this to say:-

Most of public secondary schools lack computers. Few of these schools, which have computers, are facing poor internet connections and unreliable power supply..." (DQAO, personal communication, August 16, 2022).

The DQAO quote above shows that there is a need for proper investment of computers, electric power and internet connectivity in order to strengthen computer usage for record management in public secondary schools. Most of the respondents were aware with the potential opportunities provided by computers in education sector but lack of effective investment in government owned secondary schools weaken their efforts to use computers in managing students' academic records. Furthermore the researcher conducted an interview from heads of schools. One head of the school said that:-

In my school, there is no any computer that can be used to manage students' academic records. I really don't have proper words to say but I appreciate the importance of computers in this era of technology but we have no means.(HoS1, Personal communication, August 18, 2022).

From the above quote from the head of school the issue of using computers to manage students records cannot be reached until computers are made available in public secondary schools. With limited computers, it is not possible for school teachers to manage properly students' academic records. It is high time now for the government and other stakeholders to think of enhancement of computers in public secondary schools in order to make sure that there is proper management of students' academic record which are very important for academic progress of students. Students' academic record reports if properly prepared and kept assist teachers and parents to make close follow-up on students' academic progress for further studies. Another Head of School added that:-

My teachers are not using computers in keeping students records, though there are few like to do so. The major problem is Lack of interest for teachers on computer use for records management and other technological activities..." (HoS3, personal communication, August 22, 2022).

HoS3 is shifting from the idea of shortage of funds for proper integration of computers in education at schools and unreliable source of power as challenges for computers use, still she mentions Lack of interest for teachers on computer use as another constraint among teachers in that school. This indicates that the school may have adequate facilities but if teachers lack interest to use them, management of students' records will be difficult.

In view of these arguments, it is obvious that the respondents faced many challenges on using computers in managing students' academic records. Yet, shortage of funds for proper integration of computers in education at schools, insufficient technical support, lack of interest for teachers and unreliable power supply were found to be the major challenges.

Teachers as the major component in students' academic records management in schools, need to have proper skills and knowledge in computers in order to easily manage students' academic records public secondary schools. The findings regarding the constraints on lack of adequate computers collaborate with the study findings by Kweka et al (2018) who found that most of the secondary schools in Tanzania experience inadequate ICT facilities including computers. Some secondary schools have computers which are not working while other schools have computers only for administrative purposes. There are also schools which do not have even a single computer for managing students' academic records. An absence of electricity in some schools is a big challenge. It is very difficult to operate computers and Internet to a school where there is no electric power. In Rombo District, out of 41 public secondary schools only 28 schools have access to National grid electrical power, 10 have access to solar power while 8 schools have no access to any source of power (URT, 2019). Based on the interview with some heads of schools, it was also revealed that even in schools with electricity, sometimes the payment of electricity bills is a problem although the government brings the capitation grants on time but not sufficient. In view of the preceding challenges, it could be logical to note that lack of interest among teachers to use computers in managing students' academic records may have been influenced with lack of reliable source of power.



In a broader sense, the findings of the current study have spotlighted the limited access of computer hardware and software, to support effective management of students' academic records in Tanzanian secondary schools. The findings also revealed that the difficulty in using computers to manage students' academic records is due to a number of constraints such as shortage of funds for proper integration of computers in education at schools, lack of clear ICT policy on records management, poor electricity supply, lack of teachers interest, just to mention a few. If we are to build the technological society, we must employ our efforts to ensure that teachers are exposed to technological environment for them to come up with new innovations and discoveries. Computer usage in records management may be enhanced depending on the number of factors which may include availability of computers, teachers' readiness, training and supply of reliable electricity in schools. This assist teachers to use computers to manage students' academic records from the concept of their creation, maintenance and disposition.

10. CONCLUSION AND RECOMMENDATIONS

Based on the findings of the current study, it can be concluded that teachers in public secondary schools in Rombo district are faced by number of limiting factors towards computer use for managing students' academic records. Such constraints are like lack skills and knowledge on computers, resistance to change, shortage of funds for proper integration of computers in education at schools, lack of motivation to use computers, lack of interest on computer use for records management, insufficient technical support at schools, absence of relevant software especially in records management, unclear ICT policy in education for record management and lack of time for to use computer. These constraints restricts teachers from using computers to effectively manage students' academic records which are very important and vital in academic progress.

Based on the findings and conclusion, Government should come up with practical strategies to ensure that teachers make use of computers to simplify and improve effectiveness in education especial in a crucial area of students' academic records management. The government should ensure availability of computers and adequate supportive infrastructure in secondary schools to enhance the use of computers in records management. The government also should ensure power supply to motivate teachers in using computer as a tool to improve effectiveness in records management.

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SIGNIFICANT DEVELOPMENT INDICATORS OF INNOVATIVE ACTIVITY OF INDUSTRIAL SECTORS IN THE CONTEXT OF MODERNIZATION OF NATIONAL ECONOMY

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ABSTRACT

The article analyses the significant development indicators of innovative activity of the Republic of Uzbekistan for 2014-2022 years. Moreover, the complete information about the volume of production of innovative products of metallurgical, chemical and petrochemical industry, light and food industry enterprises for recent years, has been covered.

KEY WORDS: *innovative activity, modernization, localization program, macroeconomic research, innovative product, innovative active networks, new product.*

As a result of the fundamental reforms implemented in our republic, modernization of the economy, technical and technological re-equipment of production, development of business activities based on the localization program, filling the domestic market with import-substituting and export-oriented goods, and increasing the income and employment of the population are considered as one of the important directions. This, in turn, serves to develop innovative activities and increase potential in our country. As a result, the number of enterprises and organizations producing innovative products and services in our country is increasing year by year. However, the ongoing reforms for the modernization of production require not only the updating of technologies used in enterprises, but also an innovative approach to the organization of management.

In this work, based on the available data, the important indicators of the development of innovation activities in Uzbekistan in 2014-2022 were analyzed.

Official statistics, collections and periodicals of the State Statistics Committee of the Republic of Uzbekistan, collections and analytical references published by the Institute of Forecasting and Macroeconomic Research were widely used as the database of the analysis.

On the basis of the above, in order to give a general assessment of the organization of innovative activity in our republic and the process of its development, the dynamics of changes in enterprises that produced products, works, and services during 2014-2022 were analyzed. According to the conducted analyses, enterprises producing innovative products, works, and services in our country increased by 8.5 times in the next 8-9 years. That is, we can see that their number was 289 in 2014, and it will reach 2374 by 2022.¹

The share of innovative goods, works and services in the total volume of sold products was 2.9% in 2014, 3.2% in 2016, and 5.8% in 2020. The share of innovative products sold in 2022 was 7.3%, which is an increase of about 0.7% compared to 2020 (Table 1)

¹Author's development based on the information of the Statistical Committee of the Republic of Uzbekistan (www.stat.uz)



Table 1
Dynamics of important indicators of the development of innovation activities in the Republic of Uzbekistan in 2014-2022²

No	Indicators	2014		2016		2018		2020		2022	
		Total	Industry	Total	Industry	Total	Industry	Total	Industry	Total	Industry
1.	Share of innovative products in the total volume of sold products, %	2,9	4.5	3.2	3.9	5.8	8.4	6.5	8.4	7.3	9.2
2.	Growth rate of the volume of sold innovative goods, works and services, %	100	100	62.3	54.6	126,4	130.7	116.4	125.4	132.8	136.2
3.	The share of organizations' own funds in the total costs spent on innovation, %	60.5	74.9	70.6	75.2	68.4	54.0	36.8	31.0	48.6	53.5
4.	Cost ratio for innovation	0.014	0.012	0.005	0.004	0.003	0.005	0.026	0.043	0.025	0.041
5.	Growth rate of the volume of expenses for innovation, %	100	100	121.4	63.8	73.0	122.4	72.0	91.1	81.0	95.4
6.	Share of innovative active enterprises	0.13	0.37	0.07	0.25	0.07	0.23	0.35	1.29	0.4	1.75
7.	The number of introduced technological innovations corresponding to the contribution of each innovation-active enterprise	2.2	3.5	4.4	3.5	3.8	3.9	1.7	1.6	3.2	2.5
8.	Level of cooperation in scientific research	25.5	15.5	15.8	19.3	8.8	16.3	9.2	4.5	12.6	4.2

Innovative products and services worth 18543.3 billion soums were produced by 2171 enterprises in our republic . During this period, they introduced 1946 technological innovations. However, the share of innovatively active enterprises is only 0.34 percent, and the coefficient of introduction of innovations into the relevant sectors or industries is only 1.2 (Figure 1). The share of export of innovative products in the total export volume is only 1.46 percent.

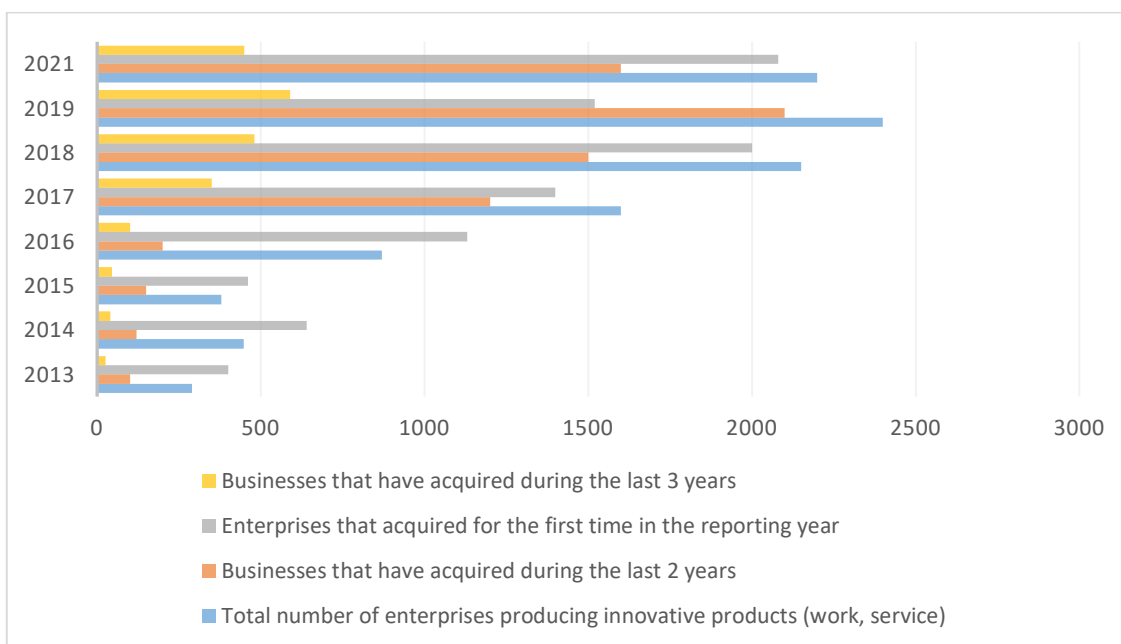


Figure 1. Information about enterprises and organizations that produced innovative products (works, services) in 2013-2021³

²This table was prepared according to the results of the analysis carried out by the author based on the official statistical data, collections and periodicals of the State Statistical Committee of the Republic of Uzbekistan and analytical references.

³Author's calculations based on the information of the State Statistics Committee of the Republic of Uzbekistan.



At this point, it should be noted that 70-90 percent of the products produced in advanced developed foreign countries are taken at the expense of the development of innovation activities.

The share of innovative products of highly innovative active industries in 2019 was 11.1% of the total volume of innovative products produced by industrial enterprises. At the same time, the share of innovative products in the total volume of products of medium innovative active industries was 15.3%.

Enterprises that exported innovative products in the largest amount were enterprises of medium innovative active industries. In 2019, the share of innovative products in the export volume of innovative industrial products was 51.1%, and the share of large-scale innovative products was 6.9%.

According to the types and level of the innovative potential of the developed enterprise, the levels of innovative activity of the enterprises were determined based on 4 high levels, medium levels, lower levels and the lowest levels. In the total volume of industrial production in 2021, the share of highly innovative active and medium innovative active industrial sectors based on total scientific achievements was 13.91 percent (Table 2).

Table 2

Relative weight of highly innovative and medium innovative active industries in the total volume of industrial production, (in %)⁴

Industrial sectors	2014	2015	2016	2017	2018	2019	2020	2021
Industry, total	100	100	100	100	100	100	100	100
Highly innovative active networks								
ICT, computing equipment industry	0.188	0.122	0.154	0.152	0.123	0.078	0.099	0.033
Production of equipment for medicine, physiology and biology	0.009	0.003	0.001	0.001	0.001	0.001	0.001	0.003
Production of optical and optical-mechanical tools and equipment	0.013	0.012	0.016	0.019	0.015	0.005	0.004	0.002
Production of equipment for control and regulation of technological processes	0.035	0.194	0.025	0.060	0.019	0.025	0.039	0.027
Production of food industry and mechanical measuring instruments	0.007	0.005	0.004	0.003	0.003	0.002	0.003	0.003
Chemical and pharmaceutical industry	0.314	0.168	0.199	0.267	0.301	0.349	0.656	0.751
Microbiology industry	0.256	0.112	0.123	0.031	0.045	0.012	0.008	0.028
Medium innovative active networks								
Chemical fiber and yarn industry	0.054	0.020	0.015	0.021	0.021	0.035	0.048	0.027
Production of trailers for automobile tractors	3,548	7,184	8,391	9,024	9,798	9,617	8,910	11,704
Agricultural machinery	0.622	0.176	0.141	0.118	0.104	0.094	0.208	0.164
Total highly innovative active and medium innovative active industries	6.1	9.4	10.1	11.1	11.4	11.5	10.9	13.9

In 2021, the share of innovative products in the total volume of manufactured products was 6.5 percent, and the share of innovative product exports in the total volume of innovative products was 17.6 percent. In some sectors of the economy, the share of innovative products in the total volume of products is very low, this indicator was only 0.003 percent in the electronics sector in 2021 .

In recent years, the volume of production of innovative products of metallurgical, chemical and petrochemical industry, light and food industry enterprises has increased significantly. The share of the fuel industry in the total production of innovative products has decreased. There was a tendency to differentiate the production of new product types by industries.

⁴This table was prepared based on the results of the analysis carried out by the author based on the official statistical data, collections and periodicals of the State Statistics Committee of the Republic of Uzbekistan, collections and analytical references published by the Institute of Forecasting and Macroeconomic Research.



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STEPS OF EVALUATING THE INVESTMENT ATTRACTIVENESS OF AUTO TRANSPORT ENTERPRISES

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ABSTRACT

The article highlights that today there is no single system for assessing the investment attractiveness of motor transport enterprises. Also, the author proposed 3 stages of evaluating the investment attractiveness of motor transport enterprises.

KEY WORDS: *investment resources, volume of transportation, investment program, investment activity, transport logistics enterprises, transport-logistics services, transport-logistics processes, products and services.*

Today, a large amount of investments are being attracted for the development of the market of transport and logistics services and the expansion of the transport and transit capabilities of our country. However, the lack of a single policy related to the implementation of research and innovative developments in the field of transport logistics, as well as the development and improvement of the system of introduction to production, does not allow the sufficient application of new techniques and technologies and advanced foreign experiences at the expense of investments in the market of transport services¹. It is known that up to 90 percent of the period from the creation of products and services to delivery to consumers corresponds to transport and logistics processes, which includes, in addition to transportation, procurement management, stock management, warehouse operations, product distribution management, cargo processing, packaging, loading and unloading, includes logistics information technologies and management of integrated logistics systems. The provision of safe, high-quality and cheap cargo and passenger transportation and other transport-logistics services to the population and economic sectors directly depends on the effectiveness of the complex implementation of these processes. It mainly determines the direction of the investment activities of these enterprises and sets them strategic tasks such as, for example, an effective combination of own funds and debt capital, assessing the level of risk of various types of activities and achieving their balance, as well as attracting professional management personnel for planning and implementation.

A strong competitive environment requires the maximum use of all means and methods of production management in order for motor transport operators to fully use their service potential. A positive solution to this issue can be implemented by maintaining the production policy at the level of demand in the enterprise. This policy specifies the main rules for the stages of selection, creation, tariff setting and providing them to customers, strengthening and expanding the company's position in the selected market segment, increasing the number of customers, ensuring competitive advantage and, as a result, profit. directed to increase. This includes: achieving resource savings; increase the volume of transport and logistics services; At the same time, efficiency is ensured by reducing the cost of service and increasing the volume².

It is known that in today's scientific literature on the transport economy, the provision of transport services is divided into 3 basic processes: transportation, auxiliary services and supply processes. Issues of organization of the production management process are considered separately in the scope of each basic process. Because management in the system of transport services is not a one-time or some actions, but a complex integrated process. Management of basic organizational processes is a series of relatively independent but interrelated functions³. Therefore, the strategic need to create horizontally integrated and diversified structures in transport logistics enterprises is based on the need to achieve synergistic efficiency of economic activity. The most important aspects of strategic synergies for transport logistics enterprises and the main areas of their investment activity are reflected. Therefore, by organizing the corporate investment process, it is possible to ensure the strategic competitiveness of transport logistics services in

¹Mukhitdinova K.A. *Investment support for the development of the activities of motor transport enterprises and the economic basis of its effective use.* // *Business expert.* 2019. – No. 4(136), – B. 65

²Kadyrov T.U. *Methodology of a systematic approach to the organization of production in motor transport.* // TAI notification. - T.: 2017. - No. 3. -B. 54.

³Kadyrov T.U. *A methodological approach to the organization of the management of production processes in motor transport.* // TAI notification. - T.: 2017. - No. 2. - B. 83.



the market, the efficiency of investment resources, a relatively low level of overall corporate risk, and an increase in the market value of the enterprise in the future.

Today, there is no single system for assessing the investment attractiveness of motor transport enterprises. Therefore, based on the results of the analysis, a three-step methodology for diagnosing the investment attractiveness of motor transport enterprises is proposed. First of all, this methodology clearly describes the general situation of the enterprise and creates an opportunity for investors to get the necessary information.

At the 1st stage, the necessary database is created to analyze the company's activities. In the implementation of any activity, including the need for investment of the enterprise, a database is of course important to know what results the investment can bring. This database should be understandable to everyone, it should be possible to get the necessary information at the right time and be able to help in making decisions.

When assessing the investment attractiveness of any enterprise, it is necessary to form a database. The database should be based on primary and secondary data. The primary data includes various types of industry data that are allowed to be published openly, data from the State Statistics Committee, and information such as enterprise reports for previous years. Secondary data includes new data that needs to be collected to solve the given problem.

It is known that the listed tasks of forming an investment program are alternative in many respects. For example, capital growth at a high rate is ensured to a certain extent by the reduction of the level of current income; growth of capital and income is directly related to the level of investment risks; ensuring sufficient solvency may prevent the investment program from including projects that provide long-term capital growth and capital-intensive investment projects with high returns. Taking into account the alternative goals of forming an investment program, the transport enterprise should define the priority directions of its investment activity for a certain period, approve its investment strategy, and develop its investment policy ⁴.

Formation of an investment program of a motor transport enterprise should provide a solution to one or more of the following tasks:

-achieving a high rate of income growth. This issue is solved by the implementation of high-profit projects that create conditions for the constant support of the company's solvency.

-reduction of current expenses. This task is accomplished by implementing projects with economical operating costs.

- will be solved by implementing projects with high profitability.

- to achieve high capital growth. This task is performed by implementing projects with a high net discount value of income.

The stages of investment program formation presented in scientific and methodical literature can be adapted to the working conditions of transport operators in enterprises and the following can be distinguished:⁵

1. Clarification of the goals of the investment strategy of the transport company in the projects of the content renewal program in motion. For this, development goals are specified with a certain set of indicators.
2. Identification of the investment opportunities of the transport enterprise regardless of the availability of investment resources, the state of the investment market and other factors. The number of investment projects involved in the competition should be much higher than the number envisaged in the implementation of the investment program.
3. Optimizing the proportions of forming the investment program of the transport enterprise, taking into account the size and structure of investment resources.
4. To justify the efficiency criteria of investment projects of the transport enterprise by different types. In this case, the following can be specified as the criteria for distinguishing investment projects: net discount income, profitability index, internal rate of profitability, payback period. The main criterion for the selection of projects should be connected with the indicators of production and financial efficiency of the transport enterprise ⁶.
5. Evaluation of the effectiveness of investment projects. Primary selection of investment projects for in-depth analysis, selection from the general set of projects that do not meet the criteria of efficiency of investment projects. Independent investment projects are usually involved in the formation of the investment program of the transport enterprise, and the decision to implement them is made only on the basis of their effectiveness. If the resources are sufficient, then all effective independent investment projects should be accepted for implementation.

⁴Podsorin V.A., Ivanov K.N. *Investitsionnaya politika transportnoy kompanii: uchebnoe posobie* – M.: MIIT, 2011. – 108 p.

⁵Podsorin V.A. *Vosproizvodstvo osnovnogo kapitala kompanii v usloviyakh krisisa. // Transport, science, technology and management. Scientific-informational collection. VINITI – No. 8, 2009. – S. 65; Babaev T.S. Ekonomicheskoe obsnovanie programmy obnovleniya podvizhnogo sostava gruzovoy transportnoy kompanii: Dis. sugar economy science - M., 2009. -68 p.; Blank I.A. Basic financial management. T.1. - K.: Nika Center, Elga, 2001. - 92 p.*

⁶*Methodological recommendations for investment projects - M.: Ekonomika, 2000. - 42 p.*



6. Formation of a system of restrictions, including production and financial restrictions, of the content updating program in motion.
7. Final selection of investment projects for the program of updating the current content of the transport enterprise, taking into account the optimization of investment activities and the provision of the necessary diversification according to priority criteria.

The following restrictions may be imposed:

- limited volume of transportation. In this case, the priority direction of activity is to increase transportation to the possible volumes, and the indicator of the volume of transportation per unit of investment is used as the main direction.

- limited investment resources. In this case, the implementation of projects is related to the use of debt capital, which increases the cost and volume of investment activities.

- limited amount of investment resources. In this case, the implementation of projects is related to the structure of the investment program and the optimization of the resources providing it ⁷.

8. Approval and implementation of the investment program for updating the current content.

When assessing the investment attractiveness of motor transport enterprises, the database analysis should serve to perform the following main functions: - determining whether there is a need for future investments for the enterprise; - planning investments; - optimizing the costs of implementing investment projects; - choosing the target areas of investments; - controlling investment projects. ; - assessment of investment effectiveness.

In the 2nd stage, based on the collected and processed data, a comprehensive analysis of the overall activity of the enterprise is offered. These blocks are:

1. Employee potential:- employee qualification;- labor productivity;- employee dissatisfaction.
2. Organizational-management potential: - form of ownership; - quality of management of employees; - level of training of employees; - fulfillment of the main goal of the enterprise.
3. Financial situation of the enterprise: - income structure; - cost structure; - profit growth rate; - coefficient of financial independence; - the level of profitability of transportation; - comparison of the level of receivables and payables; - debt burden level;- tax burden level; - structure of debt obligations; - the level of current liquidity; - the level of indebtedness on its balance sheet; - the degree of dependence of the volume of debt on cash flow.
4. The market potential of the enterprise:- the level of services provided; - demand for rendered services; - market share of the enterprise; - level of competitiveness.
5. Innovation potential:- renewal coefficient of means of movement;- share of innovative costs;- profitability of innovations; - savings of innovations.

The components of the mentioned five blocks can be changed depending on the purpose of the analysis, each of these blocks is based on the analysis of a specific direction of the enterprise's activity, the general situation of the enterprise today, what needs to be done for the development of the enterprise in the future, the need for investments for development, in which direction investments should be made in the enterprise must fully answer the questions about the possibility of attracting. In addition, when investment projects are developed, it creates an opportunity for timely correction of how the project plan is being implemented, if there are deviations from the plan.

In the 3rd stage, based on the results of the 2nd stage, the factors affecting the investment attractiveness of the enterprise are identified and mathematical models of their influence are created. It is known that many factors affect the investment activity of the enterprise. After making a list of the factors that have the most influence on the investment activity of the motor transport enterprise developing mathematical models, the impact of these factors on the final result of the enterprise's activity and financial condition is considered through correlation. In this way, the questions of whether the motor transport enterprise needs investment and, if so, in which directions it should be attracted, are answered.

Summarizing the above 3 stages of evaluating the investment attractiveness of motor transport enterprises, first of all, it is necessary to form a database, then to analyze the collected data, to determine the need for investment in the enterprise based on the obtained results, and to indicate which directions should be paid attention to in order to carry out investment activities.

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THE VIEWS OF EASTERN AND WESTERN THINKERS ON HUMAN CORRUPTION

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ABSTRACT

The article examines the essence, causes and consequences of corruption in human activity, the materialization of destructive ideas and their consequences based on the views of some Eastern and Western thinkers. Also, divine teachings, sacred sources, ancient philosophers such as Plato, Aristotle, Eastern peripatetics Abu Nasr Farabi, New Age philosophers I. Kant, Hegel, modern thinkers Horkheimer, Adorno, Marcuse, Freud, Berne, etc. The views on the description and characteristics of the activities of the cultist and disruptive ideas have been studied.

KEY WORDS: *human, corruption, destructive idea, divine books, Plato, Pharaoh, Hegel, youth education, spiritual life.*

INTRODUCTION

The simple truth based on most sources is that the creator of all the evils that humanity has experienced and is experiencing is man himself, his destructive activities. According to the genius of our people, in today's era, when one beats a thousand, and a thousand beats a cloud, the destructive aspect of human nature was clearly manifested, especially in the last century: mass murders, revolutions, wars, numerous terrorist acts are examples of this. The media reports daily on violent crimes even in the most prosperous countries. Moral, religious and legal norms designed to reduce corruption are not able to completely eliminate it. Even the most favorable conditions of life cannot help to reduce vandalism. In particular, such vandalism is applied not to the relationship of people to each other, but to the natural environment and cultural monuments. And the simplest things are destroyed senselessly. Taking into account the modern level of technical and technological development, today's vandalism is becoming a clear threat not only to certain social groups, but also to the entire humanity.

At the socio-cultural level, the differences in cultural information between some social communities, the growing alienation of man from nature and society, the conflicts arising from the basic human needs and social opportunities to satisfy them are the foundations of human destructive activity at the socio-cultural level. The moral crisis in the society, the social mobilization, which is falling sharply, are the hidden sources of corruption. In fact, in my opinion, - says Islam Karimov, the first President of Uzbekistan, two forces - creativity and destruction - always fight with each other under a person. It is with regret that we must note: the experience of history shows that it is easier to incite brutality, violent instincts, that is, behavior, than humanity in human nature. [1.10].

RESEARCH METHODOLOGY

If we summarize the research level of the problem of human destruction and its prevention factors, threats caused by it, countermeasure mechanisms in modern local and foreign literature, the topic of this article has been analyzed in a wide range of socio-philosophical sciences. To solve them, the research used the following methods, including: problematic - chronological - the nature of human destruction, the origin of the emergence of certain forms and methods of their prevention. Based on the comparative-historical method, it can be noted that human destruction is a historical phenomenon, it is becoming more and more complicated, and the difficulties in resisting it are increasing. The method of concrete-sociological research envisages the determination of the consequences of human destruction directed against the interests of the individual, society and the state, as well as the trends and changes related to them, and the logical method is the determination of specific relationships between events and processes related to human destruction. allows. The combined use of these methods in the subject article made it possible to investigate the existing problem more accurately and in depth.

ANALYSIS AND RESULTS

It should be noted that the fight between constructive and destructive ideas has intensified in the current period. Why has the struggle for people's minds and hearts become the main goal of various ideologies? The fact is that in order for a certain idea to become an idea in the literal sense of the word, it must occupy people's minds, or rather, take a place in their hearts. Otherwise, this



or that idea will be preserved only as a specific message or information. From this point of view, an idea becomes a call to action, a motivating force, a guide for action only when it occupies the human heart, when it becomes an integral part of a person's spiritual and spiritual condition. That is why today the main goal of the ideological struggle is to capture not only the human mind, but also the heart. In this sense, it is necessary to influence the ideological education of today's young generation through concrete and practical actions rather than through some abstractions. Only in such conditions will it be possible to eliminate the threat of various destructive ideas and totalitarian ideologies. For this, we first need to have a deeper understanding of what a disruptive idea is and what its consequences are.

The results of the conducted research show that the concepts of "subversiveness", "destructive idea" and "ideological field" have been given many definitions in the scientific literature. unanimity does not exist. On the one hand, this is natural. For example, the more complex nature of vandalism in society, the more different definitions and approaches to it there will be. On the other hand, no matter how complex the social phenomenon of vandalism is, at the same time, it has general parameters in practice. Based on this, it can be said that the phenomenon of vandalism has not been sufficiently studied in philosophical sciences. Even the concepts of "vandal", "vandalism", "vandalism" do not exist in most dictionaries. Even if they meet, their interpretation ends with a simple translation of the word. For example, in the "Soviet Encyclopedic Dictionary"[2.1294] tampering is interpreted as "disrupting the normal structure of something, putting it out of order". Although many researchers have noted the presence of elements of corruption in human nature, the explanation close to the meaning of this topic today was given by E. Fromm [3.640]. At the same time, some forms of vandalism, such as murder, suicide, and terrorist activities, attract the attention of many scientists. In fact, these phenomena have many common grounds that need to be identified.

It should be noted here that some forms of vandalism are usually studied by specialists with a narrow focus: biologists, geneticists, psychologists, historians, lawyers. However, it is known that a holistic study of the phenomenon, involving information from specialists with a narrow focus, allows to get to its essence.

Thus, the fact that the problem of vandalism in general, and the problem of human vandalism in particular, has not been sufficiently studied, and that there is no unambiguous interpretation of the terms, indicates that there is a need for research. An in-depth study of this concept, an analysis of the foundations of vandalism in various forms of social and cultural systems and the peculiarities of their manifestation, it is possible to summarize the information collected in the world experience in order to solve the problem of vandalism. , may allow to develop socio-cultural mechanisms that stop the destructive aspects of human nature and redirect the directions of destructiveness to another field of activity in a different way.

Human corruption is not only a phenomenon of our time or society, but it has existed before. Nevertheless, human mischief reached its qualitative aspects after the industrialization stage of the development of civilization associated with, on the one hand, the increase of man's artificial power, and on the other hand, the formation of a decentralized subjectivity. Since it is possible to talk about the qualitative aspects of the phenomenon only after the phenomenon is fully formed, the phenomenon of human destruction in the transition to the post-industrial society, where humanity acquires new forms, and consequently new mechanisms of actualization and self-expression awareness is of utmost importance.

Abu Nasr Farabi, a major representative of Eastern perapateticism, also discussed in his works the corruption of human nature, its nature and characteristics. In particular, in his treatise "Talhisi navomisi Aflotun" (The Essence of Plato's Laws), Plato shows that prosperity alone is not enough for a person to live safely. As an example, he cites the poems of the famous Greek poet Tyrtaeus. Plato says that the courage that is being praised is not the courage in external war, but people can ensure peace by overcoming their own (vices) with great strength. In this place, Allama describes the spiritual courage of the human race and indicates that a person's struggle against his ego and spiritual vices is better than showing courage in battles.

Allama Plato again emphasizes that wars can be fought out of necessity and out of passion and in pursuit of some advantage. He clearly explains what kind of war is for passion and pleasure, and what kind of war is out of necessity[7.19]. Indeed, most of the wars that mankind has experienced are the result of the glory of kings, women and frivolous pleasures.

Plato says that every person has opposite, dual forces in his heart: sadness and joy, pleasure and pain, etc. One of these powers is admirable, the other is animal. It is necessary that the law should be aimed at the development of admirable power, not animal power. Plato explains that the conflict on the side of the animal power is strong and severe, and the conflict on the side of the admirable power is gentler and more pleasant. Each person should think about these two conflicting situations and submit to this admirable power. As for all the inhabitants of the city, if they do not have the strength to achieve praiseworthy powers, they must obey the justice of the law, the guide, the speaker of the deeds of the most respected saints [8.21-22].



These thoughts of Alloma later found their reflection in the concept of one of the most famous theories explaining the origin of corruption in human nature, the founder of psychoanalysis S. Freud. He believed that two feelings are characteristic of man: Eros - the feeling of life, known as the power (as "libido") aimed at strengthening, preserving and creating life; and Thanatos is the sense of death, whose power is aimed at destruction and cessation of life. S. According to Freud, all human behavior is the result of a complex interaction of these two emotions. He also noted that destructive tendencies are characteristic of all human beings and that this feeling is very strong to determine the character of most people in human society. S. According to Freud, destructive tendencies should not be avoided, because if the power of Thanatos is not directed outward, it will lead to the destruction of the person himself.

Continuing Farabi's opinion, he emphasizes the propensity to mischief in the nature of young people and the role of adults in their upbringing. Also, if the youths learn to live and enjoy themselves contrary to the law, it is difficult for the law-holders to correct them, but they must make their enjoyment subject to the law, and the young men who have reached maturity must get used to these conditions and use them. , - he says.

The lack of unity of the world, as one of the stages of the development of dialectical conflict, is preserved due to the existence of differences between the parties. Hegel writes: "This difference should be understood not only as an external difference, but also as a difference in itself, so it is natural for things to be different from themselves" [14.499]. Carried to the limit, difference becomes antagonism, which becomes the antagonism that moves the world. Everything that is developing is contradictory. Therefore, the importance of differences, the interaction of opposites, is that they determine the spontaneous movement of life forms. Thus, the philosopher emphasizes the necessity of the existence of opposites, since inactivity is equal to inanity.

Hegel is convinced that opposites exist in unity: universal and particular, internal and external, thought and thought. This unity is brought about by the spirit, which gives rise to the productive power of the imagination. The unity of opposites is that, despite the fact that they exclude each other, they simultaneously presuppose each other. The dialectical moment consists in the immanent transition of one definition to its opposite. Being such is not a fixed and final thing, but dialectically it moves to its opposite [15.22-23].

I. Kant [18.12-28], a representative of the German classical philosophy, also mentioned the cases of corruption inherent in human nature. But it was only in the 20th century that attempts were made to scientifically substantiate the destructive activity of man. One of the most famous theories explaining the origin of corruption in human nature is the concept of S. Freud, the founder of psychoanalysis. He believed that humans are endowed with two emotions: Eros, the life-sense known as the power to sustain, preserve, and create life (known as "libido"), and the power to destroy and end life. directed thanatos is the feeling of death. According to him, all human activity is the result of complex interaction of these two emotions. He also tries to justify that destructive tendencies are characteristic of all people and that this feeling is very strong in determining the behavior of most people in society [19.96]. S. According to Freud, destructive tendencies should not be avoided, because if the power of the thanatos is not directed outward, it will lead to the destruction of the personality itself. Performing expressive actions that do not go hand in hand with destruction, that is, catharsis, can weaken the destructive power [20.416]. The famous psychologist and psychotherapist E. Bern also supported S. Freud's concept [21.528]. But these researchers noted the destructive tendencies in human nature and did not analyze them in depth.

E. Fromm's work, which pays serious attention to the study of corruption, is "Anatomy of human corruption" [22.624]. He was a supporter of socio-cultural differentiation of vandalism. In his opinion, vandalism is one of the manifestations of aggression. Also, the scientist pays special attention to the study of aggression, which has a good quality and an evil quality. He distinguishes sudden disorder, that is, disorder that is activated in emergency situations, the manifestation of hidden, destructive impulses, and the disorder that depends on the character structure. This phenomenon always belongs to a specific person in an open and hidden form (sadism, necrophilia) [23.236]. The scientist pointed out the lack of opportunities for creative self-expression, narcissism, limitations, and the feeling of "worthlessness" as the main causes of corruption [24.316].

CONCLUSION/RECOMMENDATIONS

Based on the opinions of the above Eastern and Western thinkers, it can be said that the predominance of the destructive tendency in human essence is related to the specific features of social organization and regulation of society. Industrial civilization is characterized by a social structure that consciously encourages the manifestation of destructive forces. Thus, initially neutral destruction has a negative semantic meaning only in relation to productivity: dominance over creative processes should lead to the recognition of human destruction as negative.

It's hard to be optimistic about the future of hacking these days. In his comments, N. Berdyayev, who stated that "victory over the evil of war, and over evil in general, involves a drastic change in human consciousness"[25.310] is right. The scientific development



of the subject of vandalism implies a theoretical reflection from the point of view of the fundamental problems of man, the search for new ways of development and existence of humanity in mutual movement, cultural communication, and international cooperation.

His thoughts on the existence of destructiveness along with creativity in the human race, its features and consequences, and the descriptions of people and society living on the basis of destructive ideas have important scientific value. Today, these ideas are important for raising the young generation physically and spiritually, preventing the emergence of destructive ideologies and vices in their hearts, and forming the most noble feelings and creative ideas in their hearts. becomes important.

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MULTIMEDIA SUMMARIZATION USING SPACY

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ABSTRACT

The main objective of this paper is to propose a summarizing system based on natural language processing to summarize the data that can be in either video, audio or textual format. Video summarization is to generate a short summary of the content of a video by selecting and presenting the most informative or interesting materials for potential users. With the arrival of high-speed Internet and low-cost storage, the amount of data has been generated at a rocket pace, most of it is in the form of visual or video data. This makes them an important information dispensing tool. Searching and analyzing such a large number of videos is an extremely tedious task. Unlike images, where information may be gathered from a single frame, videos need the user to watch the full content, regardless of duration, which presents a challenge to information extraction. Similarly, we save time by extracting crucial information from audio recordings and text. The system focuses on the development of a module using Natural Language Processing with python to summarize the YouTube videos, audio files and textual data.

KEYWORDS - Multimedia, Natural Language Processing, Spacy, Summarization, Tokenization

I. INTRODUCTION

In this multimedia era, large number of videos, audios and text are generated and shared across internet 24/7. YouTube is a popular online video sharing platform which includes wide range of purposes from education to entertainment along with other genres like documentaries, speeches and more, ensuring that people of all age groups can easily access its content.[1]

But one of the potential drawbacks observed in such platform is recommending abundant videos for a query which deviates from overall user experience. In many cases users visit misleading or irrelevant information. As a consequence, users unknowingly end up investing their time in the videos which they provide minimal to no valuable information.[2]

We make use of Natural Language Processing (NLP) which trains the computer to get the ability to understand text and spoken words in the same way as human. NLP acts as a game changer for the users who lack in time to learn new languages or become proficient in them. The different applications are language translation, Tokenization, Named Entity Recognition (NER), Optical Character recognition (OCR), Part of Speech Tagging that plays a major role in real world applications.[3]

Summarization can be categorized as Abstractive Summarization and Extractive Summarization. In Abstractive Summarization, new sentences are formed by combining sentences in original text where as in Extractive Summarization, we extract important sentences based on some criteria to generate the relevant summary.[4] The most popular python libraries like NLTK (Natural Language Toolkit) and SpaCy are used for summarization. It is observed that quality of summary is better while using SpaCy rather than NLTK (Natural Language Toolkit).[5]

In this research paper, we propose a model to provide summarization for multimedia inputs like video, audio or text using Natural Language Processing. We make use of SpaCy in python to do tasks such as tokenization using English model like en-core-web-sm. Summarization of videos with and without transcripts is possible by converting video to audio, audio to text and later to summarized text. Other multimedia inputs like audio and text can also be summarized using our model. Audio content that maybe lengthy such as speeches, interviews or podcasts can be summarized or the user can directly provide text to be summarized.

II. OBJECTIVES

- Develop a user-friendly system with scalable processing capabilities for generating concise and informative summaries.
- Create summarization algorithms that can effectively work with various media types, including video, audio, and text



which is capable to work with any length.

- Ensure that the model is versatile and can handle different content genres, such as education, motivational speeches, sports, and entertainment.

III. METHODOLOGY

A. Proposed System Architecture

For summarizing video, user need to give the URL of the video they want to summarize. Using pytube library, we can download YouTube videos using python language. Using pytube we can check whether the URL is valid or not. Along with that it provides additional features like authentication to avoid inappropriate videos from summarization. The downloaded video which is stored in .mp4 format is now converted into .wav file (Waveform Audio File Format) using ffmpeg. It can handle multimedia files by supporting various video and audio formats. Using Speech Recognition models like google, we can convert .wav file to text. Likewise, we can also provide audio as input which will be converted to text or can directly provide text for summarization. Now to obtain summary from original text we will make use spacy library of python along with some procedure as showed in figure2. While working with videos the steps involved are video to audio, audio to text and text to summary.

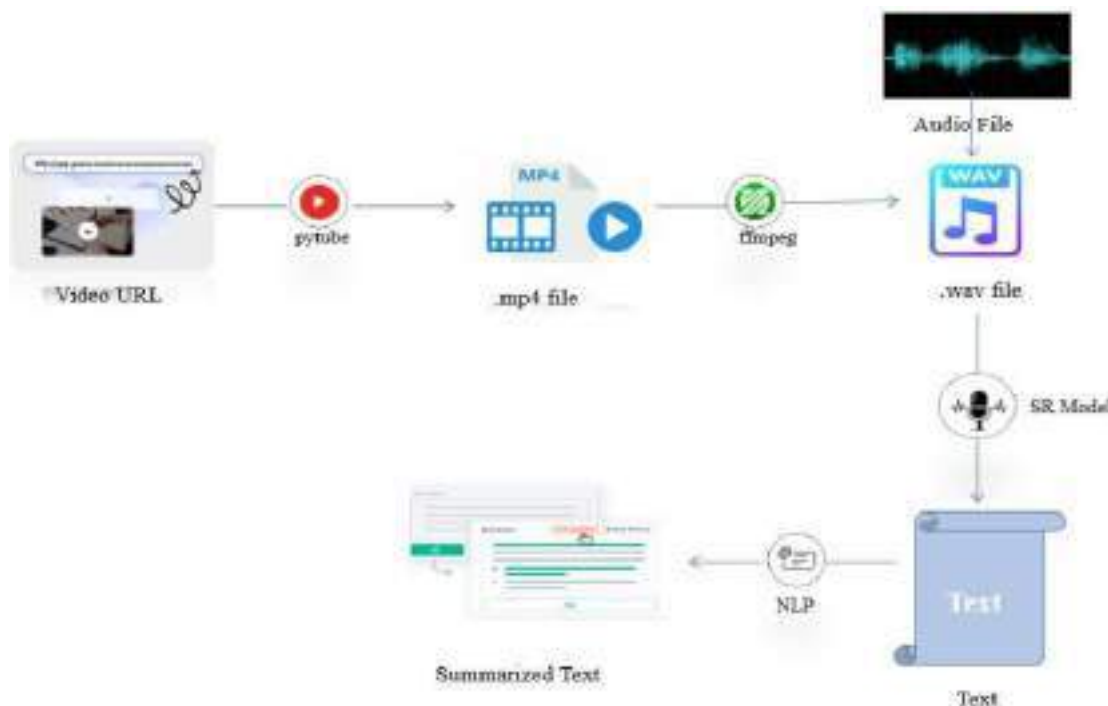


Fig.1: Proposed System Architecture

B. Algorithm for Summarization

Text Cleaning: - In Text Cleaning, we avoid stop words, punctuations and perform altering text case. Stop words like “the”, “and”, “in” are removed because they do not carry any importance during summarization. We convert the entire text into single format either in lowercase or uppercase so that “Hello,” HELLO” or “hello” are treated as one to avoid unnecessary conflicts during summarization.

Word Tokenization- Word tokenization means breaking the entire text into words or tokens. We use the en-core-web-sm model of SpaCy to perform tokenization. This model considers spaces and punctuation as boundaries to recognize words in sentences.

Word Frequency Table- A frequency Table consists of words present in the text along with its frequency. Frequency means number of times the word has appeared in the text. It helps us to find out important words that might be significant for the summary.

Normalization- In order to bring the word frequencies within a particular range, we perform normalization. The frequency of each word is divided by the maximum frequency observed. After normalization, the frequency falls within the range of 0 to 1.

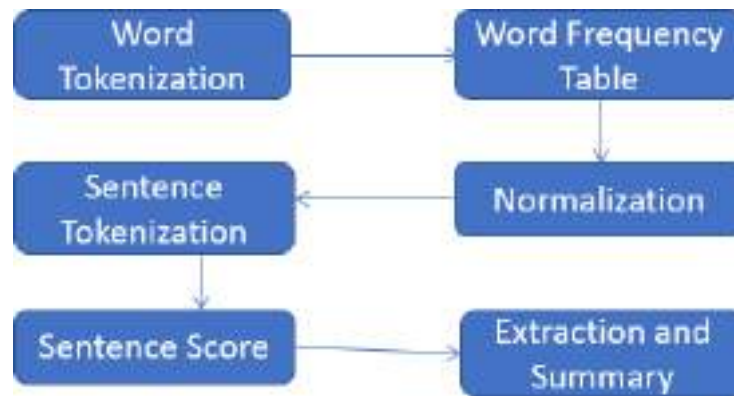


Fig.2: Algorithm For Summarization

Sentence Tokenization– The entire text is divided into sentences using SpaCy which provides effective sentence tokenization. By mainly considering punctuations as sentence boundary, tokenization is performed using SpaCy.

Sentence Scoring– To determine important sentences from the list of sentences obtained through sentence tokenization, we make use of sentence scoring. Sentence scoring is done based on the various factors like word frequency of the words present in the sentence, position of the sentence in the text.

Extraction and Summary- The sentences with high sentence score are selected for summarization. As a result, summary is formed using sentences that provide concise representation of the main points of the text. Informative summary of a longer text.

IV. RESULTS

In our project we have designed user-friendly website which consists of 4 webpages. The initial webpage is homepage which is followed by video input page, audio input page and text input page.

A. Home Page

In Home Page, we have provided 3 options which are video, audio and text. The user will choose the option which they want to summarize.



Fig.3: Home Page



B. Video Input Page

The user needs to give the video URL that they want to summarize as input. After clicking submit, the summarized output will be displayed.

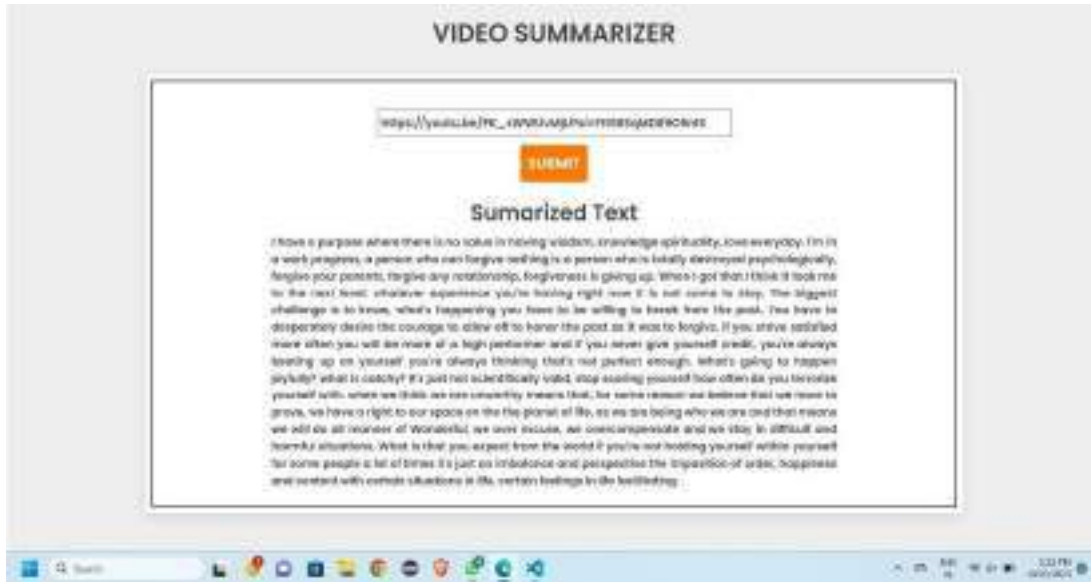


Fig.4: Video Input Page

C. Audio Input File

For summarizing audio file, user need to choose .mp3 or .wav file as input. After clicking submit, the summarized output will be displayed.



Fig.5: Audio Input Page

D. Text Input Page

If the user is directly working with text instead of video or audio then he can directly enter the text which has to be summarized. As a result, we get the summarized output.



Fig.6: Text Input Page

V. SUGGESTIONS

- **Parallel Processing:** Improve your system for parallel processing to handle a large volume of data efficiently, to create a impact on real world applications where we can summarize multiple videos, audios or text simultaneously.
- **Output Format:** To display output using images along with textual summarized content to provide visual content for better understanding of the end-users.

VI. CONCLUSION

In conclusion, the 'Multimedia Summarization using SpaCy' project represents effective and efficient summarization by harnessing the power of Natural Language Processing. The model accepts a diverse range of inputs, including video URLs, audio files, and text, showcasing its versatility and adaptability for real-world applications. It empowers users to quickly grasp key concepts and insights, effectively utilizing their time in a user-friendly manner to meet the demands of our multimedia-rich digital world which has been generated in both visual, audio and textual format.

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A CNN CLASSIFICATION APPROACH FOR POTATO PLANT LEAF DISEASE DETECTION

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ABSTRACT

The timely detection and management of plant diseases is critical in the agricultural industry. Among these, potato leaf diseases can have a major impact on crop productivity and quality. This research addresses the important requirement for rapid and reliable disease detection in potato plants. Using Convolutional Neural Networks (CNNs), a sophisticated deep learning approach, we gain considerable progress in automating the identification process. We demonstrate the model's ability to distinguish diverse kinds of disease with an amazing accuracy rate of 98.8% through rigorous experimentation. The use of data augmentation techniques improves the model's flexibility to a variety of environmental situations. This breakthrough has significant promise for shaping agricultural methods, providing a powerful tool for early disease intervention, and ensuring global food security.

KEYWORDS - Deep learning, Convolutional Neural Network (CNN), potato diseases, TensorFlow, Streamlit.

I. INTRODUCTION

A nation's progress hinges on the vitality of its agricultural sector, which serves as the bedrock of sustenance for its populace. Given the importance of agriculture, the identification of plant diseases has emerged as a critical issue. Traditional methods of identifying plant diseases, while available, can be subjective, time-consuming, and resource intensive, demanding extensive knowledge and human resources. Pathogens, living microorganisms, bacterial difficulties, fungal infections, germs, and viruses are all examples of plant diseases. These include early blight, late blight, and more, all of which can severely impact potato plants, displaying symptoms on their leaves.

Early detection and action during the early phases of these outbreaks can help farmers avoid major economic losses. Plant leaf diseases can be accurately diagnosed using experimentally verified software solutions. In recent years, machine learning and deep learning have developed as formidable technologies for this aim. Given the variety of diseases seen in different climates, effective early detection is critical for minimizing losses.

Caring for plants, ensuring their robust growth, and safeguarding them from diseases are pivotal for effective country or regional management. Convolutional Neural Networks (Convnets) are used in this study to detect potato leaf diseases. We curated a Plant Village dataset on Kaggle that included images of fifteen diverse kinds of plant leaves, from which we extracted classes specific to potato leaves.

II. OBJECTIVES

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



III. METHODOLOGY

3.1 Data Preparation

Data preparation is a crucial step in any deep learning project. In this context, it involves loading and formatting the potato disease dataset for further analysis and model training. The dataset, likely containing images of both healthy and diseased potatoes, is accessed and organized. This process typically involves importing relevant libraries like NumPy, Pandas, and potentially OpenCV for image handling. Images are read, and if necessary, they are pre-processed to ensure uniformity and ease of analysis. This may include tasks such as resizing images to a standardized dimension, converting them to a suitable format, and potentially normalizing pixel values to improve model performance.

3.2 Dataset Visualization

After data preparation, it's crucial to gain insights into the dataset's characteristics. Visualization plays a vital role in this process. It allows us to view sample images from the dataset, providing a visual understanding of the potato samples, their diversity, and the variations between healthy and diseased instances. This step aids in identifying potential challenges, such as class imbalance or image quality issues. It also helps in verifying if the dataset is correctly loaded and preprocessed. Common libraries like Matplotlib and Seaborn are often used for generating visualizations. These tools allow for displaying images along with their respective labels, enabling a quick overview of the dataset's contents.

3.3 Data Partitioning

In machine learning, it's crucial to divide the dataset into distinct subsets for training, validation, and testing purposes. The training set is used to train the model, the validation set is used to fine-tune hyperparameters and prevent overfitting, and the test set is employed to assess the model's generalization performance. This division is essential to ensure that the model does not simply memorize the training data but can generalize its predictions to new, unseen examples. Typically, this is done by randomly shuffling the dataset and then allocating a certain percentage of the samples to each subset. Care is taken to maintain class distribution across all partitions, ensuring that the model learns from a representative sample of both healthy and diseased potatoes.

3.4 Data Augmentation and Rescaling

Data augmentation is a critical technique in computer vision tasks like image classification. It involves applying random transformations to the existing training images, such as flips or rotations. This process increases the diversity of the training set, helping the model generalize better to unseen data. In this context, horizontal and vertical flips as well as random rotations by 20% are employed. Additionally, rescaling ensures that all images are brought to a uniform size, enhancing computational efficiency and consistency during model training. The images are resized to a standardized 256x256 pixel format and rescaled for numerical stability, allowing the model to learn effectively from the data.

3.5 Model Architecture

A Convolutional Neural Network (CNN), a form of deep learning model well-suited for image classification tasks, was implemented in this study. This CNN is intended to detect diseases of potato leaves. The network is composed of numerous layers, each of which serves a specific purpose in the learning process. It begins with an input layer that processes images of 256x256 pixels with RGB color channels. Preprocessing stages ensure uniformity by resizing images and rescaling pixel values to a range of 0 to 1. The network then employs a 2D convolutional layer with 32 filters, each utilizing a 3x3 kernel and ReLU activation. Subsequent convolutional layers with 64 filters extract hierarchical features. Max pooling layers follow, applying a 2x2 operation after each set of convolutional layers to reduce spatial dimensions and focus on critical features. A flatten layer transforms the multi-dimensional output into a one-dimensional array for further processing. The architecture incorporates a dense layer with 64 units and ReLU activation for feature integration, and a final dense layer with units equal to the three disease categories, employing softmax activation for probability outputs. Training leverages the Adam optimizer and Sparse Categorical Cross-Entropy loss function across ten epochs, enabling the model to discern intricate details and yield precise predictions. This meticulously designed structure demonstrates a thoughtful amalgamation of components, effectively facilitating accurate disease classification in potato leaf images.

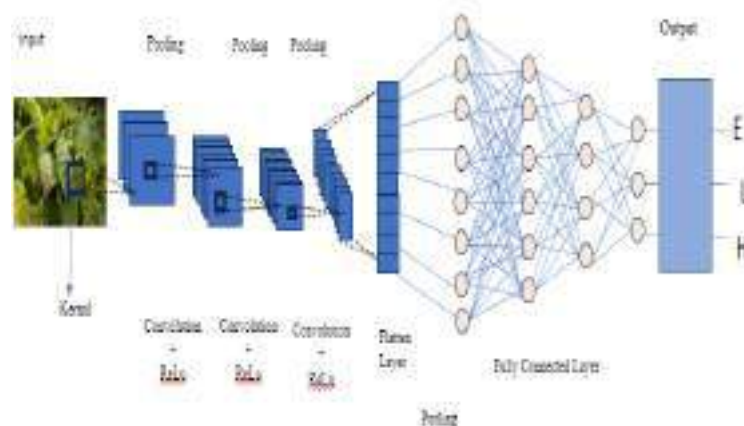


Fig 1: CNN Architecture

3.6 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 potato diseases. The model is fed batches of preprocessed images from the training set, and it adjusts its internal parameters through a process called backpropagation. 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

The suggested model was trained for a total of 50 epochs with a small batch size of 8. Following that, the model's competency on the test set was evaluated and benchmarked against a baseline for performance comparison. The results of the experiment demonstrate an excellent level of accuracy in classifying potato illnesses. The model had an overall accuracy of around 98.8%. This high level of precision indicates the effectiveness of the Convolutional Neural Network (CNN) architecture in distinguishing between healthy and unhealthy potato plants. The use of data augmentation techniques such as random flips and rotations, which increased the diversity and variability of the training data, is credited with the strong performance. As a result, the model's capacity to generalize effectively to previously encountered samples was enhanced. The experimental results validate the utility of deep learning approaches in automated plant disease categorization, emphasizing their importance in modern agriculture for crop disease detection and mitigation.

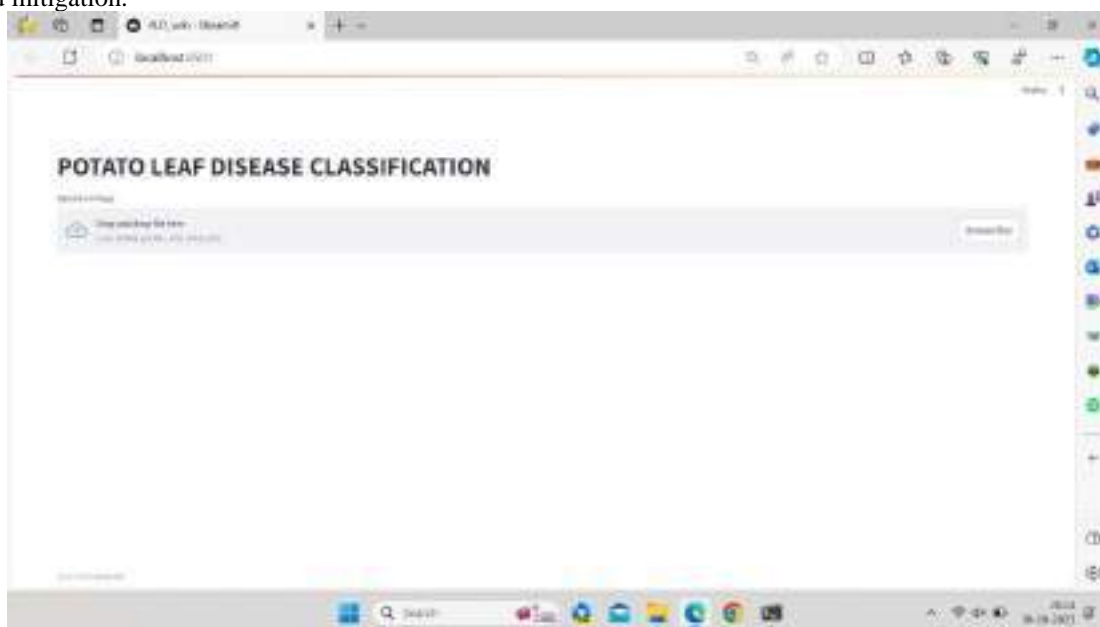


Fig.2: Interface to upload a leaf



Fig 4: Potato Late Blight

Figure 4 This image displays a potato leaf afflicted by blight, evident in its distinct dark lesions, signaling a potential fungal infection.

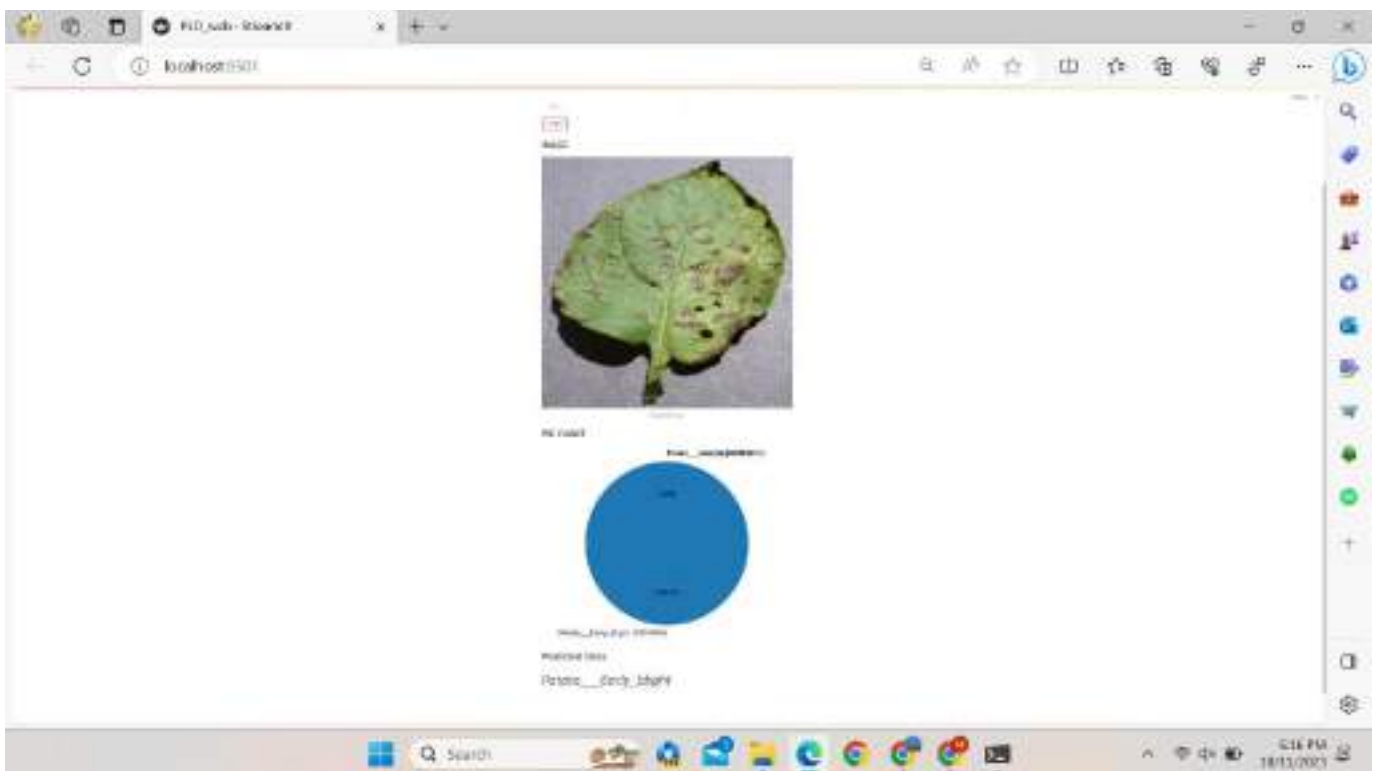


Fig.5: Potato Early Blight

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



Fig.6: Potato healthy

Figure 6 This picture shows disease-free potato leaf exemplifies an ideal condition for a thriving plant, crucial for optimal crop yield.

V. CONCLUSION

The creation of the online application using the Streamlit module marks a major changing point in the identification of potato leaf disease. The integration of a Convolutional Neural Network (CNN) with three output classes, constructed using TensorFlow in a sequential architecture, has yielded promising results. Convolutional layers, max-pooling layers, and dense layers are some of the essential elements that the model includes and are responsible for its efficiency. Advanced deep learning methods combined with a user-friendly online interface have significant potential to improve agricultural practices and ultimately support sustainable crop management.

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A MACHINE LEARNING APPROACH FOR INTRUSION DETECTION

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ABSTRACT

In the rapidly evolving digital landscape, ensuring the security of computer systems and networks has become a paramount concern. Traditional methods often struggle to keep pace with the increasing complexity and diversity of cyber threats. In the context of cybersecurity and network analysis, the crucial tools for identifying and responding to unauthorized access, malicious activities, and potential threats within a network or system cannot take place. The significance of intrusion detection is underscored by the escalating frequency and sophistication of cyberattacks that can lead to data breaches, service disruptions, and financial losses. The XGBoost algorithm's ability to handle complex, imbalanced datasets and its exceptional performance in various domains make it a promising candidate for improving intrusion detection accuracy. To evaluate the efficacy of the XGBoost algorithm, extensive experiments are conducted using the KDDCup99 dataset. This dataset represents diverse network traffic scenarios and intrusion types, providing a comprehensive evaluation environment. The Random Forest algorithm, known for its robustness in handling classification tasks, is selected as a baseline for comparison. The performance of the XGBoost algorithm is assessed using multiple performance metrics, including accuracy, precision, recall, F1-score. The outcomes highlight the potential advantages of utilizing XGBoost for intrusion detection.

KEYWORDS: Cybersecurity, Network Analysis, Intrusion Detection, XGBoost Algorithm, Random Forest Algorithm, KDDCup99 Dataset.

1. INTRODUCTION

Cybercrimes refer to a broad category of illegal activities committed in the digital realm, often leveraging technology and the internet. Cyber-crime can be defined as any crime which happens online where an electronic device is considered as a tool to perform such crimes [1][2]. These crimes encompass a wide range of malicious actions, including hacking, identity theft, phishing, malware distribution, and various forms of online fraud. CyberCriminals could potentially take advantage of weaknesses in computer systems, networks, or software to illicitly enter, pilfer sensitive information, or disrupt online operations. Due to the growing interconnectivity of our digital world, cybercrimes now pose a substantial threat to individuals, businesses, and governments alike.

Cybersecurity attacks are malicious activities that target computer systems, networks, or individuals with the intent of stealing, damaging, or otherwise compromising the integrity, confidentiality, or availability of information. Some common types of cybersecurity attacks include as shown in Fig.1: Malware, Phishing, Denial-of-Service (DoS) and Distributed Denial-of-Service (DDoS) attacks, Man-in-the-Middle (MitM) attacks, Password attacks, SQL Injection, Cross-Site Scripting (XSS), Zero-Day Exploits, DNS Tunneling, Crypto jacking, Ransomware. These are just a few examples of the many types of cybersecurity attacks that exist. Organizations must employ a comprehensive security strategy, including firewalls, intrusion detection and prevention systems, encryption, antivirus software, employee training, and regular security audits, to protect against these and other threats [3].



Fig.1: Types of Cyber Attacks [4]

It is vital to design a powerful intrusion detection system in order to prevent computer hackers and other intruders from effectively getting into computer networks or systems [5]. Machine learning based intrusion detection system is particularly useful in effectively processing the enormous data, detecting any harmful behaviour, and efficiently controlling and promptly identifying any attacks of such sorts [6]. IDS systems based on ML (Machine Learning), as well as DL (Deep Learning), have recently been deployed as feasible procedures for swiftly identifying network intrusions [7].

2. OBJECTIVES

- **Evaluate Intrusion Detection Accuracy:** Assess the performance of intrusion detection using the XGBoost algorithm and determine its accuracy in identifying unauthorized access, malicious activities, and potential threats within computer systems and networks.
- **Benchmark with Random Forest:** Conducting a comparative analysis with the Random Forest algorithm to measure the efficacy of XGBoost in intrusion detection. Determine whether XGBoost outperforms or complements the existing Random Forest system.
- **Handling Diverse Scenarios:** Evaluating how well XGBoost adapts to diverse network traffic scenarios and intrusion types by using benchmark dataset like KDDCup99 which represent different real-world situations.
- **Strengthen Cybersecurity Defenses:** Ultimately, the primary objective is to enhance cybersecurity defenses by adopting a more effective intrusion detection approach, leading to reduced data breaches, service disruptions, and financial losses.

3. METHODOLOGY

The methodology employed in this research project for enhancing intrusion detection using the XGBoost algorithm consists of several key steps. It begins with the collection of benchmark datasets, such as KDDCup99 which represent diverse network traffic scenarios and intrusion types. Intrusion detection is one of the looms to resolve the problem of network security [8]. The data undergoes thorough preprocessing, including data cleansing and normalization. The XGBoost algorithm is selected for its capabilities in handling complex, imbalanced datasets. The model is trained, and its performance is evaluated using established metrics like accuracy, precision, recall, and F1-score [9]. To provide a benchmark, the Random Forest algorithm is also implemented and tested. Controlled experiments are conducted, and the results are analyzed to identify where XGBoost excels and how it can potentially enhance intrusion detection. XGBoost or extreme Gradient Boosting helps in exploiting every bit of memory and hardware resources for tree boosting algorithms [10]. The research culminates in conclusive findings and actionable recommendations for the adoption or adaptation of XGBoost in intrusion detection systems.

Here's a detailed methodology broken down into steps:

3.1 Data Collection

- Acquire relevant datasets, including the KDDCup99 which encompass different network traffic scenarios and intrusion types.



- Conduct data quality checks to ensure the datasets are reliable and free from errors. Address any inconsistencies or missing values.

3.2 Data Preprocessing

- Perform data cleansing to handle issues like missing data, outliers, and irrelevant features. Ensure that the data is consistent and suitable for analysis.
- Normalize or scale the data, if necessary, to bring it into a consistent format for model training.

3.3 Algorithm Selection

- Choose the XGBoost algorithm as the primary tool for intrusion detection enhancement.
- The selection of the XGBoost algorithm as the primary tool for enhancing intrusion detection is justified by its exceptional capabilities that align with the specific challenges posed by its task:
 - **Handling Complex, Imbalanced Datasets:** XGBoost is renowned for its robustness in handling complex and imbalanced datasets. In the context of intrusion detection, data often includes rare intrusion types that can be overshadowed by more common benign traffic. XGBoost's ability to manage imbalanced data ensures that these rare intrusions are not overlooked, thereby improving overall detection accuracy.
 - **Ensemble Learning and Gradient Boosting:** XGBoost employs an ensemble learning approach that combines multiple weak learners to create a strong, accurate model as shown in the fig.2. It uses gradient boosting techniques to iteratively improve the model's performance, making it well-suited for capturing complex data relationships and patterns within the network traffic data.

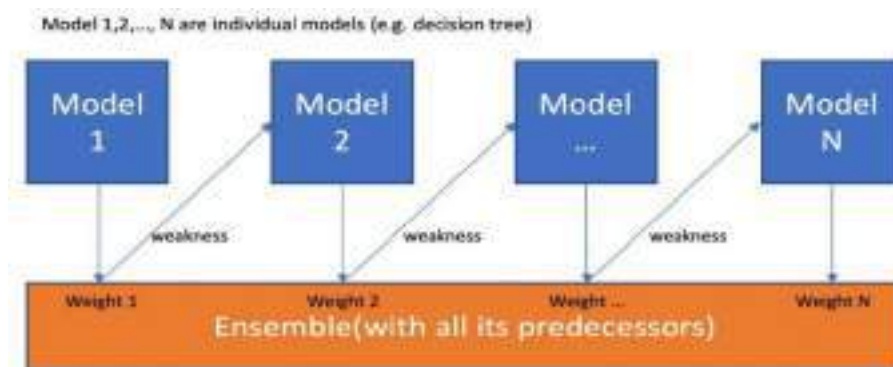


Fig.2: Boosting [11]

Boosting Algorithm

- **Initialize Weight:** Assign equal weights to all observations in the dataset. If we have N observations, each observation's initial weight is $1/N$ as shown in the Fig.2.
- **Build Weak Learners:** Fit a weak learner to the data. A model that outperforms random chance by a small margin is called a weak learner.
- **Compute Error:** Calculate the error of the weak learner. This can be the sum of the weights of the misclassified observations.
- **Compute Learner Weight:** Calculate the weight of the weak learner in the ensemble. This is usually based on the error; a lower error will result in a higher weight.
- **Update Weights:** Increase the weights of the misclassified observations and decrease the weights of the correctly classified observations. This makes the misclassified observations more important for the next weak learner.
- **Normalize Weights:** Normalize the weights so that they sum up to 1.
- **Repeat:** Repeat steps 2 to 6 for a predefined number of boosting rounds or until the error is minimized.

3.4 Model Training

- Implement the XGBoost algorithm and configure its hyperparameters, including learning rate, maximum depth, and the number of boosting rounds.
- Train the XGBoost model using the preprocessed datasets, ensuring that the data is divided into training and testing sets for evaluation



3.5 Performance Evaluation

- Define a set of performance metrics, including accuracy, precision, recall, and F1-score, to quantitatively assess the effectiveness of the XGBoost model.
- Apply these metrics to the model's predictions on both benchmark datasets to evaluate its performance.

3.6 Baseline Comparison

- Implement the Random Forest algorithm as a baseline for performance comparison.
- Train the Random Forest model using the same preprocessed datasets and evaluate its performance using the same metrics.

3.7 Data Analysis

- Interpret the results to identify where XGBoost excels or complements the Random Forest algorithm in intrusion detection.
- Determine the specific scenarios in which XGBoost demonstrates superior intrusion detection capabilities.

4. ARCHITECTURE

The below Picture Fig.3 represents the Architecture of the System.

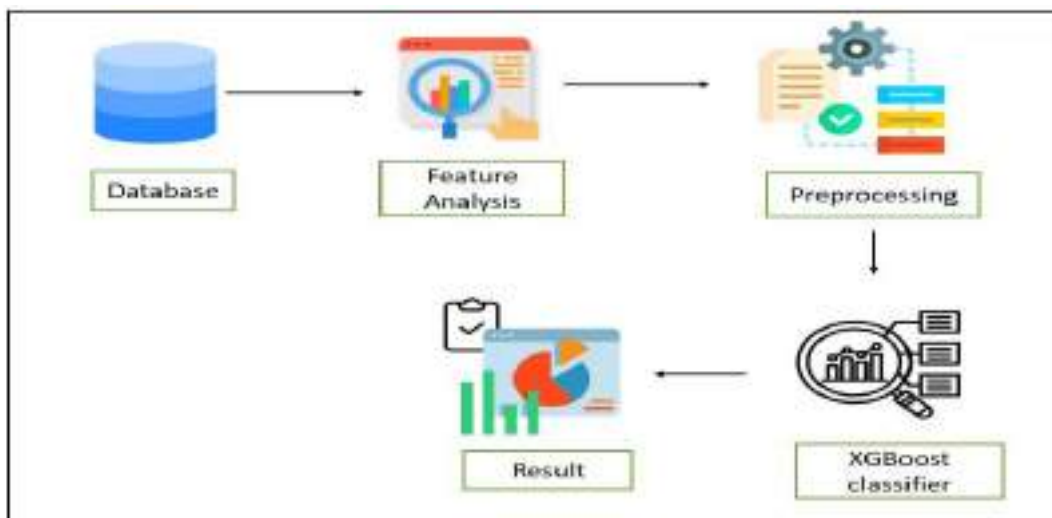


Fig.3: Architecture of System

5. ADVANTAGES OF THE SYSTEM

5.1 Handling Imbalanced Datasets: XGBoost excels in handling imbalanced datasets commonly encountered in intrusion detection. It ensures that rare intrusion types are not overlooked, thereby improving detection accuracy.

5.2 Exceptional Performance Across Domains: XGBoost has demonstrated exceptional performance in various domains, making it a promising choice for enhancing intrusion detection accuracy. Its adaptability to different contexts enhances its effectiveness.

5.3 Automation for Efficiency: The automated nature of intrusion detection using machine learning and XGBoost allows security experts to focus on strategic tasks, threat response, and policy improvements rather than manual data monitoring. This automation streamlines the process and reduces human workload.

5.4 Optimized for Speed and Efficiency: XGBoost is optimized for speed and efficiency, making it suitable for real-time or near real-time intrusion detection. It can train models relatively quickly, enabling rapid response to potential threats.

6. ALGORITHM OF PROPOSED SYSTEM

Step-1: Importing Libraries

Step-2: Data Loading

Step-3: Data Exploration

Step-4: Pie Plot Function

Step-5: Data Visualization



Step-6: Data Preparation

Step-7: Train-Test Split

Step-8: Label Mapping

Step-9: Model Training

Step-10: Model Evaluation

- Based on the test results, make forecasts.
- Compute and present the matrix of confusion.
- Plot the confusion matrix using ConfusionMatrixDisplay as show in the Fig.4

		Predicted	
		Negative (N) -	Positive (P) +
Actual	Negative -	True Negative (TN)	False Positive (FP) Type I Error
	Positive +	False Negative (FN) Type II Error	True Positive (TP)

Fig.4: Confusion Matrix [12]

-A confusion matrix is a tabular representation that helps to evaluate performance of classification model.

-The terms "TP," "FN," "TN," and "P" are commonly used in the context of binary classification to represent different outcomes in a confusion matrix.

- True Positive (TP): Both the observation and the prediction are positive.
- False Negative (FN): A positive observation is anticipated to be a negative one.
- True Negative (TN): Both the observation and the prediction are negative.
- False Positive (FP): A positive prediction is made based on a negative observation.
- Calculate and display accuracy, precision, and recall scores.

Accuracy: This tells how many times a model made a correct prediction across the entire data set.

Mathematically, Accuracy is ratio between number of correct predictions to total predictions.

$$\text{Accuracy} = \frac{TP+TN}{TP+FN+TN+FP}$$

Precision: It is about correctness of +ve predictions and is a measure of quality. It is the ratio of correctly predicted +ve cases to total number of +ve predictions.

$$\text{Precision} = \frac{TP}{TP+FP}$$

Recall: Recall measures how well the model captures all the +ve cases and is a measure of quantity. It is ratio of correctly predicted +ve cases to total number of actual positives.

$$\text{Recall} = \frac{TP}{TP+FN}$$

F1-score: Precision and recall are balanced in the F1-score. F1-score is useful when you want a single metric that consider both FP and FN.

$$\text{F1 Score} = \frac{2 \times \text{precision} \times \text{recall}}{\text{precision} + \text{recall}}$$

7. RESULTS

7.1 Random Forest using KDD(Existing)

The Below Picture Fig.5 represents the Confusion Matrix of Random Forest Using KDD.

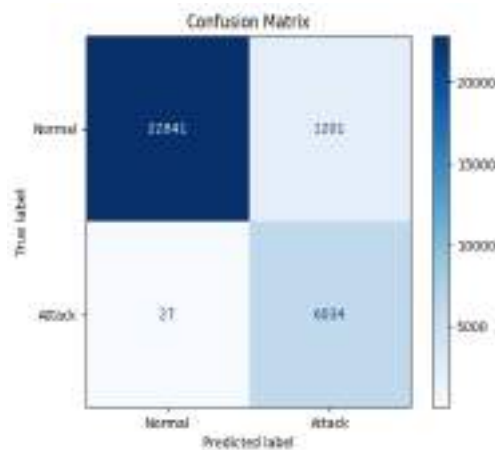


Fig.5: Confusion Matrix

Accuracy, Precision, Recall, F1-Score

```
#Calculating out the accuracy
Import accuracy, precision, recall, and f1 scores from sklearn.metrics
pos_label = 'attack.'
acc = accuracy_score(pred, labels_test)
precision = precision_score(pred, labels_test, pos_label=pos_label)
recall = recall_score(pred, labels_test, pos_label=pos_label)
f1 = f1_score(pred, labels_test, pos_label=pos_label)
print ("Accuracy is {}".format(round(acc,4)))
print("Precision is {:.4f}".format(precision))
print("Recall is {:.4f}".format(recall))
print("F1 Score is {:.4f}".format(f1))
Accuracy is 0.9284.
Precision is 0.9121
Recall is 0.9988
F1 Score is 0.9535
```

7.2 XGBoost Using KDD (comparison to random forest)

The below Picture Fig.6 represents the Confusion Matrix of XGBoost Algorithm Using KDD

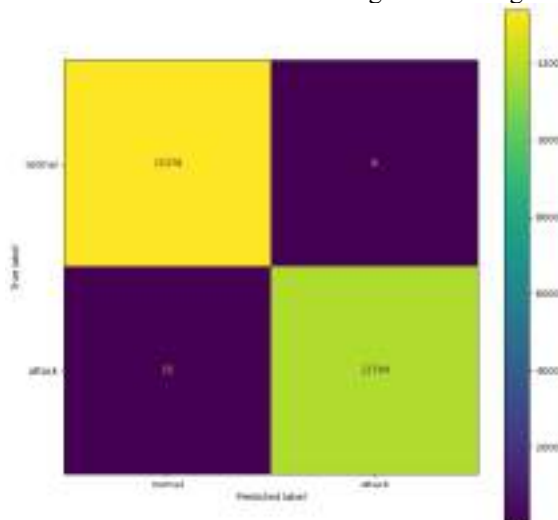


Fig.6: Confusion Matrix



Accuracy, Precision, Recall, F1-Score

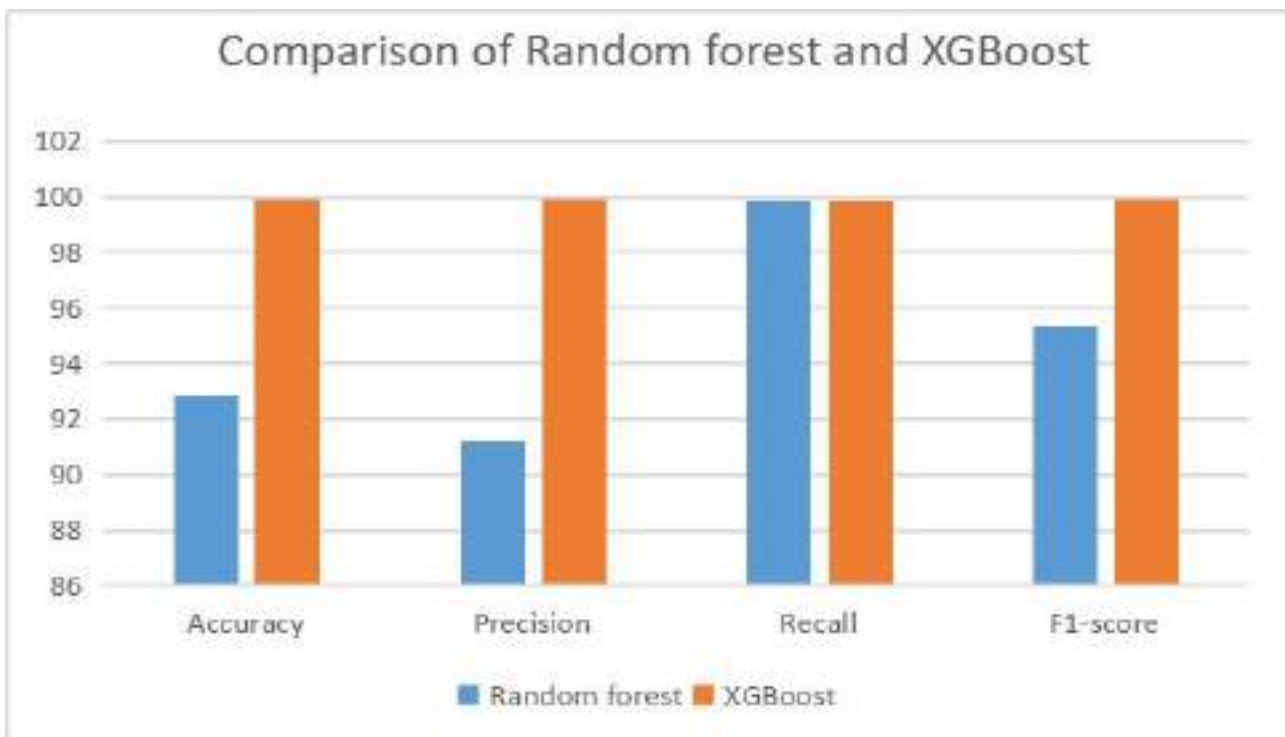
```
import xgboost as xgb
# Train the XGBoost classifier
xgb_classifier = xgb.XGBClassifier(objective='binary:logistic', n_estimators=100, random_state=42)
xgb_classifier.fit(x_train, y_train)
# Evaluate the XGBoost classifier
evaluate_classification(xgb_classifier, "XGBoost", x_train, x_test, y_train, y_test)
```

Training Accuracy XGBoost 99.98710023120356 Test Accuracy XGBoost 99.90871204604088
Training Precision XGBoost 99.98291474457544 Test Precision XGBoost 99.93221487883409
Training Recall XGBoost 99.98932103116123 Test Recall XGBoost 99.87297823693793
Training F1-score XGBoost 99.98611778525282 Test F1-score XGBoost 99.90258777688365

Comparison of Random Forest and XGBoost

	Accuracy	Precision	Recall	F1-Score
Random Forest	92.84	91.21	99.88	95.35
XGBoost	99.9	99.93	99.87	99.9

Tabel.1: Comparison of Performance Metrics



8. CONCLUSION

we used the Random Forest algorithm with the KDD dataset to establish a baseline performance. Upon comparing the results, we found that the XGBoost algorithm outperformed Random Forest in terms of accuracy when applied to the same dataset. This demonstrates the effectiveness of XGBoost over Random Forest and its adaptability to newer datasets, making it a superior choice for our classification tasks.

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AI FOR SUSTAINABLE DEVELOPMENT: ASSESSING STUDENT INTEREST, EDUCATION, AND CAREER PATHWAYS

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ABSTRACT

Artificial Intelligence is one of the most used and efficient technologies in the world right now. When harnessed effectively, AI has the potential to address global challenges, aligning with the United Nations' 17 Sustainable Development Goals. In this study, I am exploring the career opportunities for AI engineers in India, encompassing opportunities within both corporate entities and non-governmental organizations (NGOs) committed to advancing sustainable development. It further analyzes the specific skills required to join as an AI Engineer in these organizations. As a part of this study, I also conducted a survey among engineering students to know their interest and understanding of AI in the context of sustainability. In addition, the study investigates the curricular offerings of AI programs in Indian educational institutions, assessing the extent to which they prepare students for the demands of the industry, with a particular focus on the inclusion of sustainability-related content.

KEYWORDS: Artificial Intelligence (AI), Sustainable Development Goals (SDGs)

1. INTRODUCTION

The field of Artificial Intelligence (hereafter AI) is experiencing rapid growth and holds the potential to contribute significantly to the achievement of Sustainable Development Goals (hereafter SDGs), offering various benefits to humanity. Engineering students and professionals must have a fundamental understanding of sustainable development goals and artificial intelligence and learn to combine these concepts for the betterment of our country in the future.

Every year, all 192 nations are assessed based on their progress toward attaining the 17 SDGs. According to the Sustainability Development Report for 2023^[1], India is ranked 112th, with a score of 63.45. Notably, the scores for the goals of reduced inequalities (Goal 11) and life on the earth (Goal 15) have reduced when compared to previous years. Furthermore, India's scores for achieving the goals of zero hunger (Goal 2), sustainable cities and communities (Goal 11), climate action (Goal 14), and peace, justice and strong institutions (Goal 16) stagnated. As Gurinder Kaur mentioned in her report^[2], in India, the discrimination against women starts even before she is born, the prevalence of violence against women, ranging from domestic abuse to gang rape, contributes to increased inequality. As per Air Quality Report 2023, Delhi is one of the five most polluted cities in the world. There are a lot of such problems that need immediate attention and can be solved using technologies such as AI.

In this paper, three main areas are explored: how interested and informed students are about using AI for Sustainable Development Goals (SDGs), university programs for AI and sustainability education, career opportunities in AI for sustainability, and the skills required. We should use AI effectively for our country's benefit while meeting SDGs with the right planning. There are NGOs, departments focusing on sustainability, companies focusing on energy, agriculture, disaster management, etc, using AI to meet the SDGs. As a part of this study, a survey was conducted among the engineering students.

Objective

The survey among students is for to understand the attitude of students about incorporating AI and sustainability and their willingness to work for it. This information could help with curriculum development, educational initiatives, and preparing students for the future. The intention of analyzing job opportunities is to motivate students who want to pursue AI and sustainability, which can, in turn, benefit their careers and the broader progress of the country. The AI programs provided by Indian universities is evaluated to see if include sustainability topics in their curriculum and whether they equip students with the latest AI tools, as it is necessary to foster a skilled and innovative workforce in the future.



2. METHODOLOGY USED

a. Survey

The survey is a fundamental research technique used for gathering data that facilitates the assessment of a wide array of aspects such as public sentiment, attitudes, behaviors, feedback, etc. This survey will be carried out among engineering students at APJ Abdul Kalam Technological University (KTU). This survey focuses on:

- Students' understanding of AI and SDGs.
- Student involvement in AI projects aimed at achieving SDGs.
- Student interest in pursuing careers that encompass AI and Sustainability.

Following were the survey questions:

- Are you familiar with the sustainable development goals?
- Have you heard of or studied the application of Artificial intelligence in meeting sustainable development goals?
- On a scale of 1 to 5, how interested are you in the intersection of AI and sustainable development goals, with one being not interested and five being extremely interested?
- Are you currently involved in any projects or initiatives related to AI and sustainable development goals, either academically or as a personal interest?
- Would you be interested in participating in or contributing to projects or research related to AI and sustainable development goals in the future?
- Are you interested in pursuing a career where you will work with AI to meet sustainable development goals?
- Are you aware that companies hire engineers with knowledge of AI to meet sustainable development goals?

b. Job Opportunities Research

In India, the primary job search platforms used are LinkedIn, Naukri, indeed, Glassdoor, and Internshala. Within these platforms, job listings from a diverse range of companies engaged in sustainability-focused projects, encompassing areas like renewable energy, agriculture, disaster management, and NGOs can be analyzed to understand the demand for an AI Engineer/Developer in sustainability. The skills, and qualifications mentioned in the job posts is analyzed.

c. University Programs Research

The curriculum details of AI programs in India can be found online. Two important things are analyzed here:

- If sustainability-related topics are included in the curriculum.
- whether students received instruction in industry-relevant skills. Also, these skills are compared to the essential qualifications specified in job advertisements.

3. CAREER PATHWAYS AND SKILLS

There are many companies in India whose product goals align with the SDGs. If we consider the renewable energy sector, Adani Green Energy, ReNew Power, Climate Connect Digital, Siemens Energy, Websol Energy System, etc, have posts for AI Engineer. These companies mentioned use AI to make their products more efficient and sustainable, but at the same time, it is helping India to achieve the 7th SDG, affordable clean energy. Also, some companies are contributing to the research of students as well. For example, the study conducted by Madhjarasan^[3] that aimed to predict wind speed for improved energy efficiency and wind farm operation relied on real-time data supplied by Suzlon Energy Private Ltd. This research, if deemed suitable, holds the potential to enhance the performance of their products.

BKC WeatherSys is an Indian company whose domains include agriculture, renewable energy, hydrology, climate, etc,^[4] contributing to four different SDGs (Goals 6, 7, 14, and 15). Here, as per their job advertisement in Naukri, knowledge of weather/agriculture is a plus. The job advertisement posted by the National Institute of Smart Government (NISG) was also somewhat similar since they need AI engineers to analyze weather for agriculture applications.

Many private companies such as PlanetSkool, Leverage Edu, 2Sigma School, Toddle, Univ.ai, and non-profit educational organizations like Pratham, Turn the Bus, etc, provide quality education, thus contributing to sustainable development goal number 4.

There are many Non-Government Organizations (NGOs) in India. They are non-profit organizations that mainly works for fixing the social issues, helping the kids, poor, and people in need. An interesting trend emerging in these organizations is their increasing adoption of AI to bolster their effectiveness. One example is Wadhvani AI, an initiative founded by Dr. Romesh Wadhvani. This organization specializes in developing and deploying AI solutions tailored to serve marginalized populations in developing countries. Their primary focus is on agriculture and healthcare, significantly contributing to Sustainable Development Goals 3 and 15. Another remarkable player in this arena is Gramener, a company specializing in data science and AI. Although not a conventional NGO, they actively collaborate with NGOs and government bodies, harnessing the power of AI for the betterment of society and



disaster management. A notable project they undertook was in partnership with SEED, a nonprofit organization in India, and Microsoft, where they employed AI to predict impending disasters and mitigate risks for vulnerable populations. UNESCO also has put job advertisement looking for AI Engineers. In addition to this, many NGOs are working with and getting help from MNCs like Google, Microsoft, etc. For example, Swasti is working with IIIT-D and Singapore Management University to apply Artificial Intelligence and Machine Learning (AI & ML) techniques to improve segmentation and outreach among key populations. This is supported by the Google AI for Good Grant ^[7].

Sector/Domain	Company/ Organization	Contribution to SDGs
Renewable Energy	Adani Green Energy	Affordable Clean Energy (SDG 7)
	ReNew Power	
	Climate Connect Digital	
	Siemens Energy	
	Websol Energy System	
	Suzlon Energy Private Ltd	Research Support for Efficiency (SDG 7)
Agriculture, Renewable Energy, Hydrology, Climate	BKC WeatherSys	Clean Water & Energy (SDG 6 & 7), Life Below Water & On Land (SDG 14 & 15)
Agriculture	National Institute of Smart Government (NISG)	Agriculture and Weather Analysis (SDG 2)
Education	PlanetSkool	Quality Education (SDG 4)
	Leverage Edu	
	2Sigma School	
	Toddle	
	Univ.ai	
	Pratham (NGO)	
	Turn the Bus (NGO)	
Agriculture, Healthcare	Wadhvani AI (NGO)	Good Health & Well-being (SDG 3), Life on Land (SDG 15)
Data Science and AI	Gramener	Disaster Management, Social Development
International Organization	UNESCO	SDGs 1 to 17
Healthcare	Swasti (NGO - collaborated with university students)	Good Health & Well-being (SDG 3), Quality Education (SDG 4)

Table 1: Companies, their domain and contribution to SDGs

The AI Engineers are expected to have skills in ^{[8][9][10]}:

- Deep Learning (CNN, LSTM, RNN, LLM, NLP, etc)
- Machine Learning
- Image Processing
- Database Management
- Python
- R

Also, they should be adept at advanced tools like

- TensorFlow
- Keras
- Pytorch, etc.

In addition to these examples, numerous companies are actively contributing to the achievement of Sustainable Development Goals (SDGs). While their core objectives may not revolve around sustainability, they employ AI to enhance the efficiency of their products, consequently making progress towards SDGs. Nokia is using AI to reduce the network energy usage by 30% and to reduce the carbon footprint of telco networks. Similarly, ABB has adopted BrainBox AI's innovative HVAC technology, which leverages AI to create smarter, more eco-friendly, and highly efficient buildings. Schneider is making client-specific AI applications for the collection, aggregation, and visualization of client energy consumption. It also predicts energy cost and usage based on weather and seasonality. Hence, integrating sustainability education alongside AI skills proves advantageous for one's career development.

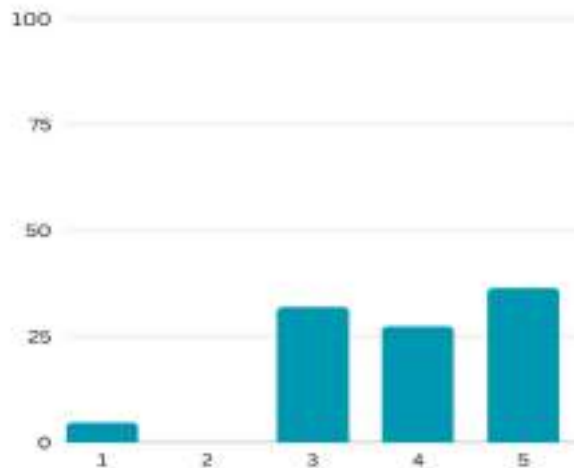
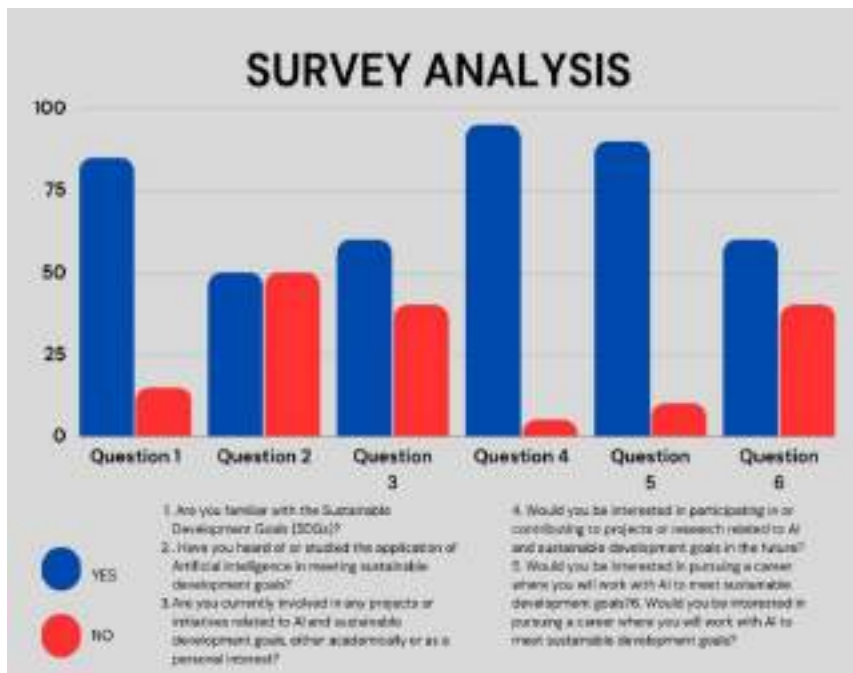


4. STUDENT ATTITUDE TOWARDS AI AND SDGS: SURVEY ANALYSIS

Around 160 students from APJ Abdul Kalam Technological University actively participated in this survey. There were 7 questions were included in it. Following are the observations from the survey:

- Approximately 15% of the surveyed students indicated a lack of familiarity with the concept of sustainable development and the Sustainable Development Goals (SDGs).
- Only 50% of students have heard of or studied about the application of AI in meeting SDGs.
- Encouragingly, around 60% of the students expressed keen interest in utilizing AI for the advancement of SDGs and were actively engaged in related initiatives.
- Around 10% of the students are not interested in pursuing a career where they will have to use AI in meeting SDGs. At the same time, 50% of students were not aware of the fact that they have career opportunities in this field.

Graph 1: Survey Analysis



Graph 2: Interest of students in using AI to meet SDGs on a scale from 1 to 5.



5. UNIVERSITY PROGRAMS AND CURRICULUM ANALYSIS FOR AI EDUCATION

In India, there are around 200 colleges offering a bachelor’s degree in Artificial Intelligence. Among them, I analyzed the curriculum of top 10 colleges. The curriculum covers essential topics like basic programming languages required, deep learning, machine learning, data structures and algorithms, image processing, etc However, these programs generally lack instruction on newer, advanced tools like TensorFlow and do not include any content related to sustainability. Nevertheless, some universities offer intriguing courses that focus on specific applications of AI, such as

- Machine Learning in Drug Discovery
- Artificial Intelligence in Medical Images
- Brain-Machine Interface

These specialized courses equip students with in-depth knowledge in these areas, enabling them to pursue careers or advanced studies with a specialized focus.

College	Course
IIT Hyderabad	B.Tech Artificial Intelligence
Chandigarh University	B.E - Artificial Intelligence and Machine Learning
Indraprastha Institute of Information Technology	B.Tech Computer Science and Artificial Intelligence
Great Lakes International University	B.Tech Artificial Intelligence
SRM Institute of Science and Technology	B.Tech Artificial Intelligence
Vellore Institute of Technology	B.Tech Artificial Intelligence and Robotics
DY Patil International University	B. Tech Data Science and Artificial Intelligence
University of Petroleum and Energy Studies	B.Tech - Artificial Intelligence and Machine Learning
Jain University	B.Tech - Artificial Intelligence and Data Engineering
GH Rasoni College	B.Tech Artificial Intelligence

Table 2: Top colleges offering AI Bachelors programme^[14]

There are around 84 colleges in India offering MTech in AI. While the majority of these programs concentrate solely on artificial intelligence, some integrate AI with fields such as Robotics, Electronics and Telecommunication, Data Science, and more. Notably, there are currently no colleges that offer specialized courses in AI for sustainability.

Most of the skills mentioned in the job advertisement are covered in the program curriculum, but practice with industry-relevant tools is not covered in the program. It is worth noting that across all the analyzed courses, sustainability is not integrated into the AI curriculum. This absence of sustainability education may contribute to students' limited exposure to Sustainable Development Goals (SDGs) and their reluctance to consider AI in sustainability as a viable career path.

6. CONCLUSION

In India, there are many companies that are contributing to sustainability with the help of AI. However, there is a notable absence of universities or online programs that specifically concentrate on the intersection of AI and sustainability. After a thorough examination of university programs, it is apparent that no institution currently offers an AI curriculum that integrates sustainable development principles. The survey analysis and the analysis of university AI programs curriculum reveals that students are generally unfamiliar with the concept of combining AI with sustainability. Additionally, approximately 40% of the surveyed students express reservations about pursuing a career in this field. Furthermore, it's evident that while some organizations contribute to certain Sustainable Development Goals (SDGs), few, if any, are effectively utilizing AI to address pressing issues in India, such as gender inequality, poverty, and sustainable infrastructure. Some of the suggestions to overcome this situation are:

- Integrate sustainable development into AI program curricula to ensure that students acquire a comprehensive understanding of AI's potential in this context.
- Indian universities could establish programs similar to the 'AI for Sustainable Development' initiative offered by University College London. This would enable students to specialize in using AI to address societal challenges and potentially foster the development of startups dedicated to achieving SDGs.
- Encourage collaboration between the Indian Government, NGOs, companies, and students to harness AI for meeting SDGs like reduced inequalities, life on earth, zero hunger, where India's performance is lacking.



- Organize seminars and conferences can be conducted to pique the interest of students to utilize AI for sustainable development, fostering a deeper appreciation of the possibilities in this field.

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TO ASSESS THE TYPES OF ALTERNATIVE DISCIPLINARY METHODS DEPLOYED BY TEACHERS IN ENHANCING STUDENTS CONDUCTS IN SECONDARY SCHOOLS IN MERU-DISTRICT ARUSHA TANZANIA

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ABSTRACT

The study is expecting to find out about the deployment of alternative disciplinary methods by teachers in enhancing students' conducts in secondary schools in Meru District, Tanzania. The study guided by behaviorist stimulus – response theory. 55 heads of schools, 1350 teachers, 20513 students and 20513 parents from Meru District was the target of this study. The sample for this study were 6 heads of schools, 60 teachers, 144 students and 6 parents making a total of 216. The study employed mixed method research design whereby probability and non-probability sampling technique used. The study used questionnaire and interview guide in data collection. Descriptive and inferential statistical data was analyzed with the aid of Statistical Package for Social Sciences (SPSS) version 22 software and data presented through tables and direct quotations and analyzed through mean, percentages and frequency. The study found out that teachers used alternative disciplinary strategies to curb indiscipline students; those methods include guidance and counseling, suspension, warnings, parental involvement, decision making collaboration and others. The study concluded that these alternative disciplinary strategies have not been very effective because still have causes of both major and minor indiscipline cases taking place in the sampled secondary schools. The researcher recommended that the school administration and teachers should familiarize with the ministry's policies and guidelines on discipline after the ban of corporal punishment so as to adopt appropriate alternative disciplinary strategies.

KEYWORDS: *Alternative disciplinary methods, Students conduct, Discipline Management*

INTRODUCTION

Learners' discipline is one of the bases of effective teaching and learning process. If learners are not well disciplined, schools will not be able to provide the best education needed for the future generation. So in this regard the purpose of education which is to liberate and form a complete person socially, spiritually, economically and mentally will suffer and probably may not be realized effectively. Therefore it is paramount to have good disciplinary measures and procedures put in place in every school so as to handle learners' disciplinary problems. Ondieki (2018), did a study on challenges facing Head teachers in Managing Discipline of students in public secondary schools in Keumbu Sub county-Kisii, he found out that, teachers are highly facing serious challenges with students who do not behave in schools. In the era of globalization whereby students have diverse personal exposure, experiences, and anticipations. They are more exposed to various cultural values and information learnt from peers and the tools of Media and Communication Technology such as radios, smart phone, the Internet and television as compared to fifteen years back which openly have become many source of disciplinary problems in schools.

However, in developing countries, indiscipline has been a major and continuous to be an administrative problem among secondary schools. For instance, Belle (2017) mentioned the common type of indiscipline in Mauritius Secondary schools as cases of insubordination to school authority such as assault and insult on teachers and non-teachers and assault on school prefects. The most common cases of indiscipline relating to the collective misbehavior of students such as the vandalism of school properties and mass protest, while the common cases of indiscipline relating to poor habits of students are speaking of pidgin English, chewing gum in class, fighting, wearing dirty and wrong clothing contrary to the official school uniform and examination malpractice.

Discipline in general terms is defined as to teach, or teaching. However, discipline in schools is often more of a way to modify behavior so that teaching can occur. The lines are thin and gray between discipline as defined and actual teaching. In general, discipline in many cases is a means to punish behavior deemed unacceptable in school. Additionally, discipline is also used to curb activity that disrupts



the educational process within the school setting. In defining student discipline, one must explore the reasons that discipline is necessary. In other words, what is it about students' actions that cause us to need to implement disciplinary measures? It is imperative as administrators to handle student discipline on a case-by-case basis. Administrators should always fully investigate each incident and be willing to ask questions of all stakeholders when needed. Additionally, strategies for handling student discipline are wide and varied. It is important to strive to be fair and consistent with student discipline. Discipline should be administered carefully and with as little loss of class time for the offending student and for his peers in the classroom (Gage A, *et al* 2018).

Nevertheless, severe disciplinary issues must be handled immediately and of course with sometimes severe penalties: Castor, (2021) and Parker, (2019) did a study on how to handle students discipline in school, he confirms that some strategies for handling disciplinary issues in schools are corporal punishment, student conference, student and parent conference, guidance and counseling both in school and outside, school psychologists, student suspension and student expulsion. Sungwa, Jackson & Kahembe, (2022) emphasized that regardless of the means used to correct inappropriate behavior we must remember that these students are still our students. The alternative methods emphasized to be used in place of corporal punishments includes guidance and counseling, suspension, expulsion, involving the parents, class room discussion with fellow students, manual work, collaborative discussion with students' school government. (Brandi S 2015). These methods are emphasized because of the negative impacts to students that have been reported by several researchers be caused by corporal punishments methods. Students exhibiting poor behavior still deserve our love, support, and help to get them through the tough times just like anyone else. Corporal punishment is a disciplinary method in which a supervising adult deliberately inflicts pain upon a child in response to a child's unacceptable behavior and/or inappropriate language. The immediate aims of such punishment are usually to halt the offense, prevent its recurrence and set an example for others (Chilewa & Osaki, 2022).

Corporal punishment has been used widely and over years and years in the whole world. There is a wide range of researches that have been conducted to study the effectiveness of corporal punishment as a measure used to discipline students, and many of the findings revealed that corporal punishment is not appropriate method for disciplinary actions. There has been a global ban of corporal punishment effected in countries like United States of America, England, Wales, Australia and New Zealand. Corporal punishment in Britain state schools and private schools funded by the government was banned in 1987 while in the remaining private schools it was abolished in 1999, Northern Ireland 2003 and in Scotland, 2000. Other countries have banned corporal punishment in all aspects of their legislation: Austria 1989, Bulgaria 2000, Costa Rica 2008, Croatia 1998, Cyprus 1994, Denmark 1997, 2007Finland 1983, Germany 2000, Greece 2006, Venezuela Hungary 2004, Iceland 2003, Netherlands 2007, Ukraine 2003, Israel 2000, New Zealand 2007, Norway 1987, Portugal 2007, Spain 2007, Sweden 1979, Uruguay 2007, South Africa abolished corporal punishment in 1996 through South African school Act 84 of 1996,

In Kenya, corporal punishment was banned through a Kenya Gazette Notice on March 13, 2001. This was through the Legal Notice No. 56 of 2001 which repealed the Legal Notice No. 40 of 1972 which had introduced corporal punishment in the Education Act of 2001. After the ban on corporal punishment, there have been concerns of deteriorating school discipline (Maina & Sindabi, 2018).

Corporal punishment is prohibited as a disciplinary measure in penal institutions in Zanzibar under article 122(1) (d) of the Children's Act, but it is lawful in mainland Tanzania where the Law of the Children Act prohibits torture, or other cruel, inhuman punishment or degrading treatment (article 13) but does not explicitly prohibit corporal punishment. In rejecting the recommendations to prohibit corporal punishment made during the Universal Periodic Review (UPR) in 2011, the Government asserted that corporal punishment does not apply in the education system but that canning is administered in schools and is a legitimate and acceptable form of punishment. Corporal punishment according to these Regulations means "punishment by striking a pupil on his hand or on his normally clothed buttocks with a light, flexible stick but excludes striking a child with any other instrument or on any other part of the body". (Article 14 of the Children's Act 2011)

The Law of the Child Act 2009 in Tanzania does not prohibit corporal punishment in schools nor repeal the provisions for it in the Education Act and Regulations. On the contrary, in reporting to the Committee on the Rights of the Child in 2013, the Government confirmed that the provision in the Law of the Child Act 2009 for "justifiable correction" (art. 13) justifies the use of canning in schools. Government guidelines in 2002 reduced the number of strokes from six to four and stated that only the heads of schools are allowed to administer the punishment, with penalties for teachers who flout these regulations.

The government of the United Republic of Tanzania (URT, 2002) officially placed the regulations of corporal punishment that include; Corporal punishment may be administered for serious breaches of school discipline or for grave offences committed whether inside or



outside the school which are deemed by the school authority to have brought or are capable of bringing the school into disrepute. Corporal punishment shall be reasonable having regard to the gravity of offence, age, sex, and health of the pupils and shall not exceed four strokes on any occasion. The head of the school in his discretion may administer corporal punishment or may delegate his authority in writing to a carefully selected member of his teaching staff provided that the authorized member of staff may act only with the approval of the head of the school on each occasion when corporal punishment is administered. A female pupil may only receive corporal punishment from a female teacher except where there is no female teacher at the school in which case the head of school may himself administer corporal punishment or authorize in writing a male teacher to administer corporal punishment. On every occasion when corporal punishment is administered it shall be recorded in writing in a book kept for this purpose and such record shall state in each instance the name of the pupil, the offence or breach of discipline, the number of strokes and the name of the teacher who administer the punishment. Every entry in the book shall be made and assigned by the head of the school. A refusal to accept corporal punishment either by pupils or by a parent on the pupil's behalf may lead to the exclusion of the pupils in accordance to the expulsion and exclusion of pupils from school regulations 2002.

A disciplinary action is instituted under the Teachers Services Act 1989 against a head of school if the administration of corporal punishment is violated. In 2019, a video clip went viral on social media showing a Tanzania regional commissioner beating a group of schoolboys (Ng'wanakilala, 2019). In this video, he is holding a stick in each hand, beating children lying on the ground, one by one. Such an act went against Tanzanian regulations for school discipline and punishment, not to mention international conventions prohibiting corporal punishment of children. The video caught the eye of then-President of Tanzania, the late John Pombe Magufuli. Contrary to global expectations, President Magufuli had nothing but praise for the commissioner as he publicly claimed in a rally shortly after the clip went viral, "I congratulate the regional commissioner for caning the students. I told him that he didn't beat them hard enough" (Ng'wanakilala, 2019). Beating, caning, slapping, spanking are some of violence acts to secondary school students. When handling students after they have done wrong in secondary school. There is serious reluctance of teachers to accept these regulations on handling students' discipline (Sungwa & Kahembe, 2022). In Africa corporal punishment is seen like a cultural practice. It is taken to be a vital tool on the educational process. Parents and teachers who are not practicing corporal punishment are seen as being negligent. Some parents and children tend to like practicing corporal punishment because of the belief that children do not grow to be well-mannered adults if they are not spanked or beaten when they make mistakes. Some even say that abolishing corporal punishment is a Western-centric concept that will cause havoc in African cultures and lead to moral decay.

Research has shown that, Corporal punishment has more negative effects to students than the expected positive outcome. So the society needs to employ the alternative methods which may have less negative impacts on a child. This will enable the society to bring up a healthy future generation, who are well formed psychologically, socially, mentally and physically.

A resinous state of reluctance on the teacher to use alternative methods for disciplinary actions in disciplining students is revealed in many schools in Tanzania. In the research that was done in Tanzania (Msiba G, 2021) strategies used by the heads of school in enhancing discipline in public secondary schools, showed that majority of teachers indicated a positive inclination to items that agreed with corporal punishment. 71% of teachers indicated reasonable corporal punishment is beneficial to school learners.

Meru District Council is one of the seven districts councils of the Arusha Region of Tanzania. Meru District council is bordered to the north by Longido District, to the east by Kilimanjaro Region, to the south by Manyara Region, and to the west by Arusha Rural District and Arusha Urban District. The administrative capital of the council is Usa River. According to the 2012 Tanzania National Census, the population of Meru District council was 268,144. Meru district has a total 55 secondary schools in which 40 are public secondary schools while 15 are private secondary schools. Meru District has a variety of teachers with different cultural background, mainly the indigenous from Meru-tribe. Meru people have a culture of using corporal punishment to discipline people who have misbehaved in the society. In case a person misbehaves, they discipline that person by calling for a gathering of community members, then they bring the person who has misbehaved and award 70 spanks on his clothed buttocks in order to deter such a misbehavior. This is done openly in public where every member of the society is able to witness it. So in this kind of cultural practice there is likelihood that it contribute to the reluctance of teachers in Meru District to use the alternative methods and stop the use of corporal punishment as a disciplinary method.

Current researches on the effects of corporal punishments have proved to be not friendly to learners in secondary schools. It has being reported that students get a lot of negative effects including, injuries and psychological effects of which leads to poor learning for students and that the intention of forming the students does not come out clearly (Abhinav G at el 2011). Meru being the district with



cases of students being mistreated especially when correcting their misconducts, there is need to find out why teachers don't prefer using alternative disciplinary method.

STATEMENT OF THE PROBLEM

Teachers are very reluctant to stop the use of corporal punishment as methods to handle students' indiscipline issues in secondary schools. Teachers in secondary schools are expected to impart knowledge and skills that will result to good academic performance as well as well-formed child through their behavior. The school leadership does influence student's good discipline due to their key role of mobilizing educational resources and managing the students. Children have a right to learn without violence in school in all private, public and faith-based institution. As well as violating children's rights, overwhelming evidence shows that the use of corporal punishment in schools can impede learning and contribute to school drop-out. According to Global Initiative to End All Corporal Punishment of Children 2019, a school culture that ensures a safe, respectful environment for students and teaching staff and promotes learning benefits students, teachers and the wider community and is shown to rely less on violence as a means to discipline or educate. There need to educate young people and bring them up morally, spiritually and socially. Children are affected by the violent methods which are deployed when enhancing their conducts in secondary school. The corporal punishment sets a lot of anguish and terrific life throughout their studies. This has being proven by several researches done on effects of corporal punishments to students in secondary schools.

Little attention has been paid on the deployment of alternative disciplinary methods by teachers in enhancing students conducts in secondary schools and the challenges that come with it, though teachers have been identified to play a crucial role in shaping students' discipline. Meru culture allows corporal punishment; students from Meru tribe take it normal to receive corporal punishment since it is being practiced even to elders in public when one has done wrong. However, few studies have explained about the strategies used by teachers to manage students' discipline in secondary schools. In filling the gap, this study therefore investigated the deployment of alternative disciplinary methods to enhance students' conducts in secondary school in Meru District.

RESEARCH QUESTIONS

What alternative disciplinary methods do teachers use when handling students discipline in secondary schools in Meru District Tanzania?

SIGNIFICANCE OF THE STUDY

This study brings awareness to the teachers, parents, public and ministry of education science and technology and policy makers about the usefulness of the alternative methods of handling students indiscipline acts at all levels of their school life. This study might assist all educational stakeholders to realize the challenges that are associated with the use of corporal punishment to discipline students at home and school. It will create awareness to the educational managers on the reason why reluctance on the use of alternative methods to handle students' indiscipline acts by teachers. Finally this study will shade light on the way forward concerning reluctance of teacher to use the alternative methods in handling students' disciplinary issues in schools.

THEORETICAL FRAMEWORK

This study was guided by behaviorist stimulus – response theory. This theory was propounded by Kounin (1996). The theory is based more on the behavior of the teachers and what the teachers should be doing to achieve the desirable behavior of students. The theory developed by Kounin is based on detailed scientific analysis of students' school discipline as a means to control student's behavior. Kouning believed that teachers should have a good lesson movement in order to have an effective connection between teaching and classroom management so as to control student's behavior. The model could be termed as group dynamic model, within which educators work with a group of learners.

Kouning argues that learners adopted good behavior and eliminate bad behavior to gain a reward and /or avoid punishment. Behavior followed by a desirable reward, such as praise, is likely to be repeated. If behavior is followed by undesirable incident, such a pain or fear, the behavior is less likely to be repeated. Kounin's discipline model focuses mainly on the behavior of the educator and what the educator should do to achieve desirable behaviors in his or her learners. Kounin recommends two techniques that can be used to address learner misbehavior. He terms these "weightiness" and "overlapping". He describes "weightiness" as the educator's attribute of having eyes at the back of his or her heads. The educator must be able to know and see what is happening in his or her class even if he or she is busy with something else. An educator who is "with-it" knows what is going on in the classroom at all times. Overlapping is the



ability to attend to two things at the same time. For example, an educator may be helping a small group of learners and also observe that members of the class are not engaging in what is expected.

Strength of the theory

Behaviorist stimulus – response theory identifies educators’ strategies that engage students in lesson and thus reduces misbehavior. This places emphasis on how educators can manage indiscipline students, lesson and classroom so as to reduce the indiscipline incidences. The theory will be applied in this study as it provides the means and best ways to reduce indiscipline. It suggests keeping students actively engaged in class activities, while simultaneously showing them individual attention but also using alternative disciplinary methods which are friendly to enhance students’ conducts.

Weakness of the theory

Behaviorist stimulus – response theory concludes that the educator’s personality has very little to do with classroom control. Referring to educator traits such as friendliness, helpfulness, rapport, warmth, patience and the like, it claims that contrary to popular opinion, such traits are of little value in managing a classroom. The theory expected to find a clear relationship between the actions of educators when students misbehaved and the subsequent misbehavior of those same students but no such findings had emerged.

The relevance of the theory

This theory suited this study as it outlines what technique of movement management to control discipline in any schools. Movement management is the ability to move smoothly from one activity to the next. Good movement in a lesson is achieved by effective momentum (Burden 1995). Some educators make two movement management mistakes: this creates confusion and results in misbehavior. Burden (1995) describes over-dwelling as focusing exclusively on a single issue long after students have understood the point. Students discipline in school needs close supervision. The belief is that behavior manifests as a result of the interplay between stimulus and response. So the aspect of training is emphasizing about the change of behavior, the more someone train a particular skill, behaviour and habit, the more he/she become perfect.

REVIEW OF EMPIRICAL STUDIES

Hermenau K at el (2018). Conducted a study on Teachers’ stress intensifies violent disciplining in Tanzanian Secondary Schools. The study aimed to investigate the influence of teachers’ stress, work satisfaction and personal characteristics on their disciplining style. The sample population of 222 teachers from 11 secondary school in Tanzania was analyzed. The study employed quantitative research design. The findings indicated that there was a direct association between perceived stress and emotional violent discipline as well as physical violent discipline. The findings underlined the importance of integrating topics, such as stress and coping as well as positive, nonviolent discipline measures into the regular teacher’s training and in addition to develop and evaluate school-based preventative interventions for teachers. The current study tried to find out whether the teachers and parents are aware of the alternative disciplinary strategies and if they employ them in enhancing students’ conduct in Meru District.

Felista & Rebeca (2022), strategies used by Heads of Secondary Schools in Managing Students’ Discipline for Academic Achievement, the study employed convergent parallel mixed research design. A sample population of 113 respondents was used to fill questionnaires and interview guide. The study revealed that the strategies used to curb the indiscipline cases include the use of guidance and counseling, cooperation between teachers and parents, provision of positive and negative rewards, and rules and regulations have to be enacted. The study recommended that teachers should have good relationship with both parents and students, parents should play their parenting roles effectively. The current study goes deeper into looking at the other alternative disciplinary strategies that have not been mentioned, and bring more light and emphasis on their use.

Segbefia S. K. & Agbogli A. A. (2022). Conducted a study on examining the implementation of the disciplinary code and its impact on students’ behavior, the study employed a descriptive survey design where questionnaires were used to obtain the data. The study concluded that enforcing school rules and regulations is the best way to maintain school discipline. To avoid indiscipline and student riots, it was suggested that the college administration not only involve students in decision-making but also obtain consensus with students on allowance deductions. This study has explained only one strategy to enhance students conduct. In filing up the gap of the remaining strategies, the current study examined more of the strategies other than involving students in decision-making, these includes; suspension, guidance and counseling, classroom discussion and parents involvement indiscipline issue of their children.



A study by Suyatno et al., (2019) on strategy of values education in the Indonesian education system revealed that values education at Junior High School in Bangka Belitung started with the preparation of school vision based on values, and then the achievement of vision through the preparation of values education strategy. Habituation of values and values role model became the most dominant strategies used by principals and teachers to cultivate values. The results also showed that values derived from religious teachings, namely the values of Iman-taqwa (faith piety) and good akhlaq (Morals) were the most important values serve as a foundation in developing values and discipline in schools. The study has identified habituation of values as strategy to maintain students' discipline. However, only habituation of values was not enough to solve and to maintain students' discipline through guidance and counseling. Therefore it is necessary for this study to be conducted to identify more alternative strategies that can help to improve students' discipline other than violent strategies, which have had serious problems when administered on students in secondary schools.

Manyengo, Kambuga & Mbalamula (2018), did a study on the corporal punishment as a strategic reprimand used by teachers to curb students' misbehaviors in secondary schools in Tanzania. This study employed a quantitative approach using a descriptive survey design. The study sample size was 12 teachers and 45 students from secondary schools where by questionnaires were used as data collection procedure. The results revealed that majority of the teacher's preferred corporal punishment and continue using it as the only alternative punishment strategy. The study moreover found that the majority of students were of the view that corporal punishment should be eliminated due to its harm and cause for students skipping classes and absenteeism. The study design did not match with sample size of the study. The study sample size was too small compared to the research paradigms employed which allows involvement of large number of respondents.

Lynnette & Otara (2022) did a study on the effectiveness of school principals' positive reinforcement approach on managing discipline in public Secondary Schools. The study adopted both Cross-sectional Survey Design, with a population of 271 Principals, 271 Deputy Principals, 1759 Teachers and 10 Directors of education. Only questionnaires were used as research instrument for data collection. The study revealed that the positive behavior reinforcement was very effective, though majority of teachers supported the use of Corporal Punishment in maintaining discipline to students but with moderation. They argued that, if Corporal Punishment was abolished, schools would be descended into chaos. The study reveals that teachers were supportive of using Corporal Punishment in maintaining discipline to students. The study used only questionnaires research instrument during data collection due to unanswered questions. When using questionnaires, there is a chance that some questions will be ignored or left unanswered. The current study will employ in depth interview guide, documentary review and observation methods to collect qualitative data to triangulate the information obtained from questionnaires.

The International Human Rights of the Child Article 28.2 of 1989 states that schools must be run in an orderly way that children are to benefit from them and state parties shall take all appropriate measures to ensure that school discipline is administered in a manner consistent with the child's human dignity and conformity. However, experiences from schools in Tanzania seem to be doing precisely the opposite on what it agreed on the right of the child convention of 1989. Public officials including one of the former Deputy Ministers of education once encouraged the use of corporal punishment in public schools as a means of enhancing performance and keeping discipline among pupils (African Child Information Hub 2013; Daily News 9th April 2013 & Odhiambo, 2017). Evidently, there have been a number of cases on improper execution of punishment to students in schools which have instigated serious concerns among stakeholders on whether corporal punishment guidelines are understood by teachers. Studies by Odhiambo (2017) and Hakielimu (2011) revealed that corporal punishment has been a routine to many students as they are beaten for almost any mistake or behaviour which does not even require the teachers to use corporal punishment. In view of this, the current study assess the state of corporal punishment as a management approach of addressing students' discipline problems in Secondary Schools in Meru District in Tanzania.

Salleh & Rosli (2019), conducted a study on the parental involvement in discipline management of special education students in schools, Malaysia. The study adopted qualitative design. The study sample size was 6 heads of school, 12 teachers and 18 parents, where by interview and observations guide were used as instrument for data collection. The study findings indicated that the overall involvement of parents in discipline management of special education students was at a moderate level. Moreover, the study found out that school authorities need to reduce resistance faced by parents so that they can involve themselves in all activities and programs that are carried out by school. Through the cooperation forged between teaches and parents, misconduct and discipline problems of students can be handled collectively by both school and parents. The study seems to be conducted to special education secondary schools where by the rate of students' indiscipline behaviour was very low due to the nature of schools compared to the design used. The current study will be conducted in private and public secondary schools where reality of students life and indiscipline cases arise.



Ugwuegbulm (2018), conducted a study on the exploring parental involvement in public secondary schools in Imo State, Nigeria: The role of socioeconomic status. The study employed qualitative design. Semi-structured individual interviews were conducted to parents. The results of this study revealed that irrespective of their social and economic status, parents believed that secondary education was necessary for college education. Influenced by sociocultural norms, the parent's perceived parental involvement not as a planned, structured efforts directed solely toward the success of children, instead, they viewed participation in their children's education as integral to their overall parental obligations. The findings of the study show the importance of parents' involvement in schools activities beside parents were calming it not as planned. The use of qualitative research may lead to mislead of conclusion since results replicated. Data must be recognized by the researchers in qualitative research for it to be collected. That means there is a level of trust prevent in the data collection process that other forms of research do not require. This study adopted concurrent embedded design which involves the collections of qualitative and quantitative data.

Mbang B, Piliyesi E & Anyona J (2020), conducted a study on the parental involvement and students' discipline in public day secondary schools at Ilala District in Tanzania. The study used qualitative approach design, phenomenology design was used and in quantitative approach, descriptive design was employed. The target population for the study was the parents, teachers and students of the public day secondary schools. Findings of the study revealed that parents of secondary schools in Ilala District in Tanzania are involved in solving indiscipline cases among students. In their efforts to deal with the students' indiscipline, the parents offer counseling, attend disciplinary meetings, strive to teach their children good moral s and punish their children when involved in indiscipline. Phenomenology design would have been difficult to analyses and interpretation since the researcher involve the parents who are not familiar with issues about involvement in school disciplinary cases. This study used both quantitative and qualitative approach design to ensure that the results found are effective and comes from the respondent who is aware of the reality of students' misconducts in schools.

KNOWLEDGE GAP

The reviewed empirical studies show that heads of secondary schools were struggling in managing students' discipline problems in the schools (Kambuga et al. 2018) despite the banning of corporal punishment which was used to maintain students' discipline at any education institutions (URT, 2020). In the view of the reviewed literatures, the removal of corporal punishment to students at secondary level has caused some students to misbehave. This was the role of the heads of schools and teachers to ensure students' discipline in their schools was good. Several studies (Ishengoma, 2014; Mbagi et al., 2020; Andrew, 2018; Semali & Vumilia, 2016) explain about forms of students' discipline, use of corporal punishment to curb down students' indiscipline behaviors. However, none of the reviewed studies explaining about the strategies formulated by heads of schools on enhancing students' discipline in secondary schools, none of the reviewed studies has explained why teachers are hesitating to stop the use of corporal punishment in schools. In filling this gap therefore, the current study investigated the alternative disciplinary methods used by teachers in enhancing discipline in secondary schools in Meru District, Tanzania.

Methodology

This study adopted a mixed method approach under which a concurrent embedded design was used. According to Creswell (2018), a concurrent embedded design which is a single-phase mixed approach involves a simultaneous collection and analysis of both quantitative and qualitative data sets for the purpose complementing each other in order to gain a deeper understanding about the research problem. The advantage of this design is that it combines the advantages of both qualitative and quantitative data (Okendo & Kitula, 2020). In this study the design enabled the researcher to collect the appropriate information needed for drawing a realistic and reliable conclusion. Heads of schools, teachers, students and parents from Meru District were targeted in this study. According to Meru District Educational office (2022) there are 55 secondary schools in Meru District. Whereby 40 secondary schools are public and 15 secondary schools are private schools, with 55 heads of schools, 854 teachers, 18,351 students and 18,351 parents. Heads of schools were targeted because they oversee all school activities and they are responsible for creating conducive working environment and they are the chairpersons of the school disciplinary committee in their respective schools. Sixty (60) teachers used in this study because they are the ones who play a major role in the process of curriculum implementation and therefore, they provided information regarding students' behaviors. One hundred forty four (144) students were also included in this study since they are the once who more often find themselves in indiscipline acts. Six (6) parents also formed part of the respondents of this study, since they are the ones who know their children better out of school and can give valid information in relation to their children disciplinary issues. The instruments used for data collection were questionnaires for both teachers and students and interview guide for heads of schools and parents. The quantitative data was analyzed through computer software (SPSS) version 22 and qualitative data on the other hand was thematically analyzed.



RESEARCH FINDINGS AND DISCUSSION

The researcher wanted to assess the types of alternative disciplinary methods deployed by teachers in enhancing students' conducts. To generate information in this section, questionnaire was used to collect information from teachers and students while interview guide was conducted to heads of schools and parents. Students were requested to respond to Likert scale statements ranging from strongly agree (5) to strongly disagree (1). The descriptive statistics analysis was carried out to present the responses of teachers and students in terms of frequencies and percentage of occurrences. The responses of students and teachers are summarized in Tables below. The responses of parents and heads of schools were compared and discussed together with teachers and students by using direct quotations.

Table 1: Teachers responses on the types of alternative disciplinary methods deployed by teachers in enhancing students conducts (n=60)

ITEMS	SD		D		U		A		SA		Mean
	f	%	f	%	f	%	f	%	f	%	
Guidance and counseling	0	0.0	0	0.0	0	0.0	33	55.0	27	45.0	4.45
Discussion with parents	0	0.0	0	0.0	0	0.0	33	55.0	27	45.0	4.45
Discussion in the classroom	0	0.0	0	0.0	13	21.7	27	45.0	20	33.3	4.12
Extra class work	0	0.0	0	0.0	7	11.7	15	25.0	38	63.3	4.52
Peer counseling	0	0.0	0	0.0	0	0.0	40	66.7	20	33.3	4.33
Isolation	2	3.3	7	11.7	0	0.0	33	55.0	18	30.0	3.97
Withdrawing opportunity	0	0.0	2	3.3	0	0.0	13	21.7	45	75.0	4.68
Gardening	0	0.0	0	0.0	0	0.0	60	100.0	0	0.0	4.00
Awarding for improved students	0	0.0	0	0.0	0	0.0	22	36.7	38	63.3	4.63
Suspending students home.	0	0.0	0	0.0	0	0.0	9	15.0	51	85.0	4.85

Source: Field Data (2022)

Data in Table 1 indicated that extreme majority 100% of the teachers participated in the study strong agreed and agreed that guidance and counseling is the type of alternative disciplinary method deployed by teachers in enhancing students conducts. This implies that teachers used counseling and counseling technique as the alternatively disciplinary method to shape the behaviour of students who misbehave in secondary schools. This method help teachers to guide students to behave well and refusing bad behaviour that will tend to affect their day to day conducts when they are at school or outside the school. Guidance and counseling help to improve discipline and academic performance of students. There is enough proofing that lack of guidance and counseling to students leads to indiscipline in schools. These findings are in line with Felista & Rebeca (2022), found the strategies used to curb the indiscipline cases include the use of guidance and counseling, cooperation between teachers and parents, provision of positive and negative rewards, and rules and regulations have to be enacted.

Additionally, the data in the Table 1 show that extreme majority 100% of the teachers strong agreed and agreed on the discussion with parents as the type of alternative disciplinary method deployed by teachers in enhancing students conducts. The study noted that extreme majority of teachers preferred to discuss with parents as the alternative disciplinary strategies in dealing with indiscipline issues among the students in secondary schools. This implies that parents as first socializing agents by collaborating with teachers can play a great role on the shaping the behaviour of students/children when they are at school and home. This method is more effective due to the fact that discussion and cooperation between parents and teachers can assist each other to make follow up on students behaviour when they are at school or home. These findings concur with study done by Salleh & Rosli (2019), conducted a study on the parental involvement in discipline management of special education students in schools, Malaysia. The study found out that through the cooperation forged between teaches and parents, misconduct and discipline problems of students can be handled collectively by both school and parents.

Moreover, the results in the Table 1 show that greater majority 78.3% of the teachers participated in the study agreed and strong agreed on the discussion in the classroom as alternative disciplinary method deployed by teachers in enhancing students' conducts and only extreme minority 21.7% of the teachers undecided on the statement. The findings noted that teachers prefer to discuss with students in the classroom as the alternative disciplinary strategy to enhance students conducts. This disciplinary strategy is very effective because through discussion between teachers and students in the classroom will help to know the sources of misconducts between the students and suggest the ways that can be used to abolish sources of misconducts among the students that lead to shape the behaviour of students without using corporal punishment.



Furthermore, the data presented in Table 1 indicate that extreme majority 100% of the teachers strong agreed and agreed on the awarding for improved students as alternative disciplinary method deployed by teachers in enhancing students’ conducts. This implies that awarding improved students used as alternative disciplinary method to shape the misconducts students instead of using corporal punishment. Through awarding may motivate misconducts students to behave well and leaving bad behaviors by expecting to be awarded after being improved from misconducts.

Data in Table 1 indicated that extreme majority 100% of the teachers agreed on use of suspension students’ home as alternative disciplinary method deployed by teachers in enhancing students’ conducts. The extreme majority of teachers agreed on this alternative disciplinary method to deal with misconducts students rather than using corporal punishment.

The suspension punishment that provided by school committee or head of school to the indiscipline students helped to shape misconducts behavior to the students due to the fact that after finished the suspension they come back to school and stop to engage in indiscipline issues any more instead pay attention on their studies and result to have good performance in the studies. These findings concur with findings with Lilian, (2015) found that suspension help in shaping the behavior of misconducts after being suspended the students behavior change and tend to behave well.

During an interview with heads of schools about the forms of alternative disciplinary methods they employ in Secondary schools. One of the heads of schools said that:

Various strategies of discipline being used in schools to instill discipline of students of this school, the effectiveness of these strategies varies from school to school and also depending with the offence committed. For minor indiscipline manual punishment was effective while for major indiscipline alternative strategies include suspension, Exclusion, Guidance and counseling, peer mediation and teacher-student conferences are used (Personal interview with Head of School A on 26th September, 2022).

Another head of school testified that: “*The common employed alternative disciplinary strategies included warnings and reprimands; school discipline committees; guidance and counseling; reporting the cases to higher authorities*” (Personal interview with Head of School B on 26th September, 2022).

Additionally, during interview another head of school said that:

Many teachers prefer using reprimands in attempts to stop disruptive student behavior, particularly by students with emotional or behavioral problems, though this may not be effective. Other teachers using warnings and reprimands to manage students discipline. But for me as a head of school I prefer using guidance and counseling as an alternative disciplinary strategies in dealing with students showing bad behaviour, for I think guidance and counseling is the effective in shaping students behaviour that other methods. (Personal interview with Head of School B on 26th September, 2022)

The result in Table 1 show that extreme majority 100% of the teachers sampled to participate in the study agreed on the providing students extra-curricular activities like gardening as the alternative disciplinary method to deal with misconduct students. When the sent out of class setting and provided other work to do help to shape behavior of students. But this method may have negative effect on students’ academic performance due to the fact when the students assigned the work miss class session which lead to poor academic performance. These findings are in line with Donna, (2018) the study recognized that school discipline policies that exclude students from the learning environment promote a cycle of academic failure that pushes them out of economic opportunities and into the school-to-prison pipeline.

Table 2: Teachers Responses on the Frequently Head of Schools Use Corporal Punishment in Managing Students’ Discipline (n=60)

Variables	f	%
Frequently	40	66.7
Not at all	20	33.3
Total	60	100.0

Source: Field Data (2022)

The data from Table 2 show that majority 66.7% of the teachers participated in the study responded that frequently heads of schools use corporal punishment in managing students discipline whereas minority 33.3% of the teachers responded not all that heads of schools use corporal punishment in managing students’ discipline. The findings noted that majority of teachers sampled to participate in the



study agreed that frequently heads of school use corporal punishment in managing students' discipline. This implies that heads of schools believe that corporal punishment is the most effective method in dealing with misconducts students and to shape the behavior of the students. These findings join forces with the findings obtained by Lynnette & Otara (2022) the study revealed that the positive behavior reinforcement was very effective, though majority of teachers supported the use of Corporal Punishment in maintaining discipline to students but with moderation. They argued that, if Corporal Punishment was abolished, schools would be descended into chaos. The study reveals that teachers were supportive of using Corporal Punishment in maintaining discipline to students. Manyengo, Kambuga & Mbalamula (2018), The results revealed that majority of the teacher's preferred corporal punishment and continue using it as the only alternative punishment strategy.

Table 3: Students responses on the types of alternative disciplinary methods deployed by teachers in enhancing students conducts (n=144)

ITEMS	SD		D		U		A		SA		Mean
	f	%	f	%	f	%	f	%	f	%	
Guidance and counseling	38	26.6	4	2.8	0	0.0	27	18.9	74	51.7	3.66
Discussion in the classroom	15	10.5	23	16.1	10	7.0	45	31.5	50	35.0	3.64
Cleaning	8	5.6	11	7.7	38	26.6	53	37.1	33	23.1	3.64
Extra class work	13	9.1	22	15.4	16	11.2	54	37.8	38	26.6	3.57
Suspension	26	18.2	10	7.0	34	23.8	38	26.6	35	24.5	3.32
Discussion with parents.	20	14.0	27	18.9	27	18.9	30	21.0	39	27.3	3.29
Withdrawing opportunities.	21	14.7	34	23.8	26	18.2	18	12.6	44	30.8	3.21
Law enforcement agents	20	14.0	12	8.4	22	15.4	36	25.2	53	37.1	3.63
Gardening.	15	10.5	31	21.7	20	14.0	57	39.9	20	14.0	3.25
Watering flowers	24	16.8	34	23.8	15	10.5	43	30.1	27	18.9	3.10

Source: Field Data (2022)

The data in Table 3 show that majority 70.6% of the students participated in the study strong agreed and agreed that teachers used guidance and counseling as the alternative disciplinary method in enhancing students conducts while extreme minority 29.4% of the students participated in the study disagreed on the statement that teachers used guidance and counseling as the alternative disciplinary method in enhancing students conducts. The study noted that majority of students agreed that teachers use guidance and counseling as alternative disciplinary method to deal with misconducts students at school. This evident that teachers used guidance and counseling instead of corporal punishment to misbehaving students, so there are necessity of having an office of guidance and counseling in each community secondary school in order for teachers to use this strategy effectively and bring positive result of shaping the behaviour of students in secondary schools. These findings concur with The Assertive Discipline Model (2007) which asserts that the teachers set limits on learners' behaviour so that order is maintained in an effective and efficient learning environment through teaching obedience to authority and simultaneously providing learners with support.

These were supported during the interviews with parents; the use of guidance and counseling was discovered as one parent had the following to say:

Many teachers in the school that my children are learning prefer using guidance and counseling method to shape students' discipline, this method is effective due to the fact teachers guide students on how they wanted to behave and counsel to leave bad behaviors which are accepted at school and even at home. But there are other alternative disciplinary methods used like warning, suspension and manual work to the indisciplined students (Personal interview with parent on 26th September, 2022)

Another parent said that:

Teachers prefer using suspension as alternative disciplinary method in shaping students behavior. But this method has negative effect on students' academic performance because the students after being suspended tend to skip/miss classes sessions which tend to affect students' academic performance. Some teachers provide manual work to the students like gardening and others called parents of the misconduct students (Personal interview with parents on 26th September, 2022).

According to the information obtained from the parents through face to face interview indicate that teachers in the sampled secondary schools used alternative disciplinary methods to enhance students conducts and those methods are effective that's why teachers prefer using those methods like warnings, reprimands, suspension, guidance and counseling and others. These findings are in line with Anunsiata et al, (2020) the study found that teachers take appropriate disciplinary actions such as suspending discontinuing and giving warnings to the students with disciplinary issues.



Additionally, data in Table 3 indicated that majority 66.5% of the students participated in the study agreed that teachers used discussion method in the classroom as alternative disciplinary method in enhancing students conducts, extreme minority 26.6% of the students disagreed on the statement and only extreme minority 7.0% of the students undecided on the statement. This implies that teachers used class discussion method with students in enhancing students’ conducts and dealing with students who misbehave in school. Any problem can be solved through discussion between two parts or more, so through class discussion between the teachers and students can help to reveal the sources misconducts among the students and find the best solution against those sources of misconducts among the students. This will help to reduce bad behaviors among the students and result students to behave well. These finding concur with Segbefia & Agbogli (2022) the study find out that that enforcing school rules and regulations is the best way to maintain school discipline. To avoid indiscipline and student riots, it was suggested that the college administration involve students in decision-making but also obtain consensus with students on allowance deductions.

Data in Table 3 show that slightly majority 51.1% of the students participated in the study strong agreed and agreed that teachers use suspension as the alternative strategy used to enhance students conducts, extreme minority 25.2% of the students strong disagreed and disagreed on the statement and extreme minority 23.8% of the students undecided on the statement. This implies that teachers prefer using suspension in enhancing students’ conducts and dealing with misconducts students in secondary schools. The suspension shape the misbehave students and bring them in line, but when the students suspended lack class session which result to have bad academic performance. These findings are in line with Mwaura (2019), found out that corporal punishment and suspension were some of the most frequently used strategies in enforcing discipline in schools. Also these findings concur with Juan *et al*, (2021) study found that proposed that minor infraction suspensions contributed to lost instruction time, dampened relationships with educators, and school alienation sentiments. Indeed, suspensions have been associated with lower academic performance over time.

Moreover, data in Table 3 show that minority 48.3% of the students participated in the study strong agreed and agreed that teachers discuss with parents as the alternative disciplinary method to enhance students conducts, 32.9% of the students disagreed on the statement while extreme minority 18.9% of the students participated in the study undecided on the statement. Parents can be involved to deal with the students’ indiscipline, by offering counseling, attend disciplinary meetings, strive to teach their children good morals and punish their children when involved in indiscipline. So this method is very effective because both parents and teachers so the students’ behaviors progress monitored at home and school settings. But the challenge of this disciplinary strategy is that some parents are not familiar with issues about involvement in school disciplinary cases. These findings concur with Ugwuegbulm (2018) the findings of the study show the importance of parents’ involvement in schools activities beside parents were claiming it not as planned.

Furthermore, data in Table 3 show that majority 64.4% of the students strong agreed and agreed that teachers provide extra class work to the students who misbehave or misconducts, extreme minority 24.5% of the students disagreed on the statement and only 11.2% of the students sampled to participate in the study were undecided on the statement. The study found out that teachers provide extra class work to the students who misbehave in order to bring them in line. The misconducts students assigned more class work that resulted them to use their extra time to do that work instead engaging in other extra-curricular activities lack sports and games. When misconducts students lacking the chance of engaging in other extra-curricular activities result those students to regret their mistakes and will not tend to commit the mistakes or misbehaving again.

Table 4: Students Responses on the Frequently do teachers use alternative disciplinary methods in managing students’ discipline (n=144)

ITEM	Very Frequently		Frequently		Not at all		Mean
	f	%	f	%	f	%	
How frequently do teachers use alternative disciplinary methods in managing students’ discipline?	31	21.7	97	67.8	15	10.5	1.89

Source: Field Data (2022)

Data from Table 4 indicated that extreme minority 21.7% of the students participated in the study responded that very frequently teachers use alternative disciplinary methods in managing students’ discipline, majority 67.8% of the students responded that frequently teachers use alternative disciplinary methods in managing students’ discipline and only extreme minority 10.5% of the students responded that not at all teachers use alternative disciplinary methods in managing students’ discipline. Majority of students stated that teachers use alternative disciplinary methods in managing students’ discipline, this implies that teachers in the sampled secondary schools prefer



using alternative disciplinary methods in dealing with misconduct students and shaping the students discipline. Since teachers prefer using alternative disciplinary methods in managing students' discipline, means that alternative disciplinary methods are effective in shaping students discipline and dealing with indiscipline issues among the students. These findings concur with Igwe (2014) the study found that teachers use all the alternative disciplinary strategies but rated cognitive and supportive strategies as very effective and punitive strategy as moderate. Major challenge faced by teachers in disciplining students after the ban of corporal punishment is students being unaffected and not wanting to change with the minor punishments given to them.

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions were drawn from the research findings of the study; school administration and staff teachers have deployed alternative discipline strategies which include guidance and counseling, collaborative decision making, parental involvement in indiscipline cases, suspension, warnings, extra classwork and others. Guidance and counseling and suspension is the most popularly used form of strategies while extra class work and parental involvement is the least adopted disciplinary strategies used. Also the study concluded that these alternative disciplinary strategies have not been very effective because still have causes of both major and minor indiscipline cases taking place in the sampled secondary schools.

From the conclusions; the study came up with recommendations that included:

The research recommends that teachers training colleges, school administration and ministry of education, science and technology should develop pre – service and in – service staff training programs on alternative disciplinary strategies that are tailored to the school environment to keep teachers up to date with new skills of dealing with student discipline issues.

In addition, the school administration and teachers should familiarize with the ministry's policies and guidelines on discipline after the ban of corporal punishment so as to adopt appropriate alternative disciplinary strategies.

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GARBHASANSKAR – A CRITICAL REVIEW

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ABSTRACT

Together, Garbha and Sanskar mean shaping and cultivating the unborn while also reforming, polishing, and completing them. 'Garbha Sanskar' is the process of choosing and disseminating beneficial influences through yoga, reading virtuous scriptures, positive thinking, prayer, healthy diet, and joyful behaviour. Your link with your child begins the moment you become pregnant, despite the fact that this may seem bizarre and weird. It's not like you already know the baby when he's born. Even as it is growing inside of you, the baby listens to you and is sensitive to your emotions. By meditating, rubbing your infant gently, listening to calming music, and of course thinking positively, you can influence your baby's early impressions.

KEY WORDS: shreyasipraja, Pinda Shuddhi, designer baby.

INTRODUCTION

Ayurveda's "Shreyasipraja" can be obtained through Garbha Sanskar [1]. The idea of "Shreyasipraja" was mentioned by Acharya Caraka. Garbha Sanskar is a comprehensive procedure for maternal care, covering everything from conception planning to healthy baby delivery. According to Acharya Charak, the psyche of the parents, particularly the mother during pregnancy, is tied to that of the foetus.

Sanskar, which is in Sanskrit, denotes imparting excellent values or teaching good things. Garbha Sanskar then refers to educate an unborn child.

"Only after the union of Shukra and Shonit with Aatma in the uterus is the term Garbha. Only the union of shukra and shonit is not regarded as Garbha without the entry of Aatma.

"Sanskaro hi gunaantaradhanam".[2]

Sanskar means to replace undesirable traits with desirable ones. We can understand this simply as making modifications.

During pregnancy if efforts (Garbha Sanskar) are made by parents especially by mother then good traits will be inculcated in the foetus and may result in the birth of a baby with desired attributes. The method of Garbha Sanskar involves nursing the unborn child. During pregnancy, the mother's intellect and the unborn child are both being trained. The practise of a few straight forward exercises known as "Garbha Sanskar" promotes the social, physical, spiritual, and mental health of both mother and child. Scientific research has made it clear that a baby's ability to expand his or her mind and senses while still within the womb is limitless.

NEED OF GARBHA SANSKAR

- To suppress the bad gunas and develop good gunas.
- Increased stressed level and unorganised life style.
- More nuclear families hence require guidance during the pregnancy.

In Ayurveda the concept of "Suprajajanan" or aumaternity is described. If a couple wants a shreshhi prajha, they need to undergo Pinda Shuddhi or the purification of gametes (sperm and ovum) three months prior conception. Even if couples are physically strong, they might not able to give birth to a healthy child. Parents especially mother eating habits and sedentary life style have a direct impact on child mental stability and tranquilly ("Sattva Guna").

GARBHA SHAMBHAV SAMAGIRI:

A farmer requires four things in order to cultivate a healthy plant: a good or ideal season to plant the seed, a healthy seed, fertile soil, and ideal water. Similar analogies are used by Ayurveda to describe the birth of a healthy child.[3].

1) Rutu - Proper period or time for conception. (Raja Samaya)

2) Kshetra - a mother or woman with a healthy uterus. (Garbhashaya)



- 3) Ambu is a good source of nutrients for a developing foetus. (Rasa dhatu)
- 4) Beeja – Healthy Sperm and Ovum. (Purush Beeja and Stri beeja) [4]

EFFECT OF STRESS AND LIFESTYLE ON PREGNANCY

When a pregnant woman is under a lot of stress and her protein intake is poor, the stress hormone "Cortisol" can pass the placental barrier. High cortisol levels can impact memory development in foetus [5].

Prenatal stress causes pregnancy and birth complications like- Pre-term labour, pre- term delivery, low infant birth weight, shortened gestational length, pre-eclampsia, gestational diabetes etc. [6]

Intake of fast food, preservatives, cold drinks, alcohol, smoking during the pregnancy affect the growth of foetus. Travelling, work place stress increases the level of cortisol in maternal blood thus maternal anxiety cause artery resistance and abnormal flow, increased resistance index and affect the growth of foetus leading to IUGR.

ANCIENT REFERENCES OF GARBHA

SANSKAR

1. Abhimanyu from Mahabharat learnt how to enter the chakarvayu- example of Garbha Sanskar.
2. Prahlad took birth in Rakshasa family but her mother used to listen bhakti songs and later he became a follower of Lord Vishnu- example of Garbha Sanskar.
3. Vinayak Damodar Sawarkar a freedom fighter, her mother during the pregnancy used to listen brave stories from Ramayana and Mahabharat- example of Garbha Sanskar [7].

SOME BASIC ACTIVITIES DURING GARBHA SANSKAR

1. DIETARY REGIMEN
2. YOGA & PRANAYAMA
3. MUSIC THERAPY
4. MANTRA CHANTING

DIETARY REGIMEN

A pregnant women can take Nitya Sevaniya Aahara: Shashtika shali (rice grown in 60 days), Godhuma(wheat), Yava (barley), Mudga (green gram), Saindhava (rock salt), Amalaki (Embllica officinalis), Antarikshajala or Divyodaka(rain water), Ghrita, Cow milk, Madhu, Jangalamams (meat of animals from arid land) [8]. She can take Rasayana dravyas (ksheer, sarpi), Satvika Aahara. She should avoid Vriudh Aahara.

GARBHINI PARICHARYA

MONTH WISE DIETARY REGIMEN OF PREGANANT LADY

MONTH	CHARAK [9]	SUSHRUT [10]
1 ST MONTH	Non medicated ksheer(milk)	Madhur, Sheet, Liquid Diet
2 ND MONTH	Milk medicated with drugs mentioned in madhura skanda	Same as first month
3 RD MONTH	Milk with Ghrita and Honey	Same as first month and shasti rice with milk
4 TH MONTH	Milk with Navneet in aksh matra	Cooked sasti rice with curd, pretty and pleasant food mixed with milk & butter and Jangal mansa
5 TH MONTH	Milk with ghrita	Cooked shastika rice with milk, jangal mansa along with delicate cuisine combined with milk and ghrita
6 TH MONTH	Milk medicated with Madhura drugs + ghrita	Ghrita or yavagu medicated with gokshura.
7 TH MONTH	Same as in sixth month	Ghrita medicated with prithakaparnyadi group of drugs.
8 TH MONTH	Kshira Yawagu mixed with ghrita	Asthapana basti with decoction of badari mixed with bala, atibala, satpuspha, patala etc, honey and ghrita. Asthapana basti is followed by Anuvāsana basti of oil medicated with milk and Madhura drugs



9 TH MONTH	Anuvasanabasti of oil medicated with Madhura drugs and Yoni pichu.	Jangal mansa rasa up to the period of delivery
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YOGA & PRANAYAMA

The term 'Yoga' is derived from the Sanskrit root 'YUJ', meaning 'to join' or 'to yoke' or 'to unite'. [11] Yog is not only exercise but it is union of the individual consciousness (Jivatma) with universal consciousness (Parmatma). Yoga helps at all levels: muscular levels (deep relaxation), pranic level (slowing down the breathe), mental level (increase creativity and will power), emotional level (enhancing happiness in life), intellectual level (sharpening intellect and calming down mind), spiritual level (move towards the casual state of mind).

Yoga and pranayama during pregnancy:

First we do the prayer:

Sangachhadawam samvadadhvam samvomanaansi jaanataam.

Devaa bhaagam yathaaa poorve sam janaanaa upaasate (Rigveda).

Aasana's to be done during pregnancy:

1. Swastha Vajarasana
2. Vajarasana
3. Swastikasana
4. Parvatasana
5. Marjarasana
6. Bhadrasana
7. Ardha upavista Konasana
8. Upavista Konasana
9. Sulabha Pawana Muktasana
10. Utkatasana

Pranayama during pregnancy: Sheetali, Bhramri, Omkar, Anulomaviloma

Pregnancy benefits of yoga and pranayama

1. Relieving leg cramps and oedema in the later trimester.
2. Pranayama reduces nausea, motion sickness, and mood swings.
3. Allows for easier labour and shortens the first stage of labour.
4. It also heals the uterus, abdomen, and pelvic floor during the postpartum period. [12]

MUSIC AND MANTRA THERAPY

Shabad is another name for sound treatment. A pregnant woman can engage in Garbha samvad (pleasant conversation with the unborn child) and listen to ragas and mantras. Garbha Sanskar Stotra, Raksha Kavch, Gopal Santan Mantra, Ramraksha Kavach, Gayatari Mantar, etc. are a few instances of mantras[13]. Ragas include, among others, the kalayani raga and the bahiravi raga.

Benefits

1. The right and left hemispheres of the brain will synchronise when a certain mantra is said.
2. Chanting and listening also promote brain oxygenation, lower blood pressure and pulse rate, and support the development of relaxed brain wave activity.
3. Boost EQ (emotional quotient) and IQ (intellectual quotient).

DISCUSSION

Garbha Sanskar instilled positive traits in the foetus during its intrauterine life. A baby is made and designed by its parents. In the womb, a baby resembles soil. The form of the pot will be determined by how the kumbkara (pot builder) shapes the soil. Similar to how our actions during pregnancy have an impact on the foetus. "Parents are the creators and designers of their baby"

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