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STUDIES ON PLANTS USED FOR COOLING EFFECT BY THE TRIBES OF ADILABAD DISTRICT, ANDHRA PRADESH

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ABSTRACT

The paper deals with 26 species of plants covering 24 genera and 21 families used by the tribes of Adilabad district for cooling. Cucurbitaceae is the dominant family with 3 species followed by Sapindaceae, Sapotaceae, Arecaceae (2 spp each) and others. Trees are dominant with 10 species followed by herbs (8 spp) and others. Fruits are used in a maximum of 12 practices followed by leaf (6) and others. *Ceratophyllum demersum*, and 15 practices were found to be new.

KEY WORDS: Ethnomedicine, Cooling, Adilabad district, Andhra Pradesh

INTRODUCTION

From time immemorial, man has been interested in trying to control diseases. The history of medicine thus contributes review of the evolution of man and human knowledge during the 20th century and made medicine more complex. Adilabad district is situated between 77° 47' and 80° 0' of the eastern longitudes and 18° 40' and 19° 56' of the northern latitudes. It is bounded on North by Yeotmal and Chanda districts of Maharashtra, on the East by Chanda district, on the South by Karimnagar and Nizamabad districts and on the West by Nanded district of Maharashtra state. It ranks second among all the districts in the state in forest area occupying about 44.5 per cent (7218.86 Sq km). The total tribal population of the district is 495,794 (18.08%) (2011 census) and the main tribes are Gonds, Kolams, Koyas, Lambadas, Mannes, Naikpods, Pradhans, Thoties and Yerukalas. Though there are publications on cooling effects of plants in different parts of India (Kumar et al. 2008, Sandhya Sri and Reddi 2014, Manjula and Reddi, 2016) exclusive studies on the tribes of Adilabad district were not observed necessitating the present study.

MATERIAL AND METHODS

Extensive ethnobotanical explorations were conducted in 42 tribal pockets with good forest cover in Adilabad district during 2006-2009. Knowledgeable informants including the *vaidyas* and elderly persons (42) of the tribal communities were interviewed and obtained information on the plants used for curing jaundice. The data were verified in different villages among the interviewers showing the same plant sample and even with same informants on different occasions. The knowledgeable informants were taken to the field and along with the collection of plants for the voucher specimens, the use of the plants as given by them were recorded. The voucher specimens were deposited in the Herbarium of the

Department of Botany (AUV), Andhra University, Visakhapatnam, India.

ENUMERATION

The plants are enumerated and arranged in an alphabetical order with botanical name followed by family, vernacular name, voucher number, part(s) used, method, mode and duration of treatment. Plants and practices marked with an asterisk (*) are considered to be new or less known.

Aegle marmelos Corr. Rutaceae VN: Maredu 7722

Stem bark is known as *Bilva sonti* and it is soaked in water at night time and the water is taken in the next morning for a week.

Ampelocissus latifolia (Lam.) Planch. Vitaceae VN: Pule-teega 7248

Fruits are directly eaten for the effect.

Bacopa monnieri (L.) Pennel Scrophulariaceae VN: Sambrani chettu 7308

Whole plant juice with sugar candy taken orally in 3-spoonful early in the morning for about 15 days.

Blumea mollis (D. Don.) Merr. Asteraceae VN: Kukka Pogaku 7166

*Leaf paste is applied on head.

Cardiospermum halicacabum L. Sapindaceae VN: Budda kakara 8092

*Leaf paste is applied on head.

Carissa spinarum L. Apocynaceae VN: Vaaka 7434

*Ripened fruits are directly eaten.

Ceratophyllum demersum L. Ceratophyllaceae VN: Neeti sambrani 7956

Stem bark paste is applied on head.



Citrullus colocynthis (L.) Schard. Cucurbitaceae VN: Erripuchcha 8040

Fruit pulp with sugar is eaten.

Cocculus hirsutus (L.) Diels Menispermaceae VN: Dushta theega 8244

Leaf paste is applied on head.

Cocos nucifera L. Arecaceae VN: Kobbari chettu 7124

Coconut water is said to be good for cooling effect.

Cucumis melo L. Cucurbitaceae VN: Karbuja 8056

Ripened fruits are eaten during summer.

Cucumis sativus L. Cucurbitaceae VN: Dosakaya 7178

Tender fruits are eaten during summer.

Garuga pinnata Roxb. Burseraceae VN: Garuga chettu 8288

*Fruits are eaten when thirsty (sweet and sour) also pickled and eaten by local people.

Ipomoea aquatica Forssk. Convolvulaceae VN: Tuti kooru 8072

*Whole plant crushed with turmeric and 10 gm of paste is orally taken once a day.

Leea asiatica (L.) Ridsd. Leeaceae VN: Jata mokidi 7774

*Leaf paste is applied on head for 3-4 days.

Manilkara hexandra (Roxb.) Dubard Sapotaceae VN: Pala chettu 8032

Fruits are eaten directly.

Manikara zapota (L.) P. Royen Sapotaceae VN: Sapota 7886

Fruits are eaten directly.

Phoenix sylvestris (L.) Roxb. Arecaceae VN: Eetha 8180

*Ripened fruits are eaten for cooling effect.

Sansevieria roxburghiana Schult. et Schult. f. Agavaceae VN: Chemma kithala 8052

*Rhizome paste is applied on head.

Santalum album L. Santalaceae VN: Chandanamu 7070

*Wood paste is applied on forehead.

Sapindus trifoliata L. Sapindaceae VN: Kunkudu 7004

*Leaf paste is applied on head for cooling effect.

Sterculia urens Roxb. Sterculiaceae VN: Tapasy chettu 7034

*Gum is called **katira**, and is eaten directly.

Tephrosia purpurea (L.) Pers. Fabaceae VN: Vempali 8640

*Leaf paste is applied on head.

Tribulus terrestris L. Zygophyllaceae VN: Palleru 7082

*Fruit paste is taken for cooling effect.

Typha angustifolia L. Typhaceae VN: Jammu gaddi 7086

*Well-cleaned rhizomes are sliced and soaked in buttermilk and eaten early in the morning for about 10 days.

Ziziphus mauritiana Lam. Rhamnaceae VN: Regu 8544

*Fruit paste is applied on the head for cooling effect.

spp each) and others with one species each. Habit-wise analysis showed the dominance of trees with 10 species followed by herbs (8 spp), climbers (5 spp) and shrubs (3 spp). Morphological analysis showed the maximum utilization of fruits in 12 practices followed by leaf (6), stem bark, whole plant, and rhizome (2 practices each) and wood and gum in one practice each. *Ceratophyllum demersum* and 15 practices were found to be new or less known (Jain 1991, Kirtikar and Basu 2003). Plants used for similar purpose in different parts of India are *Aegle marmelos*, *Cocculus hirsutus* by the people in Jaisalmer, Barmer, Jodhpur and Bikaner districts of Rajasthan (Kumar et al., 2008); *Aegle marmelos*, *Cocculus hirsutus*, *Ziziphus mauritiana* by the Gond, Kol, Baiga, Panica, Khairwar, Manjhi, Mawasi and Agaria tribes of Rewa district, Madhya Pradesh (Shukla et al., 2010); *Cocculus hirsutus* by the Bagta tribe of Visakhapatnam district, Andhra Pradesh (Sandhya Sri and Reddi, 2014); *Cocculus hirsutus*, *Cocos nucifera*, *Ziziphus mauritiana* by the Koya, Gond, Lambada, Konda reddy tribes of Khammam district, Andhra Pradesh (Manjula and Reddi, 2016). The tribals of the study area have sound knowledge on the use of different medicinal plant species for their own healthcare management. They have acquired this knowledge from their long-term experiences and practices as well as from their ancestors. This knowledge should be preserved for posterity.

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RESULTS AND DISCUSSION

The paper deals with 26 species of plants covering 24 genera and 21 families used by the tribals of Adilabad district for cooling purposes. Cucurbitaceae is the dominant family with 3 species followed by Sapindaceae, Sapotaceae, Arecaceae (2



INTERTROCHANTERIC FEMUR FRACTURE

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SUMMARY

Introduction: Intertrochanteric fractures are a type of extracapsular fractures of the proximal femur occurring between the greater and lesser trochanter. They are frequently seen in the elderly because their incidence is higher as life expectancy increases.

Objective: to describe the current information related to epidemiology, anatomy, presentation, classification, evaluation and management of intertrochanteric fractures.

Methodology: a total of 35 articles were analyzed in this review, including review and original articles, as well as clinical cases, of which 27 bibliographies were used because the other articles were not relevant to this study. The sources of information were PubMed, Google Scholar and Cochrane; the terms used to search for information in Spanish, Portuguese and English were: transtrochanteric, intertrochanteric, femur, fracture, fratura.

Results: Intertrochanteric fractures have a bimodal presentation. They have a female to male ratio ranging from 2:1 to 8:1, possibly due to changes in bone metabolism after menopause. They are frequently seen in the elderly because their incidence is higher as life expectancy increases. Plain radiographs are still the initial choice to complement the diagnosis in this type of fractures. It is preferable to take anteroposterior (AP), AP and lateral cross pelvis projections of the affected hip and full body radiographs of the affected femur. Surgical treatment is preferred over conservative treatment except in cases that contraindicate surgery or anesthesia.

Conclusions: Intertrochanteric fractures are a type of extracapsular fractures of the proximal femur occurring between the greater and lesser trochanter. Femur fractures have several classifications, recently the classification of intertrochanteric fractures is based on the stability of this area. It is of vital importance to evaluate whether it is an open or closed fracture, in addition to assessing the neurovascular status. The surgical treatment has the mission of providing a stable internal fixation that allows early mobilization and full weight bearing. There are several tools and techniques to provide surgical treatment, however, in our current reality, intramedullary nails are the most used devices in the treatment of intertrochanteric fractures. Regardless of the therapeutic alternative chosen, the mortality risk is 20% to 30% in the first year after the fracture, with males being more affected than females.

KEY WORDS: transtrochanteric, intertrochanteric, femur, fracture.



INTRODUCTION

Intertrochanteric fractures are a type of extracapsular fractures of the proximal femur occurring between the greater and lesser trochanter. They are frequently seen in the elderly because their incidence is higher as life expectancy increases. They are also called transtrochanteric fractures and represent 50% of all fractures in the proximal femur(1,2).

The intertrochanteric aspect of the femur lies between the greater and lesser trochanters and consists of dense trabecular bone. The lesser trochanter functions as an insertion site for the

iliacus and psoas major. The greater trochanter functions as the site of origin of the vastus lateralis and insertion site for the obturator internus, piriformis, gluteus medius, gluteus minimus muscles. The vertical wall of dense bone extending from the posteromedial aspect of the femoral diaphysis to the posterior portion of the femoral neck is known as the femoral calcar, which is crucial in determining the stability of a fracture. Reduction and fixation with a proximal femoral nail is the treatment of choice; however, the osteosynthesis defect produces an increase in mortality and morbidity, mainly in the elderly(1-3).

Figure 1. Simple anteroposterior radiograph showing the presence of an intertrochanteric fracture classified by Tronzo type III in the proximal portion of the right femur.



Source: The Authors.

METHODOLOGY

A total of 35 articles were analyzed in this review, including review and original articles, as well as cases and clinical trials, of which 27 bibliographies were used because the information collected was not important enough to be included in this study. The sources of information were Cochrane, PubMed and Google Scholar; the terms used to search for information in Spanish, Portuguese and English were: transtrochanteric, intertrochanteric, femur, fracture, fratura.

The choice of bibliography exposes elements related to femur fractures; in addition to this factor, epidemiology, anatomy,

presentation, classification, evaluation and management of intertrochanteric fractures are presented.

DEVELOPMENT

Some bibliographies report that intertrochanteric fractures, also known as transtrochanteric fractures, represent almost 50% of all fractures in the proximal femur. The average age of affected individuals is 66 to 76 years, being a relatively younger age than those who suffer fractures of the femoral neck. The ratio between women and men ranges from 2:1 to 8:1, possibly due to changes in bone metabolism after menopause(4,5).



Among the elements mostly related to intertrochanteric fractures compared to femoral neck fractures are:
Greater number of associated diseases.

Advanced age.
History of other fractures related to osteoporosis.
Greater dependence on activities of daily living and frailty(2,4).

Figure 2. Fractures in the proximal femoral region. Right with the presence of a gamma intramedullary nail.



Source: The Authors.

Intertrochanteric fractures are generated between the greater and lesser trochanters in the proximal section of the femur, although sometimes they tend to be directed towards the subtrochanteric part. They are extracapsular fractures, have a rich vascular supply in addition to having cancellous bone, so they have less risk of osteonecrosis or pseudarthrosis, compared to femoral neck fractures. The contiguous musculature generally generates external rotation, shortening and varus at the fracture site. The abductor muscles tend to translate the greater trochanter laterally and proximally. The iliopsoas moves the lesser trochanter medially and proximally. The hip flexors, adductors and extensors direct the distal fragment in a proximal direction. One of the determining factors for fracture stability is the presence of bone contact in the posteromedial region, which acts as a buttress, making fracture collapse impossible(2,4).

Intertrochanteric fractures have a bimodal form of presentation, within which it is observed that in young individuals they are frequently caused by high energy blows, traffic accidents, bicycle falls at high speeds or falls from a height. In the

antipodal age group of young people, 90% of intertrochanteric fractures are caused by a simple fall. Most of these fractures are produced by a direct impact on the greater trochanter region (2-4,6).

It is very common for patients to leave a considerable time after the fracture to go to the health personnel, so the conditions they present are not the best; they usually spend time lying on the floor and without eating, so whoever attends the person should be aware of this circumstance, because they may find malnutrition, dehydration, venous thromboembolic disease, pressure ulcers and in some cases hemodynamic instability due to hemorrhage, since intertrochanteric fractures are caused by intertrochanteric fractures. It is of vital importance to evaluate whether it is an open or closed fracture, in addition to evaluating the neurovascular status. Another very important point is to have the necessary laboratory studies, such as complete blood count, comprehensive metabolic panel and coagulation studies to distinguish alterations and fix them before surgery(2-4).



Simple radiographs are still the first choice to complement the diagnosis in this type of fractures, it is preferable to take anteroposterior (AP), AP and lateral cross pelvis projections of the affected hip and full body radiographs of the affected femur. In addition, sometimes an assisted internal rotation projection of the injured hip may be useful to clarify the fracture pattern.

Magnetic resonance imaging (MRI) is the imaging test of choice to determine occult or undisplaced fractures that are not easily visualized on plain radiographs. Scintigraphy or computed tomography are saved for those who have a contraindication to MRI(3,4,7,8).

Figure 3. Different views of plain radiographs. Patient with intertrochanteric fracture treated surgically.



Source: The Authors.

Femur fractures present several classifications, recently, the classification of intertrochanteric fractures is based on the stability of this area(9).

The Evans classification presents the following division:

Type I: the fracture line is directed upward and outward from the lesser trochanter. Presenting a two-part fracture.

Type II: fracture with inverted oblique line: the main line is directed downward and outward, from the lesser trochanter, with medial displacement of the distal fragment by the action of the adductors. Presenting 3-part fracture.

Type III: presenting 4-part fractures(3,10).

Tronzo classification for intertrochanteric fractures

Type I: Incomplete fracture, without displacement.

Type II: Complete fracture without displacement.

Type III: IIIA: Comminution of the greater trochanter. IIIB: Comminution of the lesser trochanter with telescoped proximal fragment. The shaft is displaced medially.

Type IV: Fracture with comminution of the posterior wall. The shaft is displaced laterally.

Type V: Fracture with inverted trace(10,11).



Figure 4. Tronzo classification for intertrochanteric fractures.



Source: Lustosa L. Tronzo classification of trochanteric fractures(11).

Classification of Boyd and Griffin this includes all fractures from the extracapsular part of the neck to a point 5 cm distal to the lesser trochanter, it is based on the involvement of the subtrochanteric region.

Type I: fracture along the intertrochanteric line from the greater to the lesser trochanter.

Type II: comminuted fracture, the main trace runs along the intertrochanteric line, but with several traces in the medial cortex.

Type III: subtrochanteric fracture, with at least one fracture going to the proximal femoral diaphysis, immediately distal or at the level of the lesser trochanter.

Type IV: fracture of the trochanteric region with irradiation to the femoral diaphysis(10,12,13).

There are unusual patterns within fractures of the proximal femur, such as basicervical fractures and inverted obliquity fractures. The former are located just below the intertrochanteric line or along it, being anatomically fractures of the femoral neck, considered extracapsular, act and are treated as intertrochanteric fractures. Basicervical fractures have a higher risk of osteonecrosis compared to intertrochanteric fractures. They also have a greater tendency to rotate at the time of insertion of the implants in the femoral head. On the other hand, fractures with inverted obliquity are unstable fractures that present an oblique fracture line extending from the medial cortex, proximally, to the lateral cortex, distally. The direction and location of the fracture trace gives a tendency to medial

translation due to the traction of the adductor muscles, so these fractures should also be treated as subtrochanteric fractures(2,4).

In those patients with a risk factor that contraindicates surgery, conservative treatment is recommended. Conservative treatment can also be proposed for dementia patients without ambulation capacity and without or slight pain in the hip or in those who contraindicate the anesthesia used. Early mobilization from bed to chair is substantial to escape the high risk and complications of bed rest. In addition, conservative treatment can be considered for non-displaced fractures, with the justification that, unlike femoral neck fractures, secondary displacement does not modify the type of intervention or the results. In case of displacement, the consequent hip deformity is to be expected and understandable. Some authors show that conservative treatment in both intertrochanteric fractures and femoral head and neck fractures is associated with high morbidity and mortality rates, which is why it is currently out of use(4,14-17). Surgical treatment is intended to provide stable internal fixation for early mobilization and full weight bearing. Bone quality, fracture reduction, fracture pattern, implant design, timing of surgery and implant placement are crucial factors for fracture fixation stability. It is recommended that surgery be performed in a timely manner as soon as the patient's clinical condition is stabilized. Surgical management of these fractures is considered urgent, not emergent(2-4).

Next we will describe some of the implants used for surgical treatment. The first one we will describe is the sliding screw hip



plate implant, which over time has been widely used in both stable and unstable fractures. These plates can generally present different angles from 130° to 150°. Technically the sliding screw hip plates should be placed 1 cm from the subchondral bone to provide an accurate fixation, it should be centered on the femoral head with a reference called tip-apex distance which is the addition of the distance in millimeters between the tip of the cephalic screw and the apex of the femoral head in the anteroposterior and lateral projections; this allows to determine the position of the cephalic screw. The addition should be 25 mm to decrease the danger of proximal screw migration. Some biomechanical and clinical articles have shown no superiority between placing four or two screws to stabilize the lateral plate. From 4% to 12% of patients present loss of fixation, especially in unstable fractures. Posterior displacement, rotation defect and residual varus angulation should be corrected in the operative act. Technical mishaps in screw placement and/or incorrect impaction of the bone fragments at the moment of screw insertion are the main causes of fixation failure. At the moment of inspection, a greater shortening and more deformity can be noted when using this variety of implants in unstable fracture patterns(2,4,9).

The indications for the sliding hip screw include stable fracture patterns with an intact lateral wall since some studies show that when using them for the appropriate fracture pattern, they present results similar to those of the intramedullary nailing, however it presents some disadvantages such as increased blood loss and being an open technique, on the contrary it presents superiority in dynamic interfragmentary compression and presents relatively lower cost compared to intramedullary devices(3).

In our current reality, intramedullary nails are the most widely used devices in the treatment of intertrochanteric fractures. The endomedullary nail with sliding hip screw, also called cephalomedullary nail or gamma nail, combines the particularities of intramedullary nails and the hip plate with sliding screw, presenting some technical and mechanical superiorities. An example of this is that they can be inserted in a closed manner with less exposure of the fracture, reducing bleeding, tissue injury and fracture collapse compared to the screw-plate. Due to their intramedullary position, they also present a lower moment of forces. Some studies have shown that intramedullary nails do not offer advantages over the screw-plate in stable fracture patterns; however, cephalomedullary nails have been more effective in intertrochanteric fractures with subtrochanteric extension and in inverted oblique fractures. Early designs of these implants were associated with a risk of femoral fracture at the level of the nail tip or below the proximal locking screw insertion(2,18,18,19).

One study shows that when surgically reconstructing unstable intertrochanteric fractures with comminution of the lesser trochanter using the proximal intramedullary nailing method, the modified Candy packing wiring technique increases fixation strength at the fracture site(20).

A meta-analysis published in 2019 identified that the risk of secondary fracture, pseudarthrosis, infection and osteosynthesis failure was similar for long and short intramedullary nails. In addition, that study showed that the surgical time was longer for long nails due to the need for reaming and distal, hands-free nailing(1,21)

Figure 5. Short gamma intramedullary nail as surgical treatment in left femur fracture.



Source: The Authors.



As for the use of prosthesis, it has been successfully used in those patients with failure of open reduction with internal fixation and undergoing a new attempt of reduction and internal fixation is not a good option. Depending on the fracture site, hemiarthroplasty with calcar replacement may be required. Primary prosthetic replacement in comminuted and unstable intertrochanteric fractures provides optimal results in up to 94% of cases. Among its disadvantages are the inconvenience of internal fixation when reinserting the trochanter, the morbidity related to major surgery and the risk of postoperative dislocation. Arthroplasty is not indicated as first line treatment and is intended for patients with severe comminuted fractures, patients with a history of degenerative arthritis, recovery of internal fixation and osteoporotic bone that is unlikely to maintain internal fixation(3,4).

External fixation is not frequently used in intertrochanteric fractures; however, there were experiences in these fractures where it was found to be related to postoperative complications, such as infection, loosening of the pins and collapse of the fracture in varus(4).

When using a screw-plate, the stabilization of the large displaced fragments of the trochanter by means of an obelus or screws and a trochanteric plate should be taken into account. Basicervical fractures treated with a cephalomedullary nail or a screw-plate sometimes require additional anti-rotational screws or nails. Inverted oblique fractures do better when treated as subtrochanteric fractures with a 95° fixed angle nail-plate or an intramedullary device. In high-impact trauma, the possibility of an ipsilateral fracture of the femoral diaphysis should be ruled out(2,4).

Figure 6. Short gamma intramedullary nail in the introducer guide.



Source: The Authors.

Regardless of the therapeutic alternative chosen, the risk of mortality is 20% to 30% in the first year after the fracture, with males being more affected than females. In those patients managed conservatively, cardiopulmonary and thromboembolic situations and sepsis are the most frequent complications(3,22).

Loss of fixation is usually the consequence of varus collapse of the proximal fragment with pullout of the cephalic screw from the femoral head; it occurs in up to 20% in unstable fracture



patterns. Avulsion of the cephalic screw occurs mainly within 3 months after surgery, being its main causes:

Eccentric placement of the screw within the femoral head.

Inability to obtain a stable reduction.

Inadequate drilling that forms a second tunnel in the femoral neck.

Inadequate fit between the screw and its base, which does not allow sliding.

Excessive collapse of the fracture, so that the limit of sliding of the implant is exceeded.

Significant osteopenia that does not allow adequate fixation.

Faced with this circumstance, one can choose to accept the deformity, revise the internal fixation as it may require methylmethacrylate or convert the synthesis into a prosthetic replacement.

Pseudarthrosis is infrequent, around 2%, especially in those who present unstable fractures. It usually presents with persistent hip pain and radiographs with a persistent radiolucent line at the fracture site 4 to 7 months after fixation. When good bone stock is present, it is likely to use a new internal fixation with a valgus osteotomy and bone graft. In older patients, conversion to a prosthesis with calcar replacement is preferred.

The rotational deformity usually occurs thanks to an internal rotation of the distal fragment in the act of internal fixation. If it is severe and modifies ambulation, revision surgery is considered to remove the plate and perform a de-rotatory osteotomy of the femoral diaphysis. When using a long intramedullary nail, the distal end of the nail may penetrate the anterior cortex of the femur because of a mismatch between the curvature of the nail and that of the femur. The Z-effect is most often seen when using cephalomedullary nails with two screws, usually appearing when the more proximal screw is driven into the joint and the distal screw is driven distally.

Other more infrequent complications are osteonecrosis of the femoral head, dissociation of the implant and traumatic laceration of the superficial femoral artery by a displaced fragment of the lesser trochanter(2,4).

The occurrence of intraoperative complications is directly related to the proper surgical technique, so standardized protocols should be followed correctly to reduce their presence(23).

Timely surgical intervention is recommended to reduce the probability of hypostatic pneumonia, pressure ulcers or other complications due to long-term prostration(24-26).

In rehabilitation, early mobilization of the patient with weight bearing is pertinent according to their tolerance to ambulation. The postoperative protocol is based on weight bearing according to tolerance, chemical deep vein thrombosis prophylaxis for up to 6 weeks and gradual physiotherapy(3,27).

Isolated fractures of the greater trochanter are usually the result of eccentric muscle contraction or direct trauma. Conservative treatment may be used in older patients or surgical treatment in young, active patients who demonstrate extensive displacement of the trochanter, with preference given to open reduction with internal fixation of the displaced fragment by means of an obelchus and reinsertion of the abductor musculature, as well as plate and screw fixation with a "hooked plate". Isolated fractures of the lesser trochanter occur more in adolescents, due to a sudden contraction of the iliopsoas, on the other hand, in older people these are pathognomonic of pathological lesions of the proximal femur(2,4).

CONCLUSIONS

Intertrochanteric fractures are a type of extracapsular fractures of the proximal femur occurring between the greater and lesser trochanter. They are frequently seen in the elderly because their incidence is higher as life expectancy increases. Intertrochanteric fractures have a bimodal presentation. They have a female to male ratio ranging from 2:1 to 8:1, possibly due to changes in bone metabolism after menopause. Femur fractures have several classifications, recently the classification of intertrochanteric fractures is based on the stability of this area. It is of vital importance to evaluate whether it is an open or closed fracture, in addition to assessing the neurovascular status. Plain radiographs continue to be the initial choice to complement the diagnosis in this type of fracture, it is preferable to take anteroposterior (AP), AP and lateral cross pelvis projections of the affected hip and full body radiographs of the affected femur. Surgical treatment is preferred over conservative treatment except in cases that contraindicate surgery or anesthesia. Surgical treatment is intended to provide a stable internal fixation that allows early mobilization and full weight bearing. There are several tools and techniques to provide surgical treatment, however, in our current reality, intramedullary nails are the most used devices in the treatment of intertrochanteric fractures. Regardless of the therapeutic alternative chosen, the mortality risk is 20% to 30% in the first year after the fracture, with males being more affected than females.

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APPLICATIONS OF THE COMPLEX NUMBER IN TRIGONOMETRIC FORM IN SOME PRACTICAL PROBLEMS

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ABSTRACT

In this article, the application of the trigonometric representation of a complex number in some sums, their sum is calculated by some substitutions.

KEYWORDS: complex number, radical formula, Moavr formula, sum

Introduction. As we know, the "Complex number concept" is introduced for students of academic lyceums and specialized schools, and it is appropriate to solve some related issues through the trigonometric representation of a complex number. The trigonometric representation of a complex number and this the formula for raising a number to the nth power

$$z = r(\cos \varphi + i \sin \varphi), \quad z^n = r^n(\cos n\varphi + i \sin n\varphi) \quad (1)$$

Example 1.

Calculate the sums below

$$P = \cos \frac{\pi}{2n+1} + \cos \frac{3\pi}{2n+1} + \dots + \cos \frac{(2n-1)\pi}{2n+1} = \sum_{k=1}^n \cos \frac{(2k-1)\pi}{2n+1}$$

$$Q = \sin \frac{\pi}{2n+1} + \sin \frac{3\pi}{2n+1} + \dots + \sin \frac{2n-1}{2n+1} = \sum_{k=1}^n \sin \frac{2k-1}{2n+1}$$

To find the sums above, it is advisable to use the trigonometric form of complex numbers. For this, the second sum is multiplied by i and added to the first:

$$P + iQ = \left(\cos \frac{\pi}{2n+1} + i \sin \frac{\pi}{2n+1} \right) + \left(\cos \frac{3\pi}{2n+1} + i \sin \frac{3\pi}{2n+1} \right) + \dots + \left(\cos \frac{(2n-1)\pi}{2n+1} + i \sin \frac{2n-1}{2n+1} \right)$$

If



$$w = \cos \frac{\pi}{2n+1} + i \sin \frac{\pi}{2n+1}$$

according to Muavr's formula

$$w^n = \left(\cos \frac{\pi}{2n+1} + i \sin \frac{\pi}{2n+1} \right)^n = \cos \frac{n\pi}{2n+1} + i \sin \frac{n\pi}{2n+1} \text{ bo'ladi.}$$

$$\begin{aligned} P + iQ &= w + w^3 + w^5 + \dots + w^{2n-1} = w(1 + w^2 + w^4 + \dots + w^{2n-2}) = w \cdot \frac{w^{2n} - 1}{w^2 - 1} \\ &= w \cdot \frac{w^{2n} - 1}{w^2 - 1} \cdot \frac{w^{-1}}{w^{-1}} = \frac{w^{2n} - 1}{w - w^{-1}} = \frac{\cos \frac{2n\pi}{2n+1} + i \sin \frac{2n\pi}{2n+1} - 1}{2i \sin \frac{\pi}{2n+1}} \\ &= \frac{\sin \frac{2n\pi}{2n+1}}{2 \sin \frac{\pi}{2n+1}} + i \frac{1 - \cos \frac{2n\pi}{2n+1}}{2 \sin \frac{\pi}{2n+1}} \end{aligned}$$

Then, by equalizing the corresponding parts on both sides, this

$$P = \frac{\sin \frac{2n\pi}{2n+1}}{2 \sin \frac{\pi}{2n+1}} \quad \text{va} \quad Q = \frac{1 - \cos \frac{2n\pi}{2n+1}}{2 \sin \frac{\pi}{2n+1}}$$

we will get the result.

Taking into account the following formulas, the following relations can be written:

$$\begin{aligned} \sin \frac{2n\pi}{2n+1} &= \sin \frac{\pi}{2n+1} \\ \cos \frac{2n\pi}{2n+1} &= -\cos \frac{\pi}{2n+1} \\ 1 - \cos \frac{2n\pi}{2n+1} &= 2 \cos^2 \frac{\pi}{2(2n+1)} \\ \sin \frac{\pi}{2n+1} &= 2 \sin \frac{\pi}{2(2n+1)} \cdot \cos \frac{\pi}{2(2n+1)} \end{aligned}$$

Based on the above, the following radical formula can be written:

$$P = \frac{1}{2}$$



$$Q = \frac{1}{2} \cot \frac{\pi}{2(2n+1)}$$

Example 2.

Prove the following equality.

$$\cos \frac{\pi}{7} + \cos \frac{3\pi}{7} + \cos \frac{5\pi}{7} = \frac{1}{2}$$

To prove this equality, without using the usual trigonometric properties, we show it by trigonometric substitutions of complex numbers. First of all

$z = \cos \frac{\pi}{7} + i \sin \frac{\pi}{7}$ we enter a complex number whose modulus is equal to 1,

$|z| = 1$. We can find the 7th power of the given complex number using the above Muavr formula and get the following result:

$$z^7 = \left(\cos \frac{\pi}{7} + i \sin \frac{\pi}{7} \right)^7 = \cos \pi + i \sin \pi = -1 \text{ va } z^7 + 1 = 0.$$

On the other hand, we have the following equality:

$$\begin{aligned} \cos \frac{\pi}{7} + \cos \frac{3\pi}{7} + \cos \frac{5\pi}{7} &= \frac{1}{2} \left(z + \frac{1}{z} \right) + \frac{1}{2} \left(z^3 + \frac{1}{z^3} \right) + \frac{1}{2} \left(z^5 + \frac{1}{z^5} \right) \\ &= \frac{z^{10} + z^8 + z^6 + z^4 + z^2 + 1}{2z^5} \end{aligned}$$

$z^7 + 1 = 0$ orqali quyidagi tengliklarga erishamiz:

$$z^{10} = -z^3 \text{ va } z^8 = -z.$$

From this equation

$$\begin{aligned} z^{10} + z^8 + z^6 + z^4 + z^2 + 1 &= z^6 + z^4 - z^3 + z^2 - z + 1 \\ &= z^6 - z^5 + z^4 - z^3 + z^2 - z + 1 + z^5 = \frac{z^7 + 1}{z + 1} + z^5 = z^5 \end{aligned}$$

Accordingly, this equality is proved:

$$\cos \frac{\pi}{7} + \cos \frac{3\pi}{7} + \cos \frac{5\pi}{7} = \frac{z^5}{2z^5} = \frac{1}{2}$$

Example 3.



Calculate the following sum.

$$S_n = \sin \alpha + \sin 2\alpha + \dots + \sin n\alpha$$

To calculate the above sum, we enter the sum C_n

$$C_n = \cos \alpha + \cos 2\alpha + \dots + \cos n\alpha.$$

$z = \cos \alpha + i \sin \alpha$ The trigonometric form of the complex number is known. We multiply the sum of S_n by i and add it to the sum of C_n to get the following sum:

$$\begin{aligned} C_n + iS_n &= \cos \alpha + i \sin \alpha + \cos 2\alpha + i \sin 2\alpha + \dots + \cos n\alpha + i \sin n\alpha \\ &= z + z^2 + \dots + z^n = z \frac{z^n - 1}{z - 1} \end{aligned}$$

through trigonometric substitutions known to us $\cos x - 1 = -2 \sin^2 \frac{x}{2}$ va $\sin x = 2 \sin \frac{x}{2} \cos \frac{x}{2}$ accordingly

$$\begin{aligned} \frac{z^n - 1}{z - 1} &= \frac{\cos n\alpha + i \sin n\alpha - 1}{\cos \alpha + i \sin \alpha - 1} = \frac{-2 \sin^2 \frac{n\alpha}{2} + 2i \sin \frac{n\alpha}{2} \cos \frac{n\alpha}{2}}{-2 \sin^2 \frac{\alpha}{2} + 2i \sin \frac{\alpha}{2} \cos \frac{\alpha}{2}} \\ &= \frac{\sin \frac{n\alpha}{2}}{\sin \frac{\alpha}{2}} \left(\frac{\cos \frac{n\alpha}{2} + i \sin \frac{n\alpha}{2}}{\cos \frac{\alpha}{2} + i \sin \frac{\alpha}{2}} \right) = \frac{\sin \frac{n\alpha}{2}}{\sin \alpha} \left(\cos \frac{(n-1)\alpha}{2} + i \sin \frac{(n-1)\alpha}{2} \right). \end{aligned}$$

From the above equation, we get the following result:

$$\begin{aligned} C_n + iS_n &= (\cos \alpha + i \sin \alpha) \frac{\sin \frac{n\alpha}{2}}{\sin \alpha} \left(\cos \frac{(n-1)\alpha}{2} + i \sin \frac{(n-1)\alpha}{2} \right) \\ &= \frac{\sin \frac{n\alpha}{2}}{\sin \alpha} \left(\cos \frac{(n-1)\alpha}{2} + i \sin \frac{(n-1)\alpha}{2} \right). \end{aligned}$$

By separating the real and abstract parts of this equation, we find the sums S_n and C_n :

$$S_n = \frac{\sin \frac{n\alpha}{2} \sin \frac{(n+1)\alpha}{2}}{\sin \frac{\alpha}{2}}$$



$$C_n = \frac{\sin \frac{n\alpha}{2} \cos \frac{(n+1)\alpha}{2}}{\sin \frac{\alpha}{2}}$$

In conclusion, it should be said that when calculating certain sums, it is more convenient to calculate using the trigonometric representation of a complex number, and many sums of this type can be made in practice.

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THE ROLE OF SHAHIMARDONSOY AND ISFAYRAMSOY RIVERS IN THE NATIONAL ECONOMY OF FERGANA REGION

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ABSTRACT

Such issues as the importance of the rivers of the Fergana Valley for irrigation in the development of agriculture, factors affecting the water regime and the water regime of rivers, sources of saturation of rivers are highlighted.

KEYWORDS: *water regime of rivers, saturation of rivers, long-term runoff*

Isfayramsoy- Ferghana valley from the mountains flowing falling big from rivers one _ He is Aloy ridge of Mt northern from the side flowing falls _ This mountain range is 95 km away Isfayram river basin from the south wrapping stands _ of the basin high to the part from this except Small Aloy ridge western part is also included . So Isfayram _ _ of the basin high part tall mountainous area Don't get upset height is 3800-5200 m enough and their average the height is around 4000 m . Uchkurgan from his village a little from above starting from Isfayramsoy from to water water can be begins . Palmon villager nearby right on the side From Isfayramsoy Kuvasoy channel water takes _ Isfayramsoy the north towards flowing , Ferghana of the city eastern by past Kapchigai the hills cut , 7 km southeast of Margilon Ferghana of the valley flat 30 parts comes out and his own second exit the cone harvest does _ Here _ Isfayramsoy channel and to ditches divided goes _ Isfayramsoy basin plant to the world much poor _ Only 7 percent area only a tree and to the bushes has 15 percent thick grass knowing Copied from 75 percent a lot part in the field while grass and plants very rare _ Isfayram in the river glaciers The number is 190 , please connect common area is 102 km². They are quite a bit on high located _ Glaciers lower of the border average height 4080 m, fim of the border average height and 4270 m. Isfayram in the basin small lakes quite a bit they are _ basically glaciers under , present time and

ancient moraines with depends without located _ Connect from 0.01 km² a lot the field there are 26 of them in total The area is 1.6 km² organize does _ This is our lake water collection area is 192 km² equal to Isfayramsoy _ _ Uchkurgan to the post has been water collection 9% of the basin organize is enough Isfayramsoy of the basin area Uchkurgan 2220 km² to the post office , water collection of the basin average height 3240 m. On the river the most a lot water spent on June 18 , 1966 observed , 1770 m³/ sec to enough _ This is the amount Isfayramsoy's average a lot yearly 62 times more than water , eng big average monthly 20 times more than water , June 18 , 1966 on the day average per diem 8 times than water a lot was _ Most less water spending and on March 16 , 1915 observed , only 6.8 m³/ sec was _ Isfanramsoy river from the basin one in formed flow thickness average 311 mm, eng max. 406 mm, max 241 mm in length equal to In Isfayramsoy full watery period on average April 26 from October 1 continue is enough Payment 31 beginning of the period from October 1 to October 27 note will be done . In Isfayramsoy year during flowing past 56-78 percent of water , on average 68 percent solvency to the period right will come Isfayramsoy water (Uchkurgan in the post) other rivers to water than much hot , water the most Cold January is the month is water _ temperature this in the month 5 degrees on average , the most Cold to 35 degrees during the period enough _ Water



temperature July in the month the most high will be and average monthly temperature to 14.2 degrees equal to to be can _ Isfayramsoy of water the warmth in it freeze events less to be take will come Isfayramsoy There is also a lot of water clear _ In it the most a lot average monthly turbid 110 kg/ sec was _ Average a lot yearly blurry the amount is 5 kg/ sec to equal to Most a lot per diem blurry flow 900 kg/ sec on July 4 , 1946 observed . From Isfayramsoy one in flowing past blurry medium 160 thousand in the account Tonnes , eng maximum 500000 tons , minimum 27000 tons organize reached _ Har one km2 basin from the area one in average 72 tons , eng a lot has been 250 tons per year , eng little has been 12 tons per year blurry flowing came _

Aloy of the ridge northern on the slope from the glacier , about 3780 m absolute in height begins. Kuvasoy 2.5 km south of the city is located Palm water dam is located.

of the river 100 km long , water get area is 2260 km2. On the river ice snow is satisfied with its melting . . The flow module is 9.5 l/s from 1 km2 . From October until February of the river main water source land under waters is considered Maximum water spending from May to September, minimum water is observed from September to April. Full water period corresponds to July -August, the minimum corresponds to March-April. In the " Uchkurgan " post of the river average yearly flow from 15.2 to 28.8 m3/ s has changed .

Isfayram of the river average water spending

Table 1

Yearly	Average annual water consumption , m3/s												Annual average
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
2018	6.2	4.4	5.1	5.8	7.8	19.3	21.0	14.9	6.4	5.6	7.0	6.8	9.19
2019	4.5	2.7	3.2	2.2	4.2	17.1	39.5	17.0	6.2	5.6	6.9	6.2	9.61
2020	23.1	13.5	17.5	2.6	8.1	2.5	6.3	5.7	1.8	1.7	1.3	1.3	7,12
Sr. mnlet .	7.28	6.91	8.58	7.35	15.82	30,17	34.74	24.62	15.07	11.84	9.71	7,10	14.93

The Shakhimardonsoy river corresponds to the mountain glaciers located on the northern slope of the Oloy ridge. The total length of SHokhimardonsoy is 112 km, and currently it does not reach Syrdarya. The area of the basin is 1300 km2. The average height of the river basin is 2710, and the average annual water consumption near the village of Paul'gan is 9.79 m3/sec. Its average annual flow modulus is 6.9 l/sec. km2, the average flow thickness is 217 mm, and the average rainfall thickness is 588 mm, the flow coefficient is equal to 0.37. The coefficient of variability (variation) is 0.11, and 65 percent of the river's annual flow is generated by groundwater. To the basin yearly 40% of precipitation liquid without falls _ of the river start part average height is 3680 m is enough 34 Shakhimardonsoy of the river the most big from its tributaries one is Ekkidavon river is 20 km long (Table 2). To the left side of the career come is poured . This tributary is also 10 km away short has been 2 order in four tributaries there is

Don't connect common 14 km long organize does _ Table 2 Shakhimardonsoi of the river Name of tributaries Which coast from white is poured Up to his career has been distance Length Basin area , km2 from 10 km short tributaries the number length , km Ekidavon left 95 20 4 14 Inichka right 89 17 3 8 Pit right 71 20 17 51 Koksuv right 67 22 175 44 84 Kyzilbulok right 57 19 5 14 Okhna left 54 24 488 - - Kaindi left - 4 17 48 Tashbulok left - 11 19 21 Ankhor left 48 12 1 0.3 Khanariq channel left 130 Koksuv river Shakhimardan of the river right tributary is considered of the river to career has been The distance is 67 km and the length is 22 km organize is enough From its 10 km short 44 35 small tributaries is common _ 84 km long is enough Big from networks Ularsoy , Shoit , Bursun etc is considered Glaciers . Shahimardan river in the basin 74 glaciers in total is a basin 8.6% (47.7 km2) of its area occupied _ Of glaciers average The area is 0.6 km2 is enough In the basin of glaciers and snow of the line the most lower



height 3420 meters , high height is 5260 meters organize is enough Firn of the border average height is 4230 m enough _ Closed in case Morena genders with covered glaciers The area is 12.4 km² of glaciers common to the field compared to 26.0 % organize does _ Shakhimardan river 3400-3600 meters in the basin in the heights glaciers - 1.01 km² ni , 3600-3800 meters 2.87 km² in the heights ni , 3800-4000 meters 8.24 km² at altitudes ni , 4000-4200 4000 meters 12.22km² at altitudes ni , 4200-4400 meters 11.98 km² at altitudes of 4400-4600 meters 6.83 km² at altitudes of 4600-4800 meters 2.72 km² in the heights ni , 4800-5000 meters 0.77 km² in the heights ni , 5000-5200 meters 0.62 km² in the heights ni , 5200-5400 meters 0.42 km² in the heights the occupied _ Shakhimardan of the river Ekkidavon tributary 15 glaciers in the basin being their _ The area is 10.7 km² the organize is enough In this basin of glaciers average lower border to 3710 meters enough _ From this besides , Archaboshi (14), Gadjir (15) and Koksuv (14) rivers glaciers in the basins the number a lot be and connect The area is 28.3 km² the organize is enough It

is located on the northern slope of the Aloy ridge, 1300 km² , 71 km long. The source of saturation of Shakhimardan river is snow - glacier - rain. The maximum flow is observed in June-August and is up to 25.6 m³ / s, and the minimum is 3.8 m³ / s from October to April, respectively. Er over of flow the most high water module is 6.6 l/ sec from 1 km² .

Altariqsoy being studied in the area the first big natural water flow is considered Oltariqsoy , mainly Oltariqsoy _ on the channel springs and land under waters are also partial _ snow and rain in the form of precipitation with is satisfied .

The discharge of underground water in the upper part of the river bed is 2.0-2.5 m³/s. A part of Oltariqsoy water is poured into the Kurgontepa reservoir, as well as through a number of drainage channels.

At the southern border of the river, measuring station "Kapchugay" is used for irrigation. The average annual water regime in the river Oltariqsoy is 0.66 m³/s.

Average annual water consumption of Shahimardan river 2018-2020

Table 2

Average monthly water consumption , m ³ / s												Average Yearly
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
2	3	4	5	6	7	8	9	10	11	12	13	14
5.7	4.9	1.8	4.3	5.2	7.9	12.0	8.7	3.6	3.0	2.3	2.2	5.13
5.7	4.5	4.6	4.2	4.8	16.3	25.2	23.7	9.0	6.9	7.5	8.7	10.09
2.6	2.2	2.0	1.4	1.6	5.9	14.1	9.6	3.4	2.4	2.5	3.0	4.23
7.2	4.5	5.5	2.3	3.8	11.5	22.2	19.9	8.1	6.0	6.3	7.2	8.71
3.53	3.78	4.62	5.11	6.98	11.11	15.57	13.46	8.39	6.11	5.59	4.42	7.39

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EFFECT OF AQUEOUS EXTRACT OF *Tapinathus bangwensis* ON SOME DIAGNOSTIC ENZYMES IN ALLOXAN-INDUCED DIABETIC WISTAR RATS

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ABSTRACT

This study investigated the effect of aqueous *Tapinathus bangwensis* on some diagnostic enzymes in alloxan induced diabetic wistar rats. The effect of plant extract were monitored on the serum concentrations as amylase (AMYL) aspartate transaminase (AST), alanine transaminase (ALT), alkaline phosphatase (ALP), Lactate dehydrogenase (LDH) and creatinine kinas (CK) enzymes. Group 1 constitute the normal control which received only feed and water, group 2 received 50mg/kg citrate buffer. Alloxan was dissolved in 0.1M citrate buffer solution, PH 4.5. Group 1 constitute the normal control which received only feed and water, group 2 received 50mg/kg citrate buffer. Group 3 was administered alloxan solution and allowed free access to feed and water. Group 4-6 received 50mg/kg of citrate buffer and were also administered with the aqueous extract of *Tapinanthus bangwensis* at a dose of 250mg/kg and referred to as normal treated, concentration 1 (NT conc-1), concentration 2 (NT con-2) and concentration 3 (NT conc- 3) respectively. Group 7-9 were administered 50mg/kg alloxan and different grades (5%, 7% and 10%) respectively of the aqueous extract. Blood, liver and pancreatic tissue samples were collected into appropriately labelled sample bottles and analysed. Blood, liver and pancreatic tissue samples were collected into appropriately labelled sample bottles and analysed. Result of the blood analysis showed that diagnostic enzymes were elevated significantly ($p < 0.05$) in the group 3 rats. Oral administration of 250mg/kg aqueous *Tapinathus bangwensis* extract to group 7, 8 and 9 of 50mg/kg, 70mg/kg and 100mg/kg respectively significantly ($p < 0.05$) decreased many of these biochemical alterations in a dose dependant manner. 100mg/kg administration of the extract showed the highest effect in lowering the elevated parameters followed by 70mg/kg administration. 50mg/kg had the least lowering effect. AMYL decreased in group 7, 8 and 9 respectively. Similarly, the respective decreases in group 7, 8 and 9 were for AST, ALT, LDH and CK. Histopathological results of the pancreas and liver also conformed to these chemical pathological results.

KEY WORDS: *Tapinathus bangwensis*, Awolowo leaf, Aqueous extract, intraperitoneally, citrate buffer, lowering effect, enzymes

INTRODUCTION

Many of the plant species growing throughout the world have medicinal values with active constituents that have a direct action on the body (Uahomo et al., 2022). They are used both in herbal and conventional medicine and offer benefits that pharmaceutical often lack helping to combat illness and support the bodies effort to regain good health (Singh et al., 2007).

World Health Organisation (WHO) and Food and Agricultural Organisation (FAO) studies indicate large scale uses of plant material as medicine against a variety of human ailments. With improved screening techniques and genomic

investigations now in progress to target biomolecules of plant origin for treatment of a range of lethal and morbid human diseases, promising results have been emerging from these research programmes (Sofowora et al., 2013).

Onay-Ucar et al. (2006) have demonstrated that *Tapinathus bangwensis* has radical scavenging activity and thus protect against radical generation in cells. This research investigates the effect of aqueous extract of *Tapinathus bangwensis* on alloxan-induced diabetic Wistar rats. The purpose is to find out if *Tapinathus bangwensis* which has been known to lower serum enzymes during liver disease (Omoedu et al., 2008) can



be used for the management of liver disease through the reduction of some diagnostic enzymes.

MATERIALS AND METHODS

Preparation of plant materials

The plant used for this work is *Tapinanthus bangwensis*. The plant was found in the University of Port Harcourt where it was found hemi-parasitizing on specie of orange (*Citrus aurantium*) orchard located on the right side of the front of the Vice Chancellors lodge at the Delta Park of the university. The leaves which were used for this work were carefully plucked off, thoroughly washed and air dried for 24 days until a constant weight was obtained.

Preparation of aqueous extract of *Tapinanthus bangwensis*

Tapinanthus bangwensis was collected with stalks. The fresh greenish leaves were carefully plucked off from the stalks and pedicle removed from each leaf. The leaves were thoroughly washed and spread out on a clean cardboard paper and kept at room temperature in a well aerated room. They were allowed to dry to constant weight after 24 days. The dried sample was then pounded in a mortar with pistil. After pounding, the partially powdered sample was grounded in a manual grinding machine until a fine powder was obtained. Fifty grams of the powdered mistletoe was measured and dissolved in a 1 litre measuring cylinder containing 500ml distilled water. The

mixture was thoroughly shaken for 10 minutes. The mixture was then stored at room temperature for twenty-four hours (Omeodu et al, 2008). The preparation was filtered using ten different pieces of white cloth. The filtrate was filtered two times through a Whitman No. 541 filter paper and stock was stored in a refrigerator at a temperature of 40°C for 24 hours. 50mg/kg, 70mg/kg and 100mg/kg of the filtrate were then prepared from the stock solution and these three different concentrations were used to treat the test animals (Omeodu et al., 2008).

Experimental animals

The animals were divided into experimental groups of six (6) animals per group and each group was housed in a metabolic cage. They were provided with feeds and water ad libitum. The animal feeds were purchased from the Livestock Feeds, Choba, a division of Livestock Feeds Nigeria Limited. Ikeja, Lagos; while the water was supplied by the Water Treatment Plant, Choba Park, University of Port Harcourt. There was a total of (9) experimental group. All the rats weighed between 200g-300g and their average age was fourteen (14) months. The investigated animals consisted of nine groups with six animals per group (Table 1). Each animal was labelled with picric acid for easy identification on the head (HD), right hands (RH), right leg (RL), left hands (LH), left leg (LL) and tail (TL).

Table 1: Research Design

	Group 1		Group 2		Group 3		Group 4		Group 5		Group 6		Group 7		Group 8		Group 9	
	Normal control		Normal control		Normal diabetic control		Normal treated control		Normal treated control		Normal treated control		Diabetic treated control		Diabetic treated control		Diabetic treated control	
	1 (NC-1)		1 (NC-2)		(NDC)		(NT-1)		(NT-2)		(NT-3)		(DT-1)		(DT-2)		(DT-3)	
No of Rats	6		6		6		6		6		6		6		6		6	
Treatment	Feed	+ H ₂ O	Feed	+ H ₂ O	Feed	+ H ₂ O	Feed	+ H ₂ O	Feed	+ H ₂ O	Feed	+ H ₂ O	Feed	+ water	Feed	+ water	Feed	+ water
	Only	ad libitum	ad libitum	+ citrate buffer	ad libitum	+ alloxan solution	ad libitum	+ citrate buffer	ad libitum	+ citrate buffer	ad libitum	+ citrate buffer	ad libitum	+ alloxan + 5% mistletoe solution	ad libitum	+ alloxan + 7% mistletoe solution	ad libitum	+ alloxan + 10% mistletoe solution

Group one animals were administered only feeds and water *ad libitum* to serve as general control group. Group two animals received citrate buffer solution in addition to feeds and water. Alloxan solution was administered to group three animals and allowed free access to feed and water. Before citrate and alloxan administration to group two and three respectively, the animals were fasted for 18 hours. This was the same for group 4 to 9 animals that received various treatments. Group four to six were administered with citrate buffer at 50mg/kg dose, while groups seven to nine were administered with alloxan solution at same 50mg/kg and then treated with *Tapinanthus bangwensis* solution at a dose of 250mg/kg with group seven receiving 50mg/kg of the *Tapinanthus bangwensis* extract, group eight receiving 70mg/kg and group nine 100mg/kg of the extract.

Administration of *Tapinanthus bangwensis* extract

The *Tapinanthus bangwensis* solution was prepared into 5%, 7% and 10% by the process already stated by Omeodu et al. (2008). These three different preparations were fed only to groups 4, 5 and 6 respectively at a dose of 250mg/kg body weight of animal on daily basis. The treatment continued for twenty-one (21) days at the end of which all the nine groups were sacrificed by cervical dislocation method and their whole blood collected for analyses. Each of the animal's pancreas and liver were also collected and preserved in 10% formaldehyde.



Sample collection for analyses

At the end of the twenty-one days of extract administration, the animals were sacrificed on the twenty second day. Each rat to be sacrificed was withdrawn from the cage and sacrificed by cervical dislocation (Okwakpam et al., 2020). Blood sample was then collected from the animal by cardiac puncture into appropriately labelled sample bottles, its pancreas and liver tissues were also collected into separate sample bottles and preserved in formaldehyde. These samples at the end of collection were quickly taken to the laboratory for analyses. The blood specimen was centrifuged at 5000rpm using MSE centrifuge to obtain plasma. The liver and pancreatic samples were prepared into slides and analysed at the anatomical histopathology, laboratory of the University of Port Harcourt Teaching Hospital.

Enzyme assays

The whole blood specimen was assayed for the alanine transaminase (ALT) and aspartate transaminase (AST), alkaline phosphatase (ALP), lactate dehydrogenase (LDH), Creatine kinase (CK) and α -Amylase (AMYL). AST and ALT activities were determined using measurement against reagent blank (Reitman and Frank, 1957). The method of estimation of serum ALP was described by Englehard et al. (1970) for the estimation of LDH, oxidoreductase catalyses the oxidation of L-lactate to pyruvate using NAD^+ as hydrogen

acceptor, however the reaction equilibrium favours the pyruvate lactate direction at $37^{\circ}C$ (Bais and Philcox, 1994; Schuman et al., 2002). The method employed in LDH estimation is known as the OPTIMISED DG KC method (1972). The method of estimation of CK utilizes the optimised standard method recommended by the Deutsche Gessellschaft fur klinische chemie (Rec, Gssc (DG KC); 1997).

Statistical Analysis

Statistical package for social science (SPSS), version 23.0 was used for statistical analysis. Results were expressed as mean \pm standard error of mean (SEM), (n=5) and statistically analyzed by a one-way analysis of variance (ANOVA) followed by a Turkey's multiple comparison test as a post-test. Analysis at $p \leq 0.05$ was considered to indicate statistical significance.

RESULTS

The results of the investigation shown on Table 2 indicated clearly that alloxan caused diabetes mellitus in the experimental animals where the group 3 animals had very high levels of the diagnostic enzymes (AST, AMYL, ALT, ALP and LDH). Values of the control animals were found to be within normal range for the parameters analysed. CK was only slightly elevated in the experimental animals as shown on Table 2.

Table 2: shows mean serum enzyme levels in alloxan induced diabetes treated with mistletoe extracts.

Group	α -Amylase	AST	ALT	ALP	LDH	CK
1	170.167 ^d	108.167 ^{fg}	32.500 ^{de}	146.670 ^{fg}	2571.700 ^e	6486.700 ^c
2	164.833 ^{de}	110.500 ^{fg}	33.333 ^{de}	167.000 ^{ef}	3123.300 ^d	6716.700 ^c
3	250.000 ^a	200.830 ^a	56.833 ^a	386.830 ^a	6293.300 ^a	77148.800 ^{abc}
4	157.833 ^e	118.667 ^e	34.333 ^d	178.170 ^e	3028.300 ^{de}	6970.000 ^{bc}
5	163.333 ^{de}	112.167 ^{ef}	30.167 ^e	128.330 ^a	2860.00 ^{de}	7016.700 ^{bc}
6	164.167 ^{de}	103.500 ^a	31.000 ^e	130.670 ^a	2800.00 ^{de}	6891.700 ^{bc}
7	235.167 ^b	181.000 ^b	51.167 ^b	355.000 ^b	5516.700 ^b	8416.700 ^a
8	212.500 ^c	172.000 ^c	48.333 ^b	311.83 ^c	5110.00 ^{bc}	8241.700 ^{ab}
9	205	148.667 ^d	42.167 ^c	273.50 ^d	4658.300 ^c	7616.700 ^{abc}
LSD	9.148	8.025	3.172	27.556	456.050	1371.300

Values are expressed as Mean \pm Standard error of mean (SEM), n=5. Values with the same are not significantly different at ($p < 0.05$).

Morphological Findings

The liver of normal/control rats showed liver parenchyma with general structures preserved including normal hepatocytes surrounded by sinusoids and containing Kupffer and red blood cells. Portal spaces were normal and no observed fatty degeneration or abnormal distribution of fibroblast at a magnification of x200. Morphological observation of the liver

of group 3 animals shows vacuolated cytoplasm, lesions and a degenerative cytoplasm while those of groups 4-6 show normal architecture and groups 7-9 shows a gradual return to normal liver architecture in a dose dependent manner with group 7 having a close resemblance to group 3 with massive area of necrosis and group 9 having similar architecture to normal liver architecture of groups 1 and 2 animals.

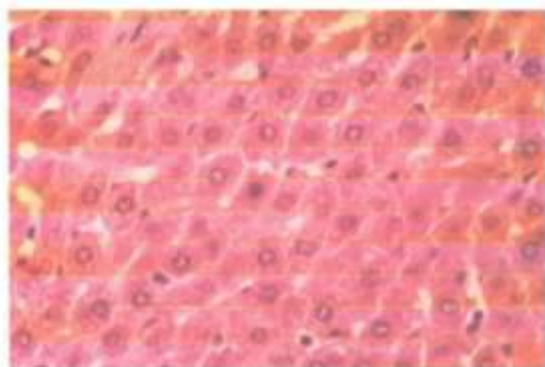


Plate 1: Showing Normal Liver architecture with clear sinusoids (Magnification x200)

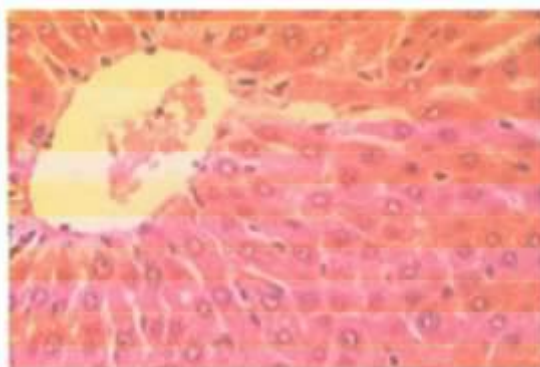


Plate 2: Showing vacuolated cytoplasm with degenerative Kuffers seen (Magnification x200)

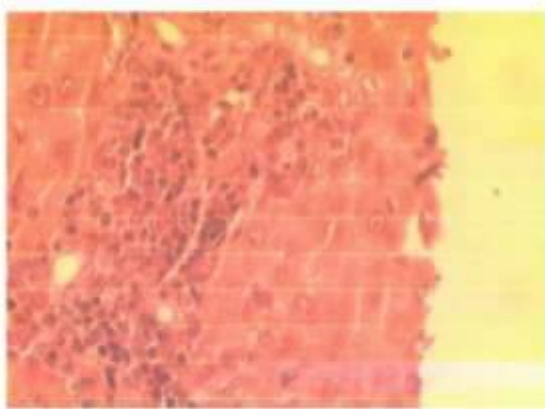


Plate 3: Showing massive area of necrosis with degenerative cytoplasm (Magnification x200)

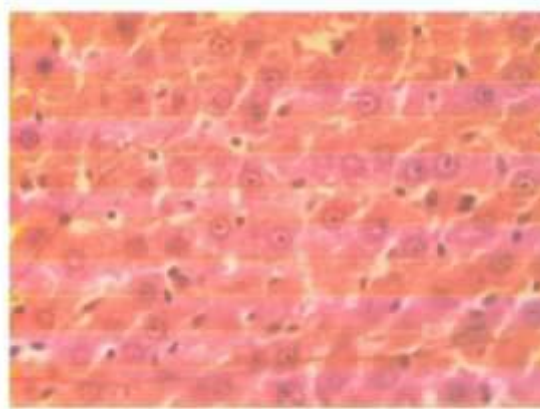


Plate 4: Showing only few areas of necrosis (Magnification x200)

The pancreas of the normal/control rats showed normal islets at magnification of, no inflammation or necrosis and no reduction in the number of cells. Morphological observation of the pancreas of the experimental animals also shows group 3 animals having extensive necrosis of islets and reduced number of cells. Group 4 – 6 have architecture close to the

normal groups 1 and 2. While groups 7 – 9 shows reduction in necrosis of the islets in a dose dependent manner with group 7 (5% extract) having more necrosis than groups 8 and 9 administered with 7 and 10% extract respectively.

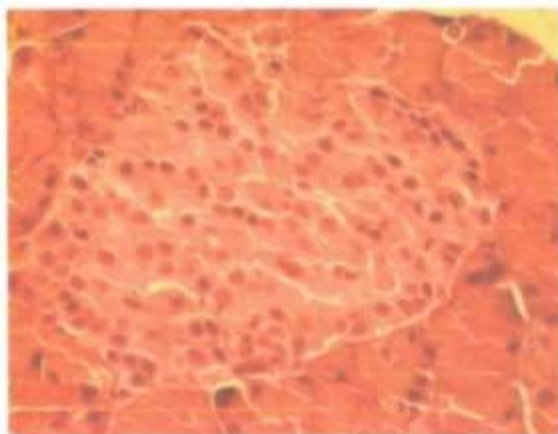


Plate 5: Showing the Pancreas with islets seen (Magnification: x200)

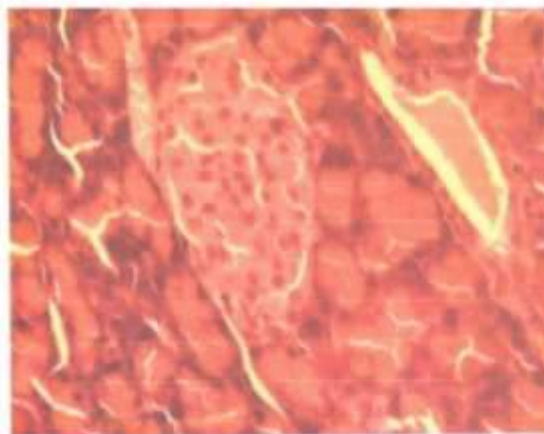


Plate 6: Showing Pancreas with extensive necrosis of islets and reduction in number of cells.

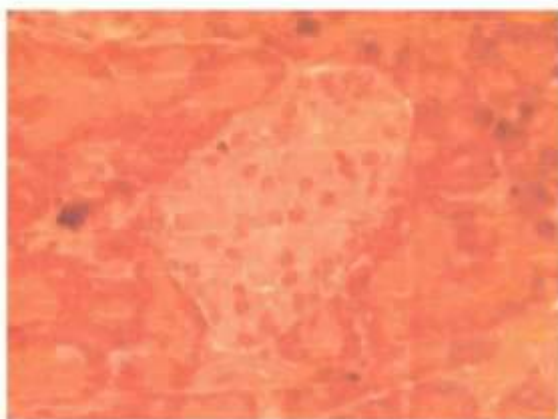


Plate 7: Showing Pancreas with enlarged islet cells (hyperplasia) with patchy necrosis (Mag.: x200)

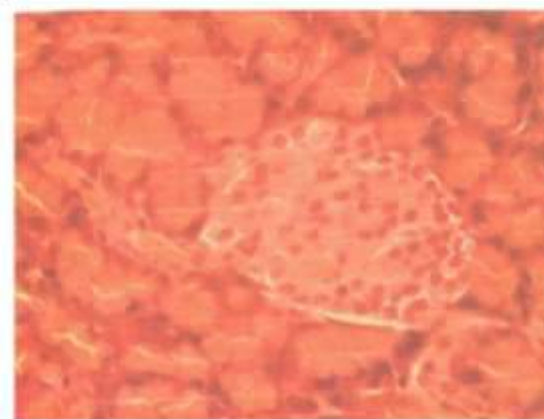


Plate 8: Showing Pancreas with patchy necrosis with few inflammatory cells seen (Mag.: x200)

DISCUSSION

Several researchers on African medicinal plants have reported significant success with minimal or no side effect (Prout, 1974). The work of Swason-Flatt et al. (1989) has lent credence to this present work.

In this study, we observed that alloxan given to the experimental rats at 50mg/kg induced diabetes mellitus in them. Serum amylase level was marked by raised liver function enzymes (AST, ALT and ALP) were elevated in the serum of the animals. LDH showed significant elevation of serum level, CK was only sparingly raised in the serum of the experimental animals. Belfiore et al. (1973) have documented the diagnostic enzymes whose activities are increased in diabetics and hence can be a good tool in the treatment and management of diabetes mellitus. In all experimental groups, ALT, AST, ALP, and LDH were significantly ($p < 0.05$) elevated. AMYL and CK were also observed to be raised in serum. Elevated serum amylase levels often accompany acute pancreatitis (Yegneswaran and Pitchmoni, 2010; Pieper-Bigelow et al., 1990). This elevation may also be caused by other conditions such as pancreatic tumours, diabetic

ketoacidosis, and kidney dysfunction (Collen et al., 1990). Warsaw et al. (1977) reported that S-type not P-type amylase is responsible for the serum amylase elevation in diabetes. Treatment of the test rats with 50mg/kg alloxan, elevated the serum levels of hepatic enzymes. ALP showed the greatest elevation with 163% increase compared with the control group, while ALT had the lowest serum elevation of 76%. AST had an increase in serum of 80% compared with the control group.

This trend was also observed in the study by Rajangam et al. (2009) where AST, ALT and ALP were released into the serum during chemical assault like alloxan (Crook, 2006). These serum AST elevations were significantly ($p < 0.05$) decreased on treatment of the animals with the *Tapinanthus bangwenses* extracts. Diabetic concentration 1 (group 8) treatment lowered the serum AST by 15%. The histopathological examination result also conformed to this finding. Similar results were obtained for ALT and ALP, LDH and CK. Following the elevation of these serum enzymes on the treatment with alloxan solution, oral administration of 250mg/kg body weight significantly lowered the serum ALT



in a dose dependant manner. 10% extract had the highest lowering capacity of 26% compared to the 15% and 10% lowering effects of group 8 (7% mistletoe solution) and group 7 (5% mistletoe solution) respectively.

These changes in enzyme activities reflect the change in the metabolism in which the enzymes are involved. Transaminase activity is increased in the absence of insulin due to availability of amino acids in the blood of diabetics and are responsible for the increased gluconeogenesis and ketogenesis (Gokce and Haznedarogly, 2008; Batran et al., 2006)

The increase observed in ALP levels in this study agreed with the work of Prince et al. (1997). This increase was lowered by treatment of extracts of mistletoe by 8% (group 7), 19% (group 8) and 2% (group 9), thus showing a dose dependent effect. Similarly, the serum elevations of LDH on treatment with alloxan significantly lowered by extract administration. 10% extracts (diabetic treated concentration 3 (DT conc-3)) showed the greatest effect of 26% lowering, while diabetic treated concentration 1 (DT conc-1) had the lowest reduction of 12%. This study observed no significant ($p > 0.05$) change in creatinine kinase level.

CONCLUSION

This study was able to establish the diabetogenicity of alloxan as seen in the diagnostic enzyme concentrations which were elevated. Therefore, this study has shown that extract of African mistletoe is insulinogenic and thus can be a good anti-diabetic agent as it can improve most of the altered biochemical and physiological parameters observed during diabetes mellitus.

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INTERACTIVE METHODS OF TEACHING ENGLISH VOCABULARY

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ABSTRACT

The article is about the problems of teaching vocabulary and idioms of the English language with the help of games for using them in oral speech. Games offer students a fun-filled and relaxing learning atmosphere. Games are also motivating students and learners in learning new vocabulary. While playing games, the learners' attention is on the message, not on the language.

KEY WORDS – *vocabulary, idiom, interactive way, method, experiment, communication*

No matter what language you are studying, expanding your vocabulary is always exciting. It might be entertaining or boring to learn new English words. In a matter of seconds, words are pulled from the dictionary and used to demonstrate to students how monotonous reading a poem aloud can be. Nevertheless, if you study words with friends in a group, you will find the process to be quite enjoyable and not too challenging. Knowledge can take on new forms in the setting of interactive learning. They reflect specific data about their environment on the one hand. The odd thing about this knowledge is that it is given to the student during his own activity, not in the shape of a system that the teacher has already created. The teacher needs to set up scenarios where the learner is engaged, asking questions and taking action. Under such circumstances, "he together with others gains the abilities that allow him to change into knowledge what was initially a problem or hindrance."

On the other hand, a student who is interacting in class with other students and a teacher learns multiple methods for knowledge search and masters a system of tried-and-true ways of operating in connection to himself, society, and the wider world. As a result, the pupils' acquired information also serves as a means of acquiring new ones on their own.

As the learner will find, acquire, and construct information on their own, interactive learning aims to provide the conditions for this to happen. There is an enhancement in student-to-student communication.

Some positive aspects of the use of interactive learning methods can be cited:

- significantly increases the motivation of students;
- Higher level of assimilation of the material. Reducing fatigue;
- The student does not have the opportunity to sit out, he needs to think for himself, not relying on others. Both weak and strong students work. There is an interest in the studied material;

- develops the ability to work in a group, develops communication skills

It is possible to be convinced of the advantage and effectiveness of the interactive learning strategy only when it is directly implemented in pedagogical activity. The currently existing set of interactive learning methods allows this process to be carried out quite successfully.

It makes learners get attached with the word several times, and also, they can generalize its use in other different contexts [3.1656].

Interactive methods in teaching English vocabulary can be different. Let's look at some of them:

The method "Whose sun is brighter", Whose Sun Shines Brighter allows

- simultaneously include students of the entire group in the work;
- repeat and consolidate the material covered;
- develop students' oral speech;
- develop students' analytical abilities.

This method involves choosing the team captains, who then go to a board with two circles drawn on it and alternate between describing the animal, fruit, or vegetable depicted in the image (you can use any subject), or defining the word in English. If the answer is accurate, each correct sentence said adds one point and one ray to the mug. The captain with the most sun rays, or points, is the winner. Examples:

A wild animal of the dog family – **wolf**

A large wild animal of the cat family with yellowish orange fur with black lines which lives in parts of Asia – **tiger**

A wild mammal belonging to the dog family which has a pointed face and ears, a wide tail covered in fur and often reddish-brown fur – **fox**

An adult female chicken which is often kept for its eggs, or the female of any bird – **hen**



The "Cities", Countries method allows

- simultaneously include students of the whole group in the work or work individually;
- repeat and consolidate the material covered;
- develop students' oral and written speech;
- develop students' analytical abilities.

This method will allow you to repeat and consolidate the passed lexical material. Each line is filled in

alphabetically, and the choice of the alphabet is chosen by drawing lots, then everyone must fill the entire line with answers so that each word begins with the letter "B". A minute is given to fill in. The one who completes the task first gets 10 points for each word found. If you could not fill in any of the columns in one minute, a minus is put or left empty.

IN PLACE OF THE TEN SELECTED NAMES, YOU CAN ADD OR REPLACE OTHERS.

Names	Count ries & cities	Animals	Fruits	Vegetables	Plants	School and computer equipments	House	Clothing	Transporta tion	Films
Bob	Brazil	Bull	Banana	-	Bush	Blackboard	Bed room	Boots	Bicycle	Bat man
Piter	Paris	Pig	Pine-apple	Pump kin	Palm	Printer	Picture	Pyjamas	Plane	Police academy

The method of "Riddles about animals" allows

- simultaneously include students of the whole group in the work or work individually;
- the development of students' speech reactions; instruction in the use of language in context;
- stimulation of students' speech-thinking activity;

The kids must correctly guess the riddles that the teacher reads to them. The team scores one point for each response that is right. Consider this:

The animal is a pet. It prefers seafood. It's (a cat)

a wild animal. It enjoys bananas. (a monkey)

It is gray and enormous. (an elephant)

This animal, enjoys grass. Animal raised in homes. Milk is produced by it. (a cow)

Riddles are read aloud by the teacher, and the students are required to solve them. The team scores one point for each right response. For instance:

1. This animal is a pet. He enjoys fish. (cat)
2. The creature is wild. He is a bananas fan. (monkey)
3. It is gray and quite big. (elephant)
4. This creature adores grass. It is a pet. We get milk from it. (cow)

The game "Tic-Tac-Toe" allows you to:

- simultaneously include students of the entire group in the work;
- repeat and consolidate the material covered;
- develop students' oral speech.

This method will allow you to repeat and consolidate the lexical material on the proverbs and sayings of the English language.



The group is divided into 2 teams, each team chooses one person and they draw 6 squares on the board, as shown in the example. The first team asks a question to the participant of the second group, who is standing on the board, if he answers the question correctly, then he draws one cross on any of the squares, if he cannot, he will answer, skips the move. The second team asks a question to the participant of the first group, who is standing on the board, if he answers the question correctly, then he draws one zero on any of the squares, if he cannot, he will answer, skips a move. As a result, the winner is the participant who closes all the moves first and draws three zeroes after crossing them out. And so he wins and gets 10 points. Participants can ask, for example, the following questions:

Define the following proverb in English

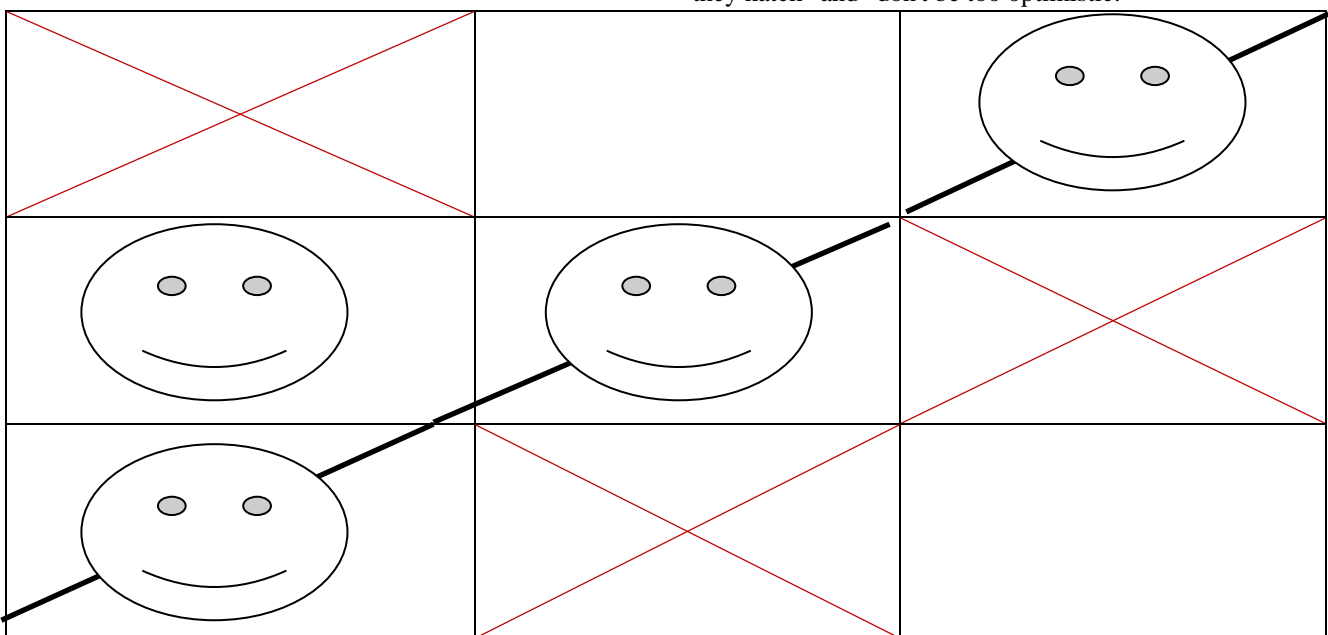
A bird in the hand is worth two by one, so don't risk losing what you have in the pursuit of an uncertain goal.

Because cats are exceedingly powerful and can withstand numerous mishaps or troubles, they have nine lives.

Asking questions or being interested in something that doesn't affect you is frequently not a good idea.

A leopard's spots cannot be changed, and neither can a person's fundamental human nature.

To individuals who might be let down by errors in judgment, the traditional counsel is to "don't catch your chickens before they hatch" and "don't be too optimistic."



The Decision Tree game enables you to:

- involve every student in the class at once;
- reinforce and consolidate the previously taught subject;
- Improve spoken communication among students.

The class is split into two or three teams, each with the equal number of students. The teams trade positions and verify the options; if not, they write their solutions on the neighbors' trees. Each team discusses and discovers the meaning of English idioms while making notes or notes on its own "tree" (Whatman sheet).

<p><i>to flog (beat) a dead horse</i> — to waste energy <i>to keep something under one's hat</i> — to keep it secret <i>A hard nut to crack</i> - a very difficult problem</p>	<p><i>to carry coals to Newcastle</i> — <i>(to be) in Queer street</i> — (to be) extremely short of money; in trouble; in debt <i>It's (all) Greek (double Dutch) to me.</i> — I can't understand it.</p>
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ACUTE TOXICITY AND PHARMACOLOGICAL EFFECTS OF METHANOLIC LEAVE EXTRACT OF *ORMOSIA ROBUSTA* (FABACEAE)

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ABSTRACT

Ethnopharmacological relevance: *Ormosia robusta* (fabaceae) is a perennial non-climbing woody tree.

Objective: The current study sought to investigate the phytochemical screening, antioxidant properties, membrane stabilizing activity, anticonvulsant activity, and gastrointestinal motility properties of *O. robusta* methanolic leaf extract.

Materials and methods: Phytochemical analysis was carried out using standard methods, and antioxidant activity was determined using the estimation of total phenolic contents and DPPH radical scavenging activity. Hypotonic solution-induced haemolysis and Heat-induced haemolysis tests were used to investigate membrane stabilizing activity. The anticonvulsant activity was evaluated using Isoniazid (INH) induced convulsions and Pilocarpine induced convulsions methods in mice. And gastrointestinal motility test was carried out by the charcoal meal passage test in mice using methanolic leaf extract of *O. robusta*.

Results: Preliminary phytochemical examination showed the presence of phytosterols, phenol, glycosides, tannins, terpenoids, flavonoids, saponin, protein and amino acid. The methanolic leaves extract of *O. robusta* (200 and 400 mg/kg; i.p.) produced significant ($p < 0.01$) dose-dependent inhibition of the latency of convulsion responses elicited by Pilocarpine and Isoniazid. The membrane-stabilizing action of the extract was demonstrated by its ability to prevent hypotonic and heat-induced haemolysis. Methanolic extract showed significant antioxidant properties. In respect of the gastrointestinal motility test, *O. robusta* caused significant ($p < 0.001$) dose-dependent inhibition of motility in the mice. The effects of the extract in the various models were generally comparable to those of the standard drugs used.

Conclusion: The findings in this study suggest that the methanolic leaves extract of *O. robusta* possesses antioxidant, membrane stabilizing activity, gastrointestinal motility properties and anticonvulsant effect possibly mediated through several mechanisms. These activities could be attributed to the presence of tannins, terpenoids, phenols, saponins and flavonoids.

KEYWORDS: *Ormosia robusta* baker, antioxidant properties, membrane stabilizing activity, anticonvulsant activities, gastrointestinal motility

INTRODUCTION

The investigated plant *O. robusta* baker belongs to the family Fabaceae (also known as the legume family: Leguminosae), locally known as Sanchi or Sanchi-blog by the tribe garos (Sinha et al. 2014). It was found growing on the hilly terrain of tropical semi-evergreen forests. It is widely distributed throughout East Asia, some parts of India (Assam, Arunachal Pradesh, Meghalaya, Mizoram), Myanmar, and Thailand. In Bangladesh, it is found in the hills of sitakunda and maheskhali (Misbahuzzaman, K., Alam 2006). *O. robusta* baker is a large tree, up to 12 m, with bright orange-colored bunches of fruits. Leaves are imparipinnate, flowers creamy-white, legumes 1-2 seeded, cylindrical or slightly compressed between seeds looked yellowish-green. It is mainly used as timber and firewood. The

extract of bark (soaked in water overnight) is used in the treatment of jaundice by the garos (Ghani 2002; Sinha et al. 2014). Although this plant is not widely explored yet, the bark has been reported to contain two prenylated isoflavones, warangalone and erysenegalensein m, along with two triterpenoids, betulinic acid and lupeol (Ahmed, Haque, and Ahsan 2013). Based on the literature search, no study has been carried out to scientifically use *O. robusta* in treating RBC haemolysis, diarrhea and convulsive disorders. The present study aimed to find the phytochemical constituents, acute toxicity, antioxidant and membrane stabilizing activity, anticonvulsant activities and gastrointestinal motility test of the methanolic leaves extract of *O. robusta* Baker.



2. MATERIAL AND METHODS

Plant Collection and Extract Preparation

The leaves of *O. robusta Baker* (Fabaceae) were collected from Maheshkhal Island, Chittagong, Bangladesh. The plant was identified at Bangladesh National Herbarium, Dhaka, Bangladesh, and a voucher specimen (Accession no. DACB 38324) was deposited for future reference. The collected plant parts were separated from undesirable materials or plants or plant parts and washed thoroughly with water several times. During Collection, any adulteration was strictly prohibited. They were sun-dried for one week. The leaves were grounded into a coarse powder with the help of a suitable grinder. Dried powdered samples (500 gm) were immersed in 3000 ml of 90% methanol (Merck KGaA, Darmstadt, Germany) with intermittent shaking. Following 15 days, the solvent was decanted, filtered, and evaporated in a rotary evaporator. The extract was kept protected from light and stored at 4°C (yield 15 g deep greenish gummy extract). The Greenish gummy extract obtained was always reconstituted in distilled water to the appropriate concentration before administration to experimental animals.

Laboratory Animals

Swiss-albino mice of either sex (aged 4-5 weeks, weighing 18-25gm) obtained from the Laboratory mice-breeding centre, the department of pharmacy, Jahangirnagar University, were used for the studies. The animals were housed in well-ventilated cages that were kept under normal environmental circumstances and had free access to food and water. Mice experiments were conducted in compliance with the regulations of the Animal Ethical Committee of the Noakhali Science and Technology University Research Cell. These guidelines followed the internationally accepted principles for laboratory use and care.

Drugs, Chemicals and Reagents

All of the chemicals utilized were of analytical reagent quality. Methanol was purchased from Merck, Darmstadt, Germany; Castor oil was purchased from WELL's Heath Care, Spain. Pilocarpine hydrochloride (Popular Pharmaceuticals Ltd. Bangladesh), Isoniazid (Novartis (Bangladesh) Ltd.), Hyoscine butyl bromide (ACI Ltd. Bangladesh), Activated Charcoal (Lab. Reagent, India), DPPH (1,1-diphenyl, 2-picryl hydrazyl), trichloroacetic acid, ferric chloride, Gallic acid and BHA were obtained from Sigma Chemical Co. USA. Folin-Ciocalteu reagent, sodium carbonate and potassium ferricyanide were purchased from Merck, Germany. Hydrochloric Acid (BDH Ltd, England), Chloroform (ACS, Merck), Ammonia (Merck Millipore, India), Ferric Chloride (Fisher, USA). Acetic anhydride, Sulphuric acid, lead acetate, Nitric acid, and Copper acetate were also purchased from Merck, Darmstadt, Germany. All other reagents were procured from Sigma Chemicals limited.

Phytochemical Screening

A preliminary phytochemical study was screened for the presence of alkaloids, phenols, phytosterols, Saponins, proteins and amino acids, flavonoids, and terpenoids. These were

identified by characteristic colour changes using standard procedures (J.B. Harborne 1998).

Acute toxicity test

Five groups of 3 mice, each fasted for 18 hr prior to the experiment, were administered. A study of acute toxicity was conducted using OECD guideline 423. ORE (*O. robusta* extract) was administered orally to Swiss albino mice (20-25mg, n=3) at doses of 1000, 1500 and 2000 mg/kg p.o. Animals in the different groups were observed for 2 hr post-treatment for immediate signs of toxicity and behavioural changes (abdominal constriction, hyperactivity, sedation, grooming). Mortality and body weight were observed for 72 hrs.

Antioxidant test

Estimation of total phenolic content

The phenolic content of plant extracts was measured using the Folin-Ciocalteu reagent. Due to the use of gallic acid as a standard, the total phenolic content was reported as mg/g of gallic acid equivalents (GAE). The concentration of 6.25, 12.5, 25, 50, and 100 mg/ml of gallic acid. Stock solution (0.5 mg/ml) of plant extracts was prepared and diluted to five different concentrations (0.3, 0.2 and 0.1 mg/ml). Then 0.5 ml of sample was introduced into test tubes, and 2.5 ml of a 10-fold dilute Folin-Ciocalteu reagent (Sigma-Aldrich) was added to the extract concentrations in different sets of test tubes, shaken thoroughly, and left to stand for one min. 2 ml of 7.5% NaHCO₃ was then added and the mixture once again allowed to stand for 30 min at room temperature. The absorbance of the supernatant was measured at 760 nm using UV spectrophotometry (UV-1800, Shimadzu, Japan). The total phenolic content was calculated as mg of gallic acid equivalent per gram using a standard gallic acid calibration curve (Djeridane, A., Yousfi, M., Nadjemi, B., Boutassouna, D., Stocker, P., Vidal 2006).

Free radical scavenging activity by DPPH method

The free radical scavenging activity of leaf extract was evaluated using the stable radical DPPH (1,1-diphenyl, 2-picryl hydrazyl) according to the method described by Hazra et al. (Hazra, Biswas, and Mandal 2008). Plant methanol extracts (2 ml) were mixed with DPPH (1 ml, 0.5 mM) and sodium acetate buffer (pH 5.5, 2 ml, 0.1 M) and incubated for 30 min at room temperature. The supernatant absorbance was measured at 517 nm using a UV spectrophotometer against a blank of methanol. The lower absorbance of the reaction mixture was indicative of increased free radical scavenging activity. The capacity to scavenge the DPPH radical was computed using the following equation:

$$\% \text{ radical scavenging activity} = \frac{A \text{ control} - A \text{ test sample}}{A \text{ control}} \times 100$$

Here, A represents absorbance.

The inhibition percentage versus extract/standard concentration was displayed on a graph, and the extract concentration resulting in 50% inhibition (IC₅₀) was computed.



Membrane stabilizing activity

The erythrocyte membrane is comparable to the lysosomal membrane; therefore, the effect of medications on the stabilization of the erythrocyte membrane could be extended to the stabilization of the lysosomal membrane. The membrane stabilizing activity of the extractives was assessed by using hypotonic solution-induced and heat-induced erythrocyte haemolysis of human erythrocytes by the method developed by Omale and Okafor (Omale and Okafor 2008) and Shinde *et al.* (Shinde, U.A., Phadke, A.S., Nair, A.M., Mungantiwar, A.A., Dikshit, V.J. and Saraf *et al.* 1999).

Collection of blood samples

In the current study, 2 ml of blood was drawn from each of the healthy Bangladeshi male humans (70kg) volunteers (n=5, age 20 to 23 years) who had no history of oral contraceptive or anticoagulant therapy. The obtained RBCs were stored in test tubes with anticoagulant Ethylene diamine-tetraacetic acid (EDTA) at room temperature (232°C). The supernatant absorbance was measured at 760 nm by UV spectrophotometry (UV-1800, Shimadzu, Japan). Using the equation derived from a standard gallic acid calibration curve, the total phenolic content was calculated as mg of gallic acid equivalent per gram (Djeridane, A., Yousfi, M., Nadjemi, B., Boutassouna, D., Stocker, P., Vidal 2006).

Preparation of erythrocyte suspension

To prepare the stock erythrocyte (RBC) suspension, 2 ml of blood was drawn from male volunteers' anti-cubital veins. The blood sample was centrifuged at 3000xg for 10 minutes and then rinsed three times with isotonic solution (0.9% saline). The volume of saline was determined and reconstituted as a 40% (v/v) suspension with an isotonic buffer solution (pH 7.4) containing 1 L of distilled water: NaH₂PO₄. 2H₂O, 0.26 g; Na₂HPO₄. 1.15 g; NaCl, 9 g. (10 mM sodium phosphate buffer).

Hypotonic solution-induced haemolysis

0.50 ml of stock erythrocyte (RBC) suspension was combined with 5 ml of hypotonic solution (50 mM NaCl) in 10 mM sodium phosphate-buffered saline (pH 7.4) containing either extract (1.0 mg/ml) or acetylsalicylic acid (0.1 mg/ml) for the test sample. The control sample, including 0.5 ml of RBCs, was combined with only hypotonic-buffered saline. Following 10 minutes of incubation at room temperature, the mixture was centrifuged at 3000xg for 10 minutes, and collect the supernatant. Supernatant absorbance was measured at 540 nm using an ultraviolet spectrophotometer. The % inhibition of either haemolysis or membrane stabilization was computed using the following equation.

$$\% \text{ inhibition of haemolysis} = \frac{OD1 - OD2}{OD1} \times 100$$

OD1 = Optical density of hypotonic-buffered saline solution alone (control) and

OD2 = Optical density of test sample in a hypotonic solution

Heat-induced haemolysis

1.0 mg/ml of plant extract or vehicle was dissolved in 5 ml of the isotonic buffer (pH 7.4), and 30 µl of erythrocyte suspension was added. Following 20 minutes of incubation at 54°C in a water bath, the tubes were cooled to 5°C in an ice bath and centrifuged at 1300xg for 3 minutes. The supernatant absorbance was determined at 540 nm using a UV spectrometer. Each sample set was evaluated in duplicate. The percentage inhibition or acceleration of haemolysis was calculated using the following equation:

$$\% \text{ inhibition of haemolysis} = \frac{OD1 - OD3}{OD1} \times 100$$

Where, OD1 = test sample unheated; OD2 = test sample heated and OD3 = control sample heated

Anticonvulsant activities

Mice were observed continuously for 30 minutes following pilocarpine and INH administration for the occurrence of limbic seizures and status epilepticus. The latency to the first episode of convulsive behavior (forelimb clonus), duration of convulsion and percentage mortality were recorded for a period of 30 min. Animals surviving more than 30 min were considered to be protected.

Maximal Electrical Shock (MES) induced seizures:

Four groups of six Swiss albino mice (25-30 g) of either sex were used. Seizures are usually induced in mice by delivering electroshock (50 mA for 0.2 seconds) by means of an electroconvulsio meter through a pair of corneal electrodes. The test animals received 200 and 400 mg/kg of ORE orally, and the standard group received phenytoin (25 mg/kg body weight) injected intraperitoneally. Thirty minutes later, MES-induced seizure was recorded, and protections from HLTE were recorded k and protections from were recorded response. All the experimental groups were compared with the control treated with a vehicle. The disappearance of the tonic hind limb extensor was used as a positive criterion. The percentage of inhibition of seizures relative to control was calculated.

Isoniazid (INH) Induced Convulsions

Albino mice (18-22 g) of either sex were randomly divided into four groups (n=5) and fasted overnight before the experiment; however, the water was supplied ad libitum. Group I was maintained as control and was given INH (300 mg/kg i.p.) only, Group II- Standard received Diazepam (5mg/kg i.p.), Group III-methanolic leaves extract (200mg/kg i.p.) and Group IV-methanolic leaves extract (400mg/kg i.p.). Group III and IV were administered extracts into mice at doses of 200 and 400 mg/kg 1h before i.p. administration of INH (300 mg/kg, i.p.) whereas, in Group II, INH was injected after 30 min of diazepam (5 mg/kg, i.p) treatment. The mice were placed in an isolated perplex chamber and observed for the following 30 minutes for the onset and duration of convulsion, which include clonic seizures, the extension of the hind limb, Fictive scratching, Tremors, Stupor and percent protection. The



percentage of seizures or deaths in the control group was 100%. The suppression of these effects in the treated groups was calculated as a percentage of controls (Bum et al. 2010; Rang HP, Dale MM, Ritter JM 2003).

Pilocarpine Induced Convulsions

Pilocarpine-induced convulsions were done with the method of Patrick *et al.* (Doughari et al. 2012) and Luciana *et al.* (Luciana et al. 2012) with slight modification. In this experiment, seizures were induced by an i.p. injection of Pilocarpine (240 mg/kg) into drug or vehicle-treated male mice. Albino mice (18-22 g) were divided into four groups (n=5 mice of either sex in one group). Group I received respective vehicles (10ml/kg); Group II was allotted for standard drug (Diazepam 5mg/kg i.p.), and Group III and IV received ME (200 mg/kg and 400 mg/kg i.p.) at different doses levels respectively. After 1 hr of injecting distilled water, Diazepam and ME into mice, Hyoscine butyl bromide (1 mg/kg i.p.) was administered. The animals were pretreated with Hyoscine butyl bromide to minimize the peripheral autonomic effects of Pilocarpine. Pilocarpine was administered to mice of Group -II at 15 minutes and group- I, III and IV at 30 minutes, respectively, after Hyoscine butyl bromide injection. After the injection of the Pilocarpine, the animals were placed separately into the transparent Plexiglas testing chamber and recorded data as previously described in the INH experiments.

Gastrointestinal motility test

Experimental procedure described by Dosso *et al.* (Dosso K., N'guessan, B.B., Bidie, A.P., Gngangan, B.N., Méité, S., N'guessan, D. 2011). For this purpose, the mice of either sex (25 to 35 g) fasted 18 to 24 hr before starting the experiment. Animals were divided into four groups, each of six animals. The

control group were given normal saline (10 ml/kg) i.p, the standard group were treated with castor oil (0.2ml/mice) as the standard drug, and the remaining groups were treated with methanolic plant extracts (200 and 400 mg/kg i.p). After 30 min of injecting saline, castor oil and extracts, 10% active charcoal in 100 ml of 5% aqueous gum acacia was administered (5 ml/kg p.o). After 1hr of administering charcoal, the animal was killed by cervical dislocation and dissected. The dissected animals were placed on a clean surface, and the distance travelled by charcoal was measured. Then GIT motility was calculated for all groups. The percent motility was calculated using the following formula:

$$\% \text{ inhibition of mortality} = \frac{T_0 - T_1}{T_0} \times 100$$

T₀ = total length of intestine

T₁ = distance travelled by charcoal in the intestine.

Statistical analysis

The data obtained by the various parameters were statistically evaluated using a one-way variance analysis (ANOVA), followed by a student t-test.

RESULTS AND DISCUSSION

Phytochemical screening

Preliminary phytochemical screening found that flower extract contains alkaloids, phytosterols, diterpenes, amino acid and proteins, and flavonoids and phenolic compounds. (Table .1).

Table 1.: Results of different group tests of flowers of *O.robusta*

Phytochemicals	Leaves Extract
Alkaloids	-
Phytosterols	+
Diterpins and Triterpens	++
Amino acid and protein	-
Flavonoids	+
Phenolic compounds	+
Saponins	+
Glycosides	+

*+= Presence, - = Absence

Acute Toxicity Test

The *O. robusta* leaves extracts at doses of 1000, 1500 and 2000 mg/kg had no adverse effect on the behavioural responses of the tested mice up to 72hrs of observation. There was no mortality observed at all the tested doses. None of the used doses affected the weight of the mice. Therefore, the LD50 of ORE was estimated to be more than 2000 mg/kg. As the maximal dose used in the analgesic trial was five times less than the doses (200

and 400 mg/kg) administered to mice and rats in the acute toxicity study, it is likely that these doses are exceedingly safe.

Antioxidant Activity

Determination of total phenolic content

The total phenolic content of *O. robusta* leaf methanolic extracts is shown in Table 2. The total phenol content of *O. robusta* leaf methanolic extract was determined (using a standard reference curve) at 88.83±1.02 mg of GAE/g of extract, suggesting that it may have antioxidant properties.

**Table 2. Determination of total phenolic contents of *O. robusta* leaves extract.**

Extract	Absorbance At 760 nm	Average absorbance.	Total phenolic Mg of GAE/mg of extracts
Methanolic extract	0.456	0.4623±.00376	88.83±1.02
	0.462		
	0.469		

Data represent mean ± SEM (n=3) of duplicate analysis

Free radical scavenging activity

In the current study, the fruit methanolic extract showed free radical scavenging activity with an IC₅₀ value of 2.67±0.016 mg/ml, and the maximum inhibition was found as 71.83%. On

the other hand, the standard Butylated Hydroxy Anisole (BHA) showed maximum inhibition of 93.09 %, and 50% inhibitory concentration (IC₅₀) was found as 4.10±0.035 mg/ml. Figure 1 shows the scavenging activity of leaf extract in a good way.

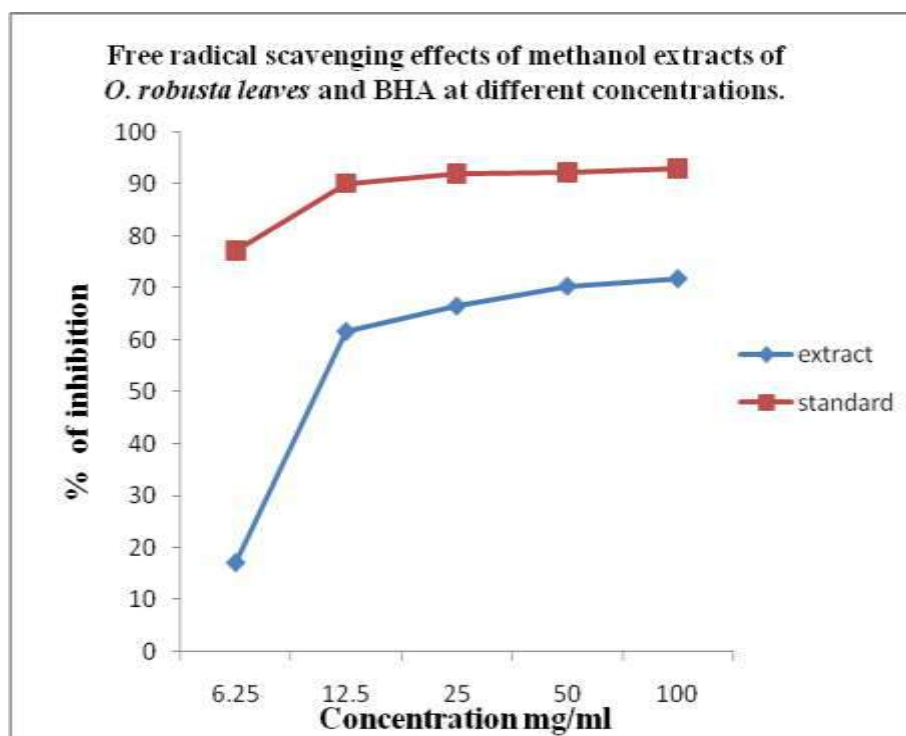


Figure 1: Free radical scavenging effects of methanolic extracts of *O. robusta* and BHA at different concentrations.

Membrane stabilizing activity.

The methanolic leaves extract was subjected to membrane stabilizing activity experiments, and the findings were statistically presented in Table 3. The results showed that the

leaf extracts (at a concentration of 1 mg/ml) were significantly ($p < 0.001$) effective in human erythrocytes against hypotonic solution and heat-induced lyses compared to the standard drug acetylsalicylic acid (0.10 mg/ml).

**Table 3: Effect of *O. robusta* leaf extract on the hypotonic solution and heat-induced erythrocyte membrane haemolysis.**

Treatment	Conc. mg/ml	% inhibition of haemolysis	
		Hypotonic solution-induced hemolysis (Mean±SD)	Heat-induced hemolysis (Mean±SD)
Control	50mM	-	-
ME	1 mg/mL	50.40±3.78***	22.72±3.208***
Acetyl salicylic acid(ASA)	0.10 mg/mL	76.60±3.97***	37.8±3.42***

ME= Methanolic extract, ASA= Acetylsalicylic Acid. Each value is presented as mean ± SEM (n = 5). Data are found to be significant by testing through one-way ANOVA at a 5% level of significance *** p<0.0001 when compared to the control.

Isoniazid induced seizures

Isoniazid (300 mg/kg i.p.) elicited clonic tonic convulsion in all the animals used. The methanolic extract of *O. robusta* leaves (200 mg/kg and 400 mg/kg i.p.) significantly (p<0.01;

0.001) delayed the onset clonic of convulsion time, significantly decreased the duration of isoniazid-induced seizures (p<0.001)

and showed a dose-dependent increase in anticonvulsant activity. Similarly, the standard anticonvulsant drug, Diazepam 5 mg/kg i.p., totally abolished the effects of isoniazid-induced convulsion in mice. Both 200mg/kg and 400mg/kg extracts showed 100% protection against INH-induced convulsion in mice with reduced flexion, hind limb extension and stupor phase of convulsion compared to the control treated group. (Table 4).

Table 4: Effects of pre-treated *O. robusta Baker* on Isoniazid-induced convulsions in mice.

Experimental group	Dose mg/kg b.w.	Onset of clonic Convulsion time (sec) Mean±S.D	Duration of convulsion time (sec) Mean±S.D	% Protection
G-I control	10 ml/kg (p.o.)	174.6±31.46	295.00±25.05	0
G-II (Diazepam)	5.0 mg/kg i.p.)	0.00±0.00***	0.00±0.00***	100
G-III ME	200 mg/kg (i.p.)	403.80±157.00**	128.60±19.34***	100
G-IV ME	400 mg/kg (i.p.)	735.25±256.48***	65.40±23.02***	100

All values are expressed as Mean ±S.D, n=5 mice in each group, by one-way ANOVA followed by Dunnett's Multiple Comparisons Test. (compared with the control group) *p<0.05, **p<0.01 and *** p<0.001.

Pilocarpine induced seizures.

Pilocarpine (240mg/kg body weight) produced convulsions in 100% of the mice used. The methanolic of *O. robusta* leaves extract at a dose of 200 mg/kg and 400 mg/kg i.p. significantly delayed the onset of Pilocarpine -induced seizures (p<0.01;

0.001) and significantly decreased the duration of isoniazid-induced seizures (p<0.001). Similarly, the standard anticonvulsant drug, Diazepam 5 mg/kg i.p., totally abolished the effects of Pilocarpine-induced convulsion in mice (Table 5).

Table 5: Effects of methanolic extract on Pilocarpine induced convulsions in mice.

Experimental group	Dose mg/kg Bodyweight	Onset of clonic convulsion (sec) Mean±S.D	Duration of convulsion (sec) Mean±S.D	% Protection
G-I control	20 ml/kg (p.o.)	128.80±37.32	254.06±229.21	0
G_II (Diazepam)	5.0 mg/kg (i.p.)	0.00±0.00***	0.00±0.00***	100
G-III ME	200 mg/kg (i.p.)	319.2±75.044***	144.00±22.32**	100
G-IV ME	400 mg/kg (i.p.)	435.38±109.61***	74.20±32.72**	100

All values are expressed as Mean ±S. D, n=5 mice in each group, by one-way ANOVA followed by Dunnett's Multiple Comparisons Test. (compared with the control group) *P<0.05, **P<0.01 and *** P<0.001.



GI motility

Both concentrations of methanol extract significantly ($p < 0.001$) reduced the distance the charcoal meal travelled through the mice's gastrointestinal tract compared to the control group and

the castor oil-treated group. The passage of charcoal meal through the digestive tract was significantly slowed by extract at doses of 200 and 400 mg/kg (53.58% and 55.23%, respectively) (Table 6).

Table 6: GIT motility activity of the extract of *Ormosia robusta*

Treatment	Dose	Total length of intestine Mean \pm SD	Distance covered by charcoal. Mean \pm SD	% Motility Inhibition
Control	10ml/kg	61.83 \pm 1.77	45.83 \pm 1.57	32
Castor oil	0.2ml/mice	50 \pm 0.57	.39.58 \pm 1.00***	20.84***
extract	200 mg/kg	68.58 \pm 2.28	31.83 \pm 0.87***	53.58***
	400 mg/kg	60.5 \pm 1.11	27.08 \pm 0.37***	55.23***

Values are expressed as mean \pm SEM ($n=5$). *** $p < 0.001$ when compared to controls.

DISCUSSION

Some previous studies demonstrated that high levels of total phenolic contents exhibit high antioxidant capacity (S. A. Baba and Malik 2014). Antioxidants with phenolic components are among the most potent kinds of synthetic chain-breaking antioxidants because of their free radical scavenging ability facilitated by their hydroxyl groups, and the total phenolic concentration could be used as a basis for rapid screening of antioxidant activity. It also has an important role in preventing lipid oxidation (Sannigrahi et al. 2010). In our study, we also found the methanolic extract of *O. robusta* leaves rich in total phenolic components. The DPPH radical scavenging method is another standard procedure applied to the evaluation of the antiradical activity. The methanolic extract showed dose-dependent DPPH radical scavenging activity. The effect of the free radical scavenging activity of extracts on DPPH radicals is thought to be due to their hydrogen donation ability of polyphenols of *O. robusta*. The results showed that the leaf extract is a free radical scavenger which may limit the occurrence of free radical damage in the human body (Kumarappan, Thilagam, and Mandal 2012). The extract contains other phytochemicals like flavonoids, which suppress reactive oxygen formation, scavenge reactive species, and up-regulate and protect antioxidant defences (S. a. Baba and Malik 2014). Therefore, it may be said that the presence of higher total phenolic components and flavonoids may be responsible for demonstrating the antioxidant activity and free radical scavenging ability of the plant.

The results showed that *O. robusta* extracts were potent in membrane stabilizing activities on human erythrocytes. The activity was comparable to standard anti-inflammatory drugs (aspirin) and control. It was found that anti-inflammatory drugs act either by inhibiting lysosomal enzymes or through the stabilization of lysosomal membranes (I. Khan et al. 2009) as human RBC membranes and lysosomal membrane components are considered similar, so membrane stabilizing activity can play a significant role in anti-inflammatory activity (M. S. S. Khan et al. 2013). It has been previously reported that some

phytochemicals like flavonoids exert stabilizing effects on lysosomes (Sadique, J., Al-Rqobah, W.A., Bugharlth, M.E., Gindy 1989). Tannin and saponins also elicited membrane stabilizing activities by binding to the erythrocyte membranes with consequent alteration of surface charges like cations of cells (Shanbrany et al., 1977), and the report says that the leaf extract of *O. robusta* has tannins, saponin, and lots of flavonoids. The current analysis reveals that the membrane stabilizing action of *O. robusta* extracts plays a significant role in the anti-inflammatory activity, possibly as a result of their high flavonoids, tannin, or saponin content, which exhibits considerable clot lysis activity.

The methanolic extract exhibited a significant decrease in a different phase of epileptic seizure against Pilocarpine and isoniazid-induced seizures when compared with the control. Still, it is showing moderate activity when compared to that Diazepam. Isoniazid exerts its convulsive effect by inhibiting GABA synthesis below a critical level in some neurons, thereby leading to CNS excitation and convulsions (Wood and Peesker 1973). Isoniazid-induced seizures were carried out further to confirm the GABA-enhancing activity of the plant extract. The methanolic leaf extract also showed anticonvulsant effects against PILO-induced seizures. PILO, a cholinergic agonist, is widely used in studies of epilepsy as a model of experimentally induced limbic seizures. It is demonstrated that Pilocarpine, acting through muscarinic receptors, causes an imbalance between excitatory and inhibitory transmission resulting in the generation of SE and simultaneously decreasing acetylcholinesterase enzymatic activities and GABAergic receptor densities (Doughari et al. 2012; Giulia, C., Daniela, L., Giuseppe, B., Roland, S.G.J., and Massimo 2008; Quintans et al. 2008). The extract, when compared to the control-treated group, produced a significant increase in the time of onset of clonic seizures; this shows a dose-dependent increase in the anticonvulsant activity in both pilocarpine-evoked status epilepticus (SE) and isoniazid induce a seizure. Diazepam widely used as a convulsion-reducing drug, also did not affect



the incidence of seizures or death but significantly delayed the onset of seizures.

Previous studies showed that various phytochemicals like terpenoids, alkaloids, saponins, and flavonoids showed anticonvulsant activity (Hui-Ling, Z., Jian-Bo, W., Yi-Tao, W., Bao-Cai 2014). Terpenoids exhibited an anticonvulsive effect (Kazmi et al. 2012). This effect, possibly mediated by the facilitation of GABA transmission, elevates GABA levels, possibly through potentiation of GABA synthesis, which has been evaluated in isoniazid-induced seizures in rats. Terpenoids could reduce pilocarpine-induced seizures probably by modulating other systems' neurotransmitters rather than the GABAergic system (Costa, J.P., Ferreira, P.B., De Sousa, D.P. 2012). Saponins components are useful in the treatment of convulsive disorders, although their action mechanisms remain unclear (Jalsrai, A., Grecksch, G., Becker 2010). Flavonoids, one of the major antioxidants, has been discovered to possess remarkable anticonvulsant and neuroprotective effects on pilocarpine-evoked status epilepticus (SE) and isoniazid induce a seizure in rats (Diniz et al. 2015). There is ample evidence to show that lipid peroxidation levels are increased during the acute period of PILO-induced seizures in adult rats (Tejada, S., Sureda, A., Roca, C., Gamundí, A., Esteban 2007), suggesting the involvement of free radicals in the PILO-induced brain damage. This is further supported by the fact that certain antioxidants have shown anticonvulsant activity against PILO-induced SE, which could be attributed to cholinergic antagonism at the M1 or M2 receptors or an increase in GABA and/or/or its receptor densities or through antioxidant mechanisms (Carlos, R.M., Carmen, A., José Luis, G.G., José Santiago, I.C., Marta, SC, Federico 2014). Data from our laboratory (antioxidant test) indicate that ME has a marked antioxidant and free radical scavenging effect *in vitro*. And the anticonvulsant effect may be ascribed to the protection of endogenous enzyme levels, an increase of the GABA level in the brain, and inhibition of oxidative injury.

The charcoal meal passage test is one of the well-established methods for finding GIT motility in animal models. It is well-established that castor oil produces diarrhea by the release of prostaglandins which stimulate the gastrointestinal motility and secretion of water and electrolytes (Murugesan, T., Ghosh, L., Mukherjee, K., Das, J., Pal, M., Saha 2000). Our results indicate that the ME decreased gastrointestinal motility was comparable to control and castor oil as a standard drug. Various researchers have suggested the presence of phytoconstituents in the plant leaves, like flavonoids, tannins, saponins, polyphenols, alkaloids and reducing sugars, can decrease GI motility (Atta, A.H., Mouneir 2004; Sebai, H., Jabri, M.A., Souli, A., Rtibi, K., Selmi, S., Tebourbi, O., El-Benna, J., Sakly 2014; Umer, Tekewe, and Kebede 2013). The dose-dependent activity of ME extract can be possibly attributed to the dose-dependent actions of flavonoids (Jeffrey B. Harborne and Williams 2000). Various researchers reported that tannins, polyphenols, reducing sugars,

and saponins (Ojewole, J.A., Awe, E.O., Nyinawumuntu 2009) could be responsible for antidiarrheal actions. The plant is good for constipating as it decreases intestinal motility. Thus, antidiarrheal actions shown by ME extract may be possibly correlated with the presence of such phytochemicals.

CONCLUSION

The crude extract of leaves is used to cure constipation in traditional medicine, and the extraction of such chemicals can aid in developing antidiarrheal drugs. The hydro-ethanolic extract of the entire plant of *O. robusta* exhibits anticonvulsant and motor impairment effects in rodents, most likely due to an interaction with gabaergic neurotransmission. Antioxidant characteristics may alter anticonvulsant effects. This study proves that this herb has been traditionally used to treat epilepsy in Ghana. Future research will isolate, purify, and identify the chemical components responsible for the CNS actions of *O. robusta*.

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COMPETING INTERESTS

There are no conflicts of interest associated with the authors of this paper.

AUTHORS' CONTRIBUTIONS

All of the authors collaborated to finish this work. PC conceived the study, performed the statistical analysis, produced the protocol, and wrote the report. FM did the literature searches. LB did the analysis and supervised study. All authors have read and approved the final manuscript.

ETHICAL APPROVAL

All animal experiments were performed in accordance with the Animal Ethical Committee from Noakhali Science and Technology Research (NSTU) Cell of Noakhali Science and Technology University, Bangladesh. The animal experiments were reviewed and approved by Animal Ethics Committee of Noakhali Science and Technology University, Bangladesh.

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DEVELOPMENT OF A BASED LEARNING MODEL TO IMPROVE STUDENT LEARNING OUTCOMES IN ENGLISH LEARNING IN SUGGESTION/ADVICE MATERIAL IN CLASS XI MIPA 1 SMA NEGERI 1 BANDUNG

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ABSTRACT

This study aims to develop a Problem Based Learning learning model to improve English learning outcomes on suggestion or advice material in class XI MIPA at SMA Negeri 1 Bandung. This study aims to improve students' abilities. The method used is the development research method (Research & development). Meanwhile, the development of learning and research will produce a new way or syllabus in teaching learning that will provide motivation to students. The results of research with the application of the PBL learning model can significantly improve student learning outcomes. This is evident from the acquisition of scores before and after the application of the PBL learning model. The results of the average pretest score of 55.50% were in the "Less" category, which reached the KKM score of 3 people (8.33%). In cycle 1 after implementing the PBL learning model, the average score was 75.02, categorized as "Good", which achieved a KKM score of 19 people (52.77%). In the second cycle, the average score increased again to 86.08, in the "Very Good" category, which reached the KKM score of 34 people (94.44%).

KEYWORDS: learning model Problem Based Learning, research and development methods (Research & development and learning English)

I. INTRODUCTION

The MIPA class is a mathematics and natural sciences major which consists of several subjects that must be taken by students, one of which is learning English as a compulsory subject that can help them in the world of lectures and the world of work. A number of facts show that student learning outcomes are low, one of which is that teachers use more conventional models with the lecture method, so students are not motivated to learn. Selection of the learning model is one of the efforts that can be made by the teacher to improve student learning outcomes. Thus, the researcher tries to conduct this class action research or in short PTK through the application of Problem Based Learning (PBL) learning models or methods to teaching English on suggestion/advice materials. This research was carried out in two cycles through the stages of planning, implementing, observing and reflecting.

The results of research with the application of PBL learning models or methods can significantly improve student learning outcomes. This is evident from the acquisition of scores before and after the application of the PBL learning model. The results of the average pretest score of 55.50% were in the "Less" category, which reached the KKM score of 3 people (8.33%). In the 1st cycle after the application of the PBL learning model or method, the average score was 75.02, categorized as "Good",

which achieved a KKM score of 19 people (52.77%). In the 2nd cycle, the average score increased again to 86.08, in the "Very Good" category, which achieved the KKM score of 34 people (94.44%).

The increase in average and pretest scores to the 1st cycle was 19.52, the increase in KKM score achievement from the pretest to the 1st cycle was 44.42%. The increase in scores from the 1st cycle to the 2nd cycle was 11.06. The increase in KKM score achievement from the 1st cycle to the 2nd cycle was 41.67%.

The percentage of student activity in cycle 1 that was categorized as "Good" was 63.07%, that was categorized as "Enough" was 22.49%, that was categorized as "Less" was 14.44%. Activities in the 2nd cycle that are categorized as "Good" are 84.45%, those that are categorized as "Enough" are 13.33, those that are categorized as "Less" are 2.22%. Student responses to the application of the PBL learning model or method stated SS (Strongly Agree) 80.29%, stated S (Agreed) 13.89%, stated CS (Quite Agree) 4.44% and stated KS (Less Agree) 1.38%.

By increasing the average value and increasing the percentage of student activity mentioned above, it can be concluded that the PBL learning model or method is effective, because it can increase student learning outcomes in learning



English towards suggestion/advice material, and continuous responses from the teacher, and requires proper preparation. ripe. Key words Problem Based Learning (PBL) learning model or method in Suggestion/Advice material.

II. LITERATURE REVIEWS

Government regulations as a reference point, namely Permendiknas number 22 of 2006 concerning Filling Standards for Elementary and Middle School Education Units, explain that MIPA learning in high schools uses the inquiry method or the study of something that is critical to searching for information on theory and data, analysis of implementation. research, and argumentative (scientific) by using certain steps towards conclusions. This inquiry method can be used as a means to train students in work, critical thinking, networking or communication as well as thinking logically or scientifically. Apart from that, the Permendiknas provides advice for MIPA to experience direct learning which can be assessed through the attitude and process skills of the students. Therefore, teachers should be able to create learning methods that are more creative and innovative in dealing with the times and the younger generation, namely students in utilizing ICT in Suggestion/Advice material in the application of the PBL learning model (Batubara, 2017: 115).

Ministry of National Education, 2009 states that the government has demanded that teachers be able to use ICT both in teaching daily learning and utilizing ICT in administrative filling such as syllabus, working on lesson planning implementation (RPP) and making interesting learning material strategies for the millennial generation, generation z to the alpha generation that must be faced as students or students.

III. RESEARCH METHODS

The research method used is based on Research and development (R&D) research methods which are directly applied to students, namely XI MIPA 1 students at SMA Negeri 1 Bandung. According to Sukmadinata (2015: 164) Research and development in this classroom action research method by means of R&D or Research and development is a research method in a process of developing new learning models that can improve old learning methods that can be used and accounted for. This research method is a development of a method or method of the teaching process in English subject classes which is applied to the teaching of Suggestion/Advice material.

This study has the instruments used in this classroom action research or in short PTK as research material and research data collection to be able to produce the necessary and needed data. This class action research instrument or in short PTK includes:

1. Learning Implementation Plan (RPP) to be carried out in English subjects by applying the Problem Based Learning (PBL) learning model.
2. Developing multiple choice questions (PG) to find out the results of this class action research or in short PTK is carried out directly to students of English class XI who apply the Problem Based Learning (PBL) learning model or method.

3. Assessment Guidelines with a predetermined range of values.
4. Competency achievement is given an assessment of "very good", "good" and "enough".
5. Guidelines and observation formats in monitoring students in carrying out this class action research or in short PTK.
6. Guidelines and observation formats in monitoring teachers in conducting this class action research or in short PTK.
7. Questionnaires or questionnaires containing questions regarding classroom action research in connection with a new learning model that uses Problem Based Learning (PBL) learning models or methods. Questionnaires were distributed directly to students, namely students.

This class action research method is related to one another so that it cannot be separated. However, the classroom action research formula by applying the Problem Based Learning (PBL) learning model or method can be used in learning other subject matter, not just learning English. So that this research method is expected to be used or carried out by teachers and academics in Indonesia.

IV. RESEARCH RESULTS AND DISCUSSION

The results of this study were carried out in two cycles, each cycle was carried out with a vulnerable time of two learning meetings using the Problem Based Learning (PBL) method on Suggestion/Advice material. The action of this research in the learning process is carried out through four stages of learning, namely:

1. The planning stage (Planning), at this stage the teacher as a researcher carries out a learning formula with a new model in the use of a Problem Based Learning (PBL) method or model in the Suggestion/Advice subject matter.
2. Stages of Implementation (Action), in the action stage the teacher as a researcher conducts classroom action research directly through the Problem Based Learning (PBL) method or model or learning method in the Suggestion/Advice material subject which is carried out in class XI MIPA at SMA Negeri 1 Bandung.
3. Observation Stage, at this stage the teacher as a researcher makes direct observations through this class action research or abbreviated CAR on the Problem Based Learning (PBL) method or model or learning method on Suggestion/Advice material subjects with samples or objects carefully namely 36 students which is the number of students present at the pretest.

The results of class action research using Problem Based Learning (PBL) methods or models in the Suggestion/Advice subject matter carried out in class XI MIPA at SMA Negeri 1 Bandung, yielded a percentage in the form of an assessment of pre-test results. This pretest or research was conducted on Thursday, August 19, 2021 with a predetermined time duration. This class action research pretest or PTK in short on the Problem Based Learning (PBL) method or model or method of learning in the subject matter of Suggestion/Advice with a sample or careful object, namely 36 students which is the number of students present at the time of the pretest. two meetings, namely 18 pretest students



in the first group and 18 students in the second pretest group.

The results of this pretest are the results of classroom action research on Problem Based Learning (PBL) methods or methods in the Suggestion/Advice subject matter with a fairly disappointing percentage of 55.50 in the "Less/sufficient" category. The results of this study are facts without engineering, the pretest scores of students with a total of 36 students who achieve KKM scores are 3 people or 8.3%. Meanwhile, 33 students or 91.67% had scores below the KKM score. The highest score obtained was 76 and the lowest score was 47. Table 1. The acquisition of the average score and the percentage of achievement of the KKM score in the pretest to clarify data from class action research using the Problem Based Learning (PBL) method or method in the Suggestion subject matter /Advice.

Table 1. Acquired average score and percentage of achievement of KKM scores in the pretest

Total Students	Average value	complete	%	Non complete	%
36 Peoples	55,5	3 Peoples	8,30 %	33 Peoples	91,6 7%

Source: Private Classroom Action Research Results

The acquisition of the average percentage of achievement of the KKM score is still in the "Less" rating so there must be a new learning method that is felt to have a direct impact on students.

Table 2. Percentage of students' ability categories in the pretest

Action	Total Students	Category	Amount	Percentage
Pretest	36 Peoples	Low/less	22 peoples	61,12%

Source: Private Classroom Action Research Results

The results of the percentage of students' ability categories in the pre-test resulted from 36 students participating in the pre-test 5 students getting pre-test results with the "good" category with a percentage of 13.88%, while the pre-test participants 9 students got pre-test results with the "enough" category with a percentage of 25%. and the lowest category, namely "low/less" has a total of 22 students with a percentage of 61.12% which is more than half the number of pretest participants.

The results of the acquisition of the average value of the class action research pretest students or abbreviated PTK in the Problem Based Learning (PBL) method or model or learning method in the Suggestion/Advice subject matter with careful samples or objects, namely 36 students, namely class XI MIPA students 1 SMA Negeri 1 Bandung. Reaping the overall results with the "Low/less" category. This can be used as a sample for further research by comparing methods and learning styles with new models or methods. The learning process is carried out online which has a considerable influence on research results and the offline learning process is carried out every three weeks with a student population of 50% of the total number of students in the class. In face-to-face or offline learning it is used to carry out a

pretest as the end point of the research.

CONCLUSIONS AND RECOMMENDATIONS

The results of the research that has been given a clear discussion can be drawn conclusions, namely:

1. The learning model with the Problem Based Learning (PBL) method or learning method in the Suggestion/Advice material subject with a sample or careful object, namely 36 students, namely class XI MIPA 1 students at SMA Negeri 1 Bandung, is deemed less effective and can be further developed with a more fun method that can be accepted by generation z or the current generation.
2. The learning model with the Problem Based Learning (PBL) method or learning method in the Suggestion/Advice material subject with a sample or careful object, namely 36 students, namely class XI MIPA 1 students at SMA Negeri 1 Bandung, is felt to be less effective with hybrid learning so that many students do not understand the learning material.

The conclusion of the research results above can be given suggestions to improve the results of subsequent research, suggestions that can be used include:

1. Teacher

The learning model uses the Problem Based Learning (PBL) method or method for the Suggestion/Advice material subject with a sample or object, namely 36 students, namely class XI MIPA 1 students at SMA Negeri 1 Bandung, the research phase formula can be taken as a reference for subsequent research. with a more creative combination of methods.

2. Students

Students who use the Learning model with the Problem Based Learning (PBL) method or model or learning method in the Suggestion/Advice subject matter can better understand the conditions of offline or face-to-face classes.

3. Other Researchers

The learning model with the Problem Based Learning (PBL) method or model for the Suggestion/Advice material subject carried out in class XI MIPA 1 SMA Negeri 1 Bandung can be used as a sample reference for comparison of other learning methods.

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THE GREAT GERBIL (*Rhombomys opimus*) AS A RESERVOIR OF CUTANEOUS LEISHMANIASIS IN THE NORTH REGIONS OF KARAKALPAKSTAN

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SUMMARY

In the article, it is shown that the burrows of the giant sand mouse in the Eshki olgen and Mautam sand massif in the western part of the Beltau Height of North West Kyzylkum are the natural endemic foci of cutaneous leishmaniasis.

KEY WORDS: Great gerbil, dynamic changes, ecological, epizootic, epidemic, prevention.

INTRODUCTION

According to the location of the territory of the Beltau Heights, Takhtakupir, Karaozek, Shymbai districts are located together, and the complex alluvial plains in the distance from the Zhaltyrbas river, Kuskanatau, Akunbaba herds, bordering Kazakdarya, are the endemic foci of cutaneous leishmaniasis.

It seems that the Beltau highlands have been overpopulated (harvested) during the last (50-60) years and are becoming a dangerous epidemiological focus. This is proof that in the last 2 years (2021-2022) cutaneous leishmaniasis has spread among people in Takhtakupir, Karaozek, and Shymbai districts, which are adjacent to this territory. Cutaneous leishmaniasis epizootics were recorded from great gerbil in the examination of all regions of the North western Kyzylkum (Dubrovsky, Asenov, 1970; Konshina, 1972), in the Central Kyzylkum (Bolshakova, 1973), in the eastern desert region of North (Eliseev, Sidorova, 1958; Bolshakova, 1973, etc.).

In all these territories, there were a number of points with less than 20% damage, more than 50% damage, and in some cases more than 100% damage. Leishmaniasis in the form of a natural outbreak in Uzbekistan, which was reported in the Karshi territory which is a territory under epidemiologic surveillance.

The territory of Beltau is in direct connection with the densely settled agricultural zone, starting from Eshki Olgen sand. The area of people living in the farm is considered to be a densely populated area throughout the year. Mainly for the development of grazing livestock pastures, Karakol herding, breeding, and horse breeding. In the mentioned consular district, the role of the fishermen in food production is huge.

The presence of a large number of birds, rabbits, and fishing is considered a very favorable situation. Beltau height, starting from Borshetau district in the east and extending to Kuskhanatau, Shahaman, Kazakdarya in the west, causes skin leishmaniasis in all territories. Animals that cause cutaneous leishmaniasis include hares, fox, vulpes corsac jackals, wolf and other species are calculated. And many different parasites

in the burrows above them are ticks, fleas, and mosquitoes that bring disease from illness to health. Large gerbil burrows are considered to be used as a source of food for ungulates.

Researchers of the USSR determined that the causative agent of skin leishmaniasis is the great gerbil, and the carrier is flies. Y. P. Vlasova and P. A. Petrishevoy (1932). These flies have determined that a large number of small animals, such as gerbils and small-toed bats, can be found all the time. N. I. Latyshev and Kryukova received the first information about the causative agent of the disease in the fall of 1937 and diagnosed cutaneous leishmaniasis from the skin of the injured ear of a gerbil. The role of rodents as a causative agent (reservoir) of cutaneous leishmaniasis was determined, and deep epidemiological studies were conducted in 1939-1

MATERIAL AND METHODS

The materials for the research work were studied in the territories close to Daukara and Karaoy areas of Takhtakupir district of Karakalpakstan during 2017-2022 (Fig. 1). In places close to this point, in the piled sands in the area near man-made houses, in the relief elements close to the sands, the large number of sand mice, distribution in natural conditions was studied. This is because the number of people infected with cutaneous leishmaniasis in the rural health centers in the area near this biotope has increased in the last two years, according to the cordic sanitation epidemiology information (Fig. 2).

It was determined that most of the people affected by cutaneous leishmaniasis are farmers, fishermen, livestock keepers and field workers. For that, endemic foci of cutaneous leishmaniasis, suitable habitat types, boundaries and population distribution of large gerbil nests, number indicators per hectare on the breeding front were determined. In order to determine the abundance and number of the big sand mouse, the linear route and the nests counting (colonial) methods were used. In the specified direction, the method of counting the nests is calculated in the same way as for counting the number of large gerbils.



Colonies with a length of 5 km and a width of 20 meters to the right are considered to determine the density of colonies in the studied territory. Every year, in every season, 40-50 mice from each sector are caught in a row in 5-10 squares, and the materials that come to the laboratory are spread over them, the condition of their fur is checked, the condition of their internal organs, cleanliness, age, sex, condition of generative organs, similarity, constriction, accommodation of embryos in the fallopian tubes, counting the number of embryos in the developmental stage, presence of blood-like black spots in the fallopian tubes, and cases of miscarriage were determined. The methods of determining and analyzing the reproduction of rodents were based on the indications of (Saratov, 1978).

THE RESULTS

When we analyzed the data on the reproduction of the great gerbil in the years 2017-2022 from the Mautam and Eshki Olgen lake sectors of the Belta massif, we analyzed it starting from the period when 2017 came out of the depression. When we determined the potential for the spread and reproduction of the big sand mouse in these biotopes in a short period of time, the number of colonies in the sand dunes near the settlements increased in 2021-2022.

According to our material, in the case of goat-grown goats in Beltau region, the number of living colonies in 2017 is 24.4%, the number of living colonies per 1 hectare is 1.3 mice in 2017, and the average number of colonies in 2021-2022 is 29.5%, per 1 hectare. the number increased by an average of 2.4 mice. Table 1. 2.

Table 1
Beltau height, Eshki olgen and Mautam sectors Differences in the number of gerbils

Years	Average number of sand mice per 1 hectare	The breeding place of the great gerbil sand mouse by month is in % (I – XII)											
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
2017	1.3	-	-	21.9	23.7	-	-	-	25.0	-	27.3	-	-
2018	1.5	-	23.3	-	25.0	26.6	-	24.2	-	27.5	29.1	22.7	-
2019	1.4	-	-	22.7	24.3	26.0	-	-	27.1	-	28.8	-	-
2020	1.6	21.9	-	24.8	-	27.1	28,7	-	-	30.1	-	-	-
2021	2.7	-	23.3	-	26.0	31.6	-	-	28,3	34.6	31,1	-	-
2022	2.4	18.4	-	23.8	24.6	27.1	-	-	-	32.3	34.0	29.7	-

Table 2
Eshki olgen and Mautam sectors of Beltau Heights
Breeding potential of the great gerbil

Years	Amount of rain in the interval X-V	Reproductive rate is the number of embryos per 100 females	The number of births per female per year	At the expense of chronic hangover	The average number of embryos that come to one pregnant tumor	Adult males were females on the basis of %
2015	282,2	647,8	0,7	198,9	3,7	63,9
2016	296,0	181,6	0,2	72,4	1,1	73,1
2017	184,2	169,3	0,1	67,9	1,1	81,3
2018	251,2	318,0	1,2	121,7	2,1	61,8
2019	199,6	824,9	1,6	341,5	5,8	61,4
2020	169,4	593,6	1,1	237,2	4,0	59,3
2021	50,2	2600,8	2,4	991,3	13,4	57,6

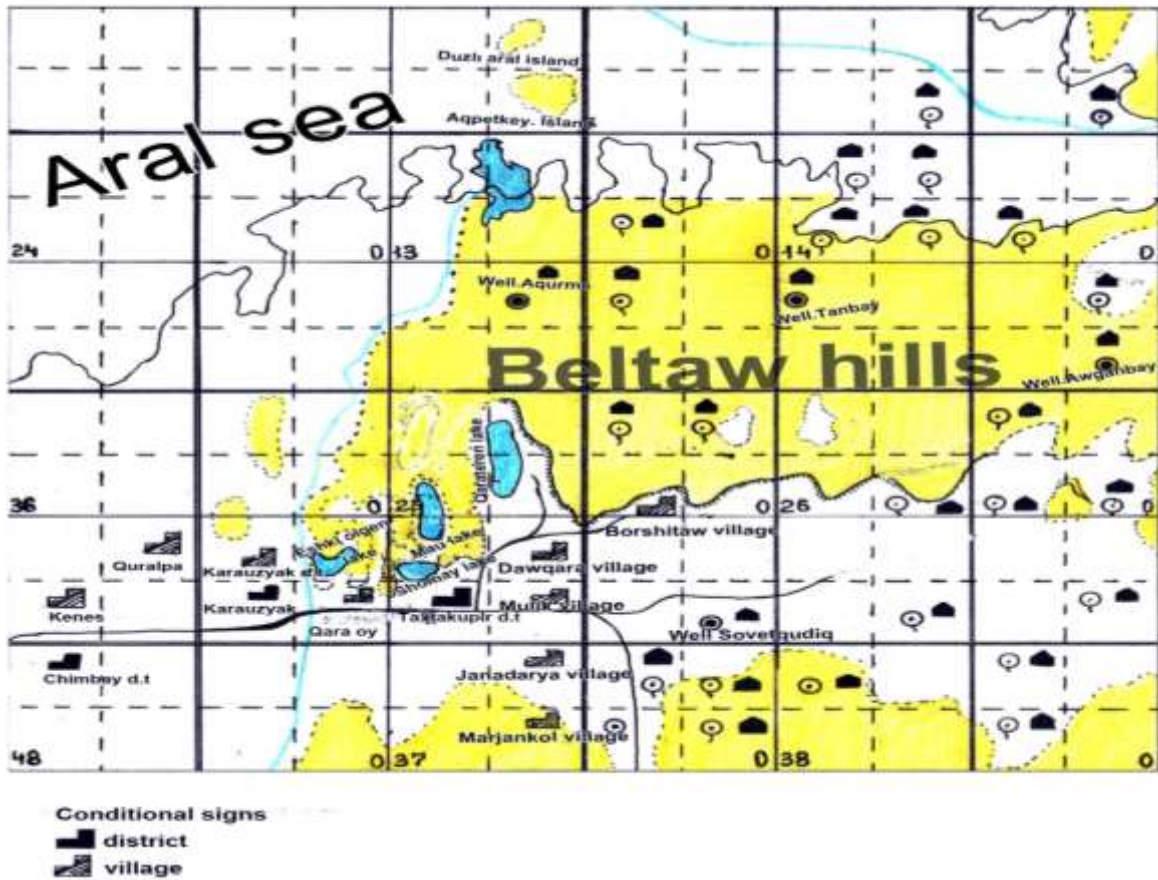


Fig.1. Territories of activity of the Takhtakupur Anti-Plague Department

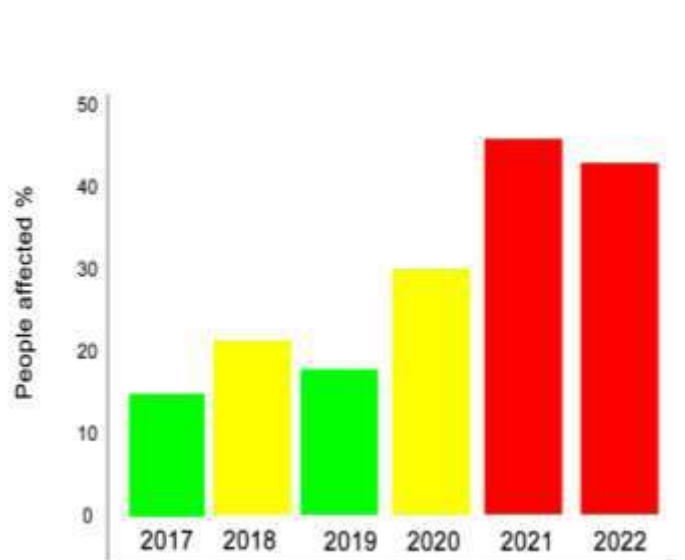


Fig. 2. Sanitation epidemiological information, changes in the number of people affected by skin leishmaniasis in some areas of Takhtakupir

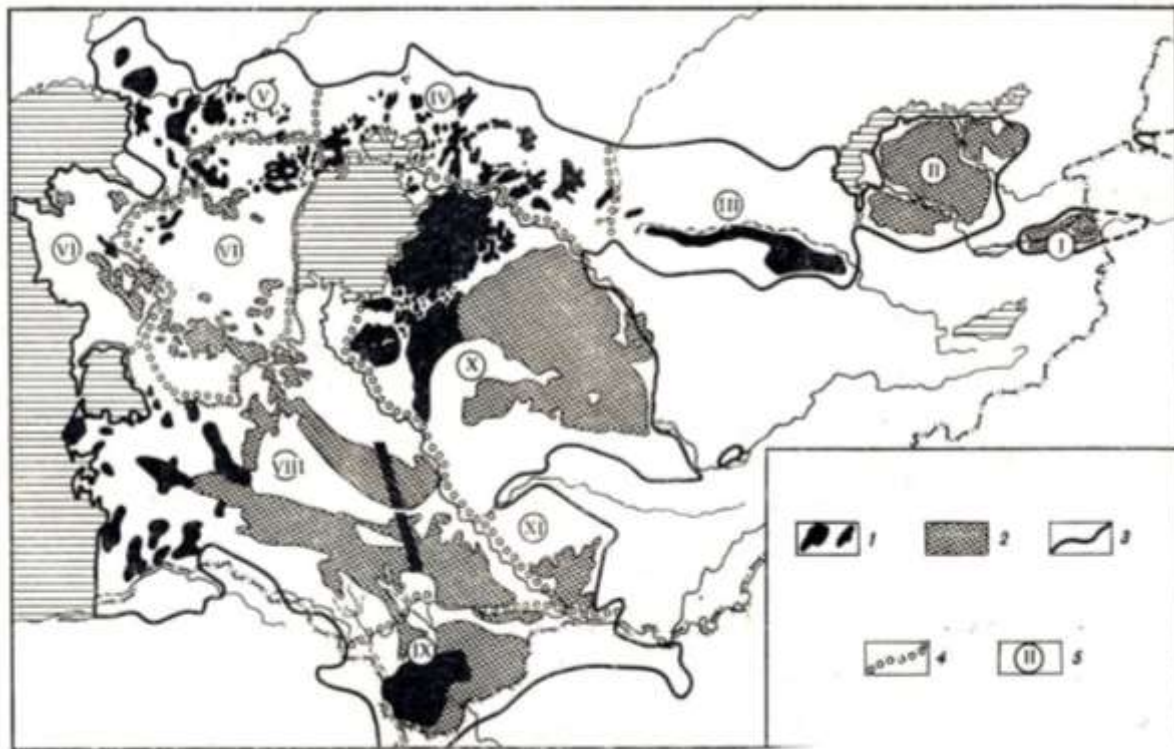


Fig. 3. Spatial structure of the Turan part of the range of the great gerbil (location of gerbils and division of the range into regional complexes of autonomous population groups).

1-dense settlements of large gerbils (more than 1 burrow per 1 ha or more than 2.5 burrows per 1 km of the route).

2-proposed contours of dense settlements (vegetation communities, to which, as a rule, dense settlements of great gerbils are confined).

3-boundary of the range of the great gerbil.

4-boundary of regional complexes of autonomous population groups

5-numbers of regional complexes of population groups

CONCLUSION

Based on the materials cited in the literature and our own observations, we had the opportunity to make the following summaries.

1. In the last 2 years (2021-2022) in the Kyzylkum plague center and in the territories related to it, we were the source of many cases of leishmaniasis in North district.

2. It was determined that the source and spreader of cutaneous leishmaniasis is a great gerbil in nature, and the territory of its active distribution.

3. Leishmania, the causative agent of some skin leishmaniasis, has not yet been identified, so effective preventive measures have not yet been implemented.

4. The role of the gerbil in spreading cutaneous leishmaniasis of other species has not yet been determined. It is considered as a basis for future research.

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A BRIEF HISTORY OF THE STUDY OF SALT SOILS IN CENTRAL ASIA

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ABSTRACT

The article considers the results of some authors who studied various characteristics of saline soils in Central Asia, as well as their methodological approaches used in assessing these characteristics.

KEY WORDS: *Central Asia, saline soils, toxic and non-toxic salts.*

INTRODUCTION

Saline soils are an essential component of natural and anthropogenic landscapes in arid areas. Salinity is one of the main genetic features of arid soils, as well as a property that limits their fertility.

Numerous studies have established that salinity and salt regime of soils in the Aral Sea basin is a very dynamic process in time and space and depends on climatic, hydrological, geomorphological, hydrogeological and irrigation and economic conditions. The study of the whole set of factors that determine the migration of salts and soil salinization, the centuries-old practical experience in combating salinization and the achievement of reclamation science makes it possible to develop scientifically based systems of hydrotechnical and agrotechnical measures to combat salinization on developed lands and to predict changes in the water-salt regime and balance, that may occur when new lands are irrigated to prevent their salinization [1-13].

Therefore, it is important not only to analyze the existing studies on saline soils, but also to study the methodological approaches used by the authors in conducting these studies [12-14].

GENERAL CONTENT OF THE ANALYTICAL REVIEW

A significant contribution to the study of various aspects of saline soils, apparently, belongs to V.A. Kovda, who is the author of the two-volume book "Origin and regime of saline soils", known among specialists, published by the publishing house of the Academy of Sciences of Russia in Moscow-Leningrad in 1946-1947. [1].

Volume I discusses very useful and necessary aspects of saline soils by chapters: 1) origin, movement and accumulation of salts, 2) salt balance of soils and territories, 3)

modern centers of salt accumulation in the soils of the USSR and neighboring countries, 4) factors of soil mineralization waters, 5) the main patterns of salt accumulation in groundwater, 6) salt accumulation in soil solutions and their salt regime, 7) salt accumulation in soils and soils, 8) secondary salinization of soils during irrigation, 9) water regime of saline soils, 10) salt regime of soils irrigated areas.

In his 1st volume, V.A. Kovda writes that most scientists (V.M. Goldshmit) believe that CL (chlorine) and S (sulfur) were part of the primary solution of salts in ocean waters, even at the time of its formation. The possibility of bringing in a large amount of CL, S and B (boron) from volcanic gases and volcanic sources is not excluded, but even after the magma cools and turns into a massive crystalline rock, it continues to be a source of CL, S and B Na (sodium) for a long time, Mg (magnesium) and K (potassium) were already mainly products of weathering and chemical denudation of massive crystalline rocks that make up the continents.

Throughout the geological history of the earth's crust, a cycle of easily soluble salts has flowed between the earth and the ocean, and the balance of this process has generally been in favor of the ocean. However, along with this circulation of salts between the ocean and the continents, salt differentials took place in accordance with their solubility, which led to the predominant accumulation of sulfates and carbonates on land and chlorides in the ocean.

For the territory of the USSR and neighboring countries, V.A. Kovda identified the following provinces of salt accumulation: a) the province of chloride salt accumulation, b) the province of sulfate-chloride accumulation, c) the province of chloride-sulphate accumulation, d) the province of sulfate-soda accumulation.



B.V. Fedorov in 1950 wrote the book "How to deal with soil salinization in irrigated areas", Ed. Academy of Sciences of the Uzbek SSR, 66 p. [2]. He wrote that one of the most harmful salts is table salt (NaCl), Glauber's salt is less harmful than table salt, gypsum and lime are themselves harmless to plants. Huge reserves of salts are contained in ancient rocks that lie at one or another depth from the surface of the earth. He also noted that special soils that have undergone profound changes are called solonchaks: they pass water very poorly, and when dried, they become excessively compacted; these soils are difficult to cultivate, and when they are plowed, very strong lumps are formed.

Salts:	Na ₂ CO ₃	NaCl	NaHCO ₃	Na ₂ SO ₄
Degree of toxicity:	10	3	3	1

P.A. Pankov in his textbook "Reclamation Soil Science" (Tashkent: Ukituvchi, 1974, 415s.) notes that the main chemical elements involved in the salinization of soils, surface, ground and soil waters of land include Ca; Mg; Na;

L.P. Rozov (1956) in his textbook "Reclamation Soil Science" (M.: Selkhozgiz, 1956) refers NaCl, MgCl₂ to harmful salts; CaCl₂; Na₂SO₄; MgSO₄; Na₂CO₃, and NaHCO₃; to harmless -CaSO₄; MgCO₃; CaCO₃; Mg(HCO₃)₂ and Ca(HCO₃)₂[3].

S.A. Vladychensky (1964) in the textbook "Agricultural soil reclamation" (Moscow: Moscow State University, 1964) gives the following example of the ratio of the toxicity of various sodium salts, if we take the toxicity of sodium sulfate (Na₂SO₄) as a unit (1) [4] :

TO; ABOUT; CL Sulfur(S), carbon(C), nitrogen(N), boron(B), etc. [5].

M.A. Pankov notes that groundwater plays a significant role in the accumulation of salts in soils. He gives the following soil salinity gradation (Table 1).

таблица 1

	Density, rest %	Chlorine (CL),%
Non-salted	<0,3	<0,01
Slightly salted	0,3-1	<0,04
Medium saline	0,3-1	0,04-0,1
Heavily saline	1-2	0,1-0,3
Salt marshes	3	>0,3

In the 2nd part of the textbook, he describes the soil-reclamation characteristics of saline soils of various geographical regions of Central Asia, including the Amudarya delta, highlighting the soils of the modern (Aral) delta, the soils of the Khorezm and Tashauz oases, the soils of the Kunyadarya plain, the soils of the Akchadarya delta.

This textbook provides interesting data on the entry of salts into the Amudarya delta along the Amudarya River in the 1950s: with an average annual river runoff of 48 million m³ and an average mineralization of 0.47 g/l, it was 18.9 million tons of salts, of which harmful salts 7.48 million ton

He also gives an example of the calculation of salts, in deposits of young alluvium saturated with water with a content of 0.017% salts. At the same time, 1 liter of fresh manure (porosity 50%, bulk density 1.4) will contain 1400 g of solids and 500 g of water. If there are 0.47 g / l of salts in the water, their total content will be 0.2335 g, or 0.017% of the dry matter weight.

M.A. Pankov writes that near the canals, groundwater is desalinated and belongs to the chloride-sulfate type, and in the depressions between the canals, where the outflow of saline solution occurs, highly mineralized groundwater of the sulfate-chloride and chloride types is formed.

T.P. Glukhova studied soil processes during irrigation with mineralized waters (Tashkent: FAN, 1977, 127c), while noting that the chemical composition of mineralized waters determines the nature of the course of soil processes and the leaching of certain salts. In her opinion, according to the degree of toxicity for cotton, irrigation waters of different

chemistry are arranged in this order: a) soda; b) soda-sulfate; c) sodium chloride d) sodium chloride sulfate; e) sulfate magnesium-sodium; f) sulfate-sodium, g) sulfate-magnesium [6].

A.R. Rasulov in 1969 studied in detail the saline soils of the Karshi steppe, the ways of their development and increase of fertility (author's abstract of the thesis for the degree of doctor of agricultural sciences, Tashkent: TSI, 1969, 51 p.). He writes that the main The source of water-soluble salts in the soils of the Karshi steppe is the weathering products of marine and continental sediments. The salinity of the rocks determines the increased mineralization of the waters of the Guzardarya River [7].

He notes that the salinization of soils and waters depends on the geological structure and composition of rocks in the feeding area, the general course of the formation of geomorphological elements, the conditions for the formation and regime of the runoff of surface and groundwater, and other factors. The following figures given by A.M. Rasulov in 1974 are of interest. Of the total area of dry lands of the Kashkadarya region (430,100 ha, including fallows and planted), saline lands accounted for 238,000 ha or 55.4%. Of these, 55.0% were weakly and moderately saline lands, 0.4% were highly saline and saline lands. In 1967, 321,709 hectares, or 74.8%, were saline lands. 70.9% turned out to be weakly and moderately saline, 3.9% - strongly saline and salinized. Thus, as a result of the development of unprepared lands for reclamation and an increase in the irrigated area from 47,000 to 164,000 hectares over a 20-year period, the area of saline



lands in these massifs will require planning, flushing, construction of a collector-drainage network and the correct irrigation regime.

M.M. Krylov in 1977 was able to re-publish his monograph "Fundamentals of reclamation hydrogeology of Uzbekistan" (Tashkent: Publishing House "Fan" of the Uz SSR, 1977, 247 pp.), which outlines the main provisions of reclamation hydrogeology, a branch of hydrogeology that originated and took shape in Uzbekistan in connection with the development of irrigated agriculture. Along with various regions of Uzbekistan, he cites the main features of the hydrogeological and reclamation zoning of the lower reaches of the Amu Darya [7]:

1) the extreme difficulty of the general underground flow due to the weak slopes of the surface of the deltas, in connection with this, GW are consumed practically by evaporation, 2) a positive salt balance characterizing the delta as a whole as a region of constant salt accumulation, 3) relatively well expressed localization of underground flow in thick sandy deposits ancient channels of the Amudarya 4) the subordination of the groundwater regime, and, consequently, the dynamics of their balance to the regime of surface runoff and irrigation.

O.K. Kamilov studied in detail various aspects of the amelioration of saline soils in Uzbekistan using the example

of irrigated areas of the Hungry Steppe ("Melioration of saline soils of Uzbekistan" Tashkent: FAN, 1985, 230 p.) [8]. In one of the sections of the monograph, considering the dynamics of salts in the aeration zone and groundwater, using the example of an experimental site, he cites the following data: in 1966, the salt reserve in t/ha in the 0-1 q layer was equal to 80.9 in terms of dry residue; chlorine - 6.5, sulfates (SO₄) - 40.11 t / ha, and in 1975. The stock of salts also in the layer 0-1 m in terms of dry residue was 45.4 t / ha, chlorine (CL) - 3, 5; and sulfates (SO₄) -23.1 t/ha.

V.M. Borovsky considered in great detail the formation of saline soils and halogeochemical provinces of Kazakhstan ("Formation of saline soils halogeochemical provinces of Kazakhstan", Alma-Ata: "Nauka", 1982, 254 p.) [9]. Summarizing various classifications of saline soils, he writes that N.I. Bazilevich and E.I. Pankova (1968) developed a classification of soils according to the degree of salinity, based on accounting for toxic ions, this construction is based on the idea of separating ions into toxic (all salts Na and Mg) and non-toxic (Ca salts). For an approximate determination of the amount of toxic salts (S), N.I. Bazilevich and E.I. Pankov proposed the following empirical formula: $S\% \approx 0.066 (mg\text{-}eq\ Na + mg\text{-}eq\ Mg)$. They proposed the following classification according to the degree of salinity, taking into account the "total effect" of toxic ions (Table 2).

Table 2

Degree of salinity	"Total effect" of toxic ions (CO ₃ ; HCO ₃ ; CL; SO ₄) expressed in mEq CL
Non-salted	<0,3
Slightly salted	0,3-1,0(1,5)
Medium saline	1,0(1,5)-3,0(3,5)
Heavily saline	3,0(3,5)-7,0(7,5)
Very salty	>7,0(7,5)

M.A. Yakubov and co-authors in 1989 developed recommendations on the assessment and the possibility of using mineralized collector-drainage water for irrigation in the Jizzakh region (Tashkent: Uzgiprovdokhoz, 1989, 53p.) [10].

He writes: on lands where drainage water is used for irrigation of agricultural crops, sampling must be carried out annually, in the summer-autumn period. It is imperative to carry out control by taking water samples for chemical analysis from collectors and water pumped out from vertical drainage wells.

Salt sampling scale is 1:25000 (2....3 points per 100 ha). According to the scale, the area of elementary plots when compiling cartograms for salinity should be 30 50 ha.

Yu.I. Shirokova in the early 2000s published an article "The problem of salinization and ways to improve the control of salinity in irrigated lands" [11]. She writes that in international practice, to assess the salinity of soils and water, the method of determining the electrical conductivity of saturated extracts is successfully used, which primarily lies in the fact that, in comparison with a water extract, it reflects the effect on the plant of all soluble salts present in the liquid phase (Table 3). This method was previously known in the CIS, but was not used, due to the preference for direct methods of chemical analysis of water extracts at a soil:water ratio of -1:5.

Таблица 3

Классификация принятая ФАО(USDA) для оценки степени засоленности почв

Degree of salinity	Electrical conductivity values of Ece soil extracts in ds/m and ms/cm at t=25 ⁰ C	
Non-salted	0-2	very sensitive crops
sparsely populated	2-4	sensitive crops
Medium saline	4-8	slightly sensitive crops
Heavily Salted	8-16	slightly salt tolerant
Very salty	>16	salt tolerant

E.I. Chembarisov and B.A. Bakhritdinov in 1981 wrote a brochure "Salts in soils and waters" published in the

Uzbek language by the publishing house "FAN", Tashkent: 1981, 38 s [12].



Referring to L.P. Rozov (1936), they provide information about most of the salts found in soils and waters:

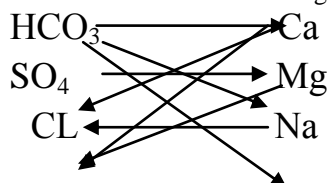
- 1) NaCl-table salt,
- 2) Na₂SO₄ - Glauber's salt (Glauber's salt and gypsum actually contain water molecules (Na₂SO₄·10H₂O; CSO₄·2H₂O);
- 3) Na₂CO₃-soda is normal, linen;
- 4) NaHCO₃-bicarbonate soda, drinking;
- 5) MgCl₂ - magnesium chloride;
- 6) Mg SO₄ - bitter salt;
- 7) MgCO₃-magnesium carbonate or magnesite;
- 8) Mg (HCO₃)₂-magnesium bicarbonate;
- 9) Ca Cl₂-calcium chloride;
- 10) Ca CO₃-carbonate or limestone, chalk;
- 11) Ca SO₄ - gypsum;
- 12) Ca (HCO)₂ - calcium bicarbonate.

They also write that as a result of experimental studies, it was found that a more complete amount of soluble salts passes into water when preparing water extracts with a weight ratio between soil and water of 1: 5, three-minute shaking and filtering immediately after shaking (Arinushkina, 1970. - 487 s [14]).

According to the number of components to be determined, a full extract and a reduced one are distinguished. When conducting a complete analysis of the bytes, the dry residue and the content of all the main ions (Ca³⁻²; HCO₃⁻; CL⁻; SO₄⁻²; Ca + 2; Mg + 2; Na +; K +) are determined. In this case, the dry residue and the content of ions are usually expressed as % per 100 g of air-dry soil. In the reduced extract analysis, only Ca³⁻² is determined; HCO₃⁻; CL⁻; SO₄⁻² and dry residue. In areas with garden or sulfate salinity, the content of Na + is also determined. The ions in the solution are bound in salt according to the method proposed by Kurnakov. This operation is carried out in mg-equivalent form. The order of combination of ions in salt is as follows:

- 1) first, the hydrocarbonate ion (HCO₃⁻) is associated with the content of calcium (Ca), then magnesium (Mg) and finally with sodium (Na). In ionic form, this can be expressed as: HCO₃⁻→Ca; Mg; Na;
- 2) further, the calcium residue is associated with the sulfate ion (SO₄)⁻² chlorine (CL): Ca → SO₄; CL;
- 3) similarly, the residue SO₄ → Mg; Na;
- 4) residue Mg → CL;
- 5) Na → CL residue.

The described order of connection of ions can be expressed in the form of the following scheme:



The above information will help specialists to more correctly assess the salinity of their land fund, as well as develop measures to reduce the salt content in the soils and waters of the fields used.

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METAPHORS IN MODERN LINGUISTIC THEORIES

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ANNOTATION

The article is devoted to metaphors in modern linguistic theories. Metaphor is studied as a certain type of tropes in poetics, as a source of new meanings of words - in lexicology, as a special type of speech use - in pragmatics, as an associative mechanism and an object of interpretation and perception of speech - in psycholinguistics, as a way of thinking and cognition - in logic and philosophy.

KEY WORDS: *metaphor, status, theory, comparisons, principle, directions, conflict.*

Metaphor is studied as a certain type of tropes in poetics, as a source of new meanings of words - in lexicology, as a special type of speech use - in pragmatics, as an associative mechanism and object of interpretation and perception of speech - in psycholinguistics, as a way of thinking and cognition - in logic and philosophy. . All this determines the existence of a number of certain approaches to the study of metaphor. Thus, in Western linguistic directions one can single out substitutive, comparative, interactionist and cognitive theories of metaphor.

The substitutive approach is based on the fact that any metaphorical expression is used instead of an equivalent literal expression and can be replaced by it. This view is rooted in Aristotle's definition above: a metaphor gives a thing a name that actually belongs to something else. The cognitive content of a metaphor can simply be considered its literal equivalent.

The theory of substitution gives metaphor the status of a simple ornamental means: the author prefers metaphor to its literal equivalent only because of stylization and embellishment of speech. No other significance, except to make speech more attractive, is given to the metaphor.

The traditional theory of substitution for the most part served as the basis for the development of a comparative theory, the beginnings of which can be found in Aristotle's Rhetoric and in M.F. Quintilian. The comparative approach assumes that the meaning of any metaphorical expression can still be expressed by a literal equivalent, since a literal expression is one of the forms of explicit comparison. This theory limits metaphor to verbal use, because metaphor here expresses only comparison. Metaphor is in constant interaction with comparison. Many authors defend the assumption that a metaphor is a concise comparison, while others refute this point of view. Actually, metaphor is based on comparison, but still metaphor is not just comparison. The concepts of "comparison" and "metaphor", from our point of view, are close, but not identical.

The interactionist theory, developed in the works of A. Richards and M. Black, is rightfully considered the leading direction in analytics in terms of explication of the essence of metaphor. M. Black is based on the idea of A. Richards, according to which a metaphor is two thoughts that relate to different objects, but act together and are contained in one word or one phrase, whose meaning is the result of their interaction. In other words, the thought itself is metaphorical, which, developing through comparison, generates a metaphor. The metaphorical use of an expression consists in its use in a sense that is different from its usual or direct sense, and in a context that helps to reveal this indirect or non-standard sense. The focus of a metaphor (that is, a clearly metaphorical word or expression inserted into the frame of the direct meanings of words) serves to convey a meaning that, in principle, could be expressed literally.

Thus, M. Black uses the concept of a system of generally accepted associations or associated implications. Its essence is that two systems of concepts interact: a system of associated implications associated with an auxiliary subject is attached to the main subject, and as a result a new meaning is formed that is not reducible to the sum of the components, and the interpretation of each subject also changes. In other words, a distinctive feature of metaphor in the theory of interaction is its semantic duality - the interaction of the main and auxiliary subjects, the play of direct and figurative meanings.

Believing that metaphor is not an isolated use of words, interactionists rely on the concepts of focus to denote the actual metaphorical structure and frame to denote the rest of the sentence, which includes the metaphor as a constituent element. The focus of metaphor serves to convey a meaning that could in principle be expressed literally. Metaphor is the result of the interaction of these two objects, during which there is an expansion, a shift in meaning.

The theory of M. Black had a great influence on further studies of metaphor within the framework of the interactionist



direction (M. Hesse, M. Arbib, E. Kitty, E.K. Way, S.S. Gusev, etc.). Interactionists (A. Richards, M. Black, E. McCormack) can also be considered the initiators of the modern cognitive approach to the analysis of metaphor. According to their interpretation, the semantics of metaphor is an interactive mechanism that connects the surface of the language with the field of knowledge. A metaphor is the result of a cognitive process that juxtaposes two or more referents that are not normally related, resulting in a semantic conceptual anomaly.

M. Beardsley's theory of conflict was also developed on the basis of the interactionist-semantic approach. According to M. Beardsley, metaphor is based on conflict, verbal opposition, which is contained in the very semantic structure of a metaphorical language unit. According to M. Beardsley, the main subject of a metaphor has two main groups of properties: those that are defining or central, and those that are considered marginal and are called connotations. The first properties serve as a necessary condition for the correct use of a given subject in a certain sense, and the second properties are accidental.

Within the framework of the conflict theory, on the basis of the interactionist theory, the anomaly theory was also formed, which is a generalization of several later versions of the conflict theory. All of them hold the view that conflicts and anomalies are inherent in metaphor and determine its identification and understanding. At the same time, the very nature of the anomaly is defined differently by different adherents of this view, but everyone is unanimous that this is something like a semantic category error. Semantic categories describe the general kinds of objects in the world, and conflict occurs when an object or its properties are attributed to its antipode.

Defenders of the anomaly theory believe that such a violation of the rules of the semantic category provides an opportunity to identify metaphorical expressions as non-literal; on the very interpretation of such expressions, their paths diverge.

Metaphors make us see some things instead of others, which act in their direct meaning as auxiliary structures and give the key to their understanding. Metaphor is a source, not a guide. Its successful interpretation depends not only on the structure of the metaphorical image (which remains the same both in the case of metaphorical and in the case of direct use), but also on the ability of the addressee to comprehend the meaning encoded by the author. The personality of the interpreter determines the metaphorical meaning, and not the meaning inherent in the metaphorical image a priori. The mysterious nature of metaphorical transfer in the interpretation of D. Davidson receives the highest form of its expression.

The considered approaches to the analysis of metaphor make it possible to single out three main views on the linguistic nature of metaphor: as a way of existence of the meaning of a word (a lexical phenomenon - a metaphor is realized in the structure of the linguistic meaning of a word); as a phenomenon of syntactic semantics (considered at the level of syntactic compatibility of words); as a way of conveying meaning in a communicative act (a functional-communicative phenomenon that is realized in a statement / in a text).

Along with the analysis of structural-semantic and functional features, recently not only in the West, but also in Russia, interest has increased in issues related to the mechanisms for generating metaphorical structures, with their cognitive activity, with the transformation of mental categories into linguistic ones in the process of metaphorical reflection of reality.

So, in modern Russian linguistics, the lexicological approach involves the study of metaphor as a method of nomination and makes the object of study the lexical meaning of the word. Representatives of the lexicological approach are G.N. Sklyarevskaya, V.G. Gak, V.N. Teliya, V.N. Vovk.

G.N. Sklyarevskaya in her monograph "Metaphor in the Language System" interprets the lexical meaning of a word as a complex redundant structure consisting of denotative content, including the core and periphery, and the connotative environment. A component of semantics that directly links the metaphorical meaning of the lexeme with the denotative one, G.N. Sklyarevskaya designates it as a "symbol of metaphor". In metaphorical transfer, the "symbol of metaphor", "which in its original nominative meaning belongs to the sphere of connotation", acts as an independent concept, "is included in the denotative content as nuclear (differential) semes and serves as the basis for semantic transformations in the process of metaphorization"

Against the background of the theories presented above, there is another tradition - to consider metaphor as a phenomenon of syntactic semantics. This position is most clearly reflected in the works of N.D. Arutyunova, who is close to the views of M. Black and the main provisions of his interactionist theory. This approach allows obtaining interesting information about the influence of the semantic compatibility of words on the process of metaphorization. Proponents of the semantic-syntactic approach see a categorical shift as the basis for the mechanism of metaphor formation. The essence of metaphor is the transposition of identifying (descriptive and semantically diffuse) vocabulary, intended to indicate the subject of speech, into the sphere of predicates, intended to indicate its features and properties.

The semantic-syntactic approach provides a lot for understanding the nature of metaphor. Its main value is that it reveals the mechanism of metaphorical meaning formation on the basis of categorical characterization. Thus, it is recognized that the metaphor is created by predication to the main subject of the metaphor of the signs of the auxiliary subject.

Thus, summing up all the theories presented by us, we can say that metaphor is considered from different points of view and positions, however, all authors in their works recognize metaphor as one of the most interesting and important topics for research.

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UDC 595.7

INDICATOR CHARACTERISTIC OF THE INSECT FAUNA IN THE BIOECOLOGICAL CHANGES OF THE SOUTHERN PRIARALIYA

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ABSTRACT

In this article, the problems of development of modern technology of pest control, indicator properties, monitoring of insects in bioecological changes in the natural ecosystem of Southern Priaralia and the implementation of ecological preventive measures of protection against them are highlighted.

KEY WORDS: *South Priaralya, insects, natural ecosystem, bioecological, indicator, pests, chemical preparations, monitoring, prevention.*

INTRODUCTION

We all know that biocenotic and ecosystemic changes in the world depend mainly on natural and anthropogenic factors. Today, negative processes taking place in natural landscapes due to bioecological global climate changes and strong anthropogenic influences have a serious impact on animal biodiversity. At this point, bioecological changes in natural ecosystems, mainly due to their negative impact on the insect world, are causing unprecedented harm to the world community.

The global climate changes taking place in the world, the anthropogenic development of natural ecosystems and the development of urbanization lead to the adaptation of representatives of the entomofauna to anthropogenically developed territories and an increase in the degree of their damage. Especially in connection with bioecological changes in the Southern Aral Sea region, an increase in the scale of xylophagous insects adapted to the arid ecosystem in the natural forest ecosystem and anthropogenic areas of the entomofauna cause serious damage to wood-building materials. [4; 5; 6].

In connection with bioecological changes in the natural ecosystem, the indicator characteristics of the general entomofauna of the coast of the Southern Aral Sea have been

determined, the emergence of new terrestrial pests and the disappearance of historical species are observed. Here, in order to determine the diversity of xylophagous insects in natural ecosystems and anthropogenic transformed territories, it is necessary to assess the damage caused to gardens, housing estates, administrative buildings, cultural and strategic facilities, as well as improve the methods of controlling certain types of pests common in our nature, is of great scientific importance.

MATERIALS AND METHODS

The necessary materials (insects) for the research work were collected during the years 2015-2022 in the natural conditions of Southern Priaralia - from the area around the present-day Aral Sea of the Republic of Karakalpakstan, from the North-Eastern part of the Ustyurt Plain, and from the Koyi Amudarya State Biosphere Reserve for comparable work.

Expeditionary researches were carried out in the field experiments, and mainly indicator properties of insects were studied in the watery, swampy places of the Aral Sea 150-180 kilometers from the city of Moynaq and in the bioecological system of the area.

Within the framework of expeditionary research, short-term trips were organized in certain areas, geographical



points of places were determined, and most importantly, work was carried out to place the collected insect species in entomological mattresses. Also, the faunistic encounter and indicator properties of insects were studied based on the expedition method in the natural ecosystem.

More than 2,000 samples of insects found on plants around the Aral Sea today were collected and attention was paid to the main 3 dominant pest species. Isoptera (Brullé, 1832) from insects collected in research works; Hodotermitidae, Lepidoptera (Linnaeus, 1758); Sphingidae, Hymenoptera (Linnaeus, 1758); Apidae, Coleoptera (Linnaeus, 1758); Carabidae, Scarabaeidae, Elateridae, Histeridae, Tenebrionidae, Scolytidae, Formicidae, Orthoptera (Latreille, 1793); Tettigonioidae, Mantoptera (Linnaeus, 1758); Many representatives of the Mantidae family were found and the main dominant species were studied.

In the study of the bioindicator properties of insects in the conditions of the South Aral Sea, their population ecology, evolutionary adaptation mechanism, adaptation to the area based on the living laws of the community of biocenoses, monitoring level and dominance were clarified. The species composition of the insect collection was also studied in laboratory conditions based on the methods of general entomological, ecological, microbiological, physiological[1; 2], systematic analysis, fauna, bioecology and developmental phases[3].

RESULTS AND DISCUSSION

To date, research work has been carried out to study the distribution and levels of occurrence of insects in the natural ecosystem of the Southern Aral Sea. Insect samples were taken mainly at a distance of 5000 m from the water area of the Aral Sea and their occurrence in desert plants was studied. Natural ecosystem biotope desert plants include sedge-Alhagi pseudalhagi, yulgun-Tamarix hispida, white head-Karelinia caspia, frankincense-Peganum harmala, reed-Scirpus affinis, salsola collina, white salsify-Chenopodium album, jiyda-Elaeagnus angustifolia, gledichiya-Gleditschia We witnessed the gathering of insects in the stem and under the stem of triacanthos, turanga-Populus euphratica, saxowul-Haloxylon aphyllum, chestnut-Aesculus hippocastanum, jaw-jaw-Capsella bursa pastoris, and sophora janonica plants (table-1).

As a result of the study, it was established that Isoptera (Brullé, 1832); Hodotermitidae, Anacanthotermes ahngerianus and Coleoptera (Linnaeus, 1758); Formicidae, Camponotus lameerei nest on the ground at a height of 20-25 cm.



Table 1.
Remote encounter and bioindicator characteristics of insects in the biotopes of the Aral Sea, which have changed from wet to dry today

№	Insect types	Remote sensing of insects on land after seawater				Bioindexing feature					
		500 m		1000 m		2000 m		3000 m			
		alive	dead	alive	dead	alive	dead	alive	dead		
1	<i>Anacanthotermes ahngerianus</i>	22,1±0,8	16,1±0,4	38,6±1,0	9,1±0,2	40,7±1,1	6,3±0,2	42,1±1,5	4,2±0,2	35,8±1,1	8,9±0,1
2	<i>Hyles centralasiae</i>	28,0±0,9	25,1±0,7	35,1±0,9	23,2±0,5	42,4±1,3	11,0±0,2	46,5±1,6	-	38,0±1,1	14,8±0,3
3	<i>Antophora sp.</i>	22,0±0,5	18,3±0,4	27,1±0,6	14,1±0,3	28,0±0,8	12,1±0,2	25,5±0,6	9,2±0,2	25,6±0,6	13,4±0,2
4	<i>Megacephala euphratica</i>	11,2±0,2	20,3±0,3	14,0±0,3	17,1±0,3	16,1±0,4	9,2±0,2	20,0±0,4	-	15,3±0,3	11,6±0,2
5	<i>Oryctes punctipennis</i>	12,1±0,2	22,5±0,4	13,0±0,2	15,0±0,3	16,2±0,4	7,1±0,2	22,2±0,5	-	15,8±0,3	11,1±0,2
6	<i>Platycleis intermedia</i>	32,1±1,0	28,1±0,9	37,3±1,1	22,1±0,2	39,1±1,1	-	43,4±1,6	-	37,9±1,2	12,5±0,2
7	<i>Severinia turcomaniae</i>	8,2±0,1	12,1±0,2	12,1±0,1	9,0±0,1	15,2±0,3	-	18,0±0,5	-	13,3±0,2	5,2±0,1
8	<i>Camponotus lameerei</i>	25,2±0,8	22,0±0,4	40,1±1,1	12,0±0,2	42,0±1,2	7,1±0,1	45,5±1,3	3,1±0,1	38,2±1,1	11,0±0,2



In the study of bioindicator properties and in the natural ecosystem, the average number of living organisms of *Anacanthotermes ahngerianus* was 35.8 ± 1.1 ; umershevik 8.9 ± 0.1 ; *Camponotus lameerei* $38.2 \pm 1.1 / 11.0 \pm 0.2$; takje pereponchatokrylye (Linnaeus, 1758); Apidae, *Antophora* sp. $25.6 \pm 0.6 / 13.4 \pm 0.2$; And in the result, it was established that the high level of solemnity in the lake negatively affects the active development of the insects.

CONCLUSIONS

In general, it is clarified that an increase in salinity in external environmental factors in a natural ecosystem primarily has a negative impact on insects, which, this, in turn, makes it clear that insects act as bioindicators in nature with their high sensitivity characteristics.

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TECHNOLOGY OF GROWING SAXAUL SEEDLINGS IN THE CONDITIONS OF THE REPUBLIC OF KARAKALPAKSTAN

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ANNOTATION

The article discusses the features of the technology of growing saxaul seedlings in the conditions of the Republic of Karakalpakstan. Saxaul seedlings are the most effective tree species in creating forest reclamation plantations that help to retain the removal of harmful salts and degradation of the drained lands of the Aral Sea.

KEY WORDS: removal, salt, seedlings, watering, process, nursery, sowing.

Improvement and implementation of technologies for growing saxaul seedlings in the natural and climatic conditions of the Republic of Karakalpakstan is an urgent task in the field of obtaining standard saxaul seedlings. According to scientists, saxaul seedlings are the most effective tree species in creating forest reclamation plantations that help to retain the removal of harmful salts and degradation of the drained lands of the Aral Sea, as well as to prevent emerging deflationary processes [3].

Large-scale forest reclamation works on the dried bottom of the Aral Sea, as well as for growing seedlings in nurseries, require a large amount of saxaul seeds. It is important to properly prepare the seeds for sowing. For saxaul seeds, it is advisable to enrich the topsoil with sand, improve their composition and properties for 3-4 days or soak them in running water for a day [1].

The basic seeding rate for seeds of the first quality class is 67 kg/ha, for the second class - 83 kg/ha and for the third class - 100 kg/ha. Seeds are sown with a laboratory germination rate of at least 70%. The technology of sowing seeds depends on the type of soil. The planting depth of black saxaul seeds is 1.5–2.0 cm on sandy soil, and 2–3 cm on sandy soil.

On sandy soils, seeds are sown on a flat field, and after the appearance of mass shoots, before vegetation irrigation (May), irrigation furrows are cut between the sowing lines [2].

The optimal time for sowing saxaul seeds for the Republic of Karakalpakstan is the end of March - the beginning of April, when the average daily air temperature is above 5 degrees.

Two types of irrigation are used: pre-emergence or post-sowing and vegetative. Pre-emergence irrigation is

carried out immediately after sowing in order to ensure swelling and germination of seeds, as well as fixing sand from blowing.

For irrigation, the drip irrigation method is used, which contributes to a more rational use of water and to reduce the risk of secondary salinization. And also in the conditions of the Republic of Karakalpakstan, when irrigating saxaul seedlings, furrow irrigation is used.

To combat weeds, two row-spacing cultivations and two manual weedings in the sowing rows are carried out (May and June). Thinning seedlings are also carried out in May. Underdeveloped plants are removed.

Saxaul seedlings are dug at the age of one year to a depth of 30-35 cm immediately before the start of silvicultural work. Seedlings are sorted into standard suitable for planting on the forest area and marriage [2].

During transportation, bunches of seedlings are placed in a car body on a layer of wet packaging material 5–10 cm thick. Seedling roots are covered with packaging material (chopped straw). The top layer of seedlings is covered with a layer of straw 15–20 cm thick, then with a tarpaulin, burlap or synthetic film and tied with a rope. In this condition, the seedlings are ready for transportation over long distances.

When dropping and transporting seedlings, care must be taken due to their fragility. Seedlings are immediately dug in on the silvicultural area. In no case should the drying of the root system be allowed - this sharply reduces the survival rate of seedlings.

When carrying out large-scale forest reclamation work on the dried bottom of the Aral Sea, the issues of growing standard planting material should be given priority through the creation of basic forest nurseries.



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THE STATE OF EXTERNAL RESPIRATION OF ADOLESCENTS LIVING IN THE NORTHERN DISTRICTS OF KARAKALPAKSTAN

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ANNOTATION

The article discusses the features of the state of external respiration of adolescents living in the northern regions of Karakalpakstan. Vital capacity of the lungs (VC) is the maximum volume of air that can be taken into the lungs after the most complete exhalation. VC is influenced by a lot of factors, VC depends on gender, age, body size and fitness.

KEY WORDS: lung capacity, indicator, lungs, region, anthropometric indicators

The vital capacity of the lungs (VC) is one of the important indicators of the functional state of the external respiration apparatus. The study of individual values of the FEM is carried out by appropriate comparison of the values obtained in the course of work.

To some extent, the VC is based on anthropometric data and the age of the subjects. Under normal conditions, the coefficient Vital capacity lightness of the (VC) is not less than 85%.

However, by the end of the developmental period, men are characterized by a low level of VC. This fact can be interpreted as a decrease in the reserve volume of this system,

despite the high efficiency of breathing at rest. It can be assumed that the lack of positive dynamics of this indicator is a consequence of the ecological exercises of life in the analyzed industrial city.

When considering the differences in the circumference of the chest of adolescents in the studied regions, it was found that the indicators of the circumference of the chest (TCG) ranged from 0.6 to 2.0 cm. It should be noted that all indicators in the age groups refer to 19 years. when breathing in the older group, the TCG was significantly higher in young men from the southern regions compared to the northern and central regions of Karakalpakstan ($p < 0.05$).

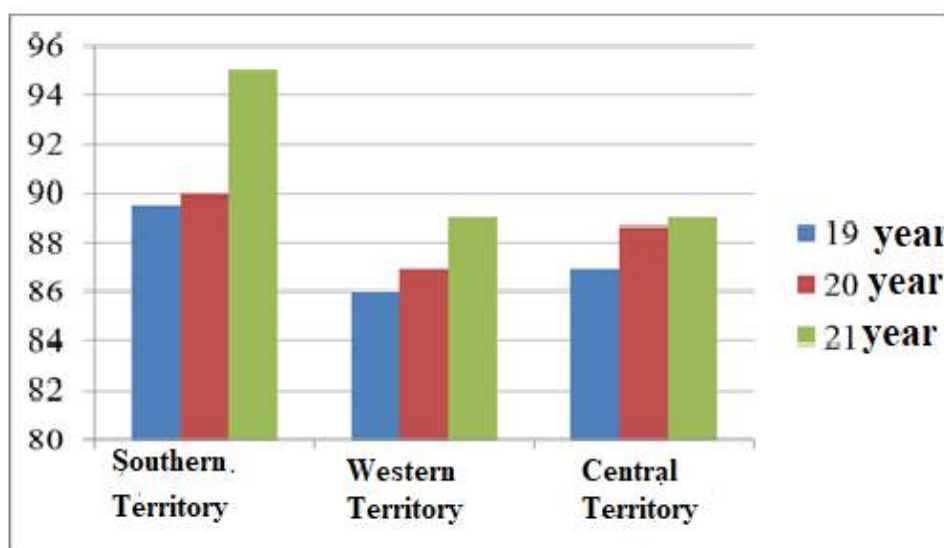


Fig.1. Indicators of chest circumference in adolescent boys living in different regions of the Republic of Karakalpakstan

In addition, when considering this indicator in the 21-year-old group, the highest indicator was recorded in young men from the southern regions, the highest standard deviation of TCG indicators during breathing was observed in young

men from the southern regions in all age groups. groups. As for the level of TCG indicators during breathing in young people (21 years old), all of them showed balanced indicators.

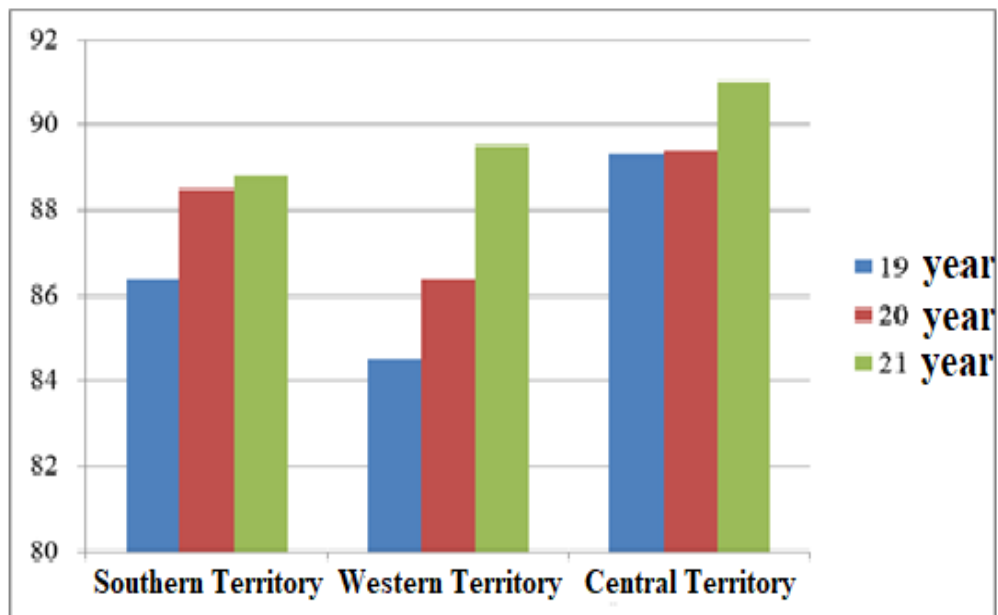


Fig.2. TCG indicators during breathing of adolescent boys living in different regions of the Republic of Karakalpakstan. TCG indicators (cm)

At the same time, a comparative assessment of TCG indicators during respiration in adolescent boys was carried out in all the studied regions of Karakalpakstan. Thus, it can be seen that the highest rate among adolescent boys in all age groups is recorded in the southern regions. ($p < 0.05$).

The greatest difference between the indices was found between the TCG indicators during exhalation of young men from the southern and central regions. The comparative assessment of the indicator shows that the largest difference was observed in young adolescents aged 21 years (4.3 cm), and the smallest in young adolescents aged 19 years (1.6 cm) in the northern regions. It should be noted that this increase depends on the influence of climatic and geographical factors of the Aral Bay region.

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ADMINISTRATIVE AND LEGAL CLASSIFICATION OF INSULTING

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ABSTRACT

This article discusses the offense of defamation, its composition and the basis of liability. In this article, it is noted the types of administrative offense, the offense of insult, types of offense of insult today, the composition and the basis of responsibility, and the suggestions for the prevention of these offenses.

KEY WORDS: *Administrative offense, signs, insult, behavior, composition of the offense.*

INTRODUCTION

The processes of renewal and further democratization of state administration and modernization of the country determined the priority directions of administrative reforms. It is known that the processes of liberalization of the administrative legal system, modernization of state administration and further improvement of administrative legislation require a conceptual approach that incorporates theoretical ideas. Administrative law is one of the large, important, developed and complex branches of the legal system of the Republic of Uzbekistan. Its status is determined by the content and importance of strong social relations regulated by administrative law. Administrative law is one of the components of public law and is closely related to areas such as constitutional law, labor law, financial law, civil law and criminal law.

Therefore, administrative law as a type of public law, first of all, regulates the relations of power, including the relations in the sphere of state management and maintenance of public order, as well as the relations that arise between the state power and citizens. But in some cases, these relations are broken, i.e. violations occur.

LITERATURE REVIEW

Today, in a time when human respect is expected to be at a high level, we can see a lot of insults to the dignity and honor of a person in our life and social networks. The Constitution of the Republic of Uzbekistan contains the following norms that ensure the protection of the dignity and worth of a person: "Everyone has the right to be protected from attacks on his honor and reputation, interference in his

personal life and the right to inviolability of his residence [Article 27], citizens are obliged to comply with the Constitution and laws, to respect the rights, freedom, honor and dignity of other people [1, Article 48]. These norms given in the Constitution provide an example of the fact that in our country the dignity and value of a person cannot be underestimated and those who break the law will be held accountable for their actions.

According to the Code of Administrative Responsibility of the Republic of Uzbekistan, adopted on September 22, 1994 and entered into force on April 1, 1995, administrative offense is an illegal, culpable (intentional or negligent) act or inaction that encroaches on a person, the rights and freedoms of citizens, property, state and public order, and the natural environment, which is subject to administrative liability according to legislation.

The main signs of an administrative offense are the following: 1) antisocial character; 2) illegality; 3) guilt; 4) deserving of punishment. The structure of an administrative offense is made up of a set of signs (elements) which are reinforced by legal documents and whose presence can lead to administrative liability [2,101].

In juridical materials, two bases of application of administrative responsibility are indicated: the first, as a legal (normative) basis of the law; the second is administrative malpractice (offence) as the factual basis [3, 216].

METHODOLOGY

To this day, dynamics and types of crimes have significantly increased compared to previous times. Accordingly, these relations are being regulated with the



introduction of the principles of behavioral responsibility, the creation of norms, and amendments to the laws. But, in spite of the increased responsibility and the implementation of preventive measures (prophylaxis), some the index of some crimes have risen than previous periods.

Today's topic, which we want to discuss, is the offense of insult, a type of offense that has developed in comparison to previous periods in terms of its dynamics and objective compared to other types of offenses.

To insult, that is, the honor of a person and intentional denigration of the value shall be the reason for the imposition of a fine in the amount of twenty to forty times of the base calculation amount [4, Article 41].

If this offense is committed again within a year, it will cause criminal liability. Namely insulting, i.e. intentionally insulting the honor and dignity of a person with indecency, if it is committed after the application of administrative punishment for such actions will be punished with a fine of up to two hundred times the amount of the base calculation or compulsory community service for up to two hundred and forty hours or correctional work for up to one year.

Defamation by publishing or reproducing in another way, including in mass media, telecommunications networks or the Internet global network - will be punished by a fine in the amount of two hundred to four hundred times the base calculation amount or two hundred and forty to three hundred hours of compulsory community service or correctional work from one to two years.

Insult:

a) in connection with the performance of the victim's service or civic duty;

b) committed by a dangerous recidivist or by a person previously convicted of defamation will be punished by a fine in the amount of four hundred to six hundred times the amount of the base calculation or correctional work from two to three years or restriction of freedom for one year [5, Article 140].

Insulting means an administrative offense that violates the honor and dignity of citizens and undermining person's moral authority in the eyes of the surrounding citizens and harm to the dignity of the victim is understood. This violation is verbal or written (letter, picture, etc.) or with actions that undermine the honor and dignity of citizens (such as slapping, spitting, rude gestures). Unlike the tort of defamation, in the case of insult, some facts that negatively describe the spiritual image of the victim are not shown, but an assessment is given to the person, this assessment can be related to the person's behavior, appearance. Whether this negative assessment is true or not is irrelevant to this content.

DISCUSSION

In the following we will see some examples. When a person calls the victim stupid, when in fact, most other people think he is not then the abuse is more obvious. The word insult itself is considered a hypothesis of the administrative-legal norm, that is, it determines the situation and conditions in which the administrative-legal norm is applied. In this case, insult is a behavior that contradicts the rules (norms) of behavior established in society. Intentional humiliation of a person's honor and dignity is a disposition of the administrative-legal norm. A fine in the amount of twenty to forty times the amount of the basic calculation is a relatively specific sanction of the administrative-legal norm. Let's talk about the structural structure of this offense.

The object is the honor and dignity of a person. The objective side is made as a result of action (active). The subject is a sane natural person who has reached the age of 16. From the subjective point of view, this offense is committed directly intentionally, that is, the person realizes that his actions are illegal and wants to commit them [6,246]. In addition, the clearly stated purpose of the offender is to destroy the honor and dignity of the person.

Abuse is between both the perpetrator and the victim, in the presence of familiar or unfamiliar people, even in the absence of the victim can be committed. In this latter case, the intention of the perpetrator is to make the insult known to the victim. If the same person commits this administrative offense and commits an administrative penalty within one year, it is qualified by the first part of Article 140 of the Criminal Code.

When this violation is detected by the employees of the internal affairs agencies or upon the appeals of the citizens to the internal affairs agencies, they draw up the relevant administrative-procedural documents in accordance with the procedure established by law and submit them to the administrative affairs court for the application of the administrative punishment measure in the established order.

CONCLUSION

In conclusion, it should be noted that the dynamics of this administrative offense today, the types of its occurrence have developed compared to previous periods. New words are entering our language, and among these words there are also insulting words, so it is important to determine the exact composition of the offense in determining the punishment for these offenses, such as whether it is a true insulting word or not. To clarify this situation, modern and qualified personnel in Uzbek and other languages are needed today. Also, neighborhood prevention inspectors should carry out work to prevent crimes and explain them to citizens. Today's topic, which we want to consider, is the offense of



insult, a type of offense that has developed in comparison to previous periods in terms of its dynamics and objective compared to other types of offenses. Thus, we believe that videos should be prepared and broadcast on television and social networks about the basis of responsibility for this offense and other offenses.

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ICT TOOLS FOR CREATIVITY IN TEACHING LEARNING PROCESS

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ABSTRACT

ICT is a broad term stands for Information Communication Technology. ICT tools for teaching and learning cover everything from digital infrastructures such as printers, computers, laptops, tablets, etc., to software tools such as Google Meet, Google Spreadsheets, etc. In traditional classrooms, a teacher's basic instructional tools for displaying information are chalkboards, multipurpose boards, bulletin boards and charts. But in today's modern scenario, tools of many professions are changing at an incredible rate and that education is no exception. The impact of technology has led to the increased use of computers for presenting information in many of today's classrooms. To make ICT teaching and learning more interactive, various platforms and tools have been created and updated over the period of time. Innovative ICT tools used in classroom teaching which helps teachers to integrate in their subject, for teaching-learning and assessment. There are numerous subject specific free of cost ICT tools available on online and offline platforms which can be used for teaching, learning and assessment. They are used by teachers to encourage participation and engage learning in their classrooms. ICT can also be used by teachers to promote collaborative work and creativity across a wide range of subjects. This study aims at highlighting the superiority of ICT tools for facilitating student learning, retention and attitudes.

KEY WORDS: Information Communication Technology, Teaching-Learning, Visual Information, Online Platforms

1. INTRODUCTION

In today's globalised world the Information and Communication Technologies (ICTs) have become deeply rooted in educational settings. Their use has fostered qualitative changes in how teaching is approached, especially in terms of presenting the contents audio-visually. Although there has been much discussion over different methods to teach college students, lectures are not likely to stop being used. To emphasize particular points, many lectures use written material presented on a chalkboard, whiteboard, or by transparencies on an overhead projector. But in the last 10 years, another method of presenting visual information with lectures has gained prominence which is projecting information directly from a computer onto a screen i.e. PowerPoint presentations. In fact, many colleges and universities have rooms equipped with technology necessary for any teacher to display information in this manner. Furthermore, some administrations are pushing the teachers to use various other technologies for creative teaching and learning.

- **Information Communication Technology:** The ICT tools means to digital infrastructures like computers, laptops, printers, scanners, software programs, data projectors, and interactive teaching box.
- **Teaching-Learning:** Teaching can be defined as engagement with learners to enable their understanding and application of knowledge, concepts and processes while learning is the acquisition of

knowledge or skills through study, experience, or being taught.

- **Visual Information:** It is use of one or more of the various visual media with or without sound. Generally, visual information includes still photography, motion picture photography, video or audio recording, graphic arts, visual aids, models, display, visual presentation services, and the support processes.
- **Online Platforms:** An online platform is a digital service that uses the Internet to facilitate interactions between two or more separate but interdependent users.

2. LITERATURE REVIEW

- **Simin Ghavifekr, Thanusha Kunjappan, Logeswary Ramasamy and Annreetha Anthony, in their research paper, "Teaching and Learning with ICT Tools: Issues and Challenges from Teachers' Perceptions (2020)",** revealed that their study is more related to identifying the perceptions in implementing ICT tools in teaching and learning in the classroom among school teachers. It examines the challenges of using ICT tools in teaching and learning in the classroom among school teachers and recognizes the effectiveness of the extent of ICT tools in supporting classroom teaching and learning



- **D. Sakthivel, Dr. B. Radha, in their study “ICT Tools for Modern Education (2021)”**, opined that Technology can be an extremely valuable tool, but it is only a tool and technology "cannot replace a teacher" and is not intended to replace the teacher. A good teacher must digitally be literate and must know the effective way to integrate technology into the curriculum so that teachers can keep the students committed
- **Marta Ferragut Martorell, in her study, “Use of ICT tools in the EFL classroom and their impact on students’ motivation”**, stated that, ICT has turned into one of the foundations of our modern society. Thus, the understanding and mastery of ICT have become an essential part of today’s education, alongside numeracy, writing and reading and it is expected to revolutionise the way students learn.

3. OBJECTIVES

- This study aims to analyze whether using ICT tools would be more beneficial for students than Chalk board teaching.
- It also aims to assess the effectiveness of ICT tools in helping the students in understanding and retaining the information.

4. LIMITATIONS

One of the major limitations of the study was that it is totally dependent on secondary data that may not be fully authenticated. Also the time utilized for the study was very limited which restricted the scope of the study.

5. RESEARCH METHODOLOGY

The study is based on secondary data. Relevant data are availed from various sources of information such as Books and Various websites.

5.1 ICT enabled tools for effective teaching learning process

Most teachers feel comfortable in using lecture method, which is not capable of achieving various objectives of classroom instruction. ICT may be of great use in achieving various objectives of teaching –learning process. It provides correct information in a comprehensive manner with different examples. It helps learners to broaden their information base. ICT provides variety in the presentation of content, which helps learners to learn according to their own pace. It helps in better understanding, and long retention of information. Following tools are used in the Teaching learning process in Online-Offline mode of instruction.

5.2 Learning management system (MOODLE)



Moodle stands for Modular Object-Oriented Dynamic Learning Environment and statistics. Moodle is free software, a learning management system providing a platform for e-learning and it

helps the various teachers considerably in conceptualizing the various courses, course structures and curriculum thus facilitating interaction with online students. Moodle supports a range of media to present or link to learning materials, support the students and to assess their learning. It is able to provide automated assessment in the form of quiz, and give immediate detailed feedback to the students.

5.3 Google Classroom



Google Classroom is a free, blended learning platform that offers a variety of benefits for both students and teachers. Google Classroom enhances the productivity and take workflow management to the next level. It keeps track of assignments coming in with a

simple glance making it very easy to know everyone’s status and to follow up with students who are missing work. Everything is time stamped, so late work is easily identifiable. Since Google apps are cloud based the work in Google Classroom saves automatically and is accessible from any device. With the app, both students and teachers can enjoy the full functionality of Google Classroom on a mobile device.

5.4 Google Forms



Google Forms allows to conduct MCQ quizzes online. The information is stored as a spreadsheet automatically record the answers. The spreadsheet then populates the responses from the quiz or survey in real-time. Google

forms can be used to give feedback to and receive feedback from students and parents.

5.5 Videoconferencing Platforms



During COVID pandemic when the world shifted to Online mode for teaching learning various free videoconferencing platforms like Google meet, Zoom and Cisco Webex etc., were used to conduct online

classes. All these have varying needs and features for facilitating interactive teaching and learning.

5.6 Virtual Labs



The Virtual Labs provides remote-access to simulation-based Labs in various disciplines of science and engineering. This student-centric approach facilitates the absorption of basic and advanced concepts

through simulation-based experimentation. Internet-based experimentation further permits use of additional web-resources, video-lectures, animated demonstrations and self-evaluation. Virtual labs are any place, any pace, any-time, any-



type labs. It is a paradigm shift in student-centric, online education.

5.7 Educational Videos and animations (YouTube and Internet)



Various valuable educational videos of various subjects available on internet also has a great impact. YouTube provide additional help in better understanding of subject knowledge.

5.8 Smart Classroom



Classroom integrated with Smartboards and internet connections provides enhanced and interactive learning and teaching opportunities for students and teachers. The internet-connected to systems in smart classes is stored with abundant

information. It is accessible anytime for their teaching and learning process. Teachers can access information from various educational sources for teaching purposes. It helps in easy access to online resources. Smart Classrooms helps in developing critical thinking and problem-solving skills in students. There are many more ICT tools that facilitate innovative teaching learning process.

6. ADVANTAGES OF USING ICT TOOLS IN TEACHING LEARNING PROCESS

• Teaching Makes Easier

Teachers are the people with one of highly benefited of having ICT in education. Through the use of it, it makes the teaching easier. When a teacher teaches the student on a new lesson it makes for them easy to inform and to evaluate what they want them to know. Creating documents files, pdf files or power point presentation through the use of computer or laptop for them to show the topics that they will going to tackle is a great way for teaching.

• Lesson can be seen and heard

The advantage of information communication technology is the lessons can be seen and be hear. Unlike on the books you can just see it, seeing those pages with paragraphs and full of text and sometime we can see the pictures. Sound coming from the videos or music that being used will be played over and over again that makes it to remember well.

• Easier to Understand

When the students see pictures appearing on the white screen using a projector they understand it easily what it really means.

• Improves Communication

Having a technology in the school discussion improves communication. Because through that medium the teacher as well as the student learn more and more vocabulary words. The proper way of saying a word or words, the correct grammar and the meaning of the words improves.

• Enjoying While Learning

Images, music and videos are one of the source of entertainment. When people see that they are happy and enjoy. Unlike from the articles that just compose of full of text it is boring. Through the colorful images, students enjoy listening to the music and imagine what it really means.

• Students Perform Better

What is good and importance of ICT in teaching and learning is the students perform better.

When a teacher teach in front of the class and start to have a visual aid like projector, the students are attract. Pictures project on the screen and the student will see what is that. The students perform better when it is attractive.

• Know More Information

The internet is one of the fastest way of getting information because just one touch, can get what is needed. In education the more we search and read the more information we will get. The teacher and the students both get more information by the way they use it.

• Improves Visual Skill

When students are learning with the use of pictures, or videos their visual skill improves.

Some teachers use riddles using photos that will improve their thinking skill and cognitive skill. And because of that students are enjoying the lesson.

7. CONCLUSION

ICT tools are very powerful in teaching and learning. ICT tools empower both teachers and learners. They transform the teaching and learning processes from being highly teacher-dominated to becoming student-centric and this transformation results in increased learning gains for students, creating and allowing for opportunities for learners. In addition, they are cost-efficient and eliminate the usage of paper. Alongside minimizing cost, they also save time during class lectures enabling swift and dynamic transmission of content. They provide access to dynamic teaching and learning methods and facilitate easy student management. ICT is a powerful tool for educational change and reform. Appropriate use of ICT has helped the college raise the interest levels amongst the students and has helped connect learning to real-life situations. Students enjoy while learning and perform better.

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EARLY PREDICTION OF HEART DISEASES USING LOGISTIC REGRESSION ALGORITHM

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ABSTRACT

World Health Organization has estimated that four out of five cardiovascular diseases (CVD) deaths are due to heart attacks. Heart disease is an uncommon condition of the heart and the blood circulation. Heart disease is also known as cardiovascular disease which is our country's main executioner. From past two decades Heart-disease remained as a leading cause of death at global level. Statistics illustrate the lethality of cardiovascular disease by showing the percentage of deaths caused by heart attacks worldwide. Therefore, it is crucial to predict the condition as earliest as possible time. Cardiologist have limitations, they cannot predict heart disease risk to a high degree of accuracy. So, a reliable, accurate and feasible system is required to predict such diseases in time for proper treatment. In order to automate analysis of large and complex medical datasets, Machine Learning algorithms and techniques have been applied. We have also seen machine learning (ML) techniques being used in recent developments in different areas of Internet of Things (IoT). Machine learning has been shown to be effective in assisting in making decisions and predictions from the large quantity of data produced by the healthcare industry. The main theme of the paper is the prediction of heart diseases using machine learning techniques by summarizing the few current researches. The main goal of our project is logistic regression algorithms used and the health care data which classifies the patients whether they are having heart diseases or not, according to the information of recorded data. Logistic Regression is a statistical and machine-learning technique classifying records of a dataset based on the values of the input fields. It predicts a dependent variable based on one or more set of independent variables to predict outcomes. It can be used both for binary classification and multi-class classification. Try to use this data a model which predicts the patient whether they are having heart disease or not.

KEYWORDS— Classification, Heart Disease, Decision Tree, Data Mining,

I. INTRODUCTION

According to the World Health Organization, every year 12 million deaths occur worldwide due to heart disease. Heart disease is one of the biggest causes of morbidity and mortality among the population of the world. Prediction of cardiovascular disease is regarded as one of the most important subjects in the section of data analysis. The load of cardiovascular disease is rapidly increasing all over the world from the past few years. Many researches have been conducted in attempt to pinpoint the most influential factors of heart disease as well as accurately predict the overall risk. Heart Disease is even highlighted as a silent killer which leads to the death of the person without obvious symptoms. The early diagnosis of heart disease plays a vital role in making decisions on lifestyle changes in high-risk patients and in turn reduces the complications.

Machine learning proves to be effective in assisting in making decisions and predictions from the large quantity of data produced by the health care industry. This project aims to predict future heart disease by analyzing data of patients which classifies whether they have heart disease or not using machine-

learning algorithm. Machine Learning techniques can be a boon in this regard. Even though heart disease can occur in different forms, there is a common set of core risk factors that influence whether someone will ultimately be at risk for heart disease or not. By collecting the data from various sources, classifying them under suitable headings & finally analyzing to extract the desired data we can say that this technique can be very well adapted to do the prediction of heart disease.

A. MOTIVATION FOR THE WORK

The main motivation of doing this research is to present a heart disease prediction model for the prediction of occurrence of heart disease. Further, this research work is aimed towards identifying the best classification algorithm for identifying the possibility of heart disease in a patient. This work is justified by performing a comparative study and analysis using three classification algorithms namely Naïve Bayes, Decision Tree, and Random Forest are used at different levels of evaluations. Although these are commonly used machine learning algorithms, the heart disease prediction is a vital task involving highest possible accuracy. Hence, the three algorithms are



evaluated at numerous levels and types of evaluation strategies. This will provide researchers and medical practitioners to establish a better.

B. PROBLEM STATEMENT

The major challenge in heart disease is its detection. There are instruments available which can predict heart disease but either it is expensive or are not efficient to calculate chance of heart disease in human. Early detection of cardiac diseases can decrease the mortality rate and overall complications. However, it is not possible to monitor patients every day in all cases accurately and consultation of a patient for 24 hours by a doctor is not available since it requires more sapience, time and expertise. Since we have a good amount of data in today's world, we can use various machine learning algorithms to analyze the data for hidden patterns. The hidden patterns can be used for health diagnosis in medicinal data.

II. METHODOLOGIES

Heart disease is even being highlighted as a silent killer which leads to the death of a person without obvious symptoms. The nature of the disease is the cause of growing anxiety about the disease & its consequences. Machine Learning techniques can be a boon in this regard. By collecting the data from various sources, classifying them under suitable headings & finally analyzing to extract the desired data we can conclude. This technique can be very well adapted to the do the prediction of heart disease. As the well-known quote says "Prevention is better than cure", early prediction & its control can be helpful to prevent & decrease the death rates due to heart disease.

A. PROPOSED SYSTEM

The working of the system starts with the collection of data and selecting the important attributes. Then the required data is preprocessed into the required format. The data is then divided into two parts training and testing data. The algorithms are applied and the model is trained using the training data. The accuracy of the system is obtained by testing the system using the testing data. This system is implemented using the following modules.

Collection of datasets: Initially, we collect a data set for our heart disease prediction system. After the collection of the dataset, we split the dataset into training data and testing data. The training dataset is used for prediction model learning and testing data is used for evaluating the prediction model. For this project, 70% of training data is used and 30% of data is used for testing. The dataset used for this project is Heart Disease UCI. The dataset consists of 76 attributes; out of which, 14 attributes are used for the system.

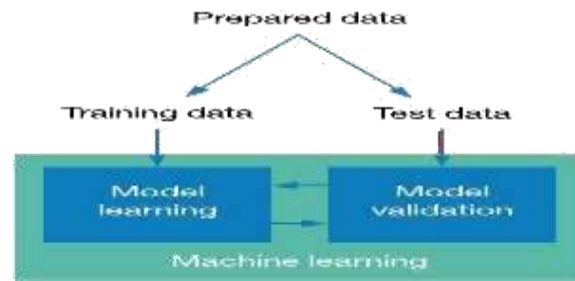


Figure:

Collection of Data

Selection of attributes: Attribute or Feature selection includes the selection of appropriate attributes for the prediction system. This is used to increase the efficiency of the system. Various attributes of the patient like gender, chest pain type, fasting blood pressure, serum cholesterol, etc., are selected for the prediction. The Correlation matrix is used for attribute selection for this model.



Figure: Correlation matrix

Pre-processing of Data: Data pre-processing is an important step for the creation of a machine learning model. Initially, data may not be clean or in the required format for the model which can cause misleading outcomes. In pre-processing of data, we transform data into our required format. It is used to deal with noises, duplicates, and missing values of the dataset. Data pre-processing has the activities like importing datasets, splitting datasets, attribute scaling, etc. Preprocessing of data is required for improving the accuracy of the model.



Figure: Data Pre-processing



Balancing of Data: Imbalanced datasets can be balanced in two ways. They are Under Sampling and Over Sampling

(a) *Under Sampling:* In Under Sampling, dataset balance is done by the reduction of the size of the ample class. This process is considered when the amount of data is adequate.

(b) *Over Sampling:* In Over Sampling, dataset balance is done by increasing the size of the scarce samples. This process is considered when the amount of data is inadequate.

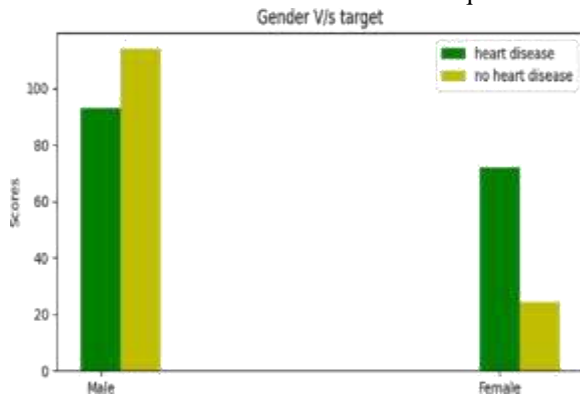


Figure: Data Balancing

Prediction of Disease: Various machine learning algorithms like SVM, Naive Bayes, Decision Tree, Random Tree, Logistic Regression, Ada-boost, Xg-boost are used for classification. Comparative analysis is performed among algorithms and the algorithm that gives the highest accuracy is used for heart disease prediction.

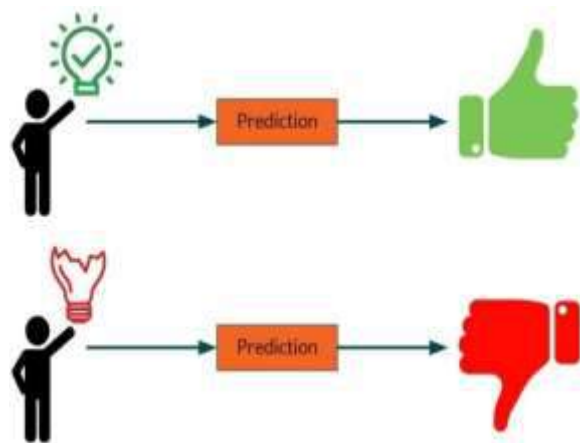


Figure:

Prediction of Disease

III. WORKING OF SYSTEM

A. SYSTEM ARCHITECTURE

The system architecture gives an overview of the working of the system. Dataset collection is collecting data which contains patient details. Attributes selection process selects the useful attributes for the prediction of heart disease. After identifying the available data resources, they are further selected, cleaned, made into the desired form. Different classification techniques as stated will be applied on preprocessed data to predict the

accuracy of heart disease. Accuracy measure compares the accuracy of different classifiers.



Figure: SYSTEM ARCHITECTURE

B. MACHINE LEARNING

In machine learning, classification refers to a predictive modeling problem where a class label is predicted for a given example of input data.

Supervised Learning: Supervised learning is the type of machine learning in which machines are trained using well "labelled" training data, and on the basis of that data, machines predict the output. The labelled data means some input data is already tagged with the correct output. In supervised learning, the training data provided to the machines work as the supervisor that teaches the machines to predict the output correctly. It applies the same concept as a student learns in the supervision of the teacher.

Supervised learning is a process of providing input data as well as correct output data to the machine learning model. The aim of a supervised learning algorithm is to find a mapping function to map the input variable(x) with the output variable(y).

Unsupervised learning: Unsupervised learning cannot be directly applied to a regression or classification problem because unlike supervised learning, we have the input data but no corresponding output data. The goal of unsupervised learning is to find the underlying structure of dataset, group that data according to similarities, and represent that dataset in a compressed format.

- 1) Unsupervised learning is helpful for finding useful insights from the data.
- 2) Unsupervised learning is much similar to how a human learns to think by their own experiences, which makes it closer to the real AI.
- 3) Unsupervised learning works on unlabeled and uncategorized data which make unsupervised learning more important.
- 4) In real-world, we do not always have input data with the corresponding output so to solve such cases, we need unsupervised learning.



Reinforcement learning: Reinforcement learning is an area of Machine Learning. It is about taking suitable action to maximize reward in a particular situation. It is employed by various software and machines to find the best possible behavior or path it should take in a specific situation. Reinforcement learning differs from supervised learning in a way that in supervised learning the training data has the answer key with it so the model is trained with the correct answer itself whereas in reinforcement learning, there is no answer but the reinforcement agent decides what to do to perform the given task. In the absence of a training dataset, it is bound to learn from its experience.

IV. ALGORITHMS

A. SUPPORT VECTOR MACHINE (SVM)

Support Vector Machine or SVM is one of the most popular Supervised Learning algorithms, which is used for Classification as well as Regression problems. However, primarily, it is used for Classification problems in Machine Learning.

The goal of the SVM algorithm is to create the best line or decision boundary that can segregate n-dimensional space into classes so that we can easily put the new data point in the correct category in the future. This best decision boundary is called a hyperplane chooses the extreme points/vectors that help in creating the hyperplane. These extreme cases are called support vectors, and hence the algorithm is termed as Support Vector Machine.

Support vector machines (SVMs) are powerful yet flexible supervised machine learning algorithms which are used both for classification and regression. But generally, they are used in classification problems. In the 1960s, SVMs were first introduced but later they got refined in 1990.

SVMs have their unique way of implementation as compared to other machine learning algorithms. Lately, they are extremely popular because of their ability to handle multiple continuous and categorical variables.

The followings are important concepts in SVM -

- Support Vectors - Data Points that are closest to the hyperplane are called support vectors. Separating line will be defined with the help of these data points.
- Hyperplane - As we can see in the above diagram, it is a decision plane or space which is divided between a set of objects having different classes.
- Margin - It may be defined as the gap between two lines on the closest data points of different classes.
- Large margin is considered as a good margin and small margin is considered as a bad margin.

Types of SVM

- Linear SVM: Linear SVM is used for linearly separable data, which means if a dataset can be classified into two classes

by using a single straight line, then such data is termed as linearly separable data, and classifier is used called as Linear SVM classifier.

- Non-linear SVM: Non-Linear SVM is used for non-linearly separated data, which means if a dataset cannot be classified by using a straight line, then such data is termed as non-linear data and classifier used is called as Non-linear SVM classifier.

- The objective of the support vector machine algorithm is to find a hyperplane in an N- dimensional space (N - the number of features) that distinctly classifies the data points.

The advantages of support vector machines are

- Effective in high dimensional spaces.
- Still effective in cases where the number of dimensions is greater than the number of samples.
- Uses a subset of training points in the decision function (called support vectors), so it is also memory efficient.
- Versatile: different kernel functions can be specified for the decision function. Common kernels are provided, but it is also possible to specify custom kernels.

The disadvantages of support vector machines include:

- If the number of features is much greater than the number of samples, avoid over-fitting in choosing Kernel functions and regularization term is crucial.
- SVMs do not directly provide probability estimates, these are calculated using an expensive five-fold cross-validation.

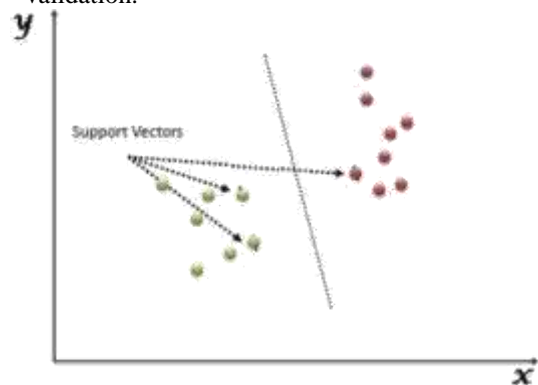


Figure: Support Vector Machine

B. NAIVE BAYES ALGORITHM

Naive Bayes algorithm is a supervised learning algorithm, which is based on Bayes theorem and used for solving classification problems. It is mainly used in text classification that includes a high-dimensional training dataset.

Naive Bayes Classifier is one of the simple and most effective Classification algorithms which helps in building the fast machine learning models that can make quick predictions.

It is a probabilistic classifier, which means it predicts on the basis of the probability of an object. Some popular examples of Naive Bayes Algorithm are spam filtration, Sentimental analysis, and classifying articles.



It is a classification technique based on Bayes' Theorem with an assumption of independence among predictors. In simple terms, a Naive Bayes classifier assumes that the presence of a particular feature in a class is unrelated to the presence of any other feature.

The Naive Bayes model is easy to build and particularly useful for very large data sets. Along with simplicity, Naive Bayes is known to outperform even highly sophisticated classification methods.

The Naive Bayes algorithm is comprised of two words Naive and Bayes, which can be described as:

- **Naive:** It is called Naive because it assumes that the occurrence of a certain feature is independent of the occurrence of other features. Such as if the fruit is identified on the basis of color, shape, and taste, then red, spherical, and sweet fruit is recognized as an apple. Hence each feature individually contributes to identify that it is an apple without depending on each other.

- **Bayes:** It is called Bayes because it depends on the principle of Bayes' Theorem.

Bayes's theorem: Bayes' theorem is also known as Bayes' Rule or Bayes' law, which is used to determine the probability of a hypothesis with prior knowledge. It depends on the conditional probability.

The formula for Bayes' theorem is given as:

$$P(A/B) = \frac{P(B/A)P(A)}{P(B)}$$

Where,

$P(A|B)$ is Posterior probability: Probability of hypothesis A on the observed event B.

$P(B|A)$ is Likelihood probability: Probability of the evidence given that the probability of a hypothesis is true.

$P(A)$ is Prior Probability: Probability of hypothesis before observing the evidence. $P(B)$ is Marginal Probability: Probability of Evidence.

Types of Naive Bayes model:

Gaussian: The Gaussian model assumes that features follow a normal distribution. This means if predictors take continuous values instead of discrete, then the model assumes that these values are sampled from the Gaussian distribution.

Multinomial: The Multinomial Naïve Bayes classifier is used when the data is multinomial distributed. It is primarily used for document classification problems; it means a particular document belongs to which category such as Sports, Politics, education, etc. The classifier uses the frequency of words for the predictors.

Bernoulli: The Bernoulli classifier works similar to the Multinomial classifier, but the predictor variables are the independent Booleans variables. Such as if a particular word is

present or not in a document. This model is also famous for document classification tasks.

C. DECISION TREE ALGORITHM

Decision Tree is a Supervised learning technique that can be used for both classification and regression problems, but mostly it is preferred for solving classification problems. It is a tree-structured classifier, where internal nodes represent the features of a dataset, branches represent the decision rules and each leaf node represents the outcome. In a Decision Tree, there are two nodes, which are the Decision Node and Leaf Node.

Decision nodes are used to make any decision and have multiple branches, whereas Leaf nodes are the output of those decisions and do not contain any further branches. The decisions or the test are performed on the basis of features of the given dataset. It is a graphical representation for getting all the possible solutions to a problem/decision based on given conditions. It is called a Decision Tree because, similar to a tree, it starts with the root node, which expands on further branches and constructs a tree-like structure. In order to build a tree, we use the CART algorithm, which stands for Classification and Regression Tree algorithm. A Decision Tree simply asks a question, and based on the answer (Yes/No), it further split the tree into subtrees.

In Decision Tree the major challenge is to identify the attribute for the root node in each level. This process is known as attribute selection. We have two popular attribute selection measures:

1) *Information Gain:* when we use a node in a Decision Tree to partition the training instances into smaller subsets, the entropy changes. Information gain is a measure of this change in entropy. Entropy is the measure of uncertainty of a random variable, it characterizes the impurity of an arbitrary collection of examples. The higher the entropy the more the information content.

2) *Gini Index:* Gini Index is a metric to measure how often a randomly chosen element would be incorrectly identified. It means an attribute with lower Gini index should be preferred. Sklearn supports "Gini" criteria for Gini Index and by default, it takes "gini" value.

The most notable types of Decision Tree algorithms are: -

1. ID3 (Decision Tree):

This algorithm uses Information Gain to decide which attribute is to be used to classify the current subset of the data. For each level of the tree, information gain is calculated for the remaining data recursively.

2. C4.5: This algorithm is the successor of the ID3 algorithm. This algorithm uses either Information gain or Gain ratio to decide upon the classifying attribute. It is a direct improvement from the ID3 algorithm as it can handle both continuous and missing attribute values.

3. Classification and Regression Tree (CART): It is a dynamic learning algorithm which can produce a regression tree as well as a classification tree depending upon the dependent variable.



Working: In a Decision Tree, for predicting the class of the given dataset, the algorithm starts from the root node of the tree. This algorithm compares the values of the root attribute with the record (real dataset) attribute and, based on the comparison, follows the branch and jumps to the next node.

For the next node, the algorithm again compares the attribute value with the other sub-nodes and moves further. It continues the process until it reaches the leaf node of the tree. The complete process can be better understood using the below algorithm:

Step-1: Begin the tree with the root node, says S, which contains the complete dataset.

Step-2: Find the best attribute in the dataset using Attribute Selection Measure (ASM).

Step-3: Divide the S into subsets that contains possible values for the best attributes.

Step-4: Generate the Decision Tree node, which contains the best attribute.

Step-5: Recursively make new decision trees using the subsets of the dataset created in step -3. Continue this process until a stage is reached where you cannot further classify the nodes and call the final node as a leaf node.

D. RANDOM FOREST ALGORITHM

Random Forest is a supervised learning algorithm. It is an extension of machine learning classifiers which include the bagging to improve the performance of Decision Tree. It combines tree predictors, and trees are dependent on a random vector which is independently sampled. The distribution of all trees is the same. Random Forests splits nodes using the best among of a predictor subset that are randomly chosen from the node itself, instead of splitting nodes based on the variables. The time complexity of the worst case of learning with Random Forests is $O(M(\text{doing}))$, where M is the number of growing trees, n is the number of instances, and d is the data dimension.

It can be used both for classification and regression. It is also the most flexible and easy to use algorithm. A forest consists of trees. It is said that the more trees it has, the more robust a forest is. Random Forests have a variety of applications, such as recommendation engines, image classification and feature selection. It can be used to classify loyal loan applicants, identify fraudulent activity and predict diseases. It lies at the base of the Boruta algorithm, which selects important features in a dataset. Random Forest is a popular machine learning algorithm that belongs to the supervised learning technique. It can be used for both Classification and Regression problems in ML. It is based on the concept of ensemble learning, which is a process of combining multiple classifiers to solve a complex problem and to improve the performance of the model.

It works in four steps

- Select random samples from a given dataset.

- Construct a Decision Tree for each sample and get a prediction result from each Decision Tree.
- Perform a vote for each predicted result.
- Select the prediction result with the most votes as the final prediction.

Advantages:

- Random Forest is capable of performing both Classification and Regression tasks.
- It is capable of handling large datasets with high dimensionality.
- It enhances the accuracy of the model and prevents the overfitting issue.

Disadvantages:

- Although Random Forest can be used for both classification and regression tasks, it is not more suitable for Regression tasks.

E. LOGISTIC REGRESSION ALGORITHM

Logistic regression is one of the most popular Machine Learning algorithms, which comes under the Supervised Learning technique. It is used for predicting the categorical dependent variable using a given set of independent variables.

Logistic regression predicts the output of a categorical dependent variable. Therefore, the outcome must be a categorical or discrete value. It can be either Yes or No, 0 or 1, true or False, etc. but instead of giving the exact value as 0 and 1, it gives the probabilistic values which lie between 0 and 1. Logistic Regression is much similar to the Linear Regression except that how they are used. Linear Regression is used for solving Regression problems, whereas logistic regression is used for solving the classification problems. In Logistic regression, instead of fitting a regression line, we fit a "Shaped logistic function, which predicts two maximum values (0 or 1).

The curve from the logistic function indicates the likelihood of something such as whether the cells are cancerous or not, a mouse is obese or not based on its weight, etc. Logistic Regression is a significant machine learning algorithm because it has the ability to provide probabilities and classify new data using continuous and discrete datasets. Advantages: Logistic Regression is one of the simplest machine learning algorithms and is easy to implement yet provides great training efficiency in some cases. Also due to these reasons, training a model with this algorithm doesn't require high computation power.

The predicted parameters (trained weights) give inference about the importance of each feature. The direction of association i.e., positive or negative is also given. So, we can use Logistic Regression to find out the relationship between the features. Logistic Regression outputs well-calibrated probabilities along with classification results. This is an advantage over models that only give the final classification as results. If a training example has a 95% probability for a class, and another has a 55% probability for the same class, we get an inference about which training examples are more accurate for the formulated problem.



Disadvantages:

Logistic Regression is a statistical analysis model that attempts to predict precise probabilistic outcomes based on independent features. On high dimensional datasets, this may lead to the model being over-fit on the training set, which means overstating the accuracy of predictions on the training set and thus the model may not be able to predict accurate results on the test set. This usually happens in the case when the model is trained on little training data with lots of features. So, on high dimensional datasets, Regularization techniques should be considered to avoid over-fitting (but this makes the model complex). Very high regularization factors may even lead to the model being under-fit on the training data.

Nonlinear problems can't be solved with logistic regression since it has a linear decision surface. Linearly separable data is rarely found in real world scenarios. So, the transformation of nonlinear features is required which can be done by increasing the number of features such that the data becomes linearly separable in higher dimensions.

Non-Linearly Separable Data:

It is difficult to capture complex relationships using logistic regression. More powerful and complex algorithms such as Neural Networks can easily outperform this algorithm

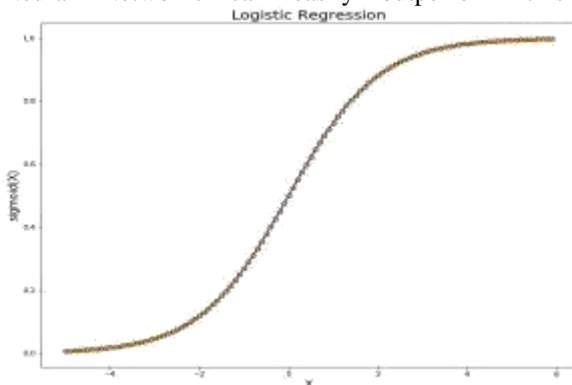


Figure: Logistic Regression

F. ADABOOST ALGORITHM

Adaboost was the first really successful boosting algorithm developed for the purpose of binary classification. Adaboost is short for Adaptive Boosting and is a very popular boosting technique which combines multiple “weak classifiers” into a single “strong classifier”

Algorithm:

1. Initially, Adaboost selects a training subset randomly.
2. It iteratively trains the Adaboost machine learning model by selecting the training set based on the accurate prediction of the last training.
3. It assigns the higher weight to wrong classified observations so that in the next iteration these

observations will get the high probability for classification.

4. Also, it assigns the weight to the trained classifier in each iteration according to the accuracy of the classifier. The more accurate classifier will get high weight.
5. This process iterates until the complete training data fits without any error or until reached to the specified maximum number of estimators.
6. To classify, perform a "vote" across all of the learning algorithms you built

Advantages

Adaboost has many advantages due to its ease of use and less parameter tweaking when compared with the SVM algorithms. Plus, Adaboost can be used with SVM though theoretically, overfitting is not a feature of Adaboost applications, perhaps because the parameters are not optimized jointly and the learning process is slowed due to estimation stage-wise. This link is useful to understand mathematics. The flexible Adaboost can also be used for accuracy improvement of weak classifiers and cases in image/text classification.

Disadvantages:

Adaboost uses a progressively learning boosting technique. Hence high-quality data is needed in examples of Adaboost vs Random Forest. It is also very sensitive to outliers and noise in data requiring the elimination of these factors before using the data. It is also much slower than the XG-boost algorithm.

G. XGBOOST ALGORITHM

XG-boost is an implementation of Gradient Boosted decision trees. It is a type of Software library that was designed basically to improve speed and model performance. In this algorithm, decision trees are created in sequential form. Weights play an important role in XG-boost. Weights are assigned to all the independent variables which are then fed into the decision tree which predicts results. Weight of variables predicted wrong by the tree is increased and these the variables are then fed to the second decision tree. These individual classifiers/predictors then assemble to give a strong and more precise model. It can work on regression, classification, ranking, and user-defined predict.

Regularization: XG-boost has in-built L1 (Lasso Regression) and L2 (Ridge Regression) regularization which prevents the model from overfitting. That is why, XG-boost is also called regularized form of GBM (Gradient Boosting Machine).

While using Scikit Learn library, we pass two hyper-parameters (alpha and lambda) to XG-boost related to regularization. alpha is used for L1 regularization and lambda is used for L2 regularization.

2. Parallel Processing: XG-boost utilizes the power of parallel processing and that is why it is much faster than GBM. It uses multiple CPU cores to execute the model. While using Scikit Learn library, thread hyper-parameter is used for parallel processing. nthread represents number of CPU cores to be used.



If you want to use all the available cores, don't mention any value for nthread and the algorithm will detect automatically.

3. *Handling Missing Values*: XG-boost has an in-built capability to handle missing values. When XG-boost encounters a missing value at a node, it tries both the left- and right-hand split and learns the way leading to higher loss for each node. It then does the same when working on the testing data.

4. *Cross Validation*: XG-boost allows user to run a cross-validation at each iteration of the boosting process and thus it is easy to get the exact optimum number of boosting iterations in a single run. This is unlike GBM where we have to run a grid-search and only a limited values can be tested.

5. *Effective Tree Pruning*: A GBM would stop splitting a node when it encounters a negative loss in the split. Thus, it is more of a greedy algorithm. XG-boost on the other hand make splits up to the max_depth specified and then start pruning the tree backwards and remove splits beyond which there is no positive gain. 5.2

V. DATASET DETAILS

Of the 76 attributes available in the dataset, 14 attributes are considered for the prediction of the output.

Figure: Dataset Attributes

Input dataset attributes

- Gender (value 1: Male; value 0 : Female)
- Chest Pain Type (value 1: typical type 1 angina, value 2: typical type angina, value 3: non-angina pain; value 4: asymptomatic)
- Fasting Blood Sugar (value 1: > 120 mg/dl; value 0:< 120 mg/dl)
- Exang – exercise induced angina (value 1: yes; value 0: no)
- CA – number of major vessels colored by fluoroscopy (value 0 – 3)
- Thal (value 3: normal; value 6: fixed defect; value 7:reversible defect)
- Trest Blood Pressure (mm Hg on admission to the hospital)
- Serum Cholesterol (mg/dl)\
- Thalach – maximum heart rate achieved
- Age in Year
- Height in cms
- Weight in Kgs.

- Cholesterol
- Restecg

S.No	Attribute	Description	Type
1	Age	Patient's age (29 to 77)	Numerical
2	Sex	Gender of patient (male-0 female-1)	Nominal
3	Cp	Chest pain type	Nominal
4	Trestbps	Resting blood pressure (in mm Hg on admission to hospital, values from 94	Numerical
5	Chol	Serum cholesterol in mg/dl, values from 126 to 564)	Numerical
6	Fbs	Fasting blood sugar>120 mg/dl, true-	Nominal
7	Resting	Resting electrocardiographics result	Nominal
8	Thali	Maximum heart rate achieved (71 to 202)	Numerical
9	Exang	Exercise included agina(1-yes 0- no)	Nominal
10	Oldpeak	ST depression introduced by exercise relative to rest (0 to .2)	Numerical
11	Slope	The slop of the peak exercise ST segment (0 to 1)	Nominal
12	Ca	Number of major vessels (0-3)	Numerical
13	Thal	3-normal	Nominal
14	Targets	1 or 0	Nominal

TABLE: Attributes of the dataset

A. PERFORMANCE ANALYSIS

In this project, various machine learning algorithms like SVM, Naive Bayes, Decision Tree, Random Forest, Logistic Regression, Adaboost, XG-boost are used to predict heart disease. Heart Disease UCI dataset, has a total of 76 attributes, out of those only 14 attributes are considered for the prediction of heart disease. Various attributes of the patient like gender, chest pain type, fasting blood pressure, serum cholesterol, exang, etc are considered for this project. The accuracy for individual algorithms has to measure and whichever algorithm is giving the best accuracy, that is considered for the heart disease prediction. For evaluating the experiment, various evaluation metrics like accuracy, confusion matrix, precision, recall, and f1-score are considered. Accuracy- Accuracy is the ratio of the number of correct predictions to the total number of inputs in the dataset. It is expressed as:



Accuracy = (TP + TN) / (TP+FP+FN+TN)

Confusion Matrix- It gives us a matrix as output and gives the total performance of the system.



Figure: Confusion Matrix

Were

TP: True positive

FP: False Positive

FN: False Negative

TN: True Negative

Correlation Matrix: The correlation matrix in machine learning is used for feature selection. It represents dependency between various attributes.



Fig: Correlation matrix

Precision- It is the ratio of correct positive results to the total number of positive results predicted by the system.

It is expressed as: Recall-It is the ratio of correct positive results to the total number of positive results predicted by the system.

It is expressed as: F1 Score-It is the harmonic mean of Precision and Recall. It measures the test accuracy. The range of this metric is 0 to 1.

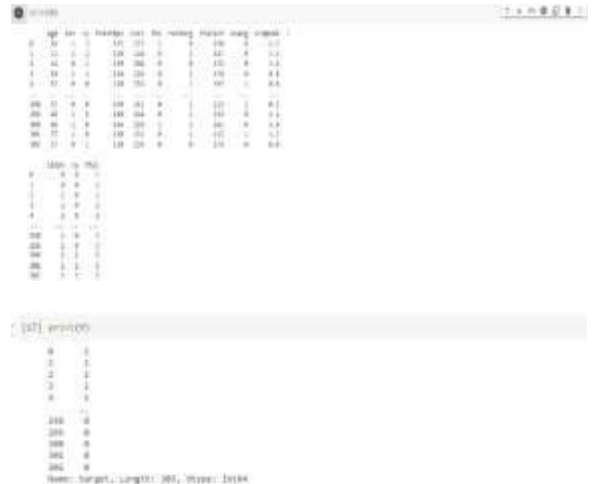
A. OUTPUT DATA COLLECTION AND PROCESSING



STATISTICAL MEASURES OF DATA



SPLITTING FEATURES AND TARGET





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USE OF LITERARY TEXTS IN THE PERFORMANCE OF LITERARY WORDS

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ANNOTATION

This article gives methodical recommendations and examples of the method of working on the literary text in teaching the subject of "Stage speech" and improving the performance of artistic speech skills, traditions of Uzbek literary speech art.

KEY WORDS: *expressive reading, artistic expressiveness, stage speech, performance, imagination.*

BADIY SO‘Z IJROCHILIGIDA ADABIY MATNLARNING QO‘LLANILISHI

Anotatsiya. Mazkur maqolada “Saхna nutki” fanini ўqitiшдаги адабий матн устида ишлаш услуги ва бадий сўз ижрочилиги маҳоратини оширишга, ўзбек бадий сўз санъати анъаналарига оид методик тавсиялар ва мисоллар берилган.

Kalit so‘zlari. Saхna nutki, ifodalari ўқиш, бадий сўз санъат, ижро таъсирчанлиги, тасаввур.

ИСПОЛЬЗОВАНИЕ ЛИТЕРАТУРНЫХ ТЕКСТОВ В ИСПОЛНИТЕЛЬСКОМ ТВОРЧЕСТВЕ

Аннотация. В данной статье даны методические рекомендации и примеры методики работы над художественным словом в процессе работы над сценической речью, рассмотрены вопросы совершенствования исполнительского мастерства и художественные традиции на узбекской сцене.

Ключевые слова: выразительное чтение, художественная выразительность, сценическая речь, исполнение, воображение.

INTRODUCTION

In order to know the outlook, ideas, and goals of different peoples and nationalities on earth, it is the need of the time to feel the highest feeling characteristic of people and to bring it into the world of thought. In fact, the role of literature and art is incomparable in the realization of life's reality in the life of a person, who is the master of nature, his dreams, his unceasing efforts in the path of happiness and freedom. It is known to us that it is difficult to be able to turn stage reality into life reality. That's why in performances, listening to and watching examples of artistic words, we lead the audience to the development of events, and in some

places we are impressed and applaud with tears in our eyes. This indicates that the views of the author and the performer in the stage play or artistic text are balanced. In theater art, the main task of the stage speech is to reveal the idea of the stage work. The artistic expression of the meaning expressed in the tone of the words is the highest goal of stage speech. That's why the theater art relies more on stage speech, and the actor first of all needs to learn the most necessary and subtle aspects of artistic speech.

MAIN PART

Students of the actor and director's group, who are studying theater art, will work on visual fragments in the



first stage of working on words from the science of stage speech. As we mentioned in the introduction, every person is proud of the beauty of the place where he was born and raised, and he is proud of the richness and charm of his mother tongue, which shows the qualities of his language. and literary works embody the unique qualities of each language. During the reading of fiction, students come across the attractive artistic language of the author of the work, full of thoughts and feelings. In this regard, he will understand the essence of the idea after reading the work himself. Talented writers think of creating a vivid image, a good character from a certain life scene or source. For this purpose, he finds and replaces the words necessary to enrich the essence of the work. The main thing that is required from the performer is to enrich this text with his imagination and ensure expressiveness, to use elements of acting skills. Also, in the pamphlet "Mukhsin Hamidov Founder of the One Actor Theater", candidate of art sciences, Professor Sotimboy Tursunboyev, "He uses hand movements (gesture), posture (pose), gestures, gaze, speech, tempo-rhythm to bring the characters to life. used theatrical means of expression, and very compactly, mainly with the help of a gesture or one or two details, he vividly embodies the living image of his character before the eyes of the audience. [1.53-p]

For example, a student-performer wants to perform a beautiful, scenic pictorial piece. In this passage, "as the sun is reflected in the rain", the performer's broad views can be seen. The ability to see the scene, to like it, to describe it in a sequence begins to form. In this regard, it is required that not a single small detail in the environment being depicted should be overlooked. Only then, as S.Tursunboyev said, the performer-student can clearly embody the image of the character or the object of the image. It is worth mentioning that today such descriptive and scenic artistic matins are widely used on television, radio, and field performances.

The next stage is a little later in the learning process. Now, single-event, dialogic passages, spoken only in the character's language (first-person language), are selected. In this process, it is considered as an important process to read the name of a man or a woman from the scope of the student's imagination. Starting with an image, passages with a conflict or dialogues are selected, in which all elements related to the analysis of a literary passage are explained to the student. Sometimes they try to change the character's speech in dialogue texts. At the

first stage, it is necessary to speak expressively without exaggeration. In the passage, they try to speak the words spoken by the elderly or young children in their own language and voice. This causes some inconvenience in this process. For example: after the words of the author, the character goes to the speech with a long pause, or vice versa, the pause is considered unnecessary. This technique is useful when used in later stages of a comic strip or finished comic stories. Because the genre and artistic language of the work lead the performer. In the earlier stages, the performer-student acquired the ability to work on the most effective points found by the author of artistic language paints in the literary text. When artistic paints are expressed in the language of performance, their effective points are created together with the subtle feelings and views of the author and the performer, just as fruit trees of various kinds ripen together with them and sprout from their roots.

METHODOLOGY

At the next stage of working with a literary and artistic text, students turn to a full story or finished work. The leading teachers of the department have shown the way of working with the literary text and its analysis in their textbooks and manuals. In particular, A. Sayfutdinov's manual entitled "Literary work and performance skills" explained in detail about the method of literary work analysis and selection. We also rely on and use the above guides. For example, "the content and form of a literary work and its acceptance by future performers are different, so their learning and mastering is also different" [p. 2.13] We use artistic texts of different genres in acting groups. In these texts, high emotions, with a half cup at the bottom of the cup, first of all frame the performer and the audience. It gives pleasure to the listener in the moment. Such texts can be used not only for the final control based on the program, but also as a link between poetic compositions in the independent work of students. For example: Drama theater and film acting students prepared a literary-artistic composition on the topic of "Love to a woman" and presented it to the management of the institute, department and students. It was felt that the students had great interest and enthusiasm. Among the poetic performances praising the woman, the mother, the motherland, welcoming the spring, Tursunoy Sodikova, candidate of philological sciences, honored cultural worker of the Republic of Uzbekistan, "Who is a woman?" a place was



also given to a prose passage called We considered it permissible to quote from this passage.

"I remember a story: a woman doesn't trust her husband at all. As the poet says, if he were a gem, put it under his tongue, turn into a pearl, and place it in his eyeball! He is hot, sleepless at night, and restless during the day. The jealous jealousy makes him jump and play. As if Erkin Vahidov:

Seni yotlar tugul hatto qilurman rashk o'zimidan ham,

Uzoqroq termulib qolsam, bo'lurman g'ash ko'zimidan ham – the verse is said from this woman's tongue.

The woman's husband, who keeps walking on the coals, will die one day. A woman burns, burns. He cries on the grave until his heart is full, until his tears run out. Then he raises his height, takes a deep breath, and whispers something. What do you say?! He says something strange when he says it!

"Thank you, thank you, no one can take you from me now!" - he says. Even if this woman lived with her partner, she could not get enough of him. But at this moment, she is proud that her husband is dead! You say repentance. Who is a woman? You can't call him selfish, you can't call him hard-hearted. It is clear that this separation will cost him dearly, but it will only increase his pain. Who knows, she might run away from her husband after her. But at the same time, she is satisfied with her husband. How should we understand this verb? Who is the woman?" [3. pp. 171-172]

In analytical processes, the teacher gives life examples, logical accents and division into parts are considered. A musical decoration is given after a perfect performance is achieved. This process is fun for the student actor. Such artistic texts with the expressiveness of small drops and the charm of the artistic language are the main performance material.

CONCLUSION

Today, the successors of the Uzbek artistic word performance are our skilled actors, in the theater, on television, at creative evenings held with young people at spiritual and educational meetings, performing examples of artistic words that will be educational and instructive to our people.

People's Artist of Uzbekistan Erkin Komilov is known and famous to our people through theater, cinema, and television. Today, an example of the actor's

rich experience and effective creative research is taking place in the hearts of our people with small narratives and instructive stories before the beginning of the educational television series broadcast on television. This indicates the effective promotion of the film.

We will witness many creative works of Ernazar Yorbekov, associate professor of UzDSMI, which will be shown on TV and radio. Dilmurod Uzokov, a senior teacher and skilled actor, has been receiving the attention and recognition of our people with his examples of artistic words on the stage and on TV screens in this regard.

In addition to theater actors, presenters and actors also contribute to this genre. "Jalaluddin Rumi" novel written by Radiy Fish by Associate Professor Muslimbek Yoldoshev, who mastered the school of artistic speech performance, and learned through the program "Mutolaa" on Madaniyat va Marifat TV channel. performance of the best masterpieces of Uzbek and world literature, youth coaches who have served in Uzbekistan such as associate professor I. Djumanov, Abdurasul Abdullayev, associate professor Bahadir Magdiyev, talented presenter and poet Talibjon Israilov, etc. They are educating young artists while serving our people with impressive artistic creations created in our mother tongue. We hope that in the future, young students will also raise the status of the art of speech performance to higher heights.

Fiction literature, which is considered a mirror of spirituality, is an important means of education in the improvement of the language, which is considered a mirror of spirituality, getting acquainted with the best examples of literature written by our scholars about language and words, thinkers of the world, and talented writers, and performing it. Conveying the most impressive aspects of power of word to the people is also an effort to convey the purity of our native language, its unique sound, rich in content, and logical consistency to the generations, and to acquire the art of speech in the education of future specialists. and we consider their actions to be the call of the heart of the teachers.

After all, we note the opinion of the poetess Zebo Mirzayeva about the art of literary words: "Which of the arts is the strongest?" I asked you. (referring to the late actress Rimma Akhmedova). You thought for a moment, then said firmly: "Words, words are stronger!"



you read a poem. I was impressed. Then I thought:
"Could it be otherwise?" [4. p. 17].

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DIFFICULTIES OF THE LINGUOCULTUROLOGICAL ASPECT IN THE TRANSLATION OF FOREIGN PROVERBS AND JOKES

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ABSTRACT

The sociolinguistic context is necessary for the understanding of humour, but it is not always valid for all humorous expressions. When the sense of humour resides in a play on words, it is necessary to appeal to a linguistic intelligence to understand the humour. Besides, the translators of humorous films encounter a lot of problem in the translation or the subtitling of puns because the literal translation will not have a humorous effect among foreign spectators, and the translation of the meaning requires a lot of space and time on the screen in which humour loses its effect.

KEYWORDS: *linguoculturology, English language, cultural jokes, proverbs, linguistic units, ethnolinguistics*

Given that humorous phrases are concise statements, often in common use, which sometimes express widespread beliefs, humour would be, in a way, a mirror of the thinking of peoples on many subjects. Jokes never start out of thin air and cartoons have a whole story behind them. Social and political events provide fertile ground for people to create jokes or caricatures.

The deep analysis of humorous phrases, jokes, caricatures of a given society will help a lot to understand the problems that affect this society, even the thinking of people. Humour often reveals the reality of the people and many of their habits and beliefs, as we will see in this study.

We will try in this research to focus on three important axes: the first concerns the sociolinguistic dimension in the birth of humour. We will discuss here the importance of the socio-cultural context in the birth of humorous expressions. Society is the only theatre on which actors can express themselves and revive or create humour. In other words, it is the socio-cultural events that force us to speak in such a way. Secondly, we will talk about the lifespan of humorous expressions. When one invents a humorous proverb or a caricature does it last all the life or good will disappear one day? It all depends on the user people as we will see later. Finally,

we will see to what extent the teaching of humour in foreign language methods could be useful or harmful to language learning.

Nobody contradicts the fact that the birth of humour needs a fertile socio-cultural ground full of social events. Saussure's semiotic triangle of the linguistic sign speaks of the signifier, the signified and the referent. If we want to assimilate this semiotic triangle to the birth of humour, we can say that the signifier would be the linguistic aspect of the humorous locution; the signified would be the concept and the hidden meaning of the locution, while the referent would be the socio-cultural context that gives rise to the humorous phrase. We will therefore try to emphasize, in this part, the third dimension of the linguistic sign "the referent" which is responsible for the richness of the humorous expressions and their understanding.

We will try to explain the relationship between the birth of humour and the socio-cultural referent by using proverbs. Proverbs are often used both to make speakers laugh and to better explain one's point of view. From the following proverbs we will see how close the relationship between the proverb and society is.



Proverb in other languages	Literal meaning	Equivalent in English
Ça ne casse pas trois pattes à un canard (French)	It doesn't break three legs to a duck	It has nothing to write home about
Что написано пером, не вырубишь топором. (Russian)	What's written with pen, cannot be cut with an axe	The pen is mightier than the sword

The genesis, therefore, of a proverb takes place thanks to an experience lived by a group of people or an incident in a given community. Proverbs make it possible to know the wisdom and the soul of a people, and consequently the way in which this people thinks. The natural and cultural elements, existing in the environment where the proverb was born, participate in the construction of the latter. In other words, to give birth to a proverb, the people concerned by this proverb seek, unconsciously, elements of their natural and cultural surroundings to formulate it. From there arises the difficulty of transposing the proverb from one language to another, especially when the elements constituting the proverb are not widespread or little used in the other community.

Using the examples in the table above, we will explain what we mean by “natural and cultural elements”:

The first proverb: “*It doesn't break three legs to a duck*”.

While the direct translation, “it doesn't break three legs to a duck” has a bit of weird flavor to it, rest assured that this idiom means no harm to any duck. Considering that a duck only has two legs, among other things, this is actually similar to the English expression “it has nothing to write home about”. Meaning, there's nothing spectacular about a particular thing.

The elements that make up this French proverb are duck and legs, but in English they are home and write. Why did the English tradition choose home and write in this proverb, while the French or rather Roman tradition used ducks and legs? Thanks to the nature and the hot climate of the England, ducks are less frequent there than in France, having a climate that is not very favourable for ducks. As for the rope, which is not

detached from the Saxon culture where horses occupy an important place, even until today in certain regions, as a means of transport. The horse driver of course uses the rope to tie the saddle and control the animal's neck to steer it in the desired direction.

The second proverb:

- “*Что написано пером, не вырубишь топором*”

- Literally: «What's written with pen cannot be cut with an axe.»

English equivalent: *The pen is mightier than a sword.*

The context of use of this proverb is the same in English and Russian. We use it to say that Persuasion through words is much more effective than coercion, as words, spoken or written, remain in people's minds even if newspapers are burned or a poet is silenced. We notice that the French tradition chooses the sword as an important element in the proverb, while the Russian folklore prefers the axe. Of course, this is not a random choice. The sword is a weapon that was used more in the forests of Europe than in Russia. Though, axe was an important element to survive cold winters and for wood. The use of this term in an Russian proverb therefore would not be strange because it is not part of the cultural and traditional notions of the peoples of Europe who would not understand the value of the weapon.

To conclude, the life expectancy of a humorous expression or a caricature depends mainly on the people who lived the event from which the expression or the caricature was born. Sometimes the event remains in people's collective memory, which gives a longer life expectancy to the humor that was born thanks to this event. On the other hand, if the new generations forget the event, it is quite possible that the phrase or caricature will lose its humorous effect.



Mastering a foreign language requires a good knowledge of the cultural aspects of the people speaking that language. For communication to achieve its goal, being mutual understanding, it is important that the interlocutors not only share the same language, but also the same culture. That doesn't mean you have to be French to speak French, but he wants to know French culture better to better understand and be understood. You can master the English language very well, but not laugh at a "joke" with a cultural reference. To tell the truth, the teaching methods of English as a foreign language avoid the use of humour, because this requires a cultural knowledge which the foreign teacher might not have.

Is it serious not to understand a humorous phrase in a foreign language? Is ignoring the humorous aspect detrimental to learning a foreign language? It is very rare that humour is the main object of true linguistic communication. On the other hand, the interlocutors often use humour as a support either to highlight the subject of discussion by leaving traces in the memory of the other, or to devalue it by using jokes. The most important thing for a user of a foreign language is to understand and make a message understood. If a humorous message escapes him, it will not really affect the good understanding of the main information. On the other hand, we must admit that it is embarrassing for natives to laugh at a joke or a humorous phrase that a foreigner does not understand.

As a native speaker of a given language, we often avoid using cultural humour with foreigners because we know that this requires a socio-cultural knowledge that a native of the same mother tongue would not have, especially when there is an age difference between the interlocutors.

In our opinion, it is not easy to teach humour to a foreign learner for several reasons:

- Firstly because humour cannot be learned. It is an aspect that the person acquires in society and especially in his social environment. In other words, it is a gift.
- We most often use a colloquial language in humour which is difficult and disturbing for the proper learning of a foreign language. He wants to learn the standard language better.
- It is not even easy for a foreign teacher to understand the humour in the language he is

teaching. Even if he understands it, it will be difficult for him to translate it because the translation of humour means "killing" the "laughter".

However, one can always integrate into the methods of English didactics humorous caricatures with international themes that everyone shares. Take for example the cartoon below which speaks of the racist whose humour is flagrant who does not need an explanation from the teacher. It is enough to explain the word "racism" to the learners so that they understand that this character in the cartoon is racist against black people to the point that he wants to shoot his shadow because he is black.

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VOCABULARY LEARNING IN ENGLISH AS A SECOND LANGUAGE IN THE FIRST CYCLE

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ABSTRACT

Learning a second language is complex and requires a lot of effort on the part of the learner and patience on the part of the teacher. Our question was as follows: do these techniques used to learn better and faster really work? It is therefore interesting to check whether college students use these strategies to learn new vocabulary related to their fields of study. We suggest that other studies, putting students in a specific learning situation, be conducted to better understand whether the use of strategies has an impact on vocabulary acquisition.

KEYWORDS: *second language, learning strategy, mobilize, communicate, reinvest*

Various definitions of intelligence have been proposed throughout the history of intelligence studies. According to Sternberg (quoted by Gregory, 1998), “looking closely, there seem to be as many definitions of intelligence as there are experts to define them”. Scientists and psychologists have often defined intelligence similarly, but using different terms. However, the most general definition is the ability to perceive information, retain it as knowledge, and apply that knowledge appropriately within a contextual environment. According to Gottfredson (1997), psychometric intelligence manifests itself in generic thinking abilities such as effective learning, reasoning, problem solving and abstract thinking.

Intelligence is a useful tool in all areas of life, but particularly when tasks are new, uninstructed, or complex, or when situations are ambiguous, changing, or unpredictable. Other definitions refer to intelligence as an individual capacity combining logic, understanding, self-awareness, learning, emotional awareness, planning ability, creativity and problem solving. In the field of psychological studies on intelligence, various approaches exist, among which the psychometric approach is the most widespread.

Researchers typically use everyday problem-solving evaluations to ensure that experiences with participants can generate solutions. For example, suppose a person has to weigh the cost of a trip in a daily problem-solving task; this activity therefore requires her to demonstrate

the ability to add and subtract. If a problem were to involve the management of finances, the effective solution would be to be able to add the receipts and subtract the expenses. However, an effective solution could also be to be assisted by a person with experience in managing the cost of travel. Ultimately, tasks involving day-to-day problem-solving procedures have the potential to capture other solutions that go beyond the most common strategies for solving the problem at hand. Everyday problem-solving tasks are used by scientists to show how aging-related cognitive decline affects the specific, vital abilities that maintain an individual's autonomy beyond the abilities measured by intelligence tests and by those measuring primary mental abilities (Mienaltowski, 2011).

The school's Junior Primary English as a Second Language program¹ is a unique opportunity for young students to come into contact with the English language and culture through songs, nursery rhymes and stories from the resource directory for English-speaking children. It responds to the student's needs to take action and promotes group participation in a meaningful and welcoming context. This curriculum takes into account the social, emotional, physical and cognitive development of young students.

The program focuses on the oral dimension of the language. The teacher speaks to the student exclusively in English, from the first lesson. The program promotes learning through different means: the student listens,



imitates, sings, interprets, communicates, repeats in his own words, etc. There are no expectations in terms of reading and writing.

The child learns his mother tongue by communicating with his parents, his brothers, his sisters, in everyday life; moreover, he becomes familiar with his cultural heritage through songs, rhymes and stories. Similarly, the pupil of the first cycle of primary education learns English by participating in the life of the class alongside his companions, as well as his teacher. He takes part in motivating activities related to the use of authentic texts. The program revolves around two skills, namely *mobilizing* one's understanding of texts heard and *communicating* orally in English. These skills are closely linked, each contributing to the development of the other. The competency *mobilizing* one's understanding of texts is the cornerstone of the program. The action takes place orally and is centred on the use and exploitation of authentic texts.

Published studies show that a young child's brain capacity for language acquisition is such that he or she can learn several languages at the same time. Learning other languages at a young age, between the ages of 3 and 7, stimulates the prefrontal lobe of the brain, that is to say the lobe that is solicited when learning the mother tongue. This allows the brain to create authentic phonemic sounds and establish a distinct syntactic network for each language, simultaneously. Between the ages of 8 and 10, a child's ability to learn to speak a new language fluently begins to decline and the situation continues to deteriorate gradually so that, by age 17, this ability drops to 15%.¹⁰⁰ Moreover, these studies show that it is not so much the number of years during which one uses a language that determines the degree of mastery of it but rather the age at which one begins to learn it.

The introduction to the English language and culture at a young age offered by this program provides the student with significant assets in three main areas. First of all, the student develops his ear for English through contact with authentic audio models⁴, at an optimal age, that is to say when the brain is imbued with the phonemic sounds of the language and when a syntactic network is naturally established. The student learns a range of songs and rhymes well known to English-speaking children, which opens the way to a new cultural experience and the acquisition of meaningful knowledge. The student is immersed in a stimulating

environment where he becomes familiar with the language at a pace that suits him.

The skills *mobilize* understanding of texts heard and *communicate* orally³ in English form a solid foundation for the development of skills *reinvest* understanding of texts read and heard and Interact orally in English programs in the second and third cycles of elementary school.

The lower primary curriculum will have positive impacts and long-term impacts on fluency and fluency in spoken language³.

When striving to understand, the student:

- makes connections between words, visual aids and other resources;
- uses previous knowledge;
- constructs representations of the language;
- gives meaning to messages;
- responds to messages;
- modulates his understanding.

The teacher is an invaluable resource as a role model and student-centred educator. He always speaks in English, adopts a normal flow and helps the student to adapt to this new exclusively English-speaking world.⁴

The English as a second language teacher knows the young student's learning process well. He knows how to bring together the conditions conducive to the establishment of a stimulating environment, where everyone can aspire to success.

The teacher aims for the student to have fun learning English through authentic songs, rhymes and stories. When he speaks, he uses visual cues to help the student understand. The teacher uses authentic texts, authentic audio models and meaningful visual aids. It ensures that the student can become familiar with the prosody of English, develop a global understanding and manage to communicate in English in a personal way.

The teacher regularly reflects on his/her teaching practices and on the progress made by the student, so as to provide the student with the best possible learning experience.

Throughout the cycle, the teacher guides and supports the student in his learning and evaluates the acquisition of skills. He ensures that the student is aware of what is expected of him and he gives him the opportunity to reflect on his progress. At the end of the cycle, the teacher determines the degree of skill development. Guided by questions and feedback from the teacher, students learn to regulate their learning



processes so that they can change their way of learning as needed.

Examples

• To help the student become aware of his use of the directed attention strategy, the teacher can ask questions such as the following³:

How concentrated are you?

Did you listen to the teacher carefully?

Have you looked carefully at the flash cards?

Did you try to understand?

We hope to provide a methodology that would serve learners to develop their language skills more effectively while stimulating their creativity and motivation. In an educational context, these objectives can be taken into account by meeting the needs of all learners. For these reasons, we believe that students would benefit if teachers considered teaching their classes and teaching their subjects based on the theory of multiple intelligences.

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RELATIONSHIP BETWEEN MATHEMATICS BELIEFS AND STUDENT ENGAGEMENT IN MATHEMATICS AS MEDIATED BY CREATIVE SELF-EFFICACY

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ABSTRACT

In this study, there are three factors that affect the Mathematics performance of the students: Mathematics Beliefs, Student Engagement in Mathematics, and Creative Self-Efficacy. These factors may have significant direct effect on how a student transfers knowledge. Moreover, this study was conducted to determine that Creative Self-Efficacy can be a mediator of Mathematics Beliefs and Student Engagement in Mathematics.

Descriptive-correlational research method was used to describe the relationship of Student Engagement in Mathematics and Mathematics Beliefs, mediated by Creative Self-Efficacy. The study included the 237 first year students who were randomly selected. These students completed the Student Engagement in Mathematics Questionnaire (SEM-Q), Mathematics Beliefs Scale (MBS) and Creative self-efficacy Questionnaire (CSEQ). The test of hypothesis and significance were done using the program Statistical Package for the Social Sciences (SPSS) version 21 and Microsoft Excel.

This study concluded that there is no significant relationship between Student Engagement in Mathematics and creative Self-efficacy, Student Engagement in Mathematics and Mathematics Beliefs, and Creative Self-efficacy and Mathematics Beliefs. Hence, Creative Self-efficacy is not a mediator between the relationship of Student Engagement in Mathematics and Mathematics Beliefs.

KEYWORDS: *mathematics beliefs, student engagement and creative self-efficacy.*

INTRODUCTION

Mathematics is an abstract science. Most students hold beliefs about their own capabilities and competence in accomplishing academic task. These beliefs may increase the engagement of the students in Mathematics and can uplift the Creative Self-Efficacy of students.

Students' feelings about mathematics, features of the classroom, or themselves as math learners are referred to as mathematics beliefs. These beliefs, which include beliefs about mathematics education, beliefs about the self, and beliefs about the social context, can influence students' math learning and problem solving in class, as well as their beliefs about mathematics education and beliefs about the self in relation to doing mathematics (Lavenia et.al., 2019).

Furthermore, student involvement is another aspect that influences their learning and has a significant impact on their academic achievement. In reality, learner engagement is defined as the level of attention, interest, passion, and positivity that students display while learning. It's being sensitive and willing to deal with setbacks and problems in order to achieve specified objectives. Because motivated students always regard a problem as a challenge and look for methods to solve it, engagement is a critical aspect in their motivation. (Gunuc, 2014).

Creative self-efficacy, or the belief in one's potential to produce creative outputs, has attracted a lot of study attention from a wide range of subjects and operational domains, as well as from a wide range of sample types. Lorschach and Jinks (1999) creative self-efficacy plays a crucial role in developing learning environment and more importantly students outcomes. They also proposed that, creative self-efficacy is a driving force which alerts students toward their learning situation.

This study aims to determine the relationship between Mathematics Beliefs and Student Engagement in Mathematics as mediated by Creative Self-efficacy. Also, it provides the importance of Creative Self-efficacy and Mathematics Belief in Student's Engagement in Mathematics. When the level of Creative Self –Efficacy and Mathematics Beliefs of the students is higher, there are also higher chances of student to Engage in Mathematics. Hence, the learnability of students in mathematics will be higher as it serves as the motivation.



Statement of the Problem

The study attempted to investigate the relationship between Mathematics Beliefs and Student Engagement in Mathematics as mediated by Creative Self-Efficacy of first year students of College of Education of the Nueva Ecija University of Science and Technology during the Second Semester of the Academic Year 2020-2021.

Specifically, the study sought answers to the following questions:

1. How may the Education Students be described in terms of their:
 - 1.1 Student Engagement in Mathematics
 - 1.2 Creative Self-Efficacy
 - 1.3 Mathematics Beliefs
2. Are there significant relationship between
 - 2.1 Student Engagement in Mathematics & Creative Self-Efficacy
 - 2.2 Student Engagement in Mathematics & Mathematics Beliefs
 - 2.3 Creative Self-Efficacy & Mathematics beliefs
3. Are Creative Self-Efficacy and Mathematics Beliefs predictors of Student Engagement?
4. Is Creative Self-Efficacy a mediator between the relationships of Student Engagement & Mathematics Beliefs?

Hypothesis

This study tested these hypotheses:

1. There is no significant relationship between Student Engagement and Creative Self-Efficacy.
2. There is no significant relationship between Student Engagement and Mathematics Beliefs.
3. There is no significant relationship between Creative Self-Efficacy and Mathematics Beliefs.
4. Is Creative Self-Efficacy is not a mediator between the relationship of Student Engagement and Mathematics Beliefs.

Conceptual Framework

Students Mathematics beliefs and Student’s Engagement in Mathematics had their own predictors. This study conducted to test if Creative Self-Efficacy can be a mediator of Student Engagement in Mathematics and Creative Self-Efficacy.

Research Paradigm

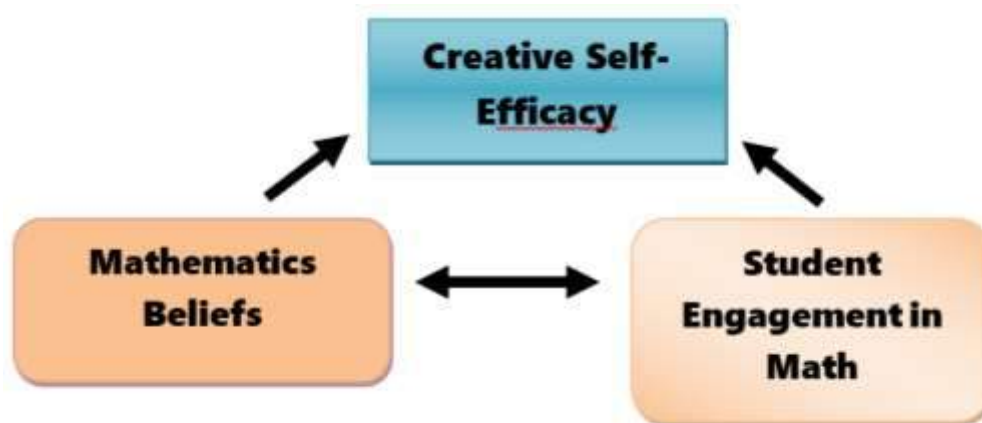


Figure 1

The figure represents the Creative Self-Efficacy as mediator of two variables. Mathematics Belief shows that it is possible that Creative Self-Efficacy can be their mediator. Also, Student Engagement can be possible to Creative Self-Efficacy as their mediator. The two variables which are Mathematics Belief and Students Engagement in Mathematics had their own predictors.

RESEARCH METHODOLOGY

Research Design

The research study used descriptive-correlational research method that described the relationship between the Student Engagement in Mathematics and Mathematics Beliefs, mediated by Creative Self-Efficacy. Creswell (2002) defined correlation as a statistical test to establish patterns in the relationship of the variables under study.



Research Delimitation

This study is delimited only for the Student Mathematics Beliefs, Student Engagement in Mathematics and Student Creative Self-Efficacy of first year students of the College of Education of Nueva Ecija University of Science and Technology.

Research Locale

This study was conducted at College of Education, Nueva Ecija University of Science and Technology, Sumacab Campus. Nueva Ecija University of Science and Technology is located at Barangay Sumacab Este, Cabanatuan City, Nueva Ecija, Philippines (as shown in the left image below). College of Education, NEUST (as shown in the right image below) is the implementing college to offer Bachelor of Secondary Education major in Social Science, English, General Science, Physics, Filipino, Chemistry and Mathematics.



Figure 2
Research Locale

The Respondents

The participants of this study are only the 237 first year students from the program of BSE, BEED, BTLE and BPE of College of Education of Nueva Ecija University of Science and Technology.

Sampling Technique

A random sampling procedure was used for selecting the participants in this study. This was achieved by requesting the total number of first year students per section in the administration office and randomly selecting students in each section until the desired number of respondents was obtained.

Research Instrument

The researcher used the following adopted questionnaires: (i) Student Engagement in Mathematics (MESQ); (ii) Mathematics Belief Scale (MBS); and (iii) Creative Self-Efficacy (CSEQ).

(i) *Students Engagement in Mathematics Questionnaire (SEMQ)*

Description. This instrument is designed to assess Student's Engagement in Mathematics. Students are asked to complete the measure provided in this study. The scale measures three dimensions of engagement: social, cognitive, and emotional.

Internal Consistency Reliability. The reliability indices were .78, .91, and .74 for cognitive engagement, emotional engagement, and social engagement, respectively. A psychometric analysis of the measure using Item Response Theory resulted in the deletion of additional items, resulting a 13-item measure. In this modified measure, the five-item emotional engagement dimension, the four-item social engagement dimension, and the four-item cognitive engagement dimension had internal reliabilities of .91, .98, and .89 respectively.

Response Mode. The respondents answered the Mathematical Engagement in Schools Questionnaire (MESQ) according to a Likert-type scale of 1 to 5 (e.g., 1 = never, 5 = always) and typically require approximately 35-minutes to complete.

**(ii) Mathematics Beliefs Scale (MBS)**

Description. This instrument which is a 25-item scale has three factors: relevance of Mathematics, changeability of Mathematical knowledge, and speed of learning and Mathematics solutions. Thirteen items should be reverse scored. These items were 10, 11, 12, 14, 15, 18, 19, 20, 21, 22, 23, 24, and 25.

(iii) Creative Self-Efficacy Questionnaire (CSEQ)

Description. The Creative Self-Efficacy Questionnaire refers to the Creative Self-Efficacy which is defined as “the belief one has the ability to produce creative outcomes. It is composed of 23 items answerable by rating how confident they are to perform each. They will be asked to rate their degree of confidence by recording a number from 0 to 100. 0 means Not at All Confident. 100 Means Highly Certain that they can do the task.

Procedure of the Study

The researchers were conducted a survey questionnaire in the College of Education. The questionnaires were administered directly to the randomly selected first year students for the study. The data collected from the field were carefully analyzed.

Statistical Analysis of Data

1. To describe Students' Mathematical Belief, Student Engagement in Mathematics, Creative Self-Efficacy, the weighted mean, standard deviation, and percentage were used and interpreted the following:

The test interpretation guide for the Mathematics Beliefs on Relevance to Mathematics was provided in Table I. It describes the respondents' beliefs that mathematics is valuable in one's life, and that it can improve one's status in life. Mathematics Beliefs on Relevance of Mathematics was divided into five interpretative scales: Low Relevance of Mathematics (1.00-1.79); Low Relevance of Mathematics (1.80-2.59); Moderate Relevance of Mathematics (2.60-3.39); High Relevance of Mathematics (3.39-4.19); and Very High Relevance of Mathematics (4.20-5.00).

The test interpretation guide for Mathematics Beliefs on Changeability of Mathematics Knowledge was provided in Table II. It describes the respondents' beliefs that by studying hard and practicing regularly can significantly improve one's mathematics knowledge and skills. Mathematics Beliefs on Changeability of Mathematics Knowledge was divided into five interpretative scales: Low Changeability of Mathematics Knowledge (1.00-1.79); Low Changeability of Mathematics Knowledge (1.80-2.59); Moderate Changeability of Mathematics Knowledge (2.60-3.39); High Changeability of Mathematics Knowledge (3.40-4.19); and Very High Changeability of Mathematics Knowledge (4.20-5.00).

The test interpretation guide for the Mathematics Beliefs on Speed of Learning and Mathematics Solution was provided in Table III. It describes the respondents' beliefs that Mathematics is about being persistent and getting the correct answer in a short period of time. Mathematics Beliefs on Speed of Learning and Mathematics Solution was divided into five interpretative scales: Low Speed of Learning and Mathematics Solution (1.00-1.79); Low Speed of Learning and Mathematics Solution (1.80-2.59); Moderate Speed of Learning and Mathematics Solution (2.60-3.39); High Speed of Learning and Mathematics Solution (3.40-4.19); and Very High Speed of Learning and Mathematics Solution (4.20-5.00).

The test interpretation guide for the Mathematics Emotional Engagement was provided in Table IV. It describes how the respondents can be very persistent in Mathematics endeavour or whether he/she shows high interest and enjoyment in Mathematics. Mathematics emotional engagement was divided into five interpretative scales: Low Mathematics Emotional Engagement (0.00-0.99); Low Mathematics Emotional Engagement (1.00-1.99); Moderate Mathematics Emotional Engagement (2.00-2.99); High Mathematics Emotional Engagement (3.00-3.99); and Very High Mathematics Emotional Engagement (4.00-5.00).

The test interpretation guide for the Mathematics Social Engagement was provided in Table V. It describes how the respondent participates actively in Mathematics related activities or whether the respondent volunteers in Mathematics activities in the school. Mathematics Social Engagement was divided into five interpretative scales: Low Mathematics Social Engagement (0.00-0.99); Low Mathematics Social Engagement (1.00-1.99); Moderate Mathematics Social Engagement (2.00-2.99); High Mathematics Social Engagement (3.00-3.99); and Very High Mathematics Social Engagement (4.00-5.00).

The test interpretation guide for the Mathematics Cognitive Engagement was provided in Table VI. It describes how the respondent can provide several related examples or whether he/she can easily learn from the past problems, and connect all learning experiences. Mathematics Cognitive Engagement was divided into five interpretative scales: Low Mathematics Cognitive Engagement (0.00-0.99); Low Mathematics Cognitive Engagement (1.00-1.99); Moderate Mathematics Cognitive Engagement (2.00-2.99); High Mathematics Cognitive Engagement (3.00-3.99); and Very High Mathematics Cognitive Engagement (4.00-5.00)

The test interpretation guide for the Creative Self-Efficacy was provided in table VII. To describe Creative Self-Efficacy, mean was used and interpreted using the following scale and verbal interpretation:



4.20 – 5.00	Very High Creative Self-Efficacy
3.40 – 4.19	High Creative Self-Efficacy
2.60 – 3.39	Moderate Creative Self-Efficacy
1.80 – 2.59	Low Creative Self-Efficacy
1.00 – 1.79	Very Low Creative Self-Efficacy

2. To determine significant relationships among student engagement in Mathematics, Mathematics Beliefs, among education students exist; *Pearson r* moment correlation was used.

All statistical computations were carried out using MS Excel and SPSS version 21 to tabulate and analyse the results of the tests administered to the respondents. For preliminary analysis, the researcher checked the normality and collinearity on the Mathematical Engagement, Resiliency, Mathematics Success, and Mathematics Beliefs.

3. To determine if engagement was predicted by Student Engagement in Mathematics and Mathematics Beliefs, multiple regression analysis was applied.

4. To determine if Creative Self-Efficacy mediates on the relationship of Student Engagement in Mathematics and Mathematics Beliefs success among College of Education Students, causal steps approach outlined in the classic work of Baron & Kenny (1986; also Kenny et al. 1998) and Judd & Kenny (1981a, 1981b) was used.

RESULTS AND DISCUSSION

1. Observable manner of the students in their Mathematics Beliefs, Student Engagement in Mathematics and Creative Self-Efficacy.

1.1 Mathematics Beliefs

The Mathematics Beliefs were described in terms of Relevance of Mathematics, Changeability of Mathematics Knowledge and Speed of Learning.

Table 1 presents Mathematics Belief in terms of Relevance of Mathematics

Table 1: Mathematics Beliefs in Terms of Relevance of Mathematics

Statement	\bar{x}	Verbal Interpretation
Relevance of Mathematics		
Mathematics is a worthwhile and necessary subject.	3.93	High Relevance of Mathematics
I study mathematics because I know how useful it is.	3.74	High Relevance of Mathematics
Studying mathematics is a waste of time. (reverse scored)	3.33	High Relevance of Mathematics
Mathematics has no relevance to my life. (reverse scored)	3.31	High Relevance of Mathematics
Mathematics will not be important to me in my life's work. (reverse scored)	3.25	High Relevance of Mathematics
Knowing mathematics will help me earn a living.	3.65	High Relevance of Mathematics
Word problems are not a very important part of mathematics. (reverse scored)	3.19	High Relevance of Mathematics
Math classes should not emphasize word problems. (reverse scored)	3.17	High Relevance of Mathematics
General weighted mean	3.45	High Relevance of Mathematics

Table above shows that the majority of the answers of respondents regarding the Mathematics Beliefs (Relevance of Mathematics) are "High Relevance of Mathematics" with an average weighted mean of 3.45.

The table revealed that "Mathematics is a worthwhile and necessary subject" with a mean of 3.93 followed by "I study Mathematics because I know how useful it is" with a mean of 3.74 both verbally interpreted as "High Relevance of Mathematics". The least is "math classes should not emphasize word problems (reverse scored)" with a mean of 3.17 verbally interpreted of "High Relevance of Mathematics".

Table 2 present the Mathematics beliefs in terms of Changeability of Mathematics Knowledge of the respondents.

**Table 2: Mathematics Beliefs in Terms of Changeability of Mathematics Knowledge**

Statement	\bar{x}	Verbal Interpretation
Changeability of Mathematics Knowledge		
Ability in math increases when one studies hard.	4.20	Very High Changeability of Mathematics Knowledge
By trying harder, one can become smarter in math.	4.21	Very High Changeability of Mathematics Knowledge
I can get smarter in math if I try hard.	4.09	High Changeability of Mathematics Knowledge
Working can improve one's ability in mathematics.	4.14	High Changeability of Mathematics Knowledge
I can get smarter in math by trying harder.	4.02	High Changeability of Mathematics Knowledge
Hard work can increase one's ability to do math.	4.11	High Changeability of Mathematics Knowledge
General weighted mean	4.13	High Changeability of Mathematics Knowledge

Table above shows that the majority of the answers of respondents regarding the Mathematics Beliefs (Changeability of Mathematics Knowledge) are "High Relevance of Mathematics" with an average weighted mean of 4.13.

The table revealed that "by trying harder, one can become smarter in Math" with a mean of 4.21 followed by "ability in Math increases when one studies hard" with a mean of 4.20 both verbally interpreted as "High Changeability of Mathematics Knowledge". The least is "I can get smarter in math by trying harder" with a mean of 4.02 that verbally interpreted of "High Changeability of Mathematics Knowledge".

According K. Abdul Gafoor and A. Kurukkan (2015), the study of Mathematics require staying away from many careers that is not related to it and better if they try hard studying the subject.

Table 3 present the Mathematics Beliefs in terms of Speed of Learning of the respondents.

Table 3: Mathematics Beliefs in Terms of Speed of Learning

Statement	\bar{x}	Verbal Interpretation
Speed of Learning		
I find I can do hard math problems if I just hang in there.	3.63	High Speed of Learning and Math Solution
If I can't do a math problem in a few minutes, I can't do it at all. (reverse scored)	2.85	Moderate Speed of Learning and Math Solution
If I can't solve a math problem quickly, I quit trying. (reverse scored)	2.96	Moderate Speed of Learning and Math Solution
I feel I can do math problems that take a long time to complete.	2.58	Moderate Speed of Learning and Math Solution
Math problems that take a long time don't bother me.	2.82	Moderate Speed of Learning and Math Solution
I'm not very good at solving math problems that take a while to figure out. (reverse scored)	2.51	Moderate Speed of Learning and Math Solution
It's not important to understand why a mathematical procedure works as long as it gives a correct answer. (reverse scored)	3.06	High Speed of Learning and Math Solution
Getting the right answer in math is more important than understanding why the answer works. (reverse scored)	2.93	Moderate Speed of Learning and Math Solution
It doesn't really matter if you understand a math problem, if you can get the right answer. (reverse scored)	2.93	Moderate Speed of Learning and Math Solution
Any word problem can be solved if you know the right steps to follow. (reverse scored)	2.41	Moderate Speed of Learning and Math Solution
Any word problem can be solved by using the correct step-by-step procedure. (reverse scored)	2.25	Moderate Speed of Learning and Math Solution
General weighted mean	2.81	Moderate Speed of Learning and Math Solution

The table above shows that the majority of the answers of respondents regarding the Mathematics Beliefs (Speed of Learning and Math Solution) are "Moderate Speed of Learning and Math Solution" with an average weighted mean of 2.81.

The table revealed that "I find I can do hard math problems if I just hang in there" with a mean of 3.63 followed by "It's not important to understand why a Mathematical procedure works as long as it gives a correct answer (reverse scored)" with a mean of 3.06 that both verbally interpreted as "High Changeability of Mathematics Knowledge". The least is "Any word problem can be solved by using the correct step-by-step procedure (reverse scored)" with a mean of 2.25 that verbally interpreted of "Moderate Speed of Learning and Math Solution".



1.2 Student Engagement in Mathematics

The Student Engagement in Mathematics was described in terms of emotional, cognitive, and social engagement.

Table 4 presents Student Engagement in terms of Emotional Engagement.

Table 4: Student Engagement in Mathematics in Terms of Emotional Engagement

Statement	\bar{x}	Verbal Interpretation
EMOTIONAL ENGAGEMENT		
Math class was fun today.	2.48	Moderate Mathematics Emotional Engagement
Today I felt bored in math class.	2.40	Moderate Mathematics Emotional Engagement
I enjoyed thinking about math today.	2.36	Moderate Mathematics Emotional Engagement
Learning math was interesting to me today.	2.55	Moderate Mathematics Emotional Engagement
I liked the feeling of solving problems in math today.	2.40	Moderate Mathematics Emotional Engagement
General weighted mean	2.44	Moderate Mathematics Emotional Engagement

The table above shows that the majority of the answers of respondents regarding Mathematics Emotional Engagement are “Moderate Mathematics Emotional Engagement” with an average weighted mean of 2.44.

The table revealed that “Learning math was interesting to me today” with a mean of 2.55 followed by “Math class was fun today” with a mean of 2.48 that both verbally interpreted as “Moderate Mathematics Emotional Engagement”. The least is “I enjoyed thinking about math today” with a mean of 2.36 that verbally interpreted of “Moderate Mathematics Emotional Engagement”.

Silvia (2022) stated that students who are emotionally engaged enjoy the feeling of solving problems and find the material interesting.

Table 5 shows Student Engagement in Mathematics in terms of Social Engagement.

Table 5: Student Engagement in Mathematics in Terms of Social Engagement

Statement	\bar{x}	Verbal Interpretation
SOCIAL ENGAGEMENT		
Today I talked about math to other kids in class.	2.22	Moderate Mathematics Social Engagement
Today I helped other kids with math when they didn't know what to do.	2.40	Moderate Mathematics Social Engagement
Today I shared ideas and materials with other kids in math class.	2.29	Moderate Mathematics Social Engagement
Students in my math class helped each other learn today.	2.82	Moderate Mathematics Social Engagement
Total weighted mean	2.43	Moderate Mathematics Social Engagement

Table above shows that the majority of the answers of respondents regarding the Mathematics Social Engagement are “Moderate Mathematics Social Engagement” with an average weighted mean of 2.43.

The table revealed that “Students in my math class helped each other learn today” with a mean of 2.82 followed by “Today I helped other kids with math when they didn't know what to do” with a mean of 2.40 that both verbally interpreted as “Moderate Mathematics Social Engagement”. The least is “Today I talked about Math to other kids in class” with a mean of 2.22 that verbally interpreted of “Moderate Mathematics Social Engagement”.

Patrick et al. (2007) showed that social engagement (I.e., task-related interaction) in fifth grade math class related to higher math grades, even after controlling for achievement in the previous year.

Table 6 presents Student Engagement in Mathematics in terms of Cognitive Engagement

Table 6: Student Engagement in Mathematics in Terms of Cognitive Engagement

Statement	\bar{x}	Verbal Interpretation
COGNITIVE ENGAGEMENT		
Today in Math class, I worked hard as I could.	2.71	Moderate Mathematics Cognitive Engagement
Today it was important to me that I understood the math really well.	2.80	Moderate Mathematics Cognitive Engagement
I tried to learn as much as I could in math class today.	2.77	Moderate Mathematics Cognitive Engagement
I did a lot of thinking in math class today.	2.42	Moderate Mathematics Cognitive Engagement
General weighted mean	2.68	Moderate Mathematics Cognitive Engagement



Table above shows that the majority of the answers of respondents regarding Mathematics Cognitive Engagement are “Moderate Mathematics Cognitive Engagement” with an average weighted mean of 2.68.

The table above revealed that “Today it was important to me that I understood the Math really well” with a mean of 2.80 and “I tried to learn as much as I could in Math class today” with a mean of 2.77 are both verbally interpreted as “Moderate Mathematics Cognitive Engagement”. The least is “I did a lot of thinking in Math class today” with a mean of 2.42 that verbally interpreted of “Moderate Mathematics Cognitive Engagement”.

1.3 Creative Self-Efficacy

Table 7 presents the Creative Self-Efficacy of the Students.

Table 7: Creative Self-efficacy

Statement	\bar{x}	Verbal Interpretation
Come up with many possible solutions to a problem.	4.23	Very High Creative Self-Efficacy
Arrive at a variety of conclusions given a difficult situation.	3.93	High Creative Self-Efficacy
Think of many answers to a difficult problem or situation.	4.02	High Creative Self-Efficacy
Come up with different kinds of responses, not just different responses.	3.98	High Creative Self-Efficacy
Answer problems in different ways, each of which is unique and special.	3.82	High Creative Self-Efficacy
Think of many types of ideas while considering a problem.	3.96	High Creative Self-Efficacy
Think of ways to defend a “crazy” thought, by thinking back on what you already know.	3.79	High Creative Self-Efficacy
Talk to your friends about wild ideas, and make them sound reasonable.	3.71	High Creative Self-Efficacy
Tell stories based on dreams you had, even if you need to fill in answers.	3.70	High Creative Self-Efficacy
Be the first in a group to come up with an original suggestion.	3.63	High Creative Self-Efficacy
Arrive at a novel solution before other people.	3.59	High Creative Self-Efficacy
Beat other people in imagining brand new ideas first.	3.29	Moderate Creative Self-Efficacy
Make sense of something you want to learn to do.	4.02	High Creative Self-Efficacy
Start to learn to do something, even if there are obstacles to doing so.	4.07	High Creative Self-Efficacy
Teach yourself how to do something new.	4.18	Very High Creative Self-Efficacy
Create a novelty that people will choose, over other novelties available.	3.77	High Creative Self-Efficacy
Find an audience that is well-connected to others in society.	3.87	High Creative Self-Efficacy
Network with people to convince them that what you made is the best.	3.77	High Creative Self-Efficacy
Be motivated to come up with new ideas.	4.30	Very High Creative Self-Efficacy
Have fun coming up with new ideas, after having learned from others.	4.20	Very High Creative Self-Efficacy
Sustain wonder about something, even after working with it for years or decades.	4.00	High Creative Self-Efficacy
General Weighted Mean	3.90	High Creative Self-Efficacy

The table above shows the total weighted mean of 3.90 as regards to the Creative Self-Efficacy as verbally interpreted “High Creative Self-Efficacy”.

The table revealed that “the students motivated to come up with new ideas” with a mean of 4.30 and the students come up with many possible solutions to a problem with a mean of 4.23 are both verbally interpreted as “Very High Creative Self-Efficacy”. Meanwhile, the least is “students beat other people in imagining a brand new idea first with a mean of 3.29 that verbally interpreted as “Moderate Creative Self-Efficacy”.

Oldham (2018) found that although ability level was linked to performance, children with strong self-efficacy finished more problems correctly and reworked more of the ones they missed. Garcia and Pintrich (1996) discovered that high positive motivational beliefs are linked to higher grades and performance in a sample of community college students, private 4-year college students, and public 4-year university students.

2. Significant Relationships among *Student engagement in Mathematics, Mathematics Beliefs, Creative Self-Efficacy.*

2.1 Student Engagement and Creative Self-efficacy

Table 8 shows the significant relationship between Student Engagement in Mathematics and Creative Self-Efficacy.



Table 8: Significant Relationship between Student Engagement in Mathematics and Creative Self-efficacy

	r(p-value)
Student engagement in mathematics (Emotional)	.002 (p=.978)
Student engagement in mathematics (Social)	-.033 (p=.698)
Student engagement in mathematics (Cognitive)	-.003 (p=.975)

The table above shows that none of the relationships is significant at 0.05 level since all p values are greater than 0.05.

2.2 Student Engagement in Mathematics and Mathematics Beliefs

Table 9 shows the significant relationship between Creative Self-Efficacy and Mathematics Beliefs.

Table 9: Significant Relationship between Student Engagement in Mathematics and Mathematics Beliefs

	Student Engagement in Mathematics (Emotional)	Student Engagement in Mathematics (Social)	Student Engagement in Mathematics (Cognitive)
Mathematics Beliefs (Relevance of Mathematics)	0.75 (p=.385)	-0.057 (p=.510)	0.098 (p=.252)
Mathematics Beliefs (Changeability of Mathematics Knowledge)	0.020 (p=.818)	0.030 (p=.729)	0.158 (p=.065)
Mathematics Beliefs (Speed of Learning)	0.102 (p=.237)	0.056 (p=.516)	0.083 (p=.335)

The table above shows that none of the relationships is significant at 0.05 level since all p values are greater than 0.05.

2.3 Creative Self-efficacy and Mathematics Beliefs

Table 10 shows the significant relationship between Creative Self-efficacy and Mathematics Beliefs.

Table 10: Significant Relationship between Creative Self-efficacy and Mathematics Beliefs

	(p-value)
Relevance of Mathematics	.061 (p=.478)
Changeability of Mathematics Knowledge	.031 (.000)
Speed of learning	-.151 (.078)

The table above shows that only the Changeability of Mathematics Knowledge is significant at 0.05 level since p values is less than 0.05. However, both Relevance of Mathematics and Speed of Learning are not significant since p values is greater than 0.05.

3. Are Creative Self-Efficacy and Math Beliefs predictors of Student Engagement?

Table 11 presents ANOVA of the Predictor Variables with Mediating Variable, Creative Self-Efficacy.

Table 11: ANOVA of the Predictor Variables with Mediating Variable, Creative Self-Efficacy

ANOVA ^a						
		SS	Df	Mean Square	F	Sig.
1	Regression	.008	3	.008	.019	.089 ^b
	Residual	57.411	133	.425		
	Total	57.419	136			
2	Regression	.880	6	.220	.513	.726 ^c
	Residual	56.539	130	.428		
	Total	57.419	136			

a. Dependent Variable: Student engagement in mathematics



b. Predictors: Constant: creative self-efficacy
c. Predictors: Constant: creative-self efficacy, relevance of mathematics, changeability of mathematics knowledge, speed of learning math

The table above shows two regression models are not significant for regression and mediation analyses. Model 1 which includes all predictors, Math Engagement and Math Beliefs is not significant, $F = .019$, $p = .089$. Model 2 which includes the mediating variable together with the predictors is significant, $F = .513$, $p = .726$. Hence, Creative Self-Efficacy and Mathematics Engagement are not significant predictors of Mathematics Beliefs.

4. Is Creative Self-Efficacy a mediator between the relationships of Student Engagement in Mathematics & Mathematics Beliefs?

None of Creative Self-Efficacy and Mathematics Beliefs was found to be significant predictors of Student Engagement. Hence, none of the two can be a mediator between the relationship of the independent and dependent variables.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The researchers concluded that there is no significant relationship between Student Engagement in Mathematics and Creative Self-Efficacy, Student Engagement in Mathematics and Mathematics Beliefs, and Creative Self-Efficacy and Mathematics Belief. Hence, Creative Self-Efficacy is not a mediator between the relationship of Students Engagement in Mathematics and Mathematics Belief.

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RELATIONSHIP BETWEEN ACADEMIC RESILIENCE AND INTERNET ADDICTION OF UNDERGRADUATE STUDENTS OF PURULIA DISTRICT OF WEST BENGAL: A STUDY

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ABSTRACT

Academic resilience is defined as the capacity to cope with academic problems, such as academic stress, academic failure, and academic boredom. Internet addiction is defined as the compulsive use of the internet that has negative effects that interfere with daily life. The present study aims to explore the relationship between academic resilience and internet addiction of undergraduate students of Purulia district of West Bengal. It is a Descriptive survey type research. Data for the study has been collected randomly from 100 undergraduate students from randomly selected two colleges (J. K. College & Nistarini College) of Purulia district of West Bengal applying Academic Resilience Scale (2016) including 30 items by Cassidy and Internet Addiction Scale (1998) including 20 items by Dr. Kimberly S. Young. The collected data has been analyzed using descriptive statistics like mean, standard deviation, variance, skewness, kurtosis, and inferential statistics like 't' test and Mann Whitney U test. The result revealed that academic resilience and internet addiction have no significant relationship. A significant difference has been observed in internet addiction between boys and girls, but no difference has been observed in academic resilience. Locality has no significant impact in both academic resilience and internet addiction.

KEYWORDS: *academic resilience, internet addiction, undergraduate students, academic failure.*

INTRODUCTION

Academic resilience and internet addiction have been two critical areas of study in recent years. Academic resilience is defined as the ability to cope with academic challenges, such as academic stress, academic failure, and academic boredom, while internet addiction refers to excessive use of the internet leading to negative consequences that interferes with daily life. Academic resilience is the capacity of a learner to bounce back, endure, or adjust to pressure and difficult circumstances in the academic area. Internet addiction has become a common factor among the students in this 21st century where the students spend time most of the time of the day using internet. Though internet has become an integral part in the education process of the students, they are accessing internet in their educational process which directly or indirectly makes them habituated to using internet. This continuous use of the internet causes addiction and results in downfall in the academic process.

LITERATURE REVIEW

Academic resilience has been found to be a crucial factor in predicting academic success (Bernard, 2012). A study by Li and colleagues (2018) found that academic resilience is positively correlated with academic achievement among university students. A study by Kuss and Griffiths (2012)

found that internet addiction is associated with negative consequences such as poor academic performance, social isolation, and psychological distress. A study by Li et al. (2018) investigated the relationship between academic resilience and internet addiction among college students in China. This study found that academic resilience was negatively correlated with internet addiction. This indicates that students who were more academically resilient were less likely to develop internet addiction. Yen et al. (2019) had found similar result among Taiwanese university students, Wang et al. (2018) among Chinese high school students, Akin and Iskender (2019) had found that academic resilience was negatively correlated with both internet addiction and academic procrastination. This suggests that those students who were more academically resilient was less likely to develop internet addiction and procrastinate. Xie et al. (2020) found that academic resilience was negatively associated with internet addiction; Kim and Lee (2020) showed that academic resilience was negatively correlated with internet addiction of 309 Korean college students. Similarly, a study by Yu and colleagues (2021) found that higher levels of academic resilience were associated with lower levels of academic stress among Chinese college students, but Kim et al. (2020) found no significant relationship between academic resilience and internet addiction among Korean university students. Another study by Wang and colleagues (2021) found that internet



addiction is associated with lower levels of academic achievement among Chinese college students. A study by Kim and colleagues (2018) found that academic resilience is negatively correlated with internet addiction among Korean college students. Similarly, a study by Deryakulu and colleagues (2021) found that academic resilience is negatively associated with internet addiction among Turkish high school students.

Overall, the literature review suggests that there is a negative relationship between academic resilience and internet addiction among university and high school students. This indicates that students who are more academically resilient may be less likely to develop internet addiction. However, there is some variation in the results across different cultural contexts.

OBJECTIVES OF THE STUDY

1. To study the relationship between academic resilience and internet addiction of undergraduate students of Purulia district of West Bengal.
2. To identify the difference in academic resilience of undergraduate students of Purulia district of West Bengal in regard to gender.
3. To identify the difference in academic resilience of undergraduate students of Purulia district of West Bengal in regard to locality.
4. To identify the difference in internet addiction of undergraduate students of Purulia district of West Bengal in regard to gender.
5. To identify the difference in internet addiction of undergraduate students of Purulia district of West Bengal in regard to locality.

HYPOTHESES OF THE STUDY
RESULTS AND DISCUSSIONS

Tests of Normality of Academic Resilience and Internet Addiction
Shapiro-Wilk

	Statistic	df	Sig.
<i>Academic Resilience</i>	0.979	100	0.114
<i>Internet Addiction</i>	0.973	100	0.037

Table 1 Test of Normality of Academic Resilience and Internet Addiction of undergraduate students of Purulia district of West Bengal

The researcher has tested the normality of data of Academic Resilience and Internet Addiction. The result of the test shows that significance of Academic Resilience and Internet Addiction in Shapiro-Wilk test are 0.114 and 0.037 respectively. Thus, the significance of Academic Resilience is

H₀1 There is no significant relationship between academic resilience and internet addiction of undergraduate students of Purulia district of West Bengal.

H₀2 There is no significant difference in academic resilience between boy and girl undergraduate students of Purulia district of West Bengal.

H₀3 There is no significance difference in academic resilience between rural and urban undergraduate students of Purulia district of West Bengal.

H₀4 There is no significant difference in internet addiction between boy and girl undergraduate students of Purulia district of West Bengal.

H₀5 There is no significance difference in internet addiction between rural and urban undergraduate students of Purulia district of West Bengal.

METHODOLOGY OF THE STUDY

- i. **Method:** The present study is Descriptive survey type in nature.
- ii. **Population:** The researchers have identified all the undergraduate students of Purulia district of West Bengal as the population for the present study.
- iii. **Sample & Sampling Technique:** The data for the study have been collected from 100 undergraduate students from randomly selected two colleges (J. K. College & Nistarini College) of Purulia district of West Bengal.
- iv. **Scale Used:** The researchers have used Academic Resilience Scale (2016) including 30 items by Cassidy and Internet Addiction Scale (1998) including 20 items by Dr. Kimberly S. Young for the collection of data.
- v. **Statistics Used:** For the present study, descriptive statistics like mean, standard deviation, variance, skewness, kurtosis, and inferential statistics like ‘t’ test, Mann Whitney U test have been used for the analysis of data.

greater than 0.05 but the significance of Internet Addiction is less than 0.05. So, the data on Academic Resilience is approximately normality distributed whereas the data on Internet Addiction is not normality distributed.



Correlations			
		Academic Resilience	Internet Addiction
Academic Resilience	Pearson Correlation	1	.141
	Sig. (2-tailed)		.160
	N	100	100
Internet Addiction	Pearson Correlation	.141	1
	Sig. (2-tailed)	.160	
	N	100	100

Table 2 Correlations between academic resilience and internet addiction of undergraduate students of Purulia district of West Bengal

Pair of Comparison	N	Mean	S.D	Mean difference	df	Calculated 't' value	Critical 't' value	Remarks
Boys	21	92.48	17.409	2.60	98	0.738	2.01 (0.05) & 2.68 (0.01)	Not Significant
Girls	79	95.08	13.457					
Rural	84	94.96	14.031	2.71	98	0.693	2.01 (0.05) & 2.68 (0.01)	Not Significant
Urban	16	92.25	16.040					

Table 3 Descriptive statistics along with 't' value of academic resilience for boy and girl, rural and urban undergraduate students of Purulia district of West Bengal

Internet Addiction	N	Mean	Significance	Decision
Boys	21	40.95	0.012	Reject the null hypothesis
Girls	79	32.46		
Rural	84	33.71	0.532	Retain the null hypothesis
Urban	16	37.00		

Table 4 Mann Whitney U test of Internet Addiction between boy and girl, rural and urban undergraduate students of Purulia district of West Bengal

TESTING OF HYPOTHESES

Hypothesis Testing 1: From table 2, it is found that value of coefficient of correlation between academic resilience and internet addiction is 0.141 that is not significant at 0.05 level of significance. So, significant relationship is not found between academic resilience and internet addiction of undergraduate students of Purulia district of West Bengal. So, the null hypothesis (H_01) "There is no significant relationship between academic resilience and internet addiction of undergraduate students of Purulia district of West Bengal" stands accepted.

Hypothesis Testing 2: Table 3 shows that the mean score of academic resilience of boy and girl undergraduate students of Purulia district of West Bengal are 94.96 and 92.25 respectively with mean difference 2.60. The standard deviations are 17.409 and 13.457 respectively. The calculated 't' value is 0.738 which is less than that of critical 't' value for the degree of freedom 98. So, the calculated 't' value is not significant at 0.01 level of significance. Result revealed no significant difference in academic resilience between boy and girl undergraduate students of Purulia district of West Bengal. So, the null hypothesis (H_02) "There is no significant difference in academic resilience between boy and girl undergraduate students of Purulia district of West Bengal" is retained.

Hypothesis Testing 3: Table 3 shows that the mean score of academic resilience of rural and urban undergraduate students of Purulia district of West Bengal are 92.48 and 95.08 respectively with mean difference 2.71. The standard deviations are 14.031 and 16.040 respectively. The calculated 't' value is 0.693 which is less than that of critical 't' value for the degree of freedom 98. So, the calculated 't' value is not significant at 0.01 level of significance. Result revealed no significant difference in academic resilience between rural and urban undergraduate students of Purulia district of West Bengal. So, the null hypothesis (H_02) "There is no significance difference in academic resilience between rural and urban undergraduate students of Purulia district of West Bengal" is retained.

Hypothesis Testing 4: The mean of internet addiction of undergraduate students of Purulia district of West Bengal, mentioned in table 4, shows that the mean value 40.95 is obtained from boy students and mean value 32.46 is obtained from girl students. From the 0.05 level of significance calculated p value is 0.012 which is statistically significant at $p < 0.05$. The result reflected significant difference between boy and girl undergraduate students of Purulia district of West Bengal. Therefore, the null hypothesis (H_05) "There is no significant difference in internet addiction between boy and



girl undergraduate students of Purulia district of West Bengal” is rejected.

Hypothesis Testing 5: The mean of internet addiction of undergraduate students of Purulia district of West Bengal, mentioned in table 4, shows that the mean value 33.71 is obtained from rural students and mean value 37.00 is obtained from urban students. From the 0.05 level of significance calculated p value is 0.532 which is statistically not significant at $p < 0.05$. The result reflected no significant difference between rural and urban undergraduate students of Purulia district of West Bengal. Therefore, the null hypothesis (H_0) “There is no significance difference in internet addiction between rural and urban undergraduate students of Purulia district of West Bengal” is retained.

MAJOR FINDINGS OF THE RESULT

After the testing of the hypotheses, the following major findings have been identified:

1. Internet addiction of the undergraduate students of Purulia district of West Bengal is not a significant factor in their academic resilience. It neither hampers the academic resilience nor enhances it in any possible way. In short, academic resilience and internet addiction of undergraduate students of Purulia district of West Bengal are not related to each other.
2. In terms of academic resilience, both the boy and the girl students of undergraduate level of Purulia district of West Bengal statistically have approximately equal authority. But specifically girl students are little bit ahead than the boy students in their academic resilience.
3. Though rural and urban students of undergraduate level of Purulia district of West Bengal live in different atmosphere, yet they both show statistically equal ability in their academic resilience. No difference is found between them. But in general the rural students are strong enough in their academic resilience than the urban students.
4. But in regard to internet addiction, boy and girl students of undergraduate level of Purulia district of West Bengal are different in their attitude. Boy students are statistically more addicted to using internet than the girl students.
5. Internet addiction of both the rural and the urban students are approximately equal. No statistical difference is found between them. But in general urban students of undergraduate level of Purulia district of West Bengal are positioning a little bit higher than the rural students.

CONCLUSIONS

The youngster will undoubtedly live a better, more confident life with the aid of academic resilience. This will teach the child to cooperate, communicate, instill moral values, behave appropriately for the circumstances, learn to be calm, and learn from experiences, among other skills that will aid in his growth and benefit him in both his personal and professional life (Shikha, 2020). Though the literature review shows that academic resilience is negatively correlated with internet

addiction among university and high school students but in case of undergraduate students of Purulia district of West Bengal, India, no significant correlation has been observed in them. So, internet addiction doesn't cause any harm in the academic resilience of the students.

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UNIFIED PAYMENT INTERFACE (UPI) – STIMULATES FINANCIAL INCLUSION

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ABSTRACT

Unified Payment Interface (UPI) facilitates digital banking. It is a role player in Indian economy with cost effective and innovative features. It is a real-time payment system developed by NPCI for peer-to-peer and person to merchant transactions with any one identifier out of aadhar number, mobile number, QR code or virtual payment address like username@bankname.com without giving any bank details like account number or IFSC code. UPI has made money transfer between bank accounts easy. Financial inclusion actually focus on underprivileged class of society, providing them with basic financial solutions. As they are not aware of banks and their products and if they are aware of, still have no access to bank services since they don't meet basic requirements for such services. These underprivileged people of society may lack necessary documents such as identity proof or income verification and even they don't know the importance of these documents. Due to all such hindrances they were unable to use bank credit facilities and rely on unorganized lending sources and are exploited by wealthy landlords under the illusion of financial assistance. After extensive research and planning the Government of India introduced number of programmes like Pradhan Mantri Jan Dhan Yojana (PMJDY), Atal Pension Yojana (APY), Pradhan Mantri Mudra Yojana (PMMY) etc. to address these barriers and provide financial solutions to this section. Financial inclusion by GOI has become incredibly simple, thanks to UPI. In this research paper we will come to know the impact of UPI on financial inclusion. We will also find the hurdles the Government is facing in financial inclusion.

KEY WORDS: *Payment Service Provider, Unified Payment Interface (UPI), Financial Inclusion, National Payment Corporation of India (NPCI), Government of India (GOI), Merchant Discount Rate (MDR)*

1. INTRODUCTION

Digital banking is transformation of traditional banking. Digitalization has made banking paperless. Demonetization in 2016 encouraged digital banking. As huge demand for currency for basic requirements motivated common man to switch to digital banking. Soon people realized digital banking operations are better substitutes to traditional physical banks. All physical bank activities like bank statement, cash withdrawal, fund transfer, account management, loan management etc. are possible digitally with single internet connection without visiting bank branch manually.

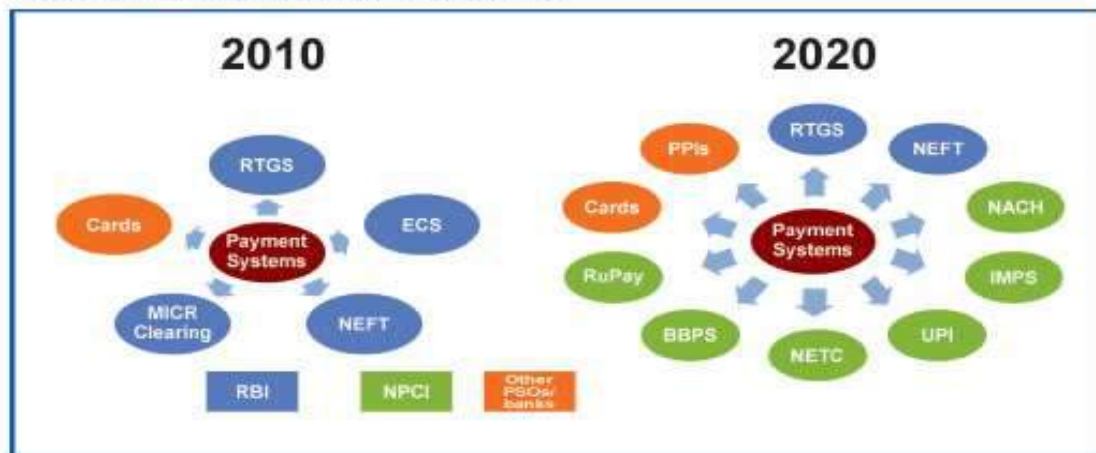
Other most required for digital banking through mobile today is UPI (Unified Payment Interface), a mobile application which come up as revolutionary e-payment product launched by NPCI

(National Payments Corporation of India), an organization for operating retail payments and settlements in India. NPCI is an initiative by RBI (Reserve Bank of India) and IBA (Indian Bank's Association) under payment and settlement Act, 2007. NPCI has also been incorporated as "Not for Profit" company under company act 1956 and now in section 8 under company act 2013.

UPI has made money transfer as easy as sending messages through mobile round the clock 24*7 and 365 days. Single mobile application can access different bank accounts merged with several banking features. UPI has made money transfer between bank accounts easy. Anybody having active bank account, stable internet connection, a smart phone (android or apple ios) and active mobile number linked with bank account.



Table 1: India's payment systems



2. REVIEW OF LITERATURE

UPI, an indigenous digital innovation of India. Lot of work is done on explaining the mechanism of UPI, its features and objectives. The work on how it has made life of people easy and how frequently people have adopted it in their day today life. The major reason behind people's adaptability to such digitalization is demonetization. It is observed that no work is done on the role of UPI in financial inclusion and overcoming the barriers of financial exclusion. Financial inclusion initiative by RBI in 2005 to combat poverty and boost economic growth. Financial inclusion faster, cheaper and more transparent via UPI an open API (Application program interface) where user can link each other without any restrictions

Since 2014 we have seen technological reformation in India. Digital payment transactions are consistently gaining momentum from the last few years as part of the Government strategy to digitize India. Financial inclusion is a crucial step towards economic growth with target to serve the unprivileged or marginalized section of society. The focus is to provide access to banking and financial services

3. OBJECTIVE

To know the role of UPI in financial inclusion.

Benefits of financial inclusion to unprivileged sections of society.

Challenges Government is facing in financial inclusion even, with UPI

4. RESEARCH METHODOLOGY

The study uses a descriptive and conceptual approach to understand and discuss the title related issues. The information has been pooled from e-journals, articles from RBI, NCPI and other regulatory bodies, articles of renowned analysts.

5. PARTICIPANTS IN UPI SYSTEM

5.1 NPCI

NPCI is the owner, service provider, coordinator and network operator of UPI network. NPCI receives the rights to operate and maintain UPI network on its own or third party service provider. It also issues circulars from time to time, to disclose major decisions, to relevant stakeholders, which all banks/PPIs/PSP will have to follow.

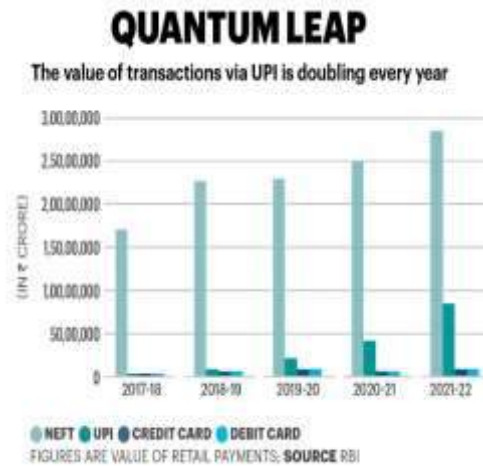
5.2 Banks

All banks and payment banks with mobile banking license, approved by RBI are eligible for UPI

- Payer PSP - A bank as a payer PSP (Payment Service Provider) onboard customer into a UPI app, allow customer to register for UPI service and facilitate with financial transaction or non-financial services
- Payee PSP - A bank as a payee PSP (Payment Service Provider) onboard customers to receive money or raise collect requests also called beneficiary/resolving PSP.
- Remitter bank - UPI user is required to have a banking account with UPI enabled bank and user account will be debited during transaction. This is the responsibility of the bank to authenticate the UPI pin set by the customer.
- Beneficiary bank - The Beneficiary account of UPI user is credited, during the UPI transaction.

5.3 Bank account holders

- The account holders or customers with UPI enabled accounts and UPI ID can utilize these services.
- Merchants - The participants. On boarded by the banks to accept UPI enabled payments from customers.
- Corporates - The third party processors, large technology companies, PSPs and aggregators connect to banks and provide services to end customers.



6. FINANCIAL INCLUSION

Financial inclusion in India aims to provide access to financial services in an affordable manner and promoting financial literacy and consumer protection.

6.1 Objectives of Financial Inclusion:

- A basic no frill banking account: The saving accounts need not maintain minimum balance account. The account holder get access to internet banking, debit and access to ATM across the country with 0 balance. The accounts with no frill have no rules lie account holder can have unlimited deposits, no fine on inactive accounts, zero charge on ATM/debit cards.
- Saving products including investment and pension
- Simple credit product and overdrafts linked with no frill accounts
- Remittance or money transfer facilities
- Micro (life) insurance or non-micro (life or non-life) insurance
- Micro pension

The key player in financial inclusion via UPI is JAM trinity – 'Jan Dhan Account, Aadhaar and mobile'. This trinity facilitated direct benefit transfers (DBTs) of subsidies into the bank account of beneficiaries. In 2014 (PMJDY) Pradhan mantri jan-dhan yojna; one o the biggest global financial inclusion initiative to provide banking services to every nonbanking household.

6.2 JAM trinity hold three main components:

- Jan Dhan Account: Government transfers are pushed into Jan Dhan Accounts, which are zero balance, no-frills saving accounts.
- Aadhaar: The flagship product of unique identification authority of India is important player in fair and authentic financial inclusion as verifies individual or beneficiary on basis of their biometrics information

- Mobile: Mobile ownership ensures outreach and communication to citizens upon successful transfer of the welfare payments. Only if the cellphone number (which is to be registered) is registered with the issuer bank for SMS Alerts/mobile alerts is mobile banking registration feasible.

The only objective financial inclusion is overall growth. The financial inclusion an initiative of the Indian government aims to improve and maximize the utilization of the nation's economic resources. The goal is to encourage disadvantaged social groups to adopt low cost lifestyle and practice saving money.

Pradhan Mantri Jan Dhan Yojana

PMJDY Accounts

Beneficiaries: 110,000

Bank Name/Type	Number of Beneficiaries	Number of Accounts	Number of Transactions	Number of Total Beneficiaries	Number of Accounts	Number of Rupay Debit Cards Issued
State Bank of India	274	1,4	20,6	27,8	428,4	3,2
Rupay Debit Card	170	1,5	1,7	1,5	664,7	5,4
Pradhan Mantri Jan Dhan Yojana	1,8	1,7	1,7	1,8	28,2	1,1
Total	3,4	3,4	2,7	4,3	1,17,7	3,8

Source: Pradhan Mantri Jan Dhan Yojana

To facilitate disadvantaged class i.e. weaker section and low income group with facilities like basic saving account, deposit account, credit facilities, insurance and pension facilities has come possible with effective use of technology like UPI. With an inscription of Rs. 189,837.87 crore, more than 48.20 crore beneficiaries are banked under PMJDY. 5.4 crore PMJDY account holders received direct benefit transfers from the government, and 56% of Jan Dhan account users are women; 67% of them live in rural or semi-urban areas.

The deep penetration has become easy only due to technology.

6.2.1 Under this scheme the excluded section of society is aided with:

- One basic bank saving and bank deposit accounts opened in any bank branch or business correspondent (bank agents or representatives of bank to provide banking and financial services top people in unbanked or under banked areas) also called Bank Mitras.
- Bank holder is not required to maintain minimum balance account
- Rupay debit card is provided to PMJDY account holders.
- Inbuilt accident insurance cover with Rupay debit card of Rs. 1 lakh (enhanced to Rs. 2 lakh to new PMJDY accounts opened after 28/08/2018) provided to all PMJDY account holders.



- An overdraft facility of Rs. 10,000 is provided to all eligible account holders.



PMJDY accounts are eligible for direct benefit transfer (DBT), Pradhan Mantri Jeevan Jyoti Bema Yojna (PMJJBY), Pradhan Mantri Surksha Bema Yojna (PMSBY), Atal Pension Yojna (APY), and Micro Unit Development & Refinance Agency



7. Benefits of financial inclusion through UPI

7.1 Increased transparency in government system

Earlier each cash payment was subject to leakage i.e. payments never used to reach the recipient to full social security benefits by government. Now technology has overcome these loops and now due to UPI all government benefits are transferred to beneficiary account directly.

7.2 Improved speed and timely delivery

As compared to cash payments digital payments are more faster and instant, no matter sender and receiver are in same town, district or state. Today transactions across the nations has also become as quick as domestic transactions. The linkage between UPI of India and PayNow of Singapore on February 21, 2023 is the outcome of this development of digital banking.

7.3 National electronic toll collection (NETC)

NETC enables the customers make electronic toll payment electronically without stopping at toll, using radio frequency identification technology.

Bank (MUDRA)

UPI emerged as instant payment system developed by NPCI. Multiple bank accounts, with several banking features, enormous fund routing, and various merchant payments are encompassed in single mobile application UPI. It is consistently proceeding towards effort of government of India, making India a cashless and paperless economy. UPI has made digital payment a habit. To strengthen UPI, Prime Minister Narendra Modi has launched the BHIM-UPI bharat interface for money-unified payment interface app on 31 December 2016. In January 2023 the digital payment transaction of 803.6 crore with value of R. 12.98 lakh crore is recorded.

The initiative envisions channeling all government benefits from center, state and local bodies to beneficiaries account. Recently launched UPI 123PAY enables feature phone users make digital transactions through UPI in voice mode facilitating digital transactions and financial inclusion in rural areas.

7.4 Bharat bill payment system (BBPS)

BBPS provides a compatible and easily accessible bill payment service to consumers via multiple channels like mobile banking UPI etc.

7.5 Enhanced credit access

Digital payments establish a user's footprints as a result the access of user to financial services and credit increases. Banks and other institutions use such bank histories to take lending decisions to small businesses and also for retail lending to those who face difficulty in getting credit in the absence of verifiable cash flows.

7.6 Safe and secure

Digital transactions are safer and secure as compared to cash transactions because cash transactions are exposed to theft and crime. Digital transactions are safe from the point of authenticity as transactions have to pass through multiple levels of authentication.

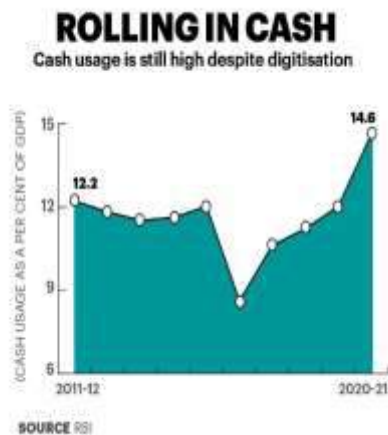
The fact that UPI transactions surpassed debit card payments in the nation in 2018–19 indicates the UPI success. There were 376 banks using UPI as of November 2022. UPI was used to conduct 7,309.45 million transactions for a total of Rs. 11,90,593.39 crore. The volume and value of UPI transactions have been growing since its introduction. The Reserve Bank of India creates a composite Financial Inclusion Index to measure the extent of financial inclusion in the nation (FI-Index). The index measures several dimensions of financial inclusion on a scale of 0 to 100, where 0 denotes total financial exclusion and 100 denotes complete inclusion.

The three broad factors that make up the FI-Index are:

- (1) Access to financial services, which is weighted at 35%
- (2) Use of financial services, which is weighted at 45%



(3) Quality of financial services, which is weighted at 20%. The FI-Index increased from 43.4 in 2017 to 53.9 in March 2021. In March 2022, it got even better, reaching 56.4. By giving a significant portion of the population, including the unorganized sector and the rural population, access to digital financial services, UPI plays a critical role in promoting financial inclusion in India. People may effortlessly transfer and receive money via UPI, as well as pay bills and complete other activities on their mobile devices. This has made financial services more accessible, especially in rural and distant places. Since UPI's introduction, the quantity and the value of transactions both have steadily increased. Over 74 billion transactions totaling Rs 125.94 trillion were made via UPI in 2022, compared to more than 38 billion transactions worth Rs, 71.54 trillion in 2021. As a result, financial inclusion is expanding in India, and UPI has a big part to play in that.



8. CHALLENGES FOR UPI

- Large size of population is not accessible to UPI because of digital illiteracy.
- The use of English in UPI apps is another factor of its unacceptability.
- As the large size of population has no access to internet connections or smartphones, so UPI transactions is still challenging.
- Several experts are concerned that without levying MDR ((Merchant Discount Rate) charged from merchants for accepting digital payments) to pay for its infrastructure, UPI won't be able to sustain itself over the long term. Currently, neither the client nor the business is charged additional fee.
- Since the launch of UPI, cash transactions have decreased in frequency, although they are still significant. Many still favor using cash as a form of payment because it is more widely accepted and .there is threat of tax terrorism.

9. CONCLUSION

Since nationalization of banks the financial inclusion was challenging for government of India and banks. The level of financial inclusion in the country can be analyzed by observing the accessibility of common man to banking services like facilitating transactions and loans. The digital revolution intensified with the affordability of smart phones and high speed mobile data has improved the Indian payment system. The launch of UPI by NPCI has added to Indian Payment system with online real time payments. UPI facilitated interbank transactions and money transfer between two accounts without any bank account number and IFSC code. Payments through UPI code and QR code has made UPI

With UPI one needs no other app at all. The RBI has allowed banks to become PSPs (payment service providers) so mobile wallets are cut off the picture. The challenges like on-line transactions, poor connectivity are addressed. Mobile transactions through telecom operators and their established centers, Cash Out points are planned to be used for financial inclusion... Government is making all its efforts to reach out to youth of the nation to participate in the mission mode programs.

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PHILOSOPHICAL VIEWS OF MAKHTUMKULI FIROGHI ABOUT MAN AND SOCIETY

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ANNOTATION

This article analyzes the philosophical views of Makhtumkuli Firagi about human and society on the basis of some of his hikmats.

KEY WORDS: *human, society, life, hereafter, youth, faith, wealth, health, advice.*

It is not an exaggeration to say that the spiritual heritage of Makhtumkuli Firoghi, a mature thinker of his time, has served as an ideological factor guiding many nations and peoples, including the Turkic peoples, on the path of goodness over the centuries. His admonitions, poems and ghazals still touch people's hearts and invite them to do good and meritorious deeds. In this article, based on the wisdom of the thinker's pen, we tried to analyze his philosophy of life as much as possible.

While reading Makhtumkuli's hikmat, which is simple in form, but has a very deep philosophical content, we come across a great philosophy of life in them. His wisdom is based on noble ideas such as faith, death and life, the transience of life and the eternity of the hereafter, the truth of the Resurrection and the need to prepare for it with awareness. In his hikmat, he often explained that human life is very short, that it should not be wasted on useless things, that it is necessary to understand the world and do more meritorious deeds.

Extremely difficult living conditions and blows of fate were important factors that shaped Makhtumkuli's philosophy of life. Losing her beloved Menglikhan, early separation from his parents and close relatives, especially his two sons, were the saddest events in her life. In such a situation, it is no exaggeration to say that the only hope and support of the scholar was his creativity. After all, in a situation where there were no relatives around him, the only thing that encouraged him was a paper and a pen. He expresses his thoughts based on what he has seen and experienced in life in his hikmats and advice, which are the product of

creativity. It calls to pay more attention to the eternal world and not to the desires of the mortal world.

Makhtumkuli's hikmat called "Bulmas" contains wonderful thoughts about the transitoriness of life and not getting attached to material things:

Мағрур бўлиб кезма умринг гулига,
Дуч бўларсан бир кун хазон елига,
Юз йил яшаб, тушсанг ажал кўлига,
Чапингдан ўнгингга бокқанча бўлмас¹.

Here, the thinker refers to youth as the flower of life, and emphasizes that it is transitory, that old age, like the autumn wind, will come in the blink of an eye. No matter how long a person lives, he should not forget that one day he will leave this mortal world. The shortness of life makes it seem like an opportunity to feed from left to right.

In his poem called "Kuring", he continues the theme and narrates admonitions that encourage people to be content and that wealth is transitory:

Бир нечани қилдинг моли бисёри,
Бир нечани қилдинг бир пулнинг зори,
Яхши-ёмон одам зотининг бори
Навбат билан ўтиб боришин кўринг².

¹ Махтумқули. Дунё ўтиб борадир. (Нашрга тайёрловчи, сўз боши ва изоҳлар муаллифи Эргаш Очилов) –Т.: "Шарқ" НМАК Бош тахририяти, 2007, Б.22.

² Махтумқули. Дунё ўтиб борадир. (Нашрга тайёрловчи, сўз боши ва изоҳлар муаллифи Эргаш Очилов) –Т.: "Шарқ" НМАК Бош тахририяти, 2007, Б.25.



In life, someone is rich, someone is poor, someone is good, someone is bad. But he will leave this world anyway. Only good or bad memories remain from a person in this world. Thinker repeatedly emphasizes the conclusion that everyone achieves this during his lifetime.

Makhtumquli faced many difficulties in his life, met good and bad, rich and poor, conscientious and unscrupulous, intelligent and stupid people. The thinker urges people to be aware of the verses he wrote describing how pitiful it is to forget about the hereafter while desiring the world's wealth:

Олтин-кумуш, шохи-ипак бўлар дом,
 Охиратнинг йўлини тўсарлар мудом,
 Бу бозорни қиздирди чарх тонгу шом,
 Ким ютдики унда, сен ҳам ютарсан?³

Here, Makhtumquli addresses people who spend their lives in pursuit of wealth and emphasizes that wealth is a trap. He describes it as a hole, an obstacle that distracts a person from thinking about the hereafter. Importantly, it comes to the conclusion that no one has ever won and will never win in this market oriented world. The fact that a person's life is like a flower and is wasted on lust, wealth, and entertainment does not give him peace, torments him, and makes him unhappy. It is such sayings that show that the scholar has reached the level of a mature philosopher.

Умримни сарф этдим ҳой билан войга,
 Қуллуқ-тоат айламадим Худойга,
 Йигитлик чоғимни ўтказдим зоя,
 Энди на куч-қувват, на бир жўш қолди⁴.

Or:

Чўх бездирса қариликнинг заҳари,
 Бузук бўлар кўнгил-вужуд шаҳари,
 Қўлдан кетса йигитликнинг баҳори,
 Қувват қочар, тиз эгилар, бел қолмас⁵.

Emphasizing the transience of youth and the hospitality of energy to the body, Makhtumquli urges people to do more good deeds during their youth, and emphasizes that when they are old, they only have the opportunity to

³ Махтумқули. Ҳикматлар. (Таржимон ва тузувчи Э.Очилов) –Т.: “O’zbekiston”, 2013, Б.61.

⁴ Махтумқули Фироғий. Сайланма. (Таржимонлар: А.Жумаев, Ж.Зулпиев) –Т.: “O’zbekiston”, 2008, Б.138.

⁵ Ўша манба, Б.50.

give advice, and therefore, it is necessary to do more good deeds in order to appreciate the value of youth:

Қарига айланди биз кўрган ёшлар,
 Ташланди оёққа биз кўрган бошлар,
 Бемаҳал юк боғлаб энди қардошлар,
 Охират қасдига кўча бошлади⁶.

In general, in Makhtumquli's views on life, thinking more about the hereafter, avoiding the pleasures of this world, and appreciating youth are given priority. Thinker formed his philosophy of life in the midst of the turmoil of his time.

In conclusion, it would be inappropriate to call Makhtumquli a pessimist because he had many thoughts about the afterlife. On the contrary, he urged people to be alert and alert to good deeds. It would be correct to say that he is an optimist who believes in the happy future of his country, bravely resists the blows of life. The fact that Makhtumquli was able to find the strength to create so many wisdoms after suffering the trials of fate is a proof of his true courage. His way of life can serve as an example for people who lose themselves in the face of life's trivial difficulties.

In conclusion, it should be noted that Makhtumquli's philosophical views on life have been showing their value to humanity for many years. His life hikmats encourage people to live properly, to be honest and pious. In today's turbulent times, the need for thoughtful advice is even greater.

Therefore, in our opinion, based on this need, at the same time:

- bringing the hikmat of scholars to the attention of the general public;
- large-scale organization of creation of artistic and popular works about his life path;
- involving mature scientists and specialists in this field;
- systematically launch and encourage scientific-research works on the thinker's activity;
- expansion of subjects and lessons related to the study of creative examples of thinkers in the educational system;
- in the process, it would be appropriate to pay serious attention to the issues of international cooperation.

⁶ Махтумқули. Дунё ўтиб борадир. (Нашрга тайёрловчи, сўз боши ва изоҳлар муаллифи Эргаш Очилов) –Т.: “Шарқ” НМАК Бош таҳририяти, 2007, Б.59-60.



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CORPORATE SOCIAL RESPONSIBILITY (CSR) AND TRIBAL DEVELOPMENT IN INDIA

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ABSTRACTS

India is home to the world's second-largest tribal agglomeration. In the post-independence period, the Indian government placed a premium on rapid industrialization to boost economic growth and employments. To provide the industry with raw materials, extensive mineral, oil, and gas extraction began. Many private ventures are promoted to boost revenue, employment, and foreign currency reserves. However, what became of the indigenous people who were dispossessed in the name of progress and who lived in and around mines, gas fields, and oil fields? They became environmental expatriates as a result of their eviction. Corporate juggernauts turned these tribal people into aliens in their land. What role should the corporate sector play in ensuring the genuine growth of these unfortunate people? The purpose of this descriptive, qualitative study is to revisit CSR for tribal development and to propose appropriate methods to make it more humane.

KEYWORDS: CSR, Tribes, Sustainable Development, society, Economy.

1. INTRODUCTION

India has second largest tribal population of the world. Since the time of antiquity, these indigenous people living in different part of the country. Though they are mentioned in our Epics but they are most neglected and deprived section of the society. Even in British colonial administration they are most disadvantaged section of the society. As they were kept aloof from the mainstream society the developed their unique culture, customs and traditions which further broadens the gap between mainstream society and tribal communities (Channa, 2020). So, from pre-independence period, the concept of 'We and They' was developed (Bhattacharya et al., 2021). After independence of the country these aboriginals are termed Scheduled Tribes (STs). There are 705 tribal communities comprising 8.6% of total population (Register General of India, 2011). Though the country came out of the clutches of British colonial masters, till the day the indigenous communities are in the abject of maldevelopment. The newly formed country's government started to absorb them in the mainstream society. In post-independence period, while the government has undertaken several developmental programmes for the socioeconomic upliftment of the tribal communities (Basha, 2017) at the same time for the economic development of the country government had initiated large scale industrialization and urbanization. In this economic development programmes, the participation of private sector was also encouraged. Rapid industrialization and urbanization invite ruthless destruction of forest and extraction of minerals. The tribal people of India used to live in lap of nature. Three to four decades ago few tribal communities practiced settled agriculture and maximum of rest of the tribal communities

lived in and around forest. They earned their livelihood by collection of leaves, fuelwood, fruits, tuber, roots from the forest. Further, their culture and traditions are greatly inspired by the surrounding nature. Maximum of their festivals are related to environment and its conservation. As they lived in the abundance of natural resources, they become the worst victim of developmental process. The so-called developmental process wreak havoc specially on the tribal communities (Battacharya and Pal, 2022). The mining projects, dam projects, road and rail projects, industrial expansion have direct impact on tribal life. The land they possess, the forest they use for centuries now perceived by the national policy makers as the property of the nation. In the name of development, assimilation and mainstreaming, these ill-fated tribal people are evicted from their natural habitat (Gadgil and Guha, 1996). It was mainly the business tycoons, policy makers and people from elite class who are beneficiaries of all these projects. Being evicted from their habitat they have not only lost their livelihood but also lost their rich culture and traditions thus become developmental refugee. With the loss of culture and traditions, now they have to fight every day to retain their tribal identity. Land alienation, cultural loss, loss of traditions and customs, socioeconomic deprivation have made them expatriate on their own land.

Largescale mining activities, establishment of mega steel and other mineral industries are done mostly at the cost tribal communities. As per ministry of Tribal Affairs around 8.54 million tribal people are displaced within 1951 to 1990 whereas only 2.12 million tribes out of 8.54 million have been rehabilitated (Mohanty, 2005). Further this kind unplanned



and unwise evictions have destroyed their livelihood. Specially life become miserable for the Primary Vulnerable Tribal Groups (PVTGs). But the companies, let it be private or public enterprises they should have ensure that adequate socioeconomic securities have been provided to these displaced and distressed tribal people. Though the several companies have started some programmes for their socioeconomic upliftment and cultural preservation under Corporate Social Responsibility (Henceforth, will be mentioned as CSR) but are these enough to cater the need and aspirations of those ill-fated tribal people? The present research paper spotlights on currents status and role of CSR in tribal development in India. Further, this research article also provides some suggestive measures for protecting the socioeconomic and cultural traits of the tribal communities through CSR scheme.

2. OBJECTIVES OF THE STUDY

The present paper spotlights on the problems faced by the tribes due to developmental projects and current status of CSR projects in this regard. Further it analyses the effects of CSR projects on the tribal people. The current research also tries to provide some suggestive measure for enhancing effectiveness and acceptability of CSR projects towards positive end.

3. RESEARCH METHODS

For pursuing the present research, we have adopted descriptive research methodology. The study is mainly based on secondary data collected from various reports of Ministry of Tribal Affairs, other govern reports, relevant books, journals and other literatures.

4. DATA COLLECTION AND ANALYSIS

Data is collected from various secondary sources. These data are further analyzed to get desired result.

5. RESULT AND DISCUSSION

5.1. Conceptualizing CSR:

The term Corporate Social Responsibility was first coined in 1953 by American economist Howard Bowen. It is the mechanism by which the corporates or giant companies take the responsibility in lieu of impact of their business operation on the environment and on the people affected by it. It is a type of compensatory measures offered by the companies to the affected people to restore their socioeconomic condition (Hanano, 2019). In the age of globalization, the corporate attitude and behaviour is within the purview of environmental awareness, human rights, values and ethics. The impact of all these corporate works has detrimental cross cutting effect in the society. It is difficult for a government to pay attention to all the issues so the initiative started to involve big corporate sector to become stakeholders. The Government of India introduces the Section 135 of the Companies Act, 2013 along with Companies (Corporate Social Responsibility policy) Rules, 2014 by which India became the first country in the world to give the concept of CSR in legal mandate. According to this amendment, Indian or Foreign companies having net worth of Rs.500 crores or net profit of the company 5 crores

per year, are required to spend 2% of their annual profit as CSR. Proper guidelines are also provided in this regard by allocating sectors for spending such amount (Verma, 2022).

In reality it is not true that all companies are performing as per the guideline of CSR to uplift their reputation. It has been found all over the world that several companies are adopting Greenwashing mechanism to uplift their reputation in the name of CSR. Some popular Greenwashing mechanism are fake and misleading Public campaign about their works and its impact, by outright false claim, highlighting some positive traits while suppressing whole negative impact, dodgy certification by manipulating some environment NGOs. For example in the name of Sustainable Forestry Initiatives (SFI), companies are accused of illegal cutting of endangered species and human rights violation. In countries like India due to lack of stringent laws, corrupted politician and bureaucrats make the success of CSR under question and also a matter of concern.

5.2. Development vs Displacement and Distress

The wheel of industrialization, urbanization, minerals and gas extraction, large power plant project, large dam project ruthlessly run over the marginalized people who are mainly the tribal people. The maximum tribal communities have close interaction with the nature. Their symbiotic relation with the nature is reflected through their sociocultural practices. It has been found that around 7000 plant species are used by the tribal communities of the country which have immense food and medicinal value and also important for ecological balance (Ministry of Tribal Affairs, 2021). Commercial forestry and reduction of forest cover also have destroyed the tribal livelihood mechanism. But large-scale displacement is caused by big projects. According to Xaxa Committee Report, 2014, 25 per cent of tribal population are either displaced persons (DP) or project affected persons (PAP). Interestingly, the expert committee on prevention of tribal land alienation and restoration pointed out that 47 per cent of the tribal population are evicted illegally from their habitat. According to a report of Amnesty International in 2016, one in six of the 870000 displaced due to coal mining in last 40 years is a tribe (Chandran, 2016). India is the third dam building nation of the world. The mega dam building projects accelerates the tribal dislocation. More than 85000 families are displaced on account of Sardar Sarovar dam and more than 25 million people are affected in Narmada Valley Project (Indispend, 2014). According to Census 2011 report, 55 per cent of the total tribal population is now residing outside of their traditional habitat. Moreover, there is 10 percent reduction in total number of tribal farmers where as there is 9 per cent increase in tribal agricultural labourers (Register General of India, 2011). This large-scale displacement is not for education opportunities or change in economic status, rather they were forcefully evicted due to developmental projects and industrialization. Displacement from their natural habitat not only threatens their livelihood but the problems are multifaceted.

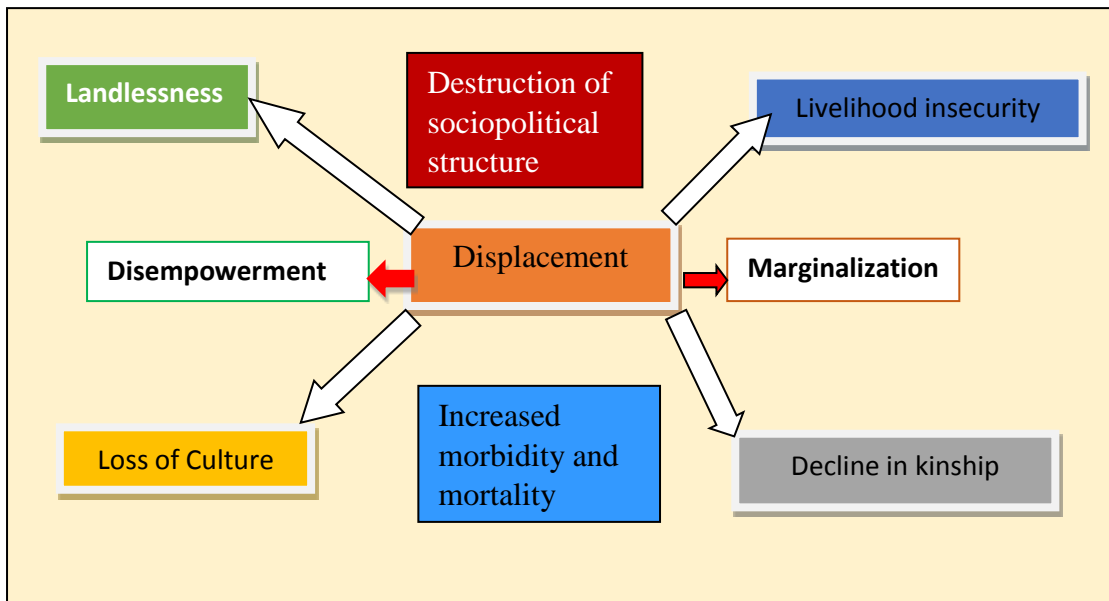


Figure1: Impact of displacement.

Uprooted from their traditional habitat causes landlessness which is directly related to their food insecurity and livelihood insecurity resulted in further marginalization. Displacement also destroys their age-old sociopolitical structure. There is partial or complete loss of culture as it is directly related with surrounding environment of their traditional habitat. For example, their rich culture of using several ethnobotanical and ethnomedicinal for food and curing several diseases are partially become obsolete due to change in habitat. Further with due course of time these oral knowledges are completely faded away. Instead of traditional liquor, the cases of foreign liquor addiction are increasing at alarming rate which causes deterioration of health and family relationship (Bhattacharya and Kumar, 2022). Further, food insecurity, lack of diversity and livelihood security exacerbates malnutrition and poor health among the tribal people. It is also widening the gap of health inequities. According to NFHS-4 survey report, 55.9 percent of tribal women of Chattisgarh, 75 per cent of tribal women of Jharkhand and 63.3 percent of tribal women of Odisha are anemic (Nadimpally, Venkatachalam and Fatima, 2019). Interestingly, these three states are major tribal hub of the country and also witness highest degree of tribal population displacement for several developmental and industrial projects. Mortality rate of under-five tribal children is shockingly high. Even, these development induced displacement causes degradation of gender relationship (Bhattacharya & Pal, 2022).

5.3. Role of CSR in alleviating crisis

While in the name of environmental protection and conservation, the government is imposing restriction on access to forests and forest products, on the other hand million acres of forests are cleared for mining and industrial activities. The main beneficiaries of all these projects are the corporate tycoons. So, these corporate sectors should have obligatory positive role to ensure that impacts of their projects on the

displaced people specially on the marginalized tribal community can be neutralized as much as possible. In India, several companies like TATA Steel, NUOVCO cement, National Mineral Development Corporation, Mahanadi Coalfields Limited are running several projects for improving standard of life of the tribes and development of the tribal habitat area. For example, MCL has established Anganwadis for the education of the tribal children. Further it runs 'Ahar Mandal', a farming project for providing nutritious food to the tribal people. Another project 'Sikshit Sunderhatto', is an initiative taken by NUOVOCO under company's CSR scheme to promote formal education and educational awareness among the tribal people (*Funds Allocated to NGOs for Tribal Welfare*, 2021). But these efforts are not adequate enough to cater the needs and to alleviate distresses of the tribal community. Some inclusive and integrated planning is the need of the hour. The planning must be in accordance with the tribal world view. Moreover, it should not be planning from above rather it should be planning from below. While pursuing rehabilitation and resettlement programme, the following points should be taken into account—

- 1) The resettlement should be as far as homogeneous with their traditional habitat.
- 2) Care should be taken to keep intact their socio-political structure.
- 3) Proper planning for resettlement should be with minimum alteration of their activities.
- 4) Alternative employment scheme should be in accordance with their world view and aspiration. Efforts should be given so that they can retain their traditional occupation.
- 5) Curriculum should be restructured as per their need and aspiration (Pal et al., 2022).
- 6) Adequate skill development training should be provided to enhance their employability skill in alternate occupation.

- 7) Measures should be taken for their cultural preservation.
- 8) Their rich knowledge on ethnobotanical and ethnomedicinal plant should be documented and it can be used for generation of alternative employment.
- 9) Proper reparation amount is to be given so that they will not face any hardship.
- 10) Strict Government supervision and intervention to ensure sustainable development of the displaced tribes.

- 11) Ensuring education for the displaced tribal children.
 - 12) Till the process of rehabilitation and resettlement is completed, they should be provided nutritious food at free of cost.
 - 13) Proper medical facilities should be provided specially to the tribal women and children at free of cost.
- A model CSR plan should look into each and every aspect of tribal life and their sentiment.

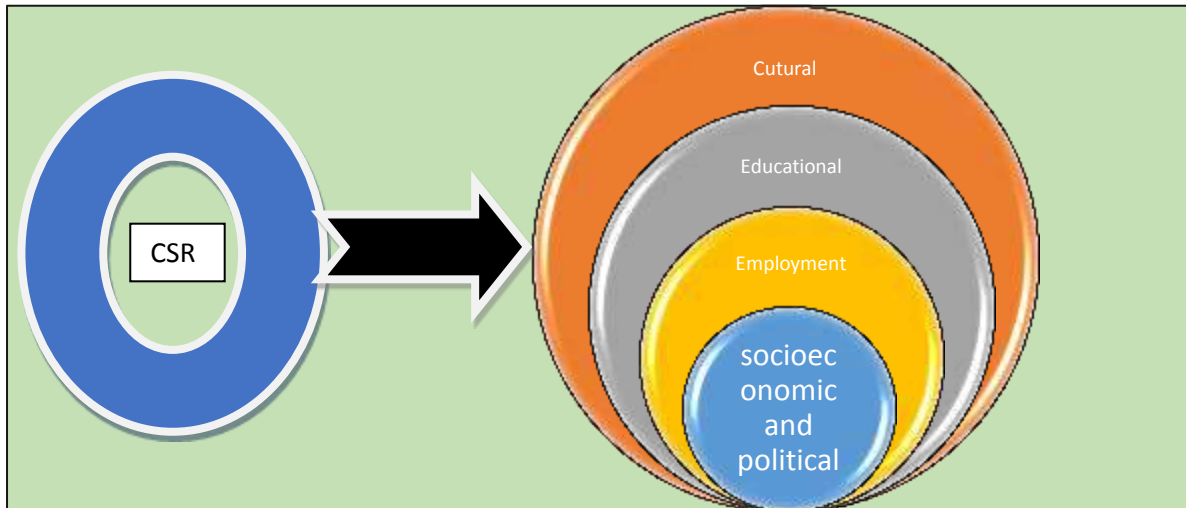


Figure 2: Model CSR plan for Tribal development.

We should remember that the tribes are the important stakeholder of the Indian society. Without their proper involvement in the developmental process, the country can not

attain the goals of sustainable development. Before taking any project, the following aspects should be taken into account—

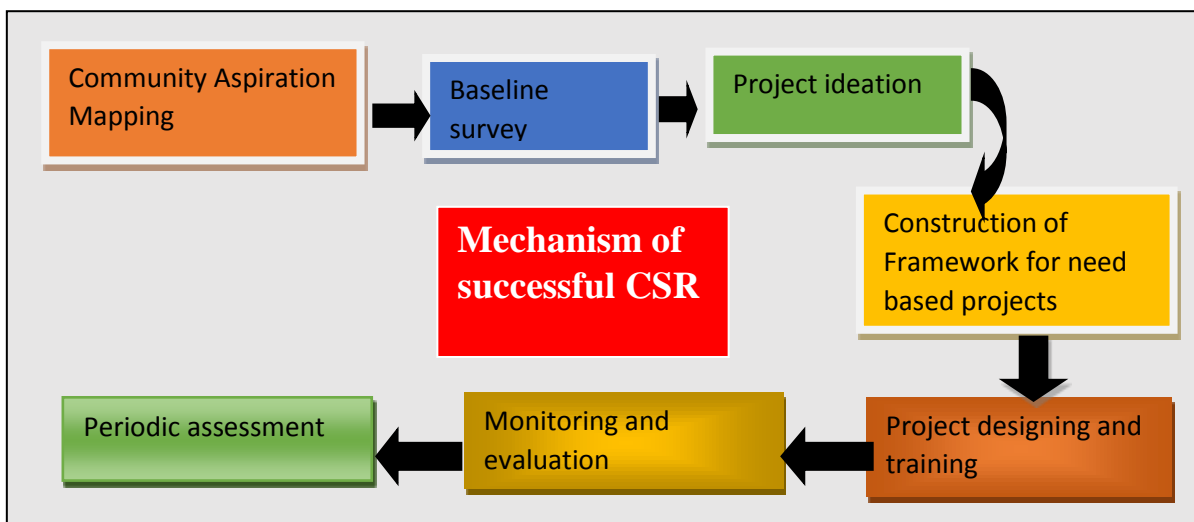


Figure 3: Mechanism of successful CSR.

6. CONCLUSIONS

It is needless to say that the tribal people are the integral part of Indian population. But unfortunately, even in this 21st century, they are the most deprived and marginalized section of the society. The roller of industrialization, urbanization ruthlessly shattered their sociopolitical structure, economy and culture. Denied of anything and everything, these ill-fated displaced and project affected tribal people are now

suffocating for their very existence. These people of the nature, now become burden of the society. Being a welfare state, the government cannot avoid its basic responsibility towards attainment of equality in the society. The success rate of CSR has already been seriously questioned. Utmost endeavor should be taken by the government for minimizing the pain, agony of the DP and PAP tribes. Along with government, the corporate sector should be assiduous towards



desired goals. Here, the government along with NGOs should play the role of concierge to protect the interests of the tribes to attain the goals of sustainable development.

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PREVALENCE AND PERCEPTIONS OF CAFFEINATED PRODUCT CONSUMPTION IN NOAKHALI REGION, BANGLADESH

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ABSTRACT

Caffeine is a complicated chemical that is naturally occurring and can be synthesized, manufactured, and added to food, dietary supplements, cosmetics and drugs. Caffeine, particularly in the form of coffee or tea, is used by the majority of people worldwide. The current study data represents that most respondents take tea (90% male and 83% female), coffee (82% male and 71% female) and soft drinks (81% male and 64.5% female) as caffeine-containing products. Few respondents take caffeine as a medicine. This data shows that male respondents take more caffeine as a medicine than female respondents. For all ages, male respondents essentially get caffeine-containing products through a day at work/study more than females. The data suggest that in all ages, both respondents believe that caffeine has increased their activeness and alertness during the day. Most respondents replied that their behaviour does not change after taking caffeine-containing products. The majority of the neurobehavioral work suggests that the desirable benefits of caffeine (e.g., increased alertness) are ubiquitous. Caffeine is a potent drug that complies with the criteria of an addictive substance regarding dependence, tolerance and withdrawal. We observed that 46% of males and 34% of females (age < 20 years), 49% of males and 36% of females (age 20-30 years), 40% of males and 24% of females (age >30 years) respondents are addicted to above caffeine-containing products, without a proper diagnosis by a specialist. The respondents mostly take caffeine for refreshment (21% male and 17% female), enjoyment (18.5% male and 24.5% female), habitually (19.5% male and 15.5% female), and most respondents (32.5% male and 40% female) take caffeine-containing products two times per day according to above data. Female respondents (38%) respond that they can continue their work without the intake of caffeine-containing products more than 24 than male respondents (20.5%). We inferred that the prevalence of caffeinated drinks was higher in males compared to female students. Caffeine could lead to discomfort and impaired cognitive performance, and over-intake can cause adverse effects such as headache, drowsiness, depression, fatigue, and difficulty concentrating in students.

KEYWORDS: Caffeine; Cognitive performance; caffeinated product; students; addiction

1. INTRODUCTION

Caffeine (1,3,7-trimethylxanthine) is a natural alkaloid found in coffee beans, tea leaves, cocoa beans, cola nuts and other plants (1). This is the most frequently ingested pharmacologically active substance in the world (1). Low to moderate doses are safe, but higher doses can lead to negative health consequences. LD50 is 150-200 mg for every kg of body mass(2). Caffeine is an important part of the diet in North America and Europe, with coffee and tea being the major sources (1). In Canada, published values for the average daily intake of caffeine from all sources are 2.4mgkg⁻¹ body weight (bw) for adults and 1.1 mgkg⁻¹ bw for children 5-18 years old (3). In the USA, daily caffeine intakes range from 1mgkg⁻² bw in the USA to 3mgkg⁻⁴bw in the UK and 5mgkg⁻⁶bw in Denmark (3,4). The caffeine content of coffee and tea depends on their preparation method and the product brand. Variations in caffeine intake can occur due to

differences in the size of the serving 'cup' (5), and the impact of these variations should be considered in the interpretation and comparison of clinical studies.

Caffeine is quickly and entirely absorbed from the gastrointestinal tract, with 99% being absorbed within 45 min of ingestion (6). Maximum caffeine concentrations in blood are reached within 1-1.5h following ingestion (1). It passes across the blood-brain barrier (7), into amniotic fluid and the fetus, and into breast milk. The liver is the primary site of caffeine metabolism, catalyzed by the CYP1A2 enzyme (8). Only 1-5% of ingested caffeine is recovered unchanged in the urine, and infants up to the age of 8-9 months have a greatly reduced ability to metabolize caffeine (9). The half-life of caffeine in healthy adults is approximately 4-5 hours (9,10) and can be influenced by many factors, including sex, age, use of oral contraceptives, pregnancy and smoking (11). Children



aged ≤ 12 years metabolize caffeine more rapidly than adults (12), and the half-life in newborns ranges from 50 to 100h, but it gradually approaches that of an adult by 6 months of age (11).

Caffeine is an inhibitory neuromodulator in the central nervous system, and four subtypes of Gprotein-coupled ARs in the brain are responsible for its behavioural effects (13). Caffeine is an adenosine receptor antagonist that blocks endogenous adenosine from binding to the receptors (1). Studies suggest that dopamine discharge in the nucleus accumbens shell may be a neuropharmacological mechanism underlying caffeine withdrawal disorder (14). The metabolic process involves the conversion of caffeine by the CYP1A2 isozyme into three dimethylxanthines, each of which has its own effects on the body (15). Paraxanthine increases lipolysis, dilates blood vessels, and increases urine volume. Theophylline relaxes the smooth muscles of the bronchi and is used to treat asthma (15). Caffeine can have various psychological effects, such as augmented alertness and diminished weariness. Low doses of caffeine can lessen symptoms of depression and lower suicide chances, while high dosages can bring about repulsive impacts (16). Consuming only 100 mg of caffeine can prompt symptoms such as dizziness, anxiety, irritability, restlessness, sleep deprivation and headaches(7). Caffeine is a drug, and repetitive administration allows the body to develop dependence. People dependent on caffeine start to show withdrawal symptoms after admission is halted for 12 to 24 h (17). The body's withdrawal system can be decreased through dose adjustments or analgesic drugs (17). Large dosages of caffeine can originate another sort of disorder known as caffeinism, which can prompt aggressiveness and psychotic behaviour. Sleep is exceptionally defenceless against even the smallest caffeine consumption, and caffeine can influence sleep before bed (17).

Caffeine stimulates the CNS, cortex, medulla, and spinal cord, leading to alertness, enhanced attention, and fortified night driving (1). Around 150-250 mg of caffeine is sufficient to incite adverse impacts, but the relationship between caffeine and cerebral pains is confounded (18). Overdose can lead to confusion and hallucinations, as well as death. Studies have examined the association between coffee consumption and the risk of CVD, but the findings have been unclear (19,20). Genetic variability between the populations examined may explain the discrepancies. Genetic modifiers of exposure or biological effect are a promising new approach to address limitations identified in previous studies (21). Coffee is also a dietary source of flavonoids, which have been proposed to have beneficial effects on the cardiovascular system (22). Several studies have recommended that caffeine consumption can increase gastric juice secretion, which may cause acid reflux, upset stomach, or ulcer (23). Emesis can be triggered by coffee moreover; it can induce catecholamine release from the adrenal medulla. It can also act as a potent diuretic and also can potentiate blood flow, glomerular filtration rate and rennin discharge (1). Caffeine can lead to osteoporosis, achy muscles, and muscle twitches (1). Caffeine can cause male

and female infertility, cross the placenta barrier, and upsurge the heart rate and metabolism of the baby, leading to miscarriage and congenital deformities (24).

Caffeine's effects on cognitive performance are complex and depend on the type of task, situational demands, and characteristics of the individual (25). The clearest evidence for caffeine effects on vigilance is found following sleep deprivation and after a period of time on the task, but the effect of caffeine on working memory tasks is less clear. Jochebed et al.,2015 (26) and Nawrot et al.,2003 (1) conducted studies on the effects of caffeine on human health. They found that moderate daily caffeine intake at a dose level up to 400 mg day⁻¹ is not associated with adverse effects such as general toxicity, cardiovascular effects, effects on bone status and calcium balance, changes in adult behaviour, increased incidence of cancer and effects on male fertility. Meredith et al.,2013 (27) and Lara et al.,2010 [49] conducted systematic reviews of the potential adverse effects of caffeine consumption in healthy adults, pregnant women, adolescents, and children. Uddin et al.,2017 (7) reviewed the Neuropsychological Effects of Caffeine, concluding that it is the most widely used psychotropic drug in the world. Low to moderate doses lead to amplified alertness and attention, while higher doses can lead to negative effects such as anxiety, insomnia, restlessness and tachycardia. Some caffeine users become dependent on the drug and are unable to reduce consumption despite knowledge of health complications.

Caffeine has many physical effects, including increased alertness, speeding up reaction time, and enhancing physical endurance. Its effect on shorter-term physical behaviour is less well-documented, but the effect of caffeine on physical exercise of short duration suggests that peak power output, speed and isokinetic strength are improved. This has led to its widespread use among elite athletes and performers, even though its benefits are not well established across activities. Caffeine is a stimulant substance that blocks adenosine receptors in the brain cells, leading to increased drowsiness (28). Regular intake of caffeine can affect the chemistry and activity of the brain, leading to withdrawal symptoms like tiredness and irritability (29). However, caffeine withdrawal is comparatively short-lived and rarely serious compared to addictive prescription drugs or street drugs (7). Caffeine withdrawal syndrome is an official diagnosis in the ICD-10, DSM-IV and DSM-5 (7), with symptoms such as persistent desire or unsuccessful efforts to cut down or control caffeine use, continued use despite knowledge of a physical or psychological problem, and tolerance.

3. METHODOLOGY

This section deals with the methodology which was adopted to attain the objectives of the study. It explains the selection of the Study area, Study design, Sampling size, Design and formulation of the questionnaire, Data collection, Data processing and analysis methods that have been used in the study (Fig. 3.1). The study was based on the survey, obtaining information through a sample survey among various professional people of Noakhali region, Bangladesh.

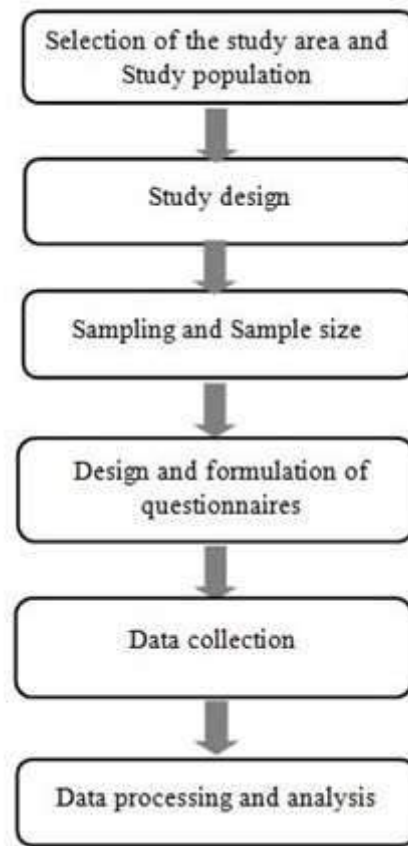


Figure 3.1: Methodology followed for the study

3.1 Study area

Three institutions of noakhali were selected as the study area. This cross-sectional descriptive study was carried out at one public university, one govt. University College and one govt. medical college of Noakhali. Our target populations were different professional people. We selected this university and colleges depending on the easy accessibility and easy availability of people.

These three public institutions are-

The Noakhali Science and Technology University: The Noakhali Science and Technology University is 10th public university which is located at Sonapur, 8 kilometres southwest of Maijdee. It has a land area of 101 acres (0.41 km²). The university has 26 departments under 05 faculties. The total number of students is about 5043.

Abdul Malek Ukil Medical College (AMUMC): Abdul Malek Ukil Medical College (AMUMC), formerly known as Noakhali Medical College, is a government medical school in Bangladesh, established in 2008. It is located in Noakhali. This college is affiliated with Chittagong University. The total number of students is about 300.

Noakhali Government College: Noakhali Government College is a public college in Noakhali, Bangladesh, established in 1963. It is located in Maijdee. This college is affiliated with Bangladesh National University. The total number of students is about 10,000.

3.2 Study design

For this study, respondents are selected by random method from different institutions in Noakhali and different places in Noakhali. For this study, four hundred respondents were selected randomly. In Noakhali Science and Technology, University took a total of 125 respondents; Noakhali Government College took 100 respondents; Abdul Malek Ukil Medical College (AMUMC) took 175 respondents. The project worker tried to find out and note down each and every respondent interview of those regions in the survey period

3.3 Participants

Among 400 participants, There were students, pharmacists, doctors, job holders, businessmen, teachers, unemployed and other professional people. These participants ranged in age from <20 years, 20-30 years and > 30 years. Among them, 200 were male, and 200 were female. Participants were randomly assigned to read about the topic. The present sample was 77.5% from the urban area and 22.5% from the rural area.

3.4 Design and Formulation of Questionnaire

The questionnaire was developed after a detailed review of relevant literature. In addition, some novel questions were developed in accordance with the study objectives. The questionnaire contained close-ended questions. The questionnaire consisted of seven sections with a total of 33 questions. Section A consists of questions on demographics and socio-economical information of respondents (age, gender, profession, area of residence, marital status). Section



B asked which type of caffeine-containing products were taken by respondents among certain caffeine-containing products (eight products). Section C consists of five question's on the basis of Section B's answer. Section C was asked to know personal information related to caffeine intake. Section D was asked to know about problems during the period of taking the particular caffeine-containing products. This section contains nine problems. Section E was asked to

know about feeling problems then don't take the particular products for more than 24 hours. Section F consists of How long can be passed without taking that particular product. Section F was asked to know about changes in their behaviour after taking particular caffeine-containing products. The questionnaire was worded in English language and was translated into Bangla if needed.

Section	Type of question
A	Demographic and socio-economical information
B	Taken of certain caffeine-containing products
C	Personal information related to caffeine intake
D	Problems during the period of taking or after taking caffeine-containing products
E	Problems when don't take caffeine-containing products
F	The passing of time without taking caffeine-containing products
G	Changes in behaviour after taking particular caffeine-containing products

Table 3.1: Sections divided and the respective type of question

3.5 Validation of questionnaire

The content of the questionnaire was checked by an assistant professor and cross-checked by an associate professor in the department of pharmacy at Noakhali Science and Technology University (NSTU), and their feedback was incorporated into the revised questionnaire.

3.6 Data collection

Data were collected by cross-sectional survey. We tried to approach groups of students after major lectures, class tests, and other respondents in their free time. The questionnaires were distributed to selected respondents with a written consent form that explained the purpose of the research and assured them of their confidentiality. Each fifteen minutes teaching

block consists of an explanation of the therapy, its main principles and evidence base and a practical demonstration. The purpose of this survey was to determine the knowledge of the respondents at the point of administration of the questionnaire. The option of completing the survey through the internet or via email was not pursued as that might have introduced bias. The respondents were told that their participation was anonymous and entirely voluntary, and there was no reward for taking Part. They were invited to complete the questionnaire immediately. The authors were present on hand to answer questions or clarify any doubts that they might have. The authors collected all filled questionnaires. The questionnaire was administered to the subjects between December 2017 and May 2018.

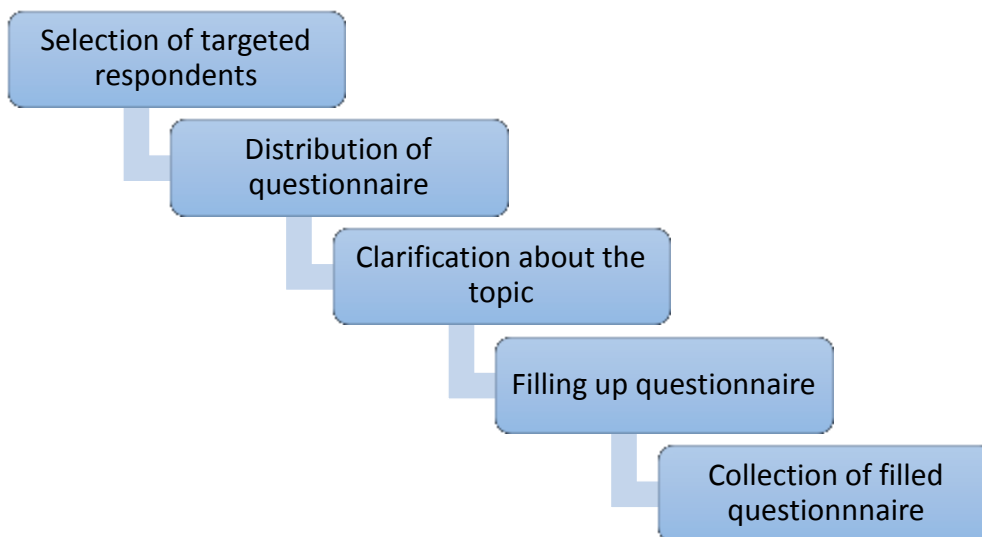


Figure 3.2: Data collection process

3.7 Problems Encountered During Data Collection

Some problems were confessed during the interview, such as students being busy with studying and unwilling to talk. The researcher overcame the problems through given extra attention and more discussion. Clarification of terminologies

and units was obtained from key informants during cross-check interviews.

3.8 Data processing and analysis



All data obtained were entered into and analyzed with a Microsoft Excel spreadsheet. The data was then coded, and participants were categorized into groups according to their backgrounds. Descriptive statistics were computed when possible. The data were summarized as counts (or percentages) occurring in the various response categories. Complete confidentiality was maintained while the data were being processed. Descriptive statistics were computed on all variables as the primary method of data evaluation. A descriptive method of analysis was used to describe the survey results using means and percentages. Some diagrams were also used to describe the findings. Microsoft excel program was used for data analysis and for chart, graph & diagram preparation.

4. RESULT AND DISSCUSION

4.1 Demographic profile

The table uses five indicators to describe the demographic characteristics of respondents. The table showed that 50% of respondents are male and 50% of respondents are female. The majority of respondents was students, with a percentage of 62.5% among total 400 respondents. Among all respondent 6.25% was pharmacist, 6.25% was doctor, 7.5% was job holder, 6.75% was businessman, 2.75% was teacher, 4.25% was unemployed, and 3.75% was other professions. 25% of students were in the age group <20 years and >30 years both. The highest number of students was in 20-30y age group with a percentage of 50%. Among the respondents, 77.5% were from an urban area, and 22.5% were from a rural area. The highest number of respondents were single, with a percentage of 69.25%, while 30.75% were married.

Item	Subgroup	Number	percentage
Sex	Male	200	50
	Female	200	50
Profession	Student	250	62.5
	Pharmacist	25	6.25
	Doctor	25	6.25
	Job Holder	30	7.5
	Businessman	27	6.75
	Teacher	11	2.75
	Unemployed	17	4.25
	others	15	3.75
Age group	<20y	100	25
	20-30y	200	50
	>30y	100	25
Area of Residence	Urban	310	77.5
	Rural	90	22.5
Marital status	Single	277	69.25
	Married	123	30.75

Table 4.1: Demographic characteristics of respondents

4.2 Taken of caffeine-containing products

The following diagram describes the comparative justification of taken of caffeine-containing products between the male and female respondents. The opinions were collected from 200 male and 200 female respondents, where the response was compared on the basis of a yes answer. Among 200 male and 200 female respondents, 90% of male respondents mentioned taking tea whereas 83% of female took tea, 82% of male respondents replied they take coffee where 71% female respondents took coffee, 81% of male respondents responded take soft drinks where 64.5% female takes soft drinks, 58.5%

male respondents mentioned take desserts where 40.5% female respondents are taking desserts, 37% male respondents mentioned take analgesic where 14% female respondents are taking analgesics, 29.5% male respondents mentioned take stimulants where 9% female respondents are taking stimulants, 18% male respondents mentioned take weight loss product where 11% female respondents are taking weight loss product, 20.5% male respondents mentioned take sport nutritions where 6% female respondents are taking sports nutrition.

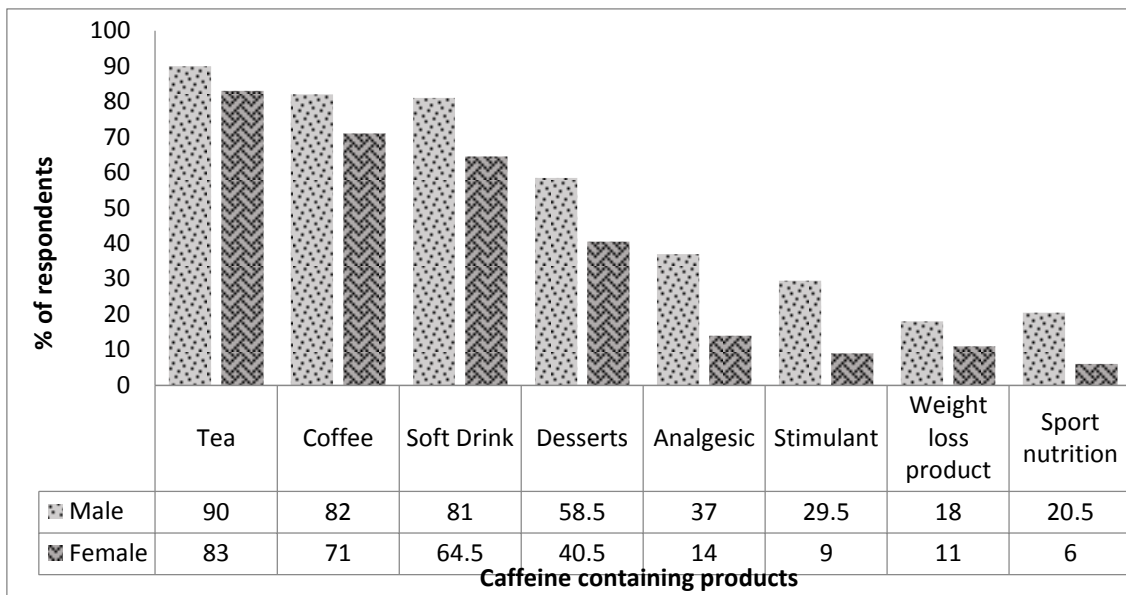


Figure 4.2 : Comparative justification of taken of caffeine-containing products

4.3 caffeine-containing products are essential to get through a day at work/study

The following diagram represents the comparative justification of essentially getting caffeine-containing products through a day at work/study among 200 male and 200 female respondents. The opinion was collected from 200 male and 200 female respondents, where the response compared to the yes answer. In this study, the information was collected from

the different institutions where both male and female ages were classified into below 20 years, 20-30 years and more than 30 years. Among the participants, 84% were male and 68% female (age < 20 years), 87% were male and 77% female (age 20-30 years), and 62% were male and 44% female (age >30 years) respondents mentioned they essentially to get caffeine-containing products through a day at work/study.

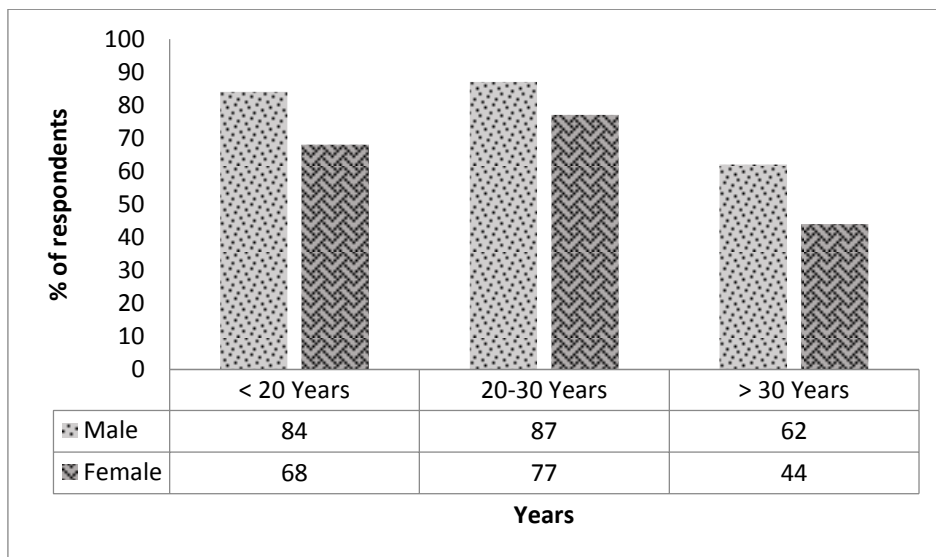


Figure 4.3 : Comparative justification of essentially to get caffeine-containing products through a day at work/study

4.4 caffeine-containing products increase alertness and activeness during the day

The following diagram describes the comparative justification of feeling that the above caffeine-containing products increase alertness and activeness during the day. The opinion was collected from a total of 200 male and 200 female respondents, where the response was compared on the basis of

a yes answer. In this study, the information was collected from the different institutions where both male and female ages were classified into below 20 years, 20-30 years and more than 30 years. Among the participants, 72% were male and 64% female (age < 20 years), 76% were male and 72% female (age 20-30 years), and 58% were male and 54% female (age >30 years) respondents mentioned that the above caffeine-

containing products increase alertness and activeness during the day.

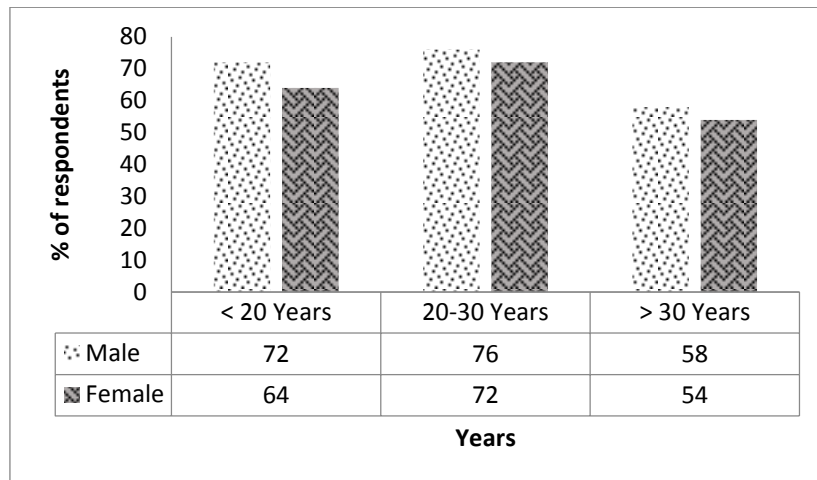


Figure 4.4 : Comparative justification of feeling that the above caffeine-containing products increase alertness and activeness during the day

4.5 Addiction to caffeine-containing products

The following diagram represents the comparative justification of addiction to the above caffeine-containing products among the various respondents. The opinion was collected from a total 200 male and 200 female respondents, where the response was compared on the basis of yes answer. In this study, the information was collected from the different

institutions where both male and female ages were classified into below 20 years, 20-30 years and more than 30 years. Among the participants, 46% were male and 34% female (age < 20 years), 49% were male and 36% female (age 20-30 years), 40% were male and 24% female (age >30 years) respondents mentioned they are addicted to above caffeine-containing products.

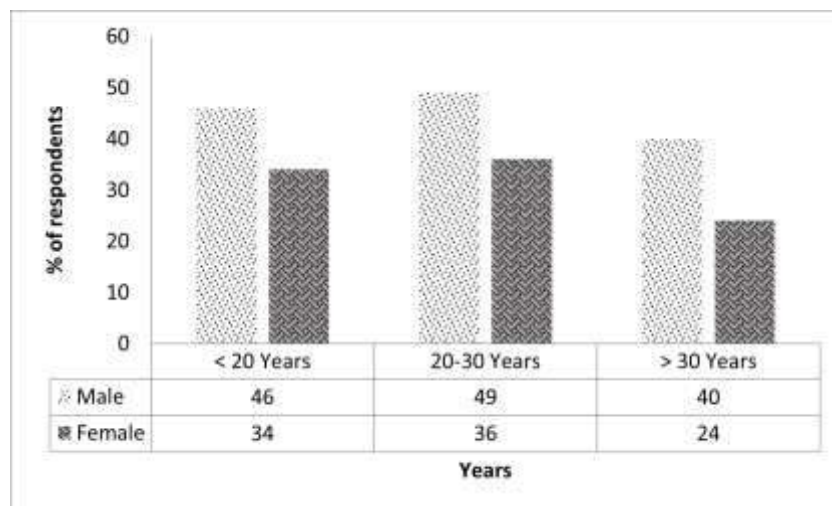


Figure 4.5 : Comparative justification of addiction to caffeine-containing products

4.6 purposes of intake of caffeine-containing products

The following diagram represents the Comparative justification of the purposes of intake of caffeine-containing products between the male and female respondents. The opinion collected from total 400 respondents were the response compared to respondents' purposes of intake of caffeine-containing products. Among 200 male and 200 female respondents, 21% of male respondents mentioned they intake caffeine-containing products for refreshment, 18.5% male intake for enjoyment, 19.5% male for habit, 13.5% of

male for reduced tiredness, 8.5% male for mental satisfaction, 6% male for sleep, 8% male for reduce stress and 5% male for others purposes where 17% female intake caffeine for refreshment, 24.5% female intake for enjoyment, 15.5% female for habit, 16% female for reduce tiredness, 7.5% female for mental satisfaction, 9% female for sleep, 6% female for reduce stress and 4.5% female intake of caffeine-containing products for other purposes.

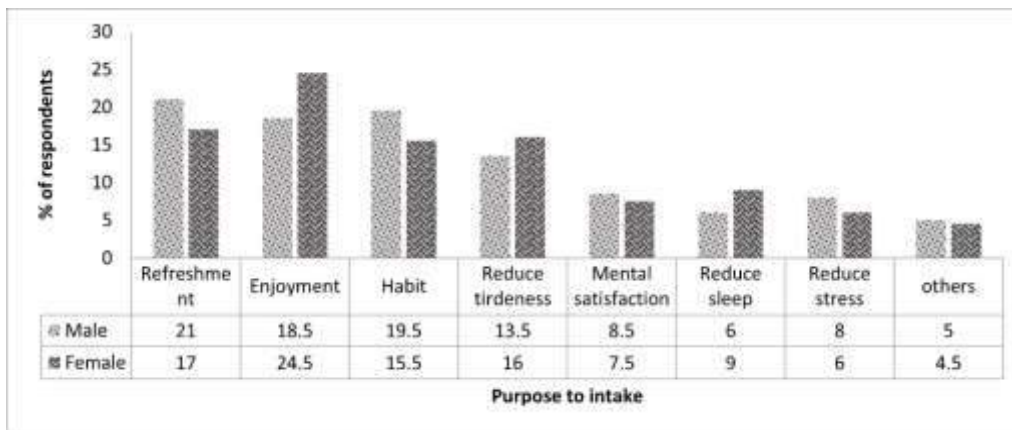


Figure 4.6 : Comparative justification of purposes of intake of caffeine-containing products

4.7 Frequency of intake of caffeine-containing products per day

The following diagram describes the comparative justification of the frequency of intake of caffeine-containing products per day between male and female respondents. The opinion was collected from 400 respondents, where the response compared to respondent Frequency of caffeine-containing products per day. Among 200 male and 200 female respondents, 13% of

male and 21% of female respondents mentioned they intake caffeine-containing products once per day, 32.5% male and 40% female respondents mentioned twice per day, 22% of male and 16% females three times per day, 17% male and 13% female four times per day and 15.5% male and 10% female respondents intake caffeine-containing products more than four times per day.

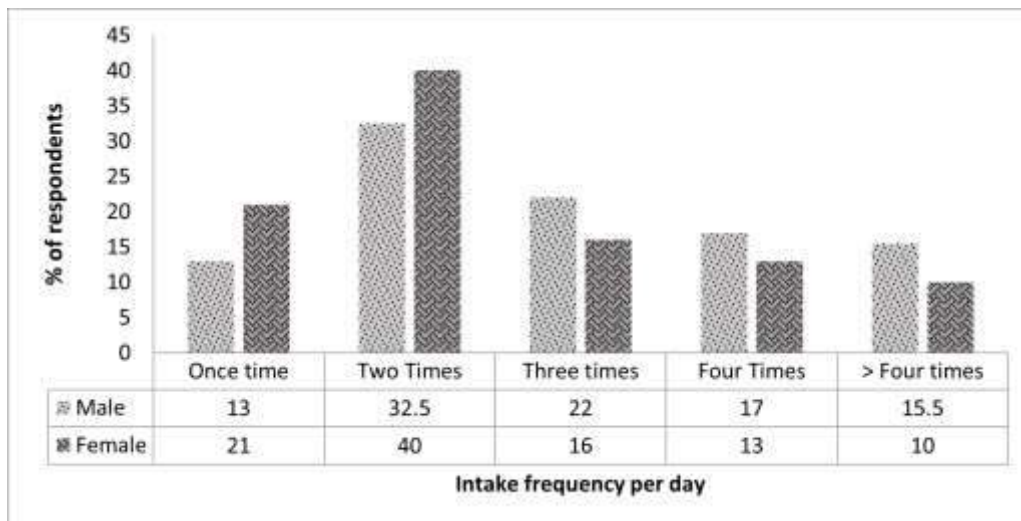


Figure 4.7 : Comparative justification of frequency of intake of caffeine-containing products per day

4.8 Feeling problems during the period of taking caffeine-containing products

The following diagram describes the comparative justification of feeling problems during the period of taking caffeine-containing products between male and female respondents. The opinion was collected from total 400 respondents, where the response was compared on the basis of yes answer. Among 200 male and 200 female respondents, 87% of male and 52% of female respondents mentioned feeling excitement, 72% of male and 30% of female respondents replied restlessness feeling, 57.5% of male and 56% of female

respondents responded feeling insomnia, 48.5% male and 39% female respondents mentioned feeling GIT problems, 42% male and 28% female respondents mentioned feeling nervousness, 45.5% male and 29% female respondents mentioned feeling visual problems, 40.5% male and 36% female respondents mentioned feeling diuresis, 48% male and 28% female respondents mentioned feeling tachycardia and 44.5% male respondents mentioned feeling teeth stain where 27% female are feeling teeth stain problems during the period of taking caffeine-containing products.

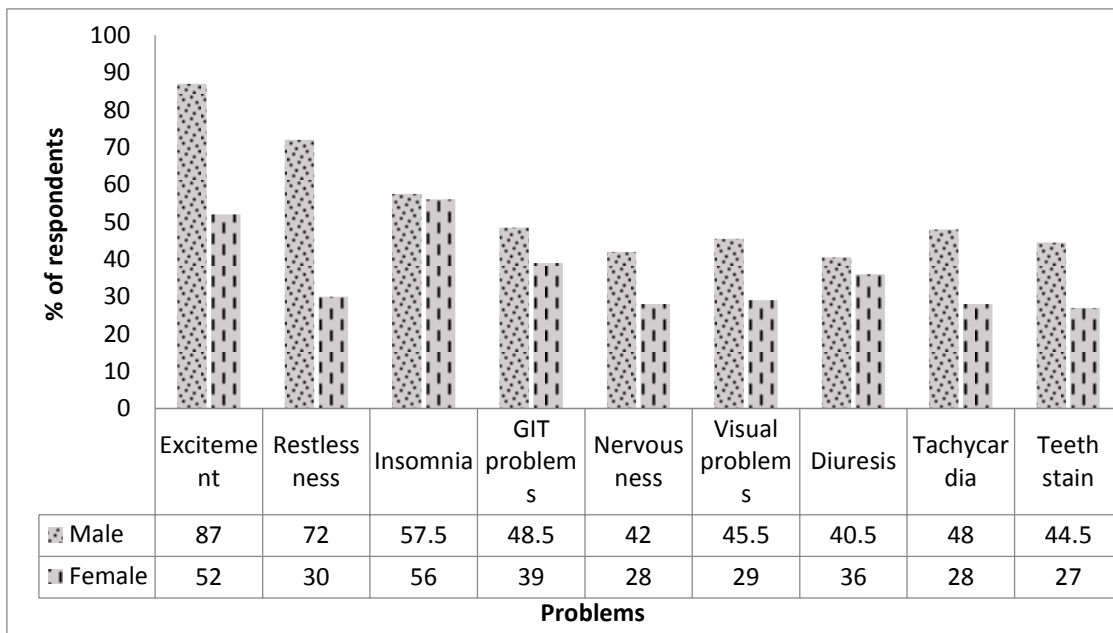


Figure 4.8 : Comparative justification of feeling the problems during the period of taking caffeine-containing products

4.9 Time spend without the intake of caffeine-containing products

The following diagram describes the comparative justification of time spent without the intake of caffeine-containing products between male and female respondents. The opinion was collected from total 400 respondents, where 200 are male, and 200 are female. The response compared respondent time spent without the intake of caffeine-containing products.

Among 400 respondents, 36.5% of male and 19% of female respondents mentioned they could continue their work without intake caffeine-containing products 1-8 hours, 29% of male and 25% of female could 8-16 hours, 14% of male and 18% female can 16-24 hour, 20.5% male and 38% female respondents can continue their work without intake caffeine-containing products more than 24 hour.

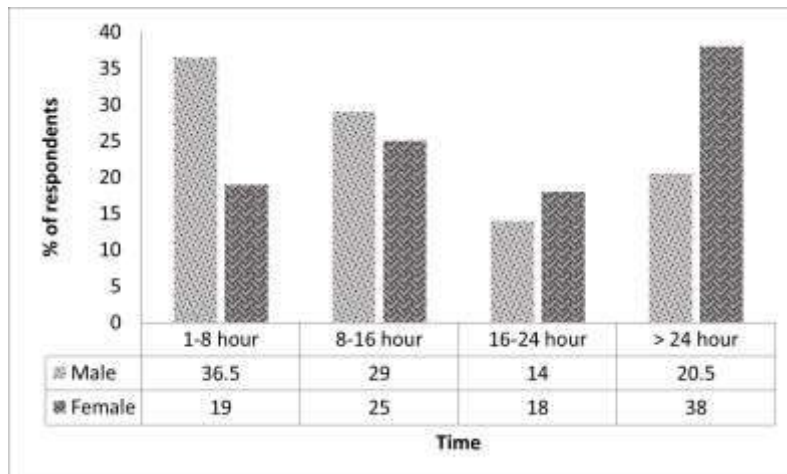


Figure 4.9 : Comparative justification of time spent without the intake of caffeine-containing products

4.10 Feeling the problems without taking caffeine-containing products more than 24 hour

The following diagram describes the comparative justification of feeling problems without taking caffeine-containing products for more than 24 hour Between male and female respondents. The opinion was collected from total 400 respondents, where 200 are male, and 200 are female. The response was compared on the basis of a yes answer. Among 200 male and female respondents, 65.5% of male respondents mentioned feeling headaches, whereas 47% of females are

feeling headaches without taking caffeine-containing products for more than 24 hours, 56% of male and 51% of female respondents replied drowsiness, 62% male and 49.5% female respondents responded feeling depressed mode, 58.5% male and 38.5% female respondents mentioned feeling fatigued, 63.5% male and 40.5% female respondents mentioned feeling difficulty concentrating and 33% male respondents mentioned feeling flu-like symptoms where 26.5% female are feeling flu-like symptoms without taking caffeine-containing products more than 24 hours.

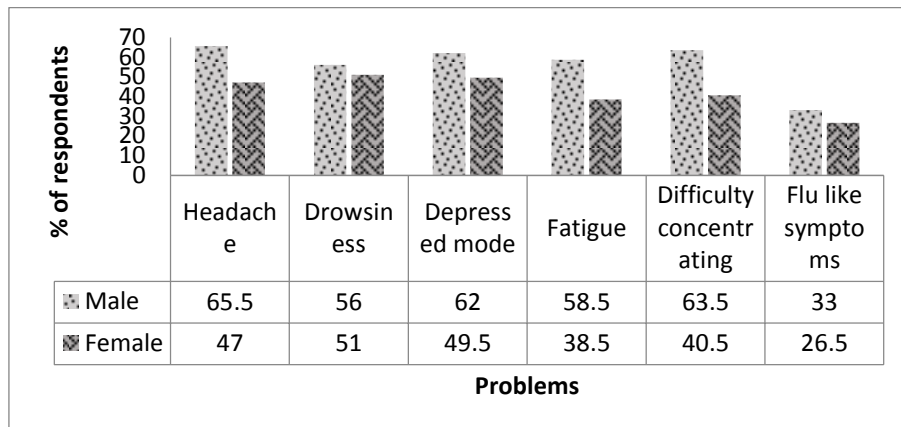


Figure 4.10 : Comparative justification of feeling of the problems without taking caffeine-containing products more than 24 hour

4.11 Changes of behaviour after taking the caffeine-containing product

The following diagram represents the comparative justification of changes in behaviour after taking caffeine-containing products between male and female respondents on the basis of their own feeling or telling by anyone. The opinion was collected from total 400 respondents, where 200 are male, and 200 are female. The response was compared on the basis of a yes answer. In this study, the information was

collected from the different institutions where both male and female ages were classified into below 20 years, 20-30 years and more than 30 years. Among the participants, 20% were male and 16% were female (age < 20 years), 35% were male, and 32% were female (age 20-30 years), 16% were male, and 18% were female (age >30 years) respondents replied their behaviour, not changes after taken caffeine-containing products.

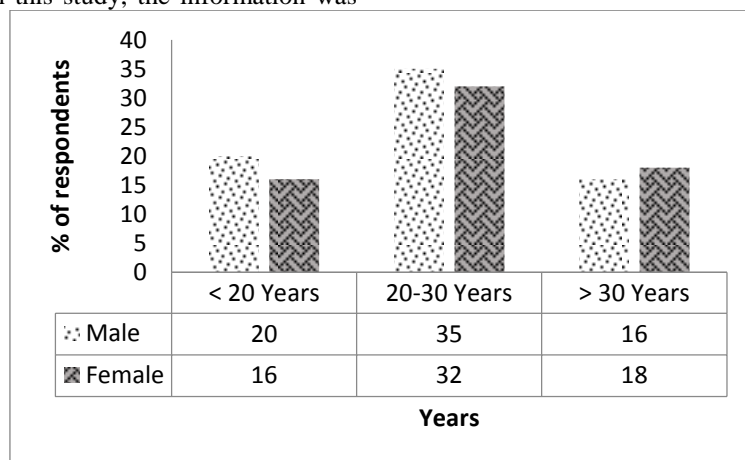


Figure 4.11 : Comparative justification of Changes of behaviour after taking the caffeine-containing product

5. CONCLUSION

Caffeine is a complex chemical that is present in foods, dietary supplements, cosmetics, and medications. Most people consume caffeinated coffee or tea. Few respondents use caffeine as a medication. Men respondents consume more medications containing caffeine than female respondents. Men of all ages use more caffeinated products at work/school than women. According to respondents of all ages, caffeine increases their daytime alertness and activity. Products containing caffeine do not alter the conduct of the majority of people. The majority of neurobehavioral studies indicate that the benefits of caffeine, such as alertness, are universal. Caffeine is an addictive substance characterized by tolerance and withdrawal. The majority of responders consume caffeine-containing beverages twice daily for refreshment, pleasure,

routine, and habit. Caffeine is typically consumed deliberately. Thus products containing caffeine can be avoided. But many people regularly consume caffeine. Greater doses can result in discomfort and mental damage. Male responders reported experiencing increased agitation, restlessness, insomnia, GIT difficulties, visual issues, diuresis, tachycardia, and tooth discoloration during or after coffee consumption. After 24 hours without coffee, however, headaches, drowsiness, depression, fatigue, concentration difficulties, and flu-like symptoms are observed. Males had more problems after 24 hours without coffee. Research on caffeine affects both health professionals and consumers. The prevalence and functional impairment of Caffeine Use Disorder require additional research.



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ETHNOMEDICINE OF SOME PTERIDOPHYTES USED BY THE PRIMITIVE TRIBAL GROUPS OF VISAKHAPATNAM, ANDHRA PRADESH

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ABSTRACT

The present study deals with 9 species of pteridophytes as many as genera and families used for various diseases by the primitive tribal groups of Visakhapatnam district, Andhra Pradesh. Plant part wise analysis, root is used in 10 practices followed by leaf and whole plant 3 each. Out of 16 practices 8 practices and one plant species were found to be new.

KEY WORDS: Ethnomedicine, Pteridophytes, Visakhapatnam, Andhra Pradesh.

INTRODUCTION

Tribes in India have their own way of living within social and cultural moorings, purely governed on the basis of local conditions and ethos. The term “tribes was first included in the Government of India Act 1935. Article 342 of the Constitution of India defines ‘tribes’ as “an endogamous group with an ethnic identity; who have retained their traditional cultural identity; they have a distinct language or dialect of their own; they are economically backward and live in seclusion, governed by their own social norms and largely having a self-contained economy.” The term ‘Primitive tribes’ was first used by western anthropologists to represent, “a primary aggregate of people living in a primitive or barbarous conditions under a headman or chief”. The primitive tribes are placed in the most disadvantageous position in modern India.

The study area includes 11 mandals of the Visakhapatnam district. It lies between 17°-34' 11" and 18°-32' 57" northern latitude and 18°-51' 49" and 83°-16' 9" eastern longitude. The entire agency track covers 6, 298 Km² i. e., 56.4% of the total geographical area of the district. The annual temperature ranges from 33.7° C (April-May) to 9.8° C (December-January) and the average elevation is about 1200 m above MSL. A detailed investigation on plants associated with Primitive Tribal Groups (PTGs) is taken up with the objectives of an extensive and intensive exploration studies in the areas of PTGs habitations. The PTG communities present in the study area are Gadaba, Khond, Porja and Savara. The present study was carried out in 11 mandals viz., Chintapalli, G.Madugula, G.K.Veedhi, Koyyuru, Hukumpeta, Pedabayalu, Dumbriguda, Munchingput, Araku valley and Ananthagiri. The total population of the study area is 38, 32, 336 (as per 2001 census). The total tribal population is 5, 57,572 (14.55%) and PTGs population is 1, 26, 778 (3.30%).

Some ethnomedicinal studies published in literature on ethnomedicine of pteridophytes (Rao et.al. 2007, Upreti et.al. 2009, Karthik et.al. 2011, Shaikh et. al. 2014, Singh and Upadhyay 2014, Rout et.al. 2019, Suraj et.al. 2020, Das and Patra 2021).

MATERIAL AND METHODS

The ethnobotanical survey was conducted during 2008-2012 covering the eleven mandals of the study area and interviews were conducted with the tribes at their habitats. During oral interviews with elder people, medicine men in the tribal area collected first hand ethnomedicinal uses, mode of preparation and administration of medicine. Each medicinal practice was cross checked with at least 3-4 informants. During field survey information was gathered on plants used for various ailments. In 95 pockets of the study area, 139 *vaidhyas* and practitioners were consulted. The specimens were identified with the help of standard floras (Gamble, 1915-1935 and Rao and Kumari, 2008). The voucher specimens were deposited in the Herbarium of the Department of Botany, *Andhra University*, Visakhapatnam.

RESULTS AND OBSERVATIONS

Nine species of pteridophytes as many as genera and families used by the primitive tribal groups of Visakhapatnam district to cure various human ailments and their daily needs. The common ailments treated by them are allergy, cooling effect, cough, Dysentery, epilepsy, fever, Fever for children, fits, Headache, piles, Post-partum problems, prolapsed of uterus, conjunctivitis. A total of 16 practices were recorded. Plant part wise analysis, root is used in 10 practices followed by leaf and whole plant 3 each. *Hemionitis arifolia* and 9 practices were found to be new (Jain 1991 and Kirtikar and Basu, 2003). The plants are arranged in an alphabetical order with botanical name followed by family, vernacular name,



voucher specimen number, method, mode and duration of the treatment. Plants and practices marked with an asterisk (*) are considered to be new or less known.

Adiantum philippense Linn. Adiantaceae Challi 9079

*Allergy: Root paste mixed with 50 ml of water is administered daily twice till cure.

*Cough: Root paste along with leaf paste of *Centella asiatica* mixed with water is administered twice a day for 3 days.

*Epilepsy: Root paste mixed with half tea glass of water is administered twice a day till cure.

*Fever with shivering: Root paste mixed with half tea glass of water is administered twice a day till cure.

*Piles: Root paste mixed with half tea glass of water is administered twice a day for 3 days.

Cyathia gigantea (Wall. ex Hook.) Halittum Cyathiaceae Peddakoti 9541

Fever: Root paste mixed with half tea glass of water is administered twice a day for 3 days.

Didymocarpus pygmaea Clarke Gesneriaceae Osso 9081

Prolapse of uterus: Root paste mixed with half tea glass of water is administered twice a day till cure.

Drymaria cordata (Linn.) Willd. ex Roem. & Schult.

Caryophyllaceae Ankidukki osso 9268

Conjunctivitis: Two drops of leaf juice is poured into the eyes before go to bed for a week.

Cooling effect: Fifty g of leaf paste is administered with half tea glass of water twice a day for 2 days.

Drynaria quercifolia (Linn.) J. Smith Polypodiaceae

Rachilaka mandhu 9355

*Fits: Root paste along with root paste of *Solanum indicum* is given in doses of 10 g tablets twice a day for 4 days.

*Post- partum problems (Body swellings): Root paste mixed with half tea glass of hot water is administered twice a day for 3 days to women to reduce body swellings after delivery.

Equisetum debile Roxb. Equisetaceae Bedda kandhiri 9244

*Dysentery: Root paste mixed with half tea glass of water is administered daily twice.

Hemionitis arifolia (Burm. f.) Moor Adiantaceae Kenneris 9308

Cough: Fifty g of leaf paste is administered daily twice.

Lygodium flexuosum (L.) Sw. Schizaeaceae Khorothi 9293

*Headache: Whole plant paste mixed with water is used during head bath or plant paste mixed with half tea glass of water is administered orally daily twice.

Marsilea quadrifolia Linn. Marsiliaceae Chenchalam koor 9240

Fever for children: Whole plant ground with leaves of *Artemisia vulgaris* is applied with coconut oil all over the body before going to bed.

Allergy: Whole plant paste is applied with castor oil all over the body till cure.

CONCLUSION

Many reports have appeared on the medicinal values of various plants, including pteridophytes and new active compounds have been isolated from different parts of the plants. Over the last decade or so, World Health Organization has passed a number of resolutions in response to a resurgence of interest in the study and use of tradition of health systems. Many developing countries have decided to take traditional forms of medicine more seriously and to explore the healthcare (WHO, 1993). However, due to soil erosion by contribution of gradient of the slopes, deforestation, nature of soil and quantum of *podu* cultivated land, etc. in the district, some species are likely to be endangered and need conservation. There is need to record ethnomedicinal uses of such plants before they are lost. However, the tribal groups about medicinal uses of plants need to be scientifically validated for future use in pharmaceutical industry. Such information is likely to help in the conservation of biodiversity and providing important lead for drug development.

There is a need for scientific validation of these practices and their efficiency, credibility and applicability need to be established through phytochemical, pharmacological and clinical screening.

Acknowledgements

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A STUDY ON WORK-FAMILY ISSUES OF NON-GAZETTED STAFF WORKING IN MUMBAI POLICE DEPARTMENT

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INTRODUCTION

Today, changes in globalization resulted into changes in the lifestyle of the people. Everyone has to make changes in their Personal and Professional life as men and women started together. Working together arises the question of the term of Work- Family issues.

In the present scenario of lifestyle, people have to give an equal importance to their work as well as to their families.

Today, almost in all states, women and men are recruited as for the post of non-gazetted staff in the police department. Police is a peculiar profession, as they are in work 24*7.

Work – Family issues of police is always considered as a tragic, but it is an integral element of police profession. It creates a negative effect on police organizations. From the officer who are working at top level to the lower-level employees everybody faces the problem of work family issues, resulted into stress, health issues, psychological problems, dissatisfaction from the job etc., ultimately these affects on their work performance.

REVIEW OF LITERATURE

Dr. Dipti and Dr. Shakti Pal (2020)- The study is on occupational stress of Mumbai police. Due to occupational stress workers gets imbalance in their personal and professional life. Police is a profession which is related to laws, rules but sometimes performing such kinds of duties creates stress and anxiety. Sample was collected from 300 respondents by using random sampling technique. The data was collected through work family scale and analysed through t-test. The study resulted that both male and female police staff face the occupational stress but the women staff faces additional issues.

Balaji Almale and Vrushali Pawar (2014): The study was undertaken to find out occupational stress suffered by Mumbai police personnel. Total 276 police staff were considered for the study. Majority of the staffs works more than 16 hours in a day, with no holiday in a months and suffering from the certain addiction. The study is concluded that there is requirement of techniques for managing the stress as the majority of the staff were suffering from the occupational stress.

Work – Family issues

Work family issues are the issues faced by the police staff while at work or when they are at home. Sometimes the staff faces the work family issues which generates stress and which resulted the not able to concentrate on work with the thoughts about the family or vice-versa.

OBJECTIVES OF THE STUDY

1. To study the demographic and organization profile of non-gazetted staff working in Mumbai Police.
2. To find out the factors responsible for work family issues of non-gazetted staff.
3. To study the influences of personal and organization variables of work family issues of non-gazetted staff.
4. To give suggestions for a balanced work family issue of non-gazetted staff.

HYPOTHESIS OF THE STUDY

1. H0 - There is no significant relation between the income and the family support provided towards non-gazetted staff working in Mumbai Police.
2. H1 - There is a significant relation between the income and the family support provide towards non-gazetted staff working in Mumbai Police.
3. H0 - There is no significant relation between Age and work load faced Non- gazetted staff working in Mumbai Police.
4. H1 - There is a significant relation between Age and work load faced by non-gazetted staff working in Mumbai Police.

NEED OF THE STUDY

In the service sectors, Police department plays an important role in the development of society. As they are protecting the society, it is important to study their problems. While working, what issues they faces in the police stations, they are able to spare time with their families, satisfaction from work and life? what are the factors that influence work and family issues. Today, police employee faces various issues related to work family. The major issues are longer duty hours, stress, lack of organizational support, family pressure, time allotment issues to family/work. Therefore, it is important to the study the factors/issues that affects in managing work family.



RESEARCH METHODOLOGY

- The data is collected from both Primary and Secondary data sources.
- Primary source includes filling of questionnaire from non- gazetted staff i.e. police constables to police sub inspector working in police departments.
- Secondary sources consist of books, periodicals, newspapers and online resources.
- Study is basically undertaken for analyzing the factors that creates work family issues and their impacts on personal and professional life of Non gazetted police staff
- Research Approach: Qualitative approach
- Sampling Technique: Convenience random sampling method
- Population: Police constables to police sub inspector working in Police Department.

DATA ANALYSIS AND INTERPRETATION

Table 1.1 Gender:
Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	20	50.0	50.0	50.0
	Female	20	50.0	50.0	100.0
	Total	40	100.0	100.0	

Source: Primary data

The male non gazetted police in the male category are 20 and female is also 20.

Table 1.2 Educational Qualification
Educational_ Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HSC	5	12.5	12.5	12.5
	Graduation	28	70.0	70.0	82.5
	Post Graduation	7	17.5	17.5	100.0
	Total	40	100.0	100.0	

Source: Primary data

Out of total respondents, the majority of the data is collected from the staff which is having the highest qualification of Graduation i.e. 28%.

Table 1.3 Age
Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 30 years	17	42.5	42.5	42.5
	31-40 years	20	50.0	50.0	92.5
	41-50 years	3	7.5	7.5	100.0
	Total	40	100.0	100.0	

Source: Primary data

Age is important factor in deciding the work family balance of the police staff. The majority of police staff collected in the study ranges from the age group of 31-40 years.

Table 1.4 Children below 10 Years
Children Below Ten years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	28	70.0	70.0	70.0
	No	12	30.0	30.0	100.0
	Total	40	100.0	100.0	

Source: Primary data

Out of 40 Respondents 70% of the respondents were having a child below less than 10 years.



Table 1.5 Special child in family
Special child in family

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	6	15.0	15.0	15.0
Valid No	34	85.0	85.0	100.0
Total	40	100.0	100.0	

Source: Primary data

Table 1.5 is about special child in the family. Special child plays very important role in work family balance issues. In the data collected 6% respondents was only having the special child in the family.

Table 1.6 Family System
Family System

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Nuclear	23	57.5	57.5	57.5
Valid Joint	17	42.5	42.5	100.0
Total	40	100.0	100.0	

Source: Primary data

Family supports is required in work family issues. 57% of the respondents were belongings to Nuclear family.

Table 1.7 Income
Income

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Less than Rs.20,000	13	32.5	32.5	32.5
Valid Rs. 20,001 - 40,000	27	67.5	67.5	100.0
Total	40	100.0	100.0	

Source: Primary data

Out of 40 respondents 67% were having the income level ranges from Rs. 20,001- Rs. 40,000.

Table 1.8 Distance between residence to police station
Distance between Residence to Police station

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Up to 9 kms	17	42.5	42.5	42.5
Valid 10-14 kms	4	10.0	10.0	52.5
Valid 15-23 kms	13	32.5	32.5	85.0
Valid More than 23 kms	6	15.0	15.0	100.0
Total	40	100.0	100.0	

Source: Primary data

Distance to reach residence to police station is one of the important criteria for managing work family issues. In the present study, maximum 42% respondents were travelling up to 9 kms.

Table 1.9 Whether you discuss your official workload with your partner

Whether you discuss your official workload with your partner

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	40	100.0	100.0	100.0

Source: Primary data

Out of total respondents 100% of the respondents are discuss their workload with their partner.

Testing of Hypothesis

- From the first hypothesis of Family support, it is found that p-value greater than significance value of 0.05 which concludes that that there is no significant relation between the income and the family support provided towards Non-gazetted staff working in Mumbai Police.



	Family Support: Irrelevant of time factor, police staff are necessary to deal with criminals and under emergency situations etc	Family Support: Police staff job nature is rigid, which sometimes create hindrances in the role as wife/husband	Family Support: Police staff some time will not find time to participate in religious and family function it must be accepted by family members	Family Support: Due to the job nature the family relationship may be hampered
Chi-Square	.100	.037	.150	1.921
Df	1	1	1	1
Asymp. Sig.	.751	.847	.699	.166
a. Kruskal Wallis Test b. Grouping Variable: Age				

➤ From the second hypothesis of Workload, it is found that two attributes are not having significance difference and rests are having significance difference. Therefore, the researcher can reject the null hypothesis and conclude that there is a significant relation between Age and work load faced by non-gazetted staff working in Mumbai Police.

	Work load - Police personnel have to give first priority for their duty than to their personal work	Work load - Work assignment is allotted on the basis of the service, experience and situation	Work load - High responsibility of the job in maintaining law and order would affect the health of the police staff	Work load - Over work load of the police staff affect both police department and family
Chi-Square	2.915	19.767	9.834	1.122
Df	2	2	2	2
Asymp. Sig.	.233	.000	.007	.571
a. Kruskal Wallis Test b. Grouping Variable: Age				

FINDINGS OF THE STUDY

- 70% of the respondents posing a graduate degree. The majority of the respondents are in the range of 31-40 years.
- 70% of the respondents are having a child of below 10 years. 85% of the police staff says that they do not have special child in their family. 57.5% of the respondents are staying in nuclear family.
- 67.5% respondents they are working for more than 8 hours. Majority of the data is collected form the police staff who are having the experience of 6-10 years also 100% of the respondents say they discuss their work load with partners.
- Also, from the first hypothesis of Family support, it is found that p-value greater than significance value of 0.05 which concludes that there is no significant relation between the income and the family support provided towards non-gazetted staff working in Mumbai Police.

- ❖ Healthy work culture is needed to manage the work family issues.
- ❖ There is a requirement of policies for work family issues management.
- ❖ Special concession have to given for women staff.
- ❖ Longer nos. of duties can be reduced so that employees can be relieved from stress.

CONCLUSION

Police department has to provide support to their employees for managing work family issues. They have to formulate with new idea and policies for quality of work family life. Various polices regarding technological development, computer training, counselling programs, stress management etc. have to be framed. Better work family development programs and policies can generate healthy lifestyle, reduction in absenteeism, stress etc. among police employees. Also, the police department should take an initiative regarding the work family issues of police in the entire department, so there can a better administration and quality work life balance in the police department.

SUGGESTIONS

- ❖ There is a requirement of proper human resource management in the department. Human resource planning at the departmental level is important to imbalance the issue.
- ❖ Work family issues can be resolved with proper counselling at departmental level. The organization have to arrange the counselling sessions, talks on management of work family issues.

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MORTON'S NEUROMA

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SUMMARY

Introduction: In 1876 American surgeon Thomas George Morton first detailed compressive neuropathy of the interdigital nerve of the forefoot. Morton's neuropathy occurs mostly. The condition is generated secondary to repeated pressure or irritation that leads to thickening of the nerve, located in the second or third intermetatarsal space. It is suggested that the use of pointed heel shoes could be a triggering factor for the development of this pathology due to the increased pressure on the forefoot.

Objective: to describe the current information related to Morton's neuroma etiology, epidemiology, presentation, diagnosis, management and treatment.

Methodology: a total of 39 articles were analyzed in this review, including review and original articles, as well as clinical cases, of which 29 bibliographies were used because the other articles were not relevant to this study. The sources of information were PubMed, Google Scholar and Cochrane; the terms used to search for information in Spanish, Portuguese and English were: Morton, neuroma, neuritis, neuralgia, interdigital.

Results: it is more frequently present in the female sex, presenting a female:male ratio of 4:1 in some bibliographies and 5:1 in others. The average age at the time of surgery is 50 years old. In 21% of the cases the neuroma is bilateral, in 66% of the cases it is related to the third space, 2% to the fourth and 32% to the second. A study showed that the average diameter of Morton's neuroma was 4.1 mm in the asymptomatic staff versus 5.3 mm in the symptomatic group.

Conclusions: This condition is certainly not a neuroma as it is a degenerative rather than neoplastic condition due to fibrosis of the digital nerve. The diagnosis is primarily clinical, where there may be altered sensation and a dorsal bulge. Examinations, investigations and non-surgical treatment are the same as those used in a primary neuroma. The use of orthoses and footwear modifications is indicated for conservative treatment. For surgical treatment, dorsal and plantar approaches are used, each with their advantages and disadvantages. The dorsal incision should be extended proximally to observe the residual limb, however sometimes exposure becomes difficult. The plantar approach provides better exposure for the nerve to be easily identified and resected, however the presence of painful scarring is notable. Other complications that may occur are atrophy, recurrence and chronic pain.

KEY WORDS: Morton, neuroma, neuritis, neuralgia, interdigital.



INTRODUCTION

In 1876 the American surgeon Thomas George Morton detailed for the first time the compressive neuropathy of the interdigital nerve of the forefoot. This disease is variously called Morton's metatarsalgia, Morton's entrapment, interdigital neuralgia, interdigital neuroma, interdigital neuritis, interdigital nerve compression syndrome, intermetatarsal neuroma and Morton's neuroma. This condition is certainly not a neuroma as it is a degenerative rather than neoplastic condition due to fibrosis of the digital nerve. Morton's neuropathy is mostly caused by irritation and compression on the plantar aspect of the transverse intermetatarsal ligament. This altered tissue gives painful discomfort related to weight bearing. Histologically, the neuroma has perineural fibrosis, neural edema and demyelination due to axonal injury. In other words, the condition is generated secondary to repeated pressure or irritation that gives way to thickening of the nerve, located in the second or third intermetatarsal space. Most of the time, interdigital neuromas are located between the 3rd and 4th metatarsal heads. It is also suggested that the use of pointed heel shoes could be a triggering factor for the development of this pathology due to the increased pressure on the forefoot(1-9).

METHODOLOGY

A total of 39 articles were analyzed in this review, including review and original articles, as well as cases and clinical trials, of which 29 bibliographies were used because the information collected was not important enough to be included in this study. The sources of information were Cochrane, PubMed and Google Scholar; the terms used to search for information in Spanish, Portuguese and English were: Morton, neuroma, neuritis, neuritis, neuralgia, interdigital.

The choice of bibliography exposes elements related to Morton's neuroma, definition, etiology, presentation, diagnosis, management and treatment.

DEVELOPMENT

Etiology.

The origin of Morton's neuroma is still to be clarified, at the moment 4 hypotheses are presented that would help to better understand the pathology. The first of them and the most accepted is the theory of the chronic trauma where the mechanical effects of the march cause chronic microtraumatism in the intermetatarsal plantar digital nerves, which are compressed between two heads of the metatarsals and the metatarsophalangeal joints, the second theory is that of the intermetatarsal bag which proposes that the bursitis located in the intermetatarsals cause compression and inflammation with subsequent fibrosis of the afflicted common plantar digital nerve. Memorably, the bursae are proximal to the neurovascular bundle in the second and third intermetatarsal spaces, where Morton's neuromas are more likely to occur, but interdigital neuromas are rare in the fourth intermetatarsal space, where the

bursa infrequently has a nexus to the neurovascular bundle. The third is the entrapment theory, which proposes that interdigital neuromas occur due to compression of the interdigital nerve against the anterior end of the deep transverse metatarsal ligament and plantar soft tissue structures. The ischemic theory is the fourth theory based on histopathological findings of the common plantar digital artery showing degenerative changes prior to fibrous thickening of the nerve. Among the reasons commonly related to the pathology are hyperextension of the toes in high heeled shoes, high impact sports activities, narrow toe shoes, toe deviation, thickening of the transverse metatarsal ligament, inflammation of the intermetatarsal bursa, forefoot trauma, metatarsophalangeal joint pathology and lipoma(5,10-14).

Epidemiology.

Epidemiologically, Morton's neuroma is more frequently present in the female sex, with a female:male ratio of 4:1 in some bibliographies and 5:1 in others, and the average age at the time of surgery is 50 years. In 21% of the cases the neuroma is bilateral, in 66% of the cases it is related to the third space, 2% to the fourth and 32% to the second. The presentation in multiple sites is infrequent, in spite of the fact that it is not unusual to find two neuromas in the same foot(5,9,12,15,16).

Presentation.

It usually presents with paresthesia in the region of the damaged digital nerve, as well as pain in the forefoot, being more frequent in women. A considerable percentage, approximately 17% of those affected with Morton's neuroma report having been the victim of a previous trauma, confirming the cause of the symptoms. Burning pain is distinctive and frequent, however the pain can also be described as stabbing or tingling with electrical sensations, and in almost half of the patients there is a sensation of "stone in the shoe" or similar to walking on a marble or a stone. Similarly, in a little less than 50% of patients there is numbness between the toes. The pain can be directed towards the leg or rearfoot, generating cramps, because of walking for a considerable time. Other factors besides walking that increase pain in this condition are wearing tight shoes or high heels, as well as being an athlete as in the case of runners who increase the weight load on the front part of the foot while doing their activity. The pain can be relatively relieved by resting the foot or removing the footwear, particularly when the condition has just begun. In patients with a chronic condition, the pain may be constant. Approximately 25% of cases report pain at night and at rest(5,8,17).

Pathophysiology.

Morton's neuroma is frequent in the third space due to the fact that this space is narrower than the other spaces. The common digital nerve in the third space accepts branches of the medial and lateral plantar nerves, being the site of anastomosis between the branches of the two nerve trunks. It is comparatively thicker, which increases the possibility of trauma and compression. The



development of Morton's neuroma has been related to trauma caused by:

- A. Repetitive trauma from running.
- B. Penetrating injury.
- C. Thickened transverse metatarsal ligament.
- D. Crush injury.
- E. Enlarged bursa in the interspace.

The constant trauma and compression of the nerve give responses such as endoneural edema, vascular variations and excessive bursal thickening leading to perineural fibrosis (5,12,18).

Histopathology.

Microscopically, the common plantar digital artery has sudden disruption of the arterial wall, inconclusive recanalization and thrombosis, these are criteria that protect the ischemic theory. It can also be found:

- Fibroblast and Schwann cell dissemination.
- Fibrosis adjacent to and within the nerves.
- Aggravation of myelinated nerve fibers.

Macroscopically it shows a fusiform tumefaction proximal to the division of the plantar interdigital nerve with thickening of the adjacent tenosynovial tissues(5,19).

Diagnosis.

First hand diagnosis is essentially clinical, sensitivity is assessed and a dorsal prominence can be found; in addition to an increase of the interdigital space. By palpating the affected space, the symptoms can be reproduced. Crushing the forefoot mediolaterally while palpating the affected space usually generates a snapping or crunching impression called Mulder's click. It is really important to recognize the value of anamnesis and physical examination, however the contribution of imaging techniques such as ultrasound and nuclear magnetic resonance imposes a greater accuracy in the correct diagnosis.

The use of weight-bearing X-rays is recommended when suspecting or trying to differentiate from subluxations, dislocations, bony masses, deformities or arthritis. In addition, Sullivan's sign, which consists of splitting of the distal intermetatarsal area and/or divergence of the contiguous toes, may be seen. A radiopaque foreign body may also be seen. Ultrasound can be used for both diagnosis and steroid administration. It also shows a non-compressible dumbbell-shaped soft tissue lesion with hypoechogenicity within the intermetatarsal space, and a "Mulder's click" can be obtained on palpation with the probe. On the other hand, nuclear magnetic resonance imaging, primarily used to rule out other pathologies, also presents a soft tissue lesion in the form of a dumbbell inside the intermetatarsal area. Here the T1 signal is usually low, the T2 signal is usually low or intermediate and the enhancement is variable(5,11,12,18-20).

There are no exact clinical visual signs that demonstrate the presence of a neuroma, so it has to be well differentiated, because some foot deformities, especially hallux valgus, can

cause overcrowding of the toes and increased pressure on the toes. Plantar calluses proximal to the metatarsal heads suggest a diagnosis of synovitis, transfer metatarsalgia, subluxation or dislocation of the metatarsophalangeal joint of the second or third toe. In addition, other differential diagnoses such as Freiberg's disease or avascular necrosis of the metatarsal head, plantar plate tears and metatarsal stress fractures can be appreciated(8,17).

One study showed that the average diameter of Morton's neuroma was 4.1 mm in the asymptomatic staff versus 5.3 mm in the symptomatic group. The diagnosis of interdigital neuroma is considerable only in those occasions when the transverse diameter in a nuclear magnetic resonance is 5 mm or greater and it is linked to the patient's clinic(8,21,22).

Management and treatment

For the moment, the best non-surgical treatment for the pathology continues to be custom-made orthoses, metatarsal off-loading plantar orthosis, footwear modifications and injections of local anesthetic substances in addition to sclerosing agents and corticosteroids. Corticosteroid injections had a good clinical outcome in those with Morton's neuroma, however 30% of the patients had to undergo surgery(12,23,24).

Budin splinting and toe taping may decrease secondary neuralgia in patients with synovitis, instability or deformity of the toe. Anti-inflammatory medications, anticonvulsant medications such as gabapentin, tricyclic antidepressants such as amitriptyline are recommended to decrease the severity of related symptoms. Some side effects have been reported in these treatments such as skin discoloration and rupture of the joint capsule adjacent to the injection site causing deformity of the toe, in addition to atrophy of the subcutaneous fat and plantar fat pad. Lately, other less invasive and more conservative techniques have also been used to treat neuromas, such as cryotherapy, alcohol injections in the nerves and radiofrequency ablation (5,9,25,26).

Recent literature indicates that the extension of the lesion is not always directly related to the importance of the symptoms, however smaller neuromas react better to steroid injections compared to larger ones(8,17,20,27).

Surgery is indicated to treat recalcitrant cases, when non-surgical management does not have good results. Two approaches are the most common for Morton's neuroma, one dorsal and the other plantar, the scar in the dorsal approach is better tolerated since the plantar scar is sometimes very painful. First the approach begins with an incision of 3 cm to 4 cm proximal to the space where the neuroma is located, this incision should preferably be in the midline so as not to cause lesions in the dorsal cutaneous nerves. Subsequently the incision is deepened to cut transversely the transverse metatarsal ligament. We then identify the common digital nerve in the proximal portion of the wound and follow it distally until its division; if we find the presence of any soft tissue adhesion it has to be

released from the nerve. Some medical specialists will end up here without any further intervention on the nerve itself, bony

after nerve decompression or neurolysis(5,12,28).

Figure 1. Plantar approach in the left foot where Morton's neuroma is visualized.



Source: The Authors.

Surgical excision of Morton's neuroma should include resection of the common digital nerve as proximal as possible. Large volumes of fatty tissue should not be excised to avoid scarring and subsequent atrophy of the plantar pad. To intervene the nerve, the common digital nerve proximal to the metatarsal heads is cut. Some specialists suture the cut ends of the nerve to the side of the metatarsal or one of the intrinsic muscles to avoid the formation of a painful stump neuroma. It is generally recommended to use postoperative footwear for the removal of stitches for approximately 7 to 14 days, in addition to using compressive bandage for 2 to 6 weeks (5,12).

The plantar approach is generally used in those who present recurrent neuromas or there is a painful trigger point close to the

focus. This approach reduces the rate of lost neuroma and does not require cutting the transverse metatarsal ligament. The plantar incision achieves a more proximal resection and a closer exposure of the nerve, in addition to the vein and artery is more easily observed so it preserves better. Among the disadvantages of the plantar approach are painful scars and plantar keratosis in almost 5% of cases(5).

The plantar approach is less used, presenting a post-excision success rate of 51% to 85%. The dorsal approach is usually used because, besides being better tolerated by those who undergo surgery, it allows immediate weight bearing in the postoperative period(8,15,29).

Figure 2. Morton's neuroma after incision.



Source: The Authors.

Complications.

Among the most frequent complications of surgical treatment we have:

Chronic pain

Infection, pain, bleeding and other complications related to surgery.

Recurrence of deformity due to inadequate cutting or change of a Morton's neuroma into a true neuroma.

Skin atrophy and discoloration, fat pad atrophy, and other alterations associated with corticosteroid injections.

CONCLUSIONS

The origin of Morton's neuroma is still to be clarified, at the moment 4 hypotheses are presented that would help to better understand the pathology. Morton's neuroma is more frequently present in the female sex, presenting a female:male ratio of 4:1 in some bibliographies and 5:1 in others. The average age at the time of surgery is 50 years. In 21% of the cases the neuroma is bilateral, in 66% of the cases it is related to the third space, 2% to the fourth and 32% to the second. One study showed that the average diameter of Morton's neuroma was 4.1 mm in the asymptomatic group versus 5.3 mm in the symptomatic group.

This condition is certainly not a neuroma as it is a degenerative condition rather than neoplastic due to fibrosis of the digital nerve. The diagnosis is primarily clinical, where there may be altered sensation and a dorsal bulge. Examinations, investigations and non-surgical treatment are the same as those used in a primary neuroma. The use of orthoses and footwear modifications is indicated for conservative treatment. For surgical treatment, dorsal and plantar approaches are used, each with their advantages and disadvantages. The dorsal incision should be extended proximally to observe the residual limb,

however sometimes exposure becomes difficult. The plantar approach provides better exposure for the nerve to be easily identified and resected, however the presence of painful scarring is notable. Other complications that may occur are atrophy, recurrence and chronic pain.

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CURRENT STATUS OF CSR (CORPORATE SOCIAL RESPONSIBILITY) PRACTICES BY ISLAMIC SARIAH BASED COMMERCIAL BANKS OF BANGLADESH

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ABSTRACT

The term CSR has developed from the voluntary choices of individual company to mandatory regulations at regional, national and international levels. In today's socially conscious environment, customers, employees and other stakeholders place a premium on working for and spending their money on businesses that prioritize CSR. This study has been conducted to know the present scenario of CSR (Corporate Social Responsibility) practices by Sariah based commercial banks in Bangladesh. Banking sector is the most important sector for any country. This sector is the life blood of the economy. Therefore practicing CSR by this industry is much more necessary. This paper aims to investigate that what level of CSR activities are practiced by the Sariah based commercial banks in Bangladesh.

KEYWORDS: *Bangladesh, Bank, CSR, Evolution, Expenditure, Principles, Annual Report.*

I. INTRODUCTION

The banking sector in Bangladesh has a long history of participating in many types of CSR initiatives, such as donations to philanthropic and benevolent organizations, city beautification projects, support of cultural and social events, etc. But, during the past fifteen years, there has been a significant increase in this activity as a result of the 2008 Bangladesh Bank Guideline, which advised banks to get more formally and formally involved in these operations. As banks are profit-driven businesses, it stands to reason that they would invest in industries that would either directly or indirectly increase their profit.

According to SRO No. 270-Ain/2010, which was issued by the government of Bangladesh on July 1, 2010, 22 CSR activities are eligible for a 10% tax rebate. Bangladesh Bank gave the banks instructions in December 2010 to set up a dedicated CSR desk to focus specifically on this issue. Bangladesh Bank began issuing an annual CSR evaluation report on banking in tandem in 2010. In 2011, the National Board of Revenue (NBR) of Bangladesh released Statutory Regulation Order (SRO), which exempted corporate spending on CSR operations from taxation. The regulatory agencies' actions have significantly increased the CSR activity of commercial banks in Bangladesh.

CSR is an organization's promise to properly manage the social, environmental, and economic impacts of its activities in line with expectations from the general public and stakeholder

groups. The sustainability tenets and CSR are closely related. CSR is a notion that has dominated company reporting in recent years. Every business has a CSR policy in place, and it yearly releases a report outlining its efforts. CSR is a self-policing business strategy that aids a firm in upholding its social obligations to the public, its stakeholders, and itself. Companies may be aware of the sort of influence they are having on all facets of society, including the economic, social, and environmental, by engaging in corporate social responsibility (CSR). CSR initiatives are a fantastic way to boost worker morale. CSR is important for a company's reputation, appeal to clients, staff, and investors, as well as for retaining top personnel and achieving total commercial success.

II. OBJECTIVES OF THE STUDY

The main objective of this study is to know about the current status of CSR practices of Sariah based commercial banks in Bangladesh. There are several particular objectives which are also given below:

- ❖ to study the concept of CSR;
- ❖ to focus on the major principles of CSR;
- ❖ to analyze the CSR expenditures of Sariah based commercial Banks of BD.

III. METHODOLOGY OF THE STUDY

Secondary data is the principal base of information for this study. SRO's issued by Bangladesh Bank, SRO's issued by NBR, Banks' websites, Website of DSE, periodicals, and annual



reports are used as the sources of secondary data for this study. Total number of listed commercial banks in Bangladesh is 34. Out of this 34 Shariah based commercial bank is 8. All of the Shariah based banks are taken into consideration. Time period is taken under consideration from the year 2016 to last published annual report of 2021.

IV. LITERATURE REVIEW

Corporate social responsibility has expanded dramatically over the past few decades, and there are currently many ideas, methods, and terminologies related to it (Garriga and Mele, 2004). CSR is currently a business concern for the corporate sector in Bangladesh. Many Islamic and conventional banks and financial organizations have conducted theoretical research relating CSR activities and financial success. Islamic banks are referred to as having a "social face" (Mashhour, 1996) because they assert that advancing social welfare and justice is just as vital to them as increasing their financial success. As a result, it is reasonable to anticipate that these banks will comprehensively address the social and moral issues of the society in which they operate. According to Islamic teaching, businesses should balance their individual rights and obligations with those they have to society, rather than limiting their goals to profit maximization alone (Williams and Zinkin, 2010, pp.519-533). According to Beekun and Badawi (2005, pp. 131–145), while Shariah safeguards a person's right to profit and the acquisition of goods and property, there are also laws and moral guidelines intended to safeguard the rights of society.

Since people and organizations are responsible for managing society's financial resources (Williams and Zinkin, 2010, pp. 519–533), good CSR practices must be integrated into their daily operations, embracing topics like responsible environmental practices and charitable giving regardless of the financial results. According to Friedman (1970, pp. 32–33; 122–126), social responsibility should not be the exclusive purview of governments, but should instead be shared by all members of society, including private citizens and businesses.

Business ethics, corporate ethics, corporate governance, socially responsible investment, environmental sustainability, and community development are just a few of the many topics which are covered by CSR (Das, 2012). Corporate citizenship, or CSR, is a term that describes the self-regulation of a company toward the integration of business culture. Research demonstrates that businesses may find a balance between their social and economic objectives (Masud, 2011). Beyond philanthropy and compliance, CSR focuses on how businesses communicate the social and environmental consequences of their economic decisions, as well as their interactions with all major influencers, including the consumer market, the supply chain, the local community, and the public policy sphere (Gray et al., 1987).

Islamic rules and teachings offer advice on every facet of human existence, both for the individual and for the entire society. Islam synchronizes with daily life and employment, and religion is not separate from financial, economic, and social endeavors. Islamic law forbids economic exploitation because it seeks to establish social justice (Kamali, 2002).

Living in peace with one's environment and one's community go hand in hand with social justice in Islam. Islamic banking takes pride in being a financial system that considers the sometimes underappreciated advantages of social justice and is not only concerned with profit. All commercial banks in Bangladesh are now investing in CSR initiatives in areas like "Humanitarian & Disaster Relief," "Education," "Health," "Sports," "Arts & Culture," and "Environment," with all other initiatives falling under the heading "Others."

According to studies by Vanhamme and Grobden (2004) and Lai, Chiu, Yang & Pai (2007), CSR practices have also been shown to lessen the risk of brand damage in a product-harm crisis, and consumers are more likely to believe that a company is less at fault for a crisis when it has a strong CSR reputation (2010). If the firm delays responding to crises or fails to move quickly when one occurs, its profitability may also suffer, in which case it may resort to CSR programs and policies. The development of critical customer trust and product knowledge might arise through CSR.

Nilson and Rahmani (2008) listed the advantages of implementing CSR as improving reputation, increasing employee satisfaction and loyalty, extending product life cycles, improving risk management due to a wider audience, innovation improvements, a higher likelihood of attracting investments, supporting marketing objectives, contributing to general business goals, lowering operating costs, lowering regulatory oversight, and forging strong relationships with the community. According to McAdam and Leonard (2003), CSR serves as an ethical anchor, and the method for addressing the need for an ethical anchor is to take stakeholder satisfaction into account. Internal organizational groups like employees, managers, and shareholders are examples of stakeholders. External organizations like society and pressure groups are examples of stakeholders.

Organizations work to attain all four of the closely connected aspects of the CSR concept—economic, legal, ethical, and philanthropic—at all times. Based on these elements, a company should "strive to earn a profit, respect the law, be ethical, and be a decent corporate citizen" in order to be considered socially responsible (Carroll, 1991).

Stakeholder theory offers a persuasive defense of the motivation for businesses to invest in CSR initiatives (Argandona, 1998). According to the stakeholder theory, an organization's ability to survive and succeed depends on its ability to address the



requirements of its many stakeholders while also achieving its economic (profit maximization, for example) and non-economic (corporate social performance) goals.

The behavior shift within businesses must have a significant impact. Implementing CSR is one of the best ways to boost employee morale, output, and loyalty, which is reflected in their work. Companies might so easily accomplish their organizational aim. Second, businesses benefit from operational efficiency and cost savings achieved via recycling, clever waste management techniques, effective resource management, and human resource management. Finally, the supply chain connection is successful and efficient when it is based on clear norms of behavior and standards. Moreover, CSR may be utilized to increase capital access by being transparent and managing social and environmental concerns well (Tolhurst, 2007). (Ali, Rehman, Ali, Yousaf & Zia, 2010).

V. EVOLUTION OF CORPORATE SOCIAL RESPONSIBILITY (CSR).

CSR ideas were first created almost a century ago. The 1953 release of Howard Bowen's seminal book *Social Responsibilities of the Businessman* served as the impetus for the current age of CSR. When he asked, "What duties to society may businesspeople legitimately be expected to assume?" Bowen provided the framework for CEOs to consider their roles in society. Although the 1950s were a relatively calm decade, it was clear that business was gaining influence, and the concept of social responsibility expanded in part as a result. During this early time, CSR was sometimes called to as social responsibility (SR), and Bowen's first interpretation of this was that business people had a duty to seek strategies, choices, and behaviors that were deemed desirable by society.

Business giving changed throughout the 1960s from highly personalized philanthropy led by industrial tycoons funding their favorite causes to more organized giving programs serving corporate goals. At the time, Dayton Hudson in Minneapolis (later known as Target Corporation) and Cummins Engine Co. in Columbus, Indiana, were in the forefront of businesses devoted to corporate philanthropy. These businesses gained notoriety for their "Five Percent Clubs," wherein they donated 5% of their pre-tax income to charitable organizations. Control Data Corporation (CDC) also gained significant notoriety at this time for its community relations programs. Subsequently, community relations advances were continued by IBM and Xerox. Several businesses started to take action in reaction to social movements on the fronts of consumer rights, environmental preservation, and civil rights, although this development took place gradually.

CSR made strides in a number of areas in the 1970s. First, the establishment of the Environmental Protection Agency (EPA), Consumer Product Safety Commission (CPSC), Equal

Employment Opportunity Commission (EEOC), and Occupational Health and Safety Administration in the early 1970s marked the federal government's most significant response to the issues of the 1960s (OSHA). Due to the fact that these new laws addressed and institutionalized the obligations of business in the context of social movements, they were known as social regulations.

Businesses entered an era that might be called "managing corporate social responsibility" in the 1970s as they started to formalize and institutionalize their responses to social and public issues, whether out of enlightened self-interest, in response to regulatory requirements, or in response to activists' protests.

The CSR movement gained more legitimacy when Ronald Reagan was elected president in 1980 because Reagan encouraged businesses and private efforts to solve social issues. Reagan did make requests for volunteers, and he was more interested in the private sector than in governmental assistance for local projects. Reagan's choice to stress that industry, not government, should be the driving force behind social responsibility was a historic one. CSR stable over this decade despite the focus on economic expansion.

Three significant trends—globalization, institutionalization, and strategic reconciliation in CSR—that have persisted since the 1990s have developed. CSR techniques spread, grew more organized, diversified, and thoroughly ingrained into company processes.

VI. THE PRINCIPLES OF CSR

To encompass all CSR work, three fundamental CSR concepts must be taken into account (Crowther, & Aras, 2008).

Sustainability

Sustainability is concerned with the way current actions are chosen, since they have an impact on the choices that will be accessible in the future. When resources are used up now, they are no longer helpful later on. This argument is especially important if the resources are limited in supply. Because they are limited in supply and cannot be replenished, raw resources of an extractive character like coal, iron, or oil cannot be utilized indefinitely. Alternatives will consequently be required in the future to implement the features that these resources provide. These resources are used in production and manufacturing enterprises. The cost of the remaining resources also tends to rise as a result of resource depletion, which may happen at some point in the very distant future yet is of more immediate concern. As a result, in this way, the organizations' operating costs tend to rise.

Accountability

In order to be held accountable, a company must acknowledge how its activities impact the outside world and accept responsibility for those impacts. So, this idea suggests quantifying the results of activities made, both inside and



outside the company. More particularly, the idea suggests that all persons impacted by the activities be informed of such quantifications. This indicates that the organizations must inform external stakeholders about the results of their operations and how those operations affect the roles of the stakeholders. This idea suggests that the organization understands that it is a member of a larger social network and that it owes obligations to that network as a whole rather than simply to its owners. Along with this acknowledgment of responsibility, there also has to be an understanding that those external stakeholders have the ability to influence the organization's actions and decision-making processes. Thus, accountability calls for the creation of acceptable environmental performance metrics and the reporting of organizational behavior.

Transparency

When decision-making procedures or laws pertaining to the goodwill and welfare of the organization and its members are being developed by stakeholders both inside and outside the organization, care must be taken to ensure that the members are aware of them. Members will be able to adhere to these requirements effectively if they are made apparent to them. Transparency must also be shown in how tasks and activities are carried out. The main characteristic of all laws, measures, processes, regulations, tasks, and activities should be

transparency, and they must all be in conformity with the aims and objectives of the business.

As a general rule, transparency entails that relevant facts are not concealed in the organization's reporting and that the external consequence of its activities may be determined from that information. By using the data supplied by the organization's reporting methods, everyone should be able to see all the repercussions of the organization's actions, including any external implications. Because external consumers of such information are ignorant of the background information and knowledge that internal users have access to, transparency is especially important to them. Hence, transparency may be considered as a natural progression from the other two principles. It can also be understood as an integral component of the process of recognizing organizational accountability for its activities with regard to the outside world and of handing over authority to external stakeholders.

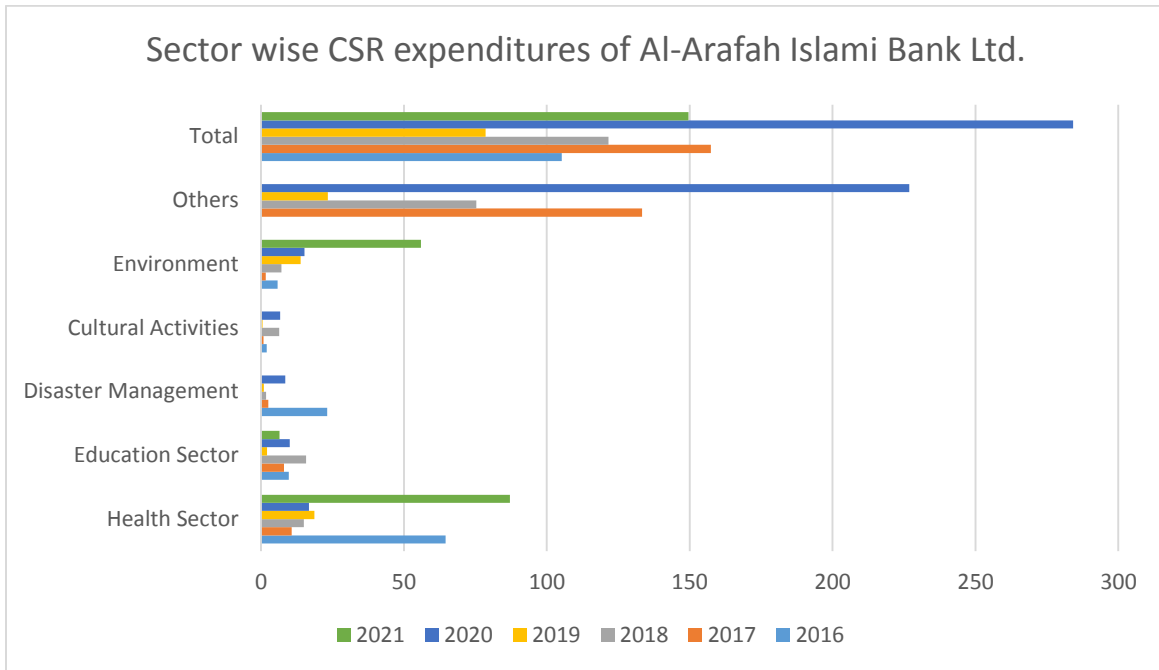
VII. ANALYSIS

1. CSR status of Al-Arafah Islami Bank Ltd:

Table -I: Sector wise CSR expenditures of Al-Arafah Islami Bank Ltd.
Amount in Million BDT

Particulars	2016	2017	2018	2019	2020	2021
Health Sector	64.60	10.80	15.03	18.71	16.81	87.10
Education Sector	9.70	8.10	15.83	2.13	10.07	6.50
Disaster Management	23.20	2.60	01.83	0.98	8.51	0.00
Cultural Activities	2.00	0.90	6.36	0.53	6.68	0.00
Environment	5.80	1.70	7.13	13.86	15.26	56.00
Others	0.00	133.30	75.39	23.42	226.81	0.00
Total	105.30	157.40	121.57	78.62	284.14	149.60

Data Source: Annual Report of Al-Arafah Islami Bank Ltd



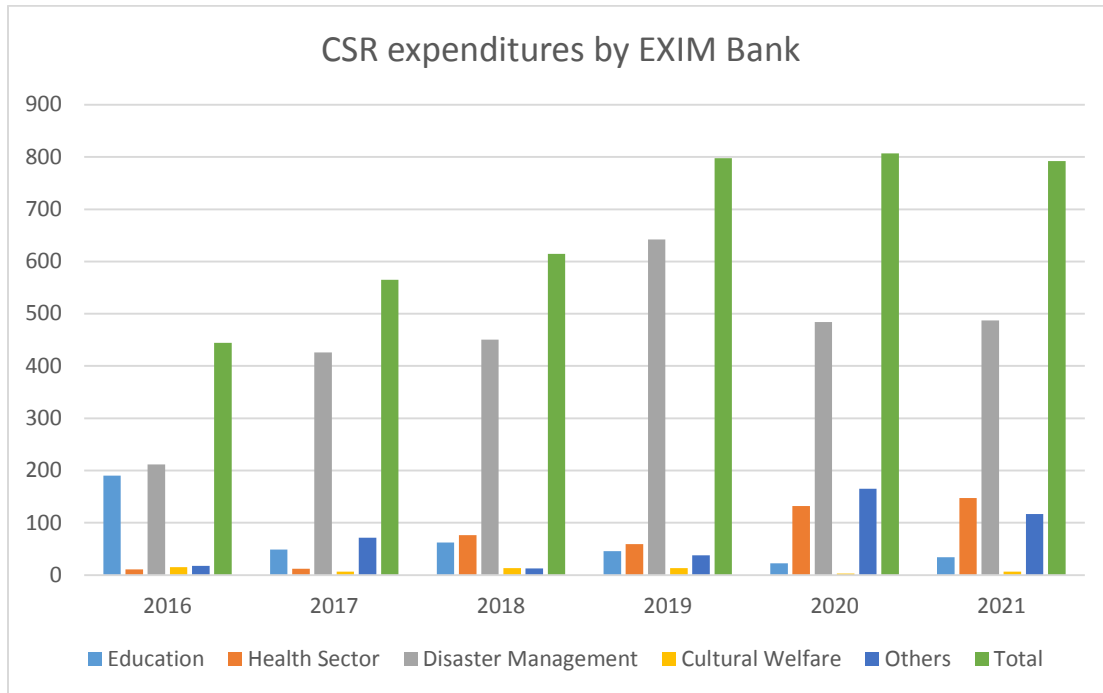
In the graph it is seen that in the year 2020 Al Arafah Islami Bank LTD has been incurred the highest expenditure among the last few years. The bank may take initiatives for the improvement of cultural activities.

2. CSR expenditures of Export Import (EXIM) Bank Ltd:

Table -II: Sector wise CSR expenditures of Export Import (EXIM) Bank Ltd.
 Amount in Million BDT

Particulars	2016	2017	2018	2019	2020	2021
Education	190.0	48.7	62.4	45.8	22.6	33.8
Health Sector	10.5	11.9	76.0	59.3	132.2	147.5
Disaster Management	211.8	426.1	450.4	642.3	484.1	487.1
Cultural Welfare	14.9	6.7	13.3	13.1	2.9	6.7
Others	17.4	71.6	12.5	37.4	165.1	116.9
Total	444.6	565.0	614.6	797.9	806.9	792.0

Data Source: Annual Report of EXIM Bank Ltd



EXIM bank has given the priority in disaster management and incurred highest expenditure in the year 2020.

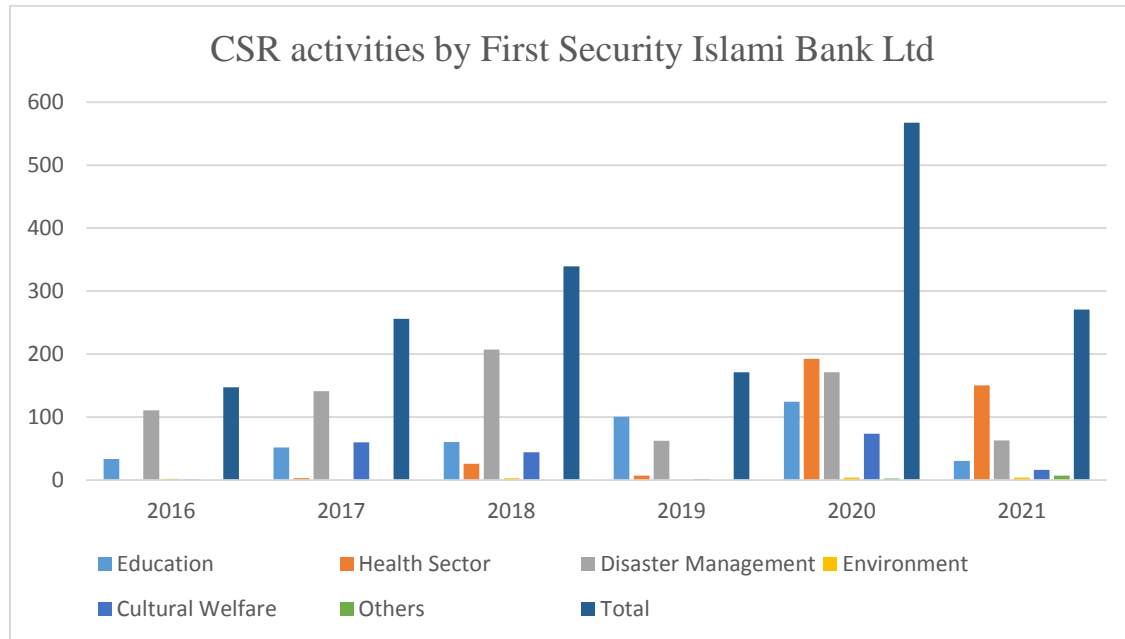
3. CSR expenses of First Security Islami Bank Ltd:

Table -III: Sector wise CSR expenditures of First Security Islami Bank Ltd.

Amount in Million BDT

Particulars	2016	2017	2018	2019	2020	2021
Education	33.47	51.5	60.10	100.3	124.5	30.50
Health Sector	0.10	2.8	25.56	6.76	192.27	150.38
Disaster Management	110.52	140.97	206.91	62.4	171.00	62.60
Environment	2.00	0.95	2.79	0.5	4.00	4.00
Cultural Welfare	0.98	59.72	44.00	1.3	73.38	16.00
Others	0.00	0.00	0.00	0.00	2.46	7.14
Total	147.07	255.94	339.36	171.26	567.61	270.62

Data Source: Annual Report of First Security Islami Bank Ltd



In the year 2020 and 2021 First Security Islami Bank Ltd has incurred the maximum CSR expenditures in the health sector.

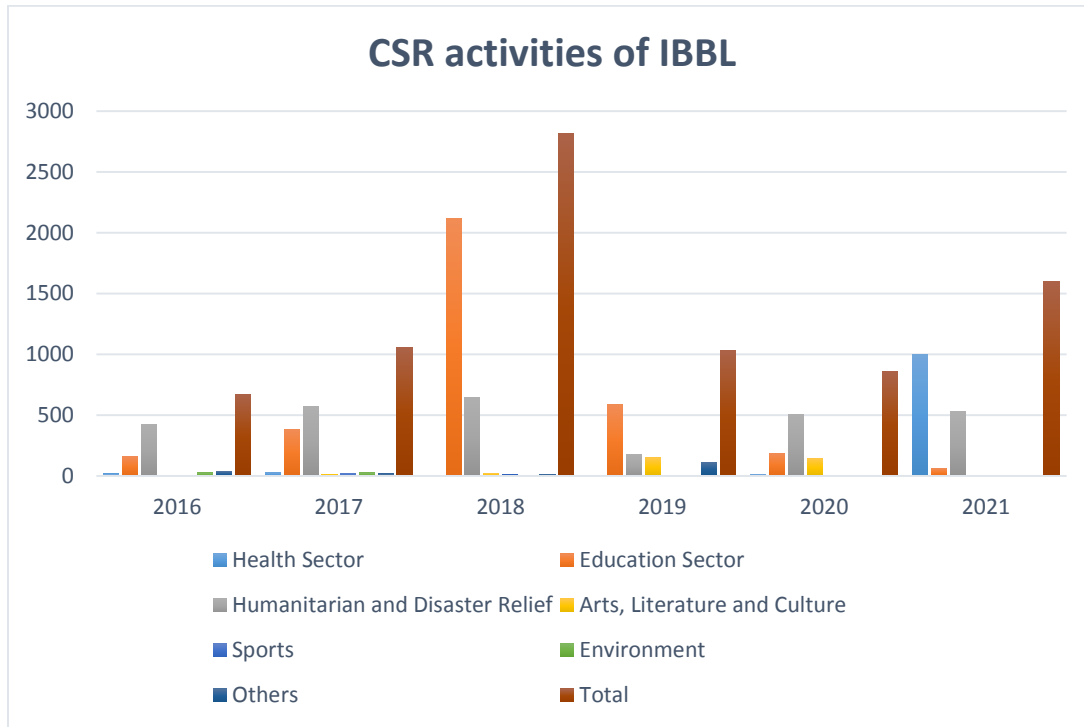
4. CSR practices of Islami Bank Bangladesh Ltd (IBBL):

Table -IV: Sector wise CSR expenditures of Islami Bank Bangladesh Ltd.

Amount in Million BDT

Particulars	2016	2017	2018	2019	2020	2021
Health Sector	16.84	28.97	1.75	0.86	15.75	1000.74
Education Sector	161.00	382.82	2118.57	585.66	186.91	64.99
Humanitarian and Disaster Relief	425.95	568.46	647.72	180.04	505.79	528.01
Arts, Literature and Culture	0.12	11.50	22.59	150.00	145.37	4.26
Sports	0.00	21	8.20	0.00	0.80	0.00
Environment	26.39	26.40	1.05	0.45	0.00	0.43
Others	40.47	18.62	13.20	114.14	0.62	1.91
Total	670.77	1057.77	2813.07	1031.15	855.24	1600.34

Data Source: Annual Report of IBBL



Highest expenditures was in 2018. In 2021 maximum expenditure on education.

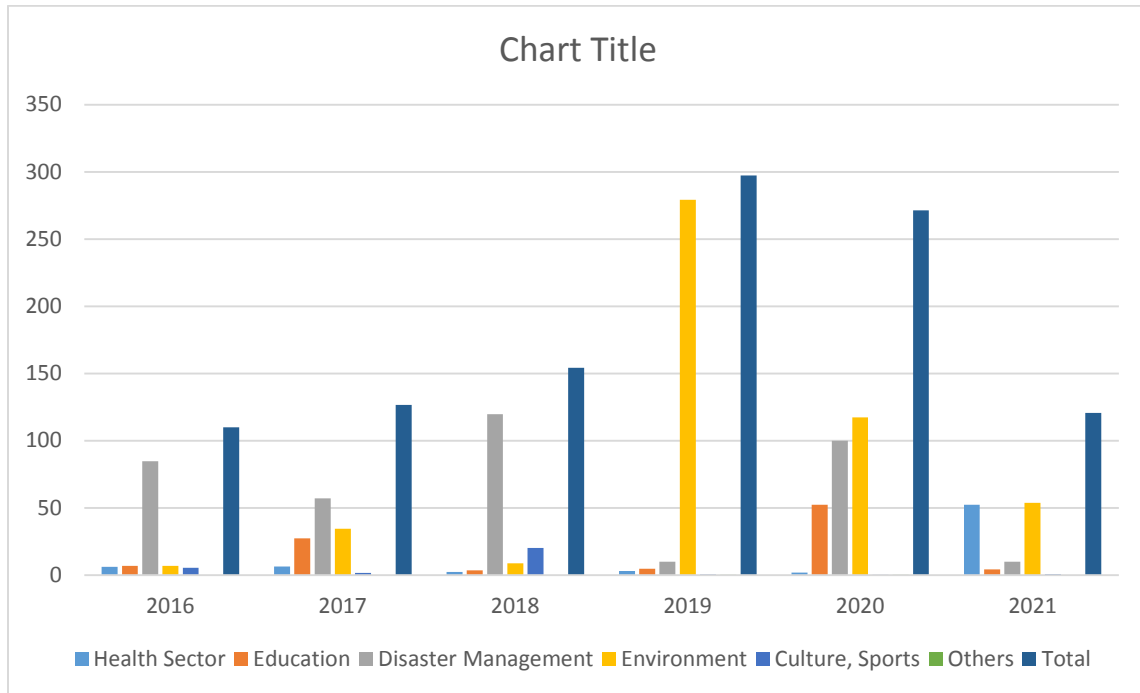
5. CSR activities of Social Islami Bank Ltd:

Table -V: Sector wise CSR expenditures of Social Islami Bank Ltd.

Amount in Million BDT

Particulars	2016	2017	2018	2019	2020	2021
Health Sector	6.14	6.32	2.26	2.97	1.70	52.30
Education	6.86	27.34	3.39	4.71	52.19	4.19
Disaster Management	84.75	56.97	119.75	10.00	100.00	9.78
Environment	6.81	34.42	8.69	279.18	117.42	53.77
Culture, Sports	5.41	1.62	20.12	0.41	0.05	0.50
Others	0.00	0.00	0.00	0.004	0.048	0.00
Total	109.97	126.67	154.21	297.274	271.408	120.54

Data Source: Annual Report of SIBL



Total expenditure is maximum in the year 2019 and main focus of the bank is on environment.

6. CSR expenditures of Shahjalal Islami Bank Ltd:

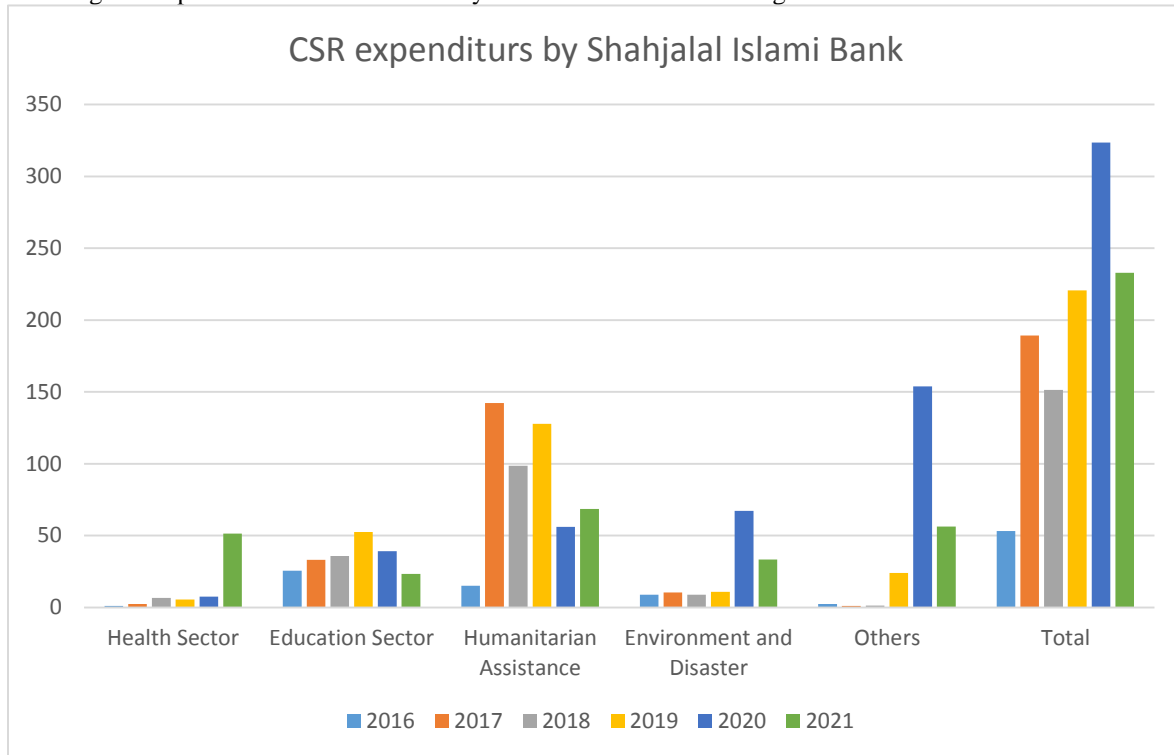
Table -VI: Sector wise CSR expenditures of Shahjalal Islami Bank Ltd.
 Amount in Million BDT

Particulars	2016	2017	2018	2019	2020	2021
Health Sector	1.00	2.36	6.62	5.60	7.46	51.48
Education Sector	25.65	33.20	35.82	52.40	39.05	23.31
Humanitarian Assistance	15.2	142.18	98.65	127.84	56.08	68.51
Environment and Disaster	8.85	10.45	8.85	10.81	67.14	33.39
Others	2.5	1.15	1.35	23.93	153.75	56.24
Total	53.2	189.34	151.29	220.58	323.48	232.93

Data Source: Annual Report of Shahjalal Islami Bank Ltd



Highest expenditure is incurred in the year 2020. Concentration is given on humanitarian assistance.

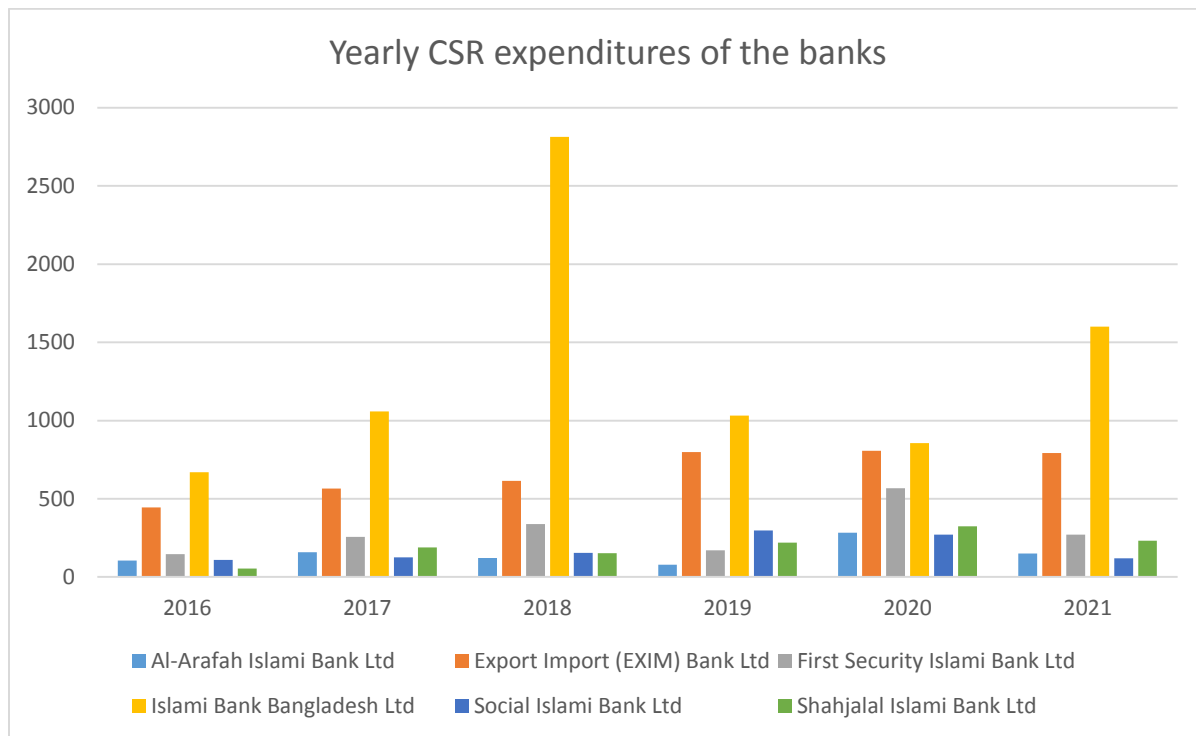


7. Comparison among the banks under considerations:

Table -VII: CSR expenditures of Banks in the stipulated time period:
 Amount in Million BDT

Name of the Banks	2016	2017	2018	2019	2020	2021
Al-Arafah Islami Bank Ltd	105.30	157.40	121.57	78.62	284.14	149.60
Export Import (EXIM) Bank Ltd	444.6	565.0	614.6	797.9	806.9	792.0
First Security Islami Bank Ltd	147.07	255.94	339.36	171.26	567.61	270.62
Islami Bank Bangladesh Ltd	670.77	1057.77	2813.07	1031.15	855.24	1600.34
Social Islami Bank Ltd	109.97	126.67	154.21	297.274	271.408	120.54
Shahjalal Islami Bank Ltd	53.2	189.34	151.29	220.58	323.48	232.93

Data source: Annual Report of the Banks



In the graph it has been observed that Islami Bank Bangladesh Ltd (IBBL) incurred the maximum amount in CSR activities in each year comparing with the other banks and in the year 2018 the expenditure was in the highest position.

VIII: FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

Findings: Major findings of the research paper are summarized below:

- All of the banks have incurred maximum expenditures on education, health, disaster management and environment.
- Expenditures on sports and culture is low.
- Some of the banks have not disclosed CSR data clearly.
- Total expenditures of the banks in CSR is low.
- CSR expenditures of the banks fluctuates significantly from year to year.

Recommendations: Based on the findings the following recommendations are made:

- Banks may increase their CSR expenditures gradually and maintain a continuous positive growth.
- Expenditures on sports and cultures must be increased so that young generations may involve in sports and cultural activities.
- Banks may increase their CSR involvement in the educational institutions especially on hygienic affairs for females.
- CSR expenditures data should be disclosed clearly.

Conclusions

The idea of corporate social responsibility (CSR), particularly in commercial enterprises, has gained prominence. Every company

has a CSR policy in place, and each one generates an annual report outlining its efforts. Every company is able to distinguish between its actions that are responsible to the public and those that are not. All CSR operations should take sustainability, responsibility, and openness into account, which are the three basic CSR concepts. Understanding how CSR contributes significantly to the successful growth and development of communities is essential to comprehending the notion of CSR. Changes, well-being, the easing of societal issues, and other factors are among those that must be taken into account within communities.

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EFFECTS OF LONGER OF DUTY HOURS ON WORK LIFE BALANCE OF STAFF WORKING IN DEPARTMENT OF MUMBAI POLICE

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ABSTRACT

The duty hours or working hours is an important variable to understand the work life balance concept. They are together dependent on each other. If one factor changes then it can get impacted on the other factor. Here, the study considered the duty are performed by police employees in the department. Long duty hours are always a challenge for the police employee while performing their duties. The researcher tried to find out the duty of hours patterns, the work life balance and its relation in the present stud. The study is undertaken on the police employees especially the police constable working in Mumbai area. Total 60 respondents from different Police stations of Mumbai. For data analysis SPSS software is used with Krushal Wallis and frequency distribution for testing of hypothesis. The study is concluded with a duty hour one of the important factors in deciding walk life balance of police. The department has to make a provision for reduction of duty hours of police employees.

KEY WORDS: Police constables, Longer duty hours, Work life balance.

INTRODUCTION

The Mumbai police is a vital sector for the development and protection of the country. It is headed by Commissioner of Police; head office is in CSMT(Mumbai). Then in the department other offices like Joint commissioner and other departments heads are available but this study is undertaken on the employees of the police who are existed in the lower-level management. It includes Police constables, Police Naik, Police head constables and Assistant Police Inspector.

The researcher has tried to study the how the pattern of working of police in the department at lower level, their actual hours of working, whether they get effected with the longer working hours, how is their work life balance, the relation of working hours on work life balance as well as on performance of the work.

Work life balance is an important factor in an individual's life. Every person the concept of work life balance is different. It depending on the organization structure, working hours, working pattern, shifts of works and many other factors. Some individual's take too much stress about the work life balance and they missed the enjoyment of life.

REVIEW OF LITERATURE

Lele Deepti (2014): The study is about the quality of work life balance of police constables. Other than their normal routine work they have assigned in VIPs duty, guard duty, clerical court work also at a same time they are getting less

welfare facility of housing and medical facilities. Total 630 police constable were considered in the study who have been completed their service range from 5 years to 20 years from different Police stations of Pune. purposive sampling technique is used for data collection. Quality of work life balance is depended on the wellness. In the present study wellness covers physical, welfare facilities, spirituality economic conditions and economic factor. The study found that the police department provide training on stress management, communication skills, team building. The study is concluded that there is requirement of professional counselling redevelopment of police quarters as well as inclusion of more hospitals for the health of police constable.

Yawalkar Vivek Sonawane, Madhulika (2017)- is about impact of working hours on work performance of women police working in Jalgaon Police department. The study is also covered the impact of working on the hell of police employees, how working impact on personal and social factors. This present study is basically on the impact of working hours on the performance of police constable. 100 police women constables were studied with testing of hypothesis through chi square method. Study is concluded that there is no significant relationship between working hours and the quality of work performed by police employees.

OBJECTIVE OF THE STUDY

1. To study the demographic profile of Police Constables



2. To study the various factors that influence on the work life balance of police working in Mumbai police department.
3. To study the relationship of long working hours on work life balance of police constables.
4. To provide suggestion on duty hours to improve work life balance challenges.

HYPOTHESIS OF THE STUDY

Hypotheses 1: There is impact of Age (individual’s personal variable) of Police Constables on Working hours (work-life balance factors).

There is no impact of Age (individual’s personal variable) of Police Constables on Working hours (work-life balance factors).

Hypotheses 2: There is impact of organization variable (No. of years of experience) of Police Constables on Working hours (work-life balance factors).

There is no impact of organization variable (No. of years of experience) of Police Constables on Working hours (work-life balance factors).

Ho is Null hypothesis and H1 is Alternative hypothesis. If There is no relationship between of personal (Age) and organizational variables (No of years of work experience in police dept) on work life balance, the null hypothesis is accepted (Ho), else null hypothesis will be rejected and H1 i.e. alternative will be accepted.

ANALYSIS AND INTERPRETATION OF DATA

1. Demographic variables:

1.1 Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	96	96.0	96.0	96.0
	Female	4	4.0	4.0	100.0
	Total	100	100.0	100.0	

(Source: Primary data)

Table 1.1 is about the gender distribution. Total Population for the study is 100. Out of which, 96 are male police constables and 4 are female constables.

1.2 Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-30 years	4	4.0	4.0	4.0
	31-40 years	28	28.0	28.0	32.0
	41-50 years	26	26.0	26.0	58.0
	more than 50 years	42	42.0	42.0	100.0
	Total	100	100.0	100.0	

(Source: Primary data)

The above tables 1.2 is regarding the age of the police constables of working in western suburbs of Mumbai. Majority of the police constables are in the age group more

STATEMENT OF THE PROBLEM

The police department is always known for 24*7 working hours. It is one of the prestigious service sectors in the country. Work like balance is one of the important factors in case of police department. The logo of Mumbai Police is itself says that Sadarakshanai Khalanigranaya which means protecting the citizens from the evil. Police employee are always available for the protection of the citizen respective of their duty hours. They work more than 12 hours in a day. If out of 24 hours in a day they are spending 12 to 14 hours in a duty, around 1 hours to reach home to police station and 7 hours of sleep then almost 1-2 hours left from their schedule to spend on the personal things and for their family members. Balancing this work and life together due to hectic schedule and longer duty hours is always a biggest challenge for them. Therefore, the researcher has undertaken the research to find out how the impact of working hours affects on work life balance of police employees.

RESEARCH METHODOLOGY

Research has been conducted on primary and secondary data, Primary data consists:

1. Structured Questionnaire - Questionnaires were circulated to the Police constables by using convenience sampling.
2. Observation- Conducted Personal observation on Police constables working in Police stations of Mumbai.

Secondary data consists

1. Various Articles and journals related to the topic
2. Various websites

than 50 years followed by 31-40 years. Age is important factor in deciding the work life balance.



1.3 Marital status					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unmarried	2	2.0	2.0	2.0
	Married	98	98.0	98.0	100.0
	Total	100	100.0	100.0	

(Source: Primary data)

The table 1.3 is about Marital status of the police constables. Major contribution in the study is the most of police constables were married i.e., 98%.

1.4 Do you have Children?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	97	97.0	97.0	97.0
	No	3	3.0	3.0	100.0
	Total	100	100.0	100.0	

(Source: Primary data)

Table 1.4 shows the weather police employees are having children. Almost 97% police constables are having children.

No of Children are also an important element in deciding the work life balance.

1.5 Family Type					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Joint	92	92.0	92.0	92.0
	Nuclear	8	8.0	8.0	100.0
	Total	100	100.0	100.0	

(Source: Primary data)

Table 1.5 is about the family type of police constables. Majority 92% police constables are stays in Nuclear family and only 8% are from Nuclear family.

1.6 Income					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2-5 lakhs	70	70.0	70.0	70.0
	5-10 lakhs	30	30.0	30.0	100.0
	Total	100	100.0	100.0	

Table 1.6 is about income of the police constables. 70% of the police constables are in the income range of 2-5 lakhs rupees. Rest 30% are in the income range of 5-10 lakhs rupees.

Income is also one of the important factors is deciding the work life balance.

1.7 No of years of experience					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5 years	3	3.0	3.0	3.0
	6-10 years	7	7.0	7.0	10.0
	11-15 years	29	29.0	29.0	39.0
	16-20 years	10	10.0	10.0	49.0
	more than 20 years	51	51.0	51.0	100.0
	Total	100	100.0	100.0	

(Source: Primary data)

Table 1.7 indicates the no of years of experience in the police organization. Majority of the police constables 51% are

having an experience of more than 20 years followed by 29% are in the age group of 11-15 years.



1.8 Working hours					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	8 Hours	5	5.0	5.0	5.0
	8-10 hours	7	7.0	7.0	12.0
	10-12 hours	41	41.0	41.0	53.0
	more than 12 hours	47	47.0	47.0	100.0
	Total	100	100.0	100.0	

(Source: Primary data)

Table 1.8 is about the working hours of Police constables. Almost 47% police constables agreed that they have to work on duty for more than 12 hours followed by 41% of the

employees work for more than 10-12 hours. Working hours is essential criteria for the measurement of work life balance.

1.9 Shift changes					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no changes	33	33.0	33.0	33.0
	In a week	60	60.0	60.0	93.0
	within 1 months	4	4.0	4.0	97.0
	within 6 months	3	3.0	3.0	100.0
	Total	100	100.0	100.0	

(Source: Primary data)

Table 1.8 is about the pattern of shift change of police employees. Majority of the police employee's duty changes in a week i.e. 60% police people work with day/night schedules.

Hypotheses 1:

H₀ - There is impact of Age (individual's personal variable) of Police Constables on Working hours (work-life balance factors).

H₁ - There is no impact of Age (individual's personal variable) of Police Constables on Working hours (work-life balance factors).

TESTING OF HYPOTHESES

Test Statistics ^{a,b}							
	Proper division of duties	Provision of working hours	No proper sleep due to busy schedule	Constantly work under strain	No time for workout	Quality time With family	Suffering from health issues due To duty hours
Chi-Square	12.570	18.128	4.586	8.187	5.534	8.293	17.851
Df	3	3	3	3	3	3	3
Asymp. Sig.	.006	.000	.205	.042	.137	.004	.000
a. Kruskal Wallis Test							
b. Grouping Variable: Age							

Kruskal – Wallis Non - Parametric Test Statistics

The above table shows that no proper sleep due to busy schedule and No time for workout of the police have p-value greater than the significance value of 0.05 and remaining attributes are less than significance value. Since, out of seven only two attribute is not having significance difference and rests are having significance difference. Therefore, the researcher can reject the null hypothesis and conclude that there is no impact of Age (individual's personal variable) of Police Constables on Working hours (work-life balance factors).

Hypotheses 2:

H₀ - There is impact of organization variable (No. of years of experience) of Police Constables on Working hours (work-life balance factors).

H₁ -There is no impact of organization variable (No. of years of experience) of Police Constables on Working hours (work-life balance factors).



Test Statistics ^{a,b}							
	Proper division of duties	Provision of working hours	No proper sleep due to busy schedule	Constantly work under strain	No time for workout	No Quality times With family	Suffering from health issues due To duty hours
Chi-Square	2.026	.942	10.602	2.120	5.868	11.482	1.681
Df	3	3	3	3	3	3	3
Asymp. Sig.	.567	.815	.014	.548	.118	.009	.641
a. Kruskal Wallis Test							
b. Grouping Variable: No of years of experience							

Kruskal – Wallis Non - Parametric Test Statistics

The above table shows that No quality time with family and no proper sleep due to busy schedule have p-value less than the significance value of 0.05 and remaining attributes are greater than significance value. Since, out of seven, only two attribute is having significance difference and rests are not having significance difference. Therefore, the researcher can accept the null hypothesis and conclude that there is impact of organization variable (No. of years of experience) of Police Constables on Working hours (work-life balance factors).

LIMITATIONS OF THE STUDY

The Present research study is indicating of how longer working hours affects on the work life balance of police constables and other demographic factors about work life balance of Police constables working in Mumbai. The current study is conducted on only police constables. The other police employees who are working in higher level are excluded from the study.

FINDINGS FROM THE STUDY

This research conducted on working hours and impact on work life balance of police constables. The maximum 96% are male police constables and 4% are female constables.

In case of Age of the police constable’s majority of the police constables are in the age group more than 50 years followed by 31-40 years. Most of police constables were married i.e., 98%.

Almost 97% police constables are having children. No of Children are also an important element in deciding the work life balance. Majority 92% police constables are stays in nuclear family and only 8% are from Nuclear family. 70% of the police constables are in the income range of 2-5 lakhs rupees. Rest 30% are in the income range of 5-10 lakhs rupees. Income is also one of the important factors is deciding the work life balance. Majority of the police constables 51% are having an experience of more than 20 years followed by 29% are in the age group of 11-15 years. Almost 47% police constables agreed that they have to work on duty for more than 12 hours followed by 41% of the employees work for more than 10-12 hours. Working hours is essential criteria for the measurement of work life balance. Majority of the police

employee’s duty changes in a week i.e., 60% police people work with day/night schedules.

SUGGESTIONS

Duty hours can be reduced to 8 hours. Reduction in duty hours results in reduction in death rate, family disputes. Proper concessions for women regarding duty hours. It will improve investigation work. Police people get a time for their time. Also, proper human resource management is required, Latest technology should be provided to complete task on time. Work should be allotted to different people instead of same work to a particular individual. Biometric has to set up in the department. 8 hours of duty will be beneficial for mental and physical health of police constables. Proper leaves should be given to the police constables.

CONCLUSION

This study states the results of impact of working hours on the Work life balance of police constables. While collecting the data it has been studies that majority of police constables are demanding for 8 hours duty as the longer duty hours are affecting on their work and life together. Longer duty hours are creating the problems on the mental and physical life of police constables. Duty hour one of the important factors in deciding walk life balance of police. The department has to make a provision for reduction of duty hours of police employees. Only recruiting the employees is not important but at the same time proper working hours should be provided to all the police employees including at higher to lower level.

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THE PHENOMENON OF TRANSTERMINOLOGY IN COMPUTER AND INTERNET TERMS

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ABSTRACT

Transterminiologization can occur due to the need to name a large number of objects using limited words in the formation of terms. In addition, the emergence of various scientific and technical fields contributes to the emergence of transterminiologization. Computer and Internet terminology does not differ from other system of terms according to its function, the main function of its units is the nomenclature of concepts related to the computer field and the Internet. The term transterminiologization clearly reflects the essence of this phenomenon. This means that a terminological unit moves from one terminological system to another with various changes in semantics. The phenomenon of transterminiologizing is characteristic of all field terminology.

KEY WORDS: *transterminiologization, terminologicalization, term system, nomenclature, computer and internet term, term nature, symbol*

In the period of scientific and technical development, the connection between the lexical aspect of the language and the activity of the society is shown. Terminology, like other branches of linguistics, deals with the study of the most relevant issues in language. In all the works devoted to terminology, the compounds that represent certain concepts of this or that field and mainly perform the nominative function are considered as terms. The terminological lexicon is absorbed into the general literary language, while the process of terminization of the generally accepted lexicon takes place. According to G.O. Vinokur, "...the characteristic feature of terms is that they do not appear spontaneously in the language, but their necessity is created only in the understanding" [1, 164].

Computer and Internet terminology is considered one of the most rapidly developing areas of scientific knowledge, its terminology is constantly evolving and is being enriched with new terms at a high speed. Because, firstly, terminology is "... a set of special words related to science, art, author or social object", and secondly, it is also a means of communication within a special language [2, 132].

Since language is a living and dynamic phenomenon, and since the term is an element of this language, it is logical to expect that all kinds of linguistic processes that interfere with its proper understanding will be manifested in the term, because "terms, being words, are not alien to any linguistic phenomenon" [3, 9]. In this regard, researchers from the linguistic point of view are faced with a number of difficulties, the elimination of which will help to quickly create an organized terminology system.

The emergence of activities related to the use of new methods of researching field terminology in linguistics makes the study of computer and Internet terms the task of defining its theoretical foundations. "The reflection of any process that occurs in society is first expressed in terminology or is

manifested as a result of transformational changes of certain terms" [3, 9].

It should be noted that today there is no generally accepted definition for the term that can reflect its essence and all typological types of terms. If a conclusion is drawn from terminological studies, it can be seen that there is no such vague unit as the term itself.

"A term is a word (or phrase) of a special field of application, which is the name of a special concept and requires definition" [4, 172]. "A term is a word or a lexicalized phrase that requires a definition to determine its significance in the system of relevant concepts" [5, 142]. "Terms are special words, which are limited to their particular purpose; these are words that tend to express concepts clearly and to be unambiguous as names of things" [6, 78]. "The term is considered a part of the vocabulary and is a specific name and definition of lexical units of a specific science and field" [7, 61]. "A term is a subordinate phrase formed on the basis of a specific word or noun, which expresses a professional concept and is designed to meet the specific needs of communication in a specific (scientific, technical, production, management) profession" [8, 271].

Terminologist scientist, V.M. According to Leychik, "...a term is a lexical unit of a certain language intended for special purposes, and means a general - concrete or abstract concept of the theory of a certain special field of knowledge or activity" [9, 67]. This definition fits the focus of our research. This is because this definition reflects the special character of the term, in which the term appears as an element of a specific term system, the term is a component of natural language. According to the scientist, the term is considered a lexical unit of a specific language and represents general, specific or abstract concepts in the science and activities of specific and special fields [10, 34].



The term is considered as a multifunctional unit, since it can perform several functions at the same time. The analyzed lexical subsystem is a formed layer of specialized words and phrases, which determines the uniqueness of its structural and semantic organization.

In our opinion, a term is a symbol used to name a special concept, which in turn is the object and subject of reality. Therefore, the meaning of a word-term corresponds to a specific concept in terms of size, and determining the meaning of a term means defining a specific concept through its signs.

Systematicity is one of the most important features of terminology, and the existence of this feature has not caused controversy among linguists. This is a rare case. In the work of many terminologists, the term is considered from the point of view of the system, in which the term is considered as a functional component of this system [11, 194]. After all, this definition of the term first of all shows the systemic nature of the term and its ability to function within a certain system, in this definition it is observed that the author follows a functional approach in understanding the term.

We will try to explain this feature of the term in detail. The systematicity of the term distinguishes it from the word in common usage, and systematicity can be defined as the property of "forming a conceptual system of authorship" [13, 78].

If the model of the logical system of scientific knowledge is considered the main component of abstract knowledge, then the system of computer and Internet terms appears as a collection of words and phrases, acquisitions clearly expressed in one or another natural national language, as a fragment of the lexical system of this language, which is a product of the primary denomination.

The terminological system formally expresses the internal structural image with the help of certain semantic symbols through the terminological elements integrated into its composition. This theoretical view can be explained as follows:

- a) semantic aspect of the term that forms certain terminological groups;
- b) the process of word formation and derivational structure affecting the relationship of terms in the formation of the terminological system;
- v) lexical-semantic process, which is the basis for the formation of phenomena of polysemy, synonymy, antonymy, homonymy in the terminological system [2, 79].

Term marks. There are two views on the main linguistic features of the term system, firstly, the nominative

nature of terms, and secondly, that it is related to the concept. Such two different understandings of the essence of the term make it difficult to correctly distinguish the relationship between terms and other words. V.D. Tabanakova: "a term is a sign used to name a special concept, and it, in turn, is an object and a subject of reality. Therefore, the meaning of the word-term corresponds to the specific concept in terms of size, and defining the meaning of the term means defining the specific concept through its signs. "Concept" and "definition" are logical categories, therefore, the definition of a specific concept is carried out according to the requirements of logic [14, 61].

Based on this, it can be clearly said that "the conceptuality of the term-sign allows to model systematic relations based on the concept as a logical category".

Transterminologizing is another important phenomenon of modern linguistics, which is the process of reinterpretation of a term belonging to one field of knowledge and transferring it to other field terms. Semantic word formation is the use of a word in a new sense, a change in the meaning of a word. As soon as the meaning of a word changes and it acquires a different meaning, the next one should be considered a new word compared to the previous one.

In connection with the development of science and technology, in the process of the emergence of terms by means of the semantic method, it is observed that, firstly, lexemes in general use become terms of other fields, and secondly, as a result of the transfer of the meanings of the terms of a knowledge or production field, they are actively transferred among the terms of other fields. Such a process is called "transterminization" in terminology, and its derivative is called "transtermin".

Researchers believe that the integration of different fields of science and technology takes place in the process of transterminologizing. The term transterminologization clearly reflects the essence of this phenomenon. This means that a terminological unit moves from one terminological system to another with various changes in semantics. The phenomenon of transterminologizing is characteristic of all field terminology.

Uzbek terminologist G'.M. Ismailov believes that the terminology itself enriches autonomously, that is, the term of one field moves to another field as a result of semantic shift, and believes that "terminization of the lexicon in general use, or more precisely, transterminization occurs." In computer and Internet terms, the following are examples of terms formed on the basis of common lexicon:

Teaser	This term refers to a type of banner that is uniquely customized to fit a specific site design. For example, in an Internet store, the "model of the day" can be a teaser, which is a block containing a description and a photo of the model of one of the products on sale. Usually, a teaser is used as a means of advertising proprietary materials, sections, and site services, but a portion of the teasers (usually much less than half) may be for sale or exchange.
Finger	Internet software currently available on many other platforms, which allows the user to get information about other users on other sites (if these sites allow access with a finger). The user's full name, whether the user is currently logged in, and any other information that the user chooses to provide as a Profile. Given a first or last name, finger means to return the login names of users whose first or last names match.



Forest	The term Internet refers to a set of one or more domain trees with a common schema and implicit trust relationships between them.
Glass	An internet term meaning a visual effect that gives windows a translucent quality.

In the process of transterminization, we understand that terms are created by a semantic method, in other words, (Latin trans means "through, from, between, between"), firstly, the transformation of commonly used lexemes into specific field terms, and secondly, as a result of the transfer of the meaning of the terms of one field of science to another. It is an axiom that does not require proof to be used in the terminological system of the field of science.

Transterminized, that is, semantically formed terms make up a large part of the terminological lexicon, especially this can be observed in computer and Internet terms. After all, transterminization of terms is a real linguistic reality. In this way, the terminological systems of this field are enriched and filled.

It should be noted that the field of terminology is closed on the one hand, and on the other hand is in continuous interaction with ordinary speech. Any ordinary non-utilitarian word can become a term by entering into a special vocabulary according to the sign of its exact correspondence to a certain socially organized thing.

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SOCIOLINGUISTIC ANALYSIS OF MEDIA LANGUAGE: PUBLICISTIC TEXT DEVELOPMENT

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ABSTRACT

Language reflects the processes taking place in society and develops at the same time, therefore the law of their influence is actively applied. It is impossible not to notice the impact of the changes in the social, economic, political, cultural and other spheres of the society on the language, but it is impossible to imagine the development of the language without such influence, which is a proof of the clear truth that there is no nation without a language, no language without a nation. Nowadays, it is recognized that the mass media is the most effective and acceptable form of speech, an effective mechanism for forming public opinion, views and moods. As mass media increases, it is observed that certain changes in the literary language, more precisely, the influence of the style of speaking prevails in the language. The analysis of media language from the sociolinguistic aspect is focused on the framework of the analysis of these problems.

KEY WORDS: *mass media, publicist text, media language, social conditions, social functions, communication*

Mass media is a unique mirror of society's life. The importance of this mirror increases even more when important socio-political changes are taking place in the life of the country, when the society is being renewed or when it is moving from one regime to another. Because in such conditions, the management system of the state, socio-political principles of the society, spiritual and moral values will change, the tasks of national development and development for the near future will be defined.

The press, as one of the active democratic institutions of the society, becomes a propagator of new ideas, an influential pulpit of public opinion. People are more interested in learning about the important social and political changes taking place in society and the world through the press.

Today, when the world is moving towards globalization in the field of political, economic, social and cultural values, every country is trying to ensure its national interests, not to move away from its foundations and not to fall under the influence of other powerful objects on the world stage. Because globalization goes along with scientific and technical progress, the expansion of relations with the outside world, both at the state level and at the individual level, is the reason for the increase of regional and global threats to the country's information infrastructure.

As a result of the various economic and political processes taking place in the world, the struggle of each country to achieve its own interests and the use of all means in this struggle, such as mass media, literature, cinema, visual arts and other fields, things that are not compatible with the spirituality and lifestyle of our people are also different. coming into our lives in forms and forms. Under the influence of gross globalization processes in the world, such a danger is entering the life of society, masked by various innovations in

the world of information, so intensively that ignoring their harmful and often irreparable consequences can lead to even more unpleasant results.

One of the most important concepts of sociolinguistics is the concept of linguistic situation, which is defined as a set of living forms of language (languages, regional common languages, regional and social dialects) that ensure the consistency of communication in certain ethnic units or administrative territorial associations. One of the most important features of modern sociolinguistics is that it is a unity of the concept of a single theory, a single object, without forming a chain link typical of linguistics and sociology. The role of language in the life of society, its influence on the development of society is a source of research for representatives of such fields as sociologists and ethnographers.

Sociolinguistics, being branches of linguistics, studies language in connection with the social conditions of its existence. Social conditions mean a complex of external circumstances in which a language actually functions and develops: a society of people using a given language, the social structure of this society. Sociolinguistics is "a branch of linguistics that studies a wide range of problems related to the social nature of language, its social functions, the mechanism of influence ... of social factors on language and the role that language plays in society" [1, 475].

Currently, within the framework of the sociolinguistic aspect, the state of the mass media language, its advantages or, on the contrary, its limitations, that is, the analysis of journalistic opinions about non-linguistic phenomena, is of great interest. Sociolinguistics includes common concepts between sociology and linguistics. These are "mass communication", "language", "communication", "information



content” [2, 134]. Journalism is a creative way of interpreting, describing and reacting to life events. One of the main goals of journalism is to form public opinion about the processes taking place in the country and the world, to increase the social activity of the masses, and researching this method within the sociolinguistic aspect is unique.

Functional stylistics studies the system of styles, the use of language tasks in them, as well as texts within a certain style.

Before proceeding to the analysis of journalistic style, we will refer to the definition of style. Style is the separation of language according to the tasks related to a specific field of human activity. People differ from each other to a certain extent in the selection and use of lexical, phraseological, grammatical and phonetic tools in the language during communication in all spheres of activity. Such a selection of language tools within the framework of the national language leads to the emergence of various forms of speech. Speech style is directly related to the function of language. That is why they are called functional style. Functional style does not mean something separate from the language, but an auxiliary system that is considered within the structure of a specific literary language, which differs from each other with its own characteristics and scope of service [3, 185].

The journalistic style is a type of functional style, which is characterized by such signs as the use of sociopolitical words and expressions, the diversity of genres and, as a result, the diversity of the stylistic use of language tools. As a means of promoting social and political knowledge and conveying it to the general public, journalistic style has a greater impact on people's minds with the diversity of the language of this style.

The general purpose of the journalistic style is to influence public opinion, to convince the reader or listener that the explanation given by the writer or speaker in a speech, essay or article is carried out not through logical discussions, but through missional appeal [4, 97]. After all, the newspaper, which is a means of reflecting the life of the society, knowing and researching it, and influencing it again, is a social phenomenon with its own characteristics. These laws are important in the development of the newspaper. Newspaper, journalism and publicism are interrelated phenomena, if the newspaper works with the means of publicism, in turn, publicism is manifested through the activity of the newspaper [5, 237].

Within the framework of the sociolinguistic aspect, the state of media language, one or another advantages of media

or, on the contrary, its limitations, analysis of journalistic opinions independent of language is of great interest.

When learning the language of OKV, it should not be overlooked that the language-related aspect of media activity is the result of intentions and specific goals. The efforts of scientists with different specialties - sociologists, political scientists, philosophers, linguists - will be needed to identify all these components of mass media activity. Mass communication is one of the types of communication. Communication is more a method of internal development and overall organization of society than a process of external interaction of individuals. It is such a process that only with its help the development of society can happen. Because this development implies the regular interaction of society and the individual.

The scope of sociolinguistic research in the media is wide, and it studies how the language changes depending on the social characteristics of the communicators, the characteristics of the communication situation, the communication channel, the content of information and other social factors in the process of mass communication [2, 137].

Mass communication is seen as a new entity that is at the center of modern linguistic processes. In it the literary and non-literary spheres are in a state of constant interaction. Because mass communication is inherently absorbing and permeable, it encompasses all of the linguistic means by which socially important topics and plots, as well as the meanings of social evaluation, are acquired [6, 83].

Text is the main form of verbal communication in mass media. In contrast to oral speech, where the influence of speech factors is extremely large, the absence of non-verbal structures (appearance, gesticulation, tone of voice, situation, etc.) in the text or their weak influence on the text allows us to see the text as the main object of studying verbal communication in the mass media system.

Sociology of mass media, in turn, studies the basic laws of the press, the essence of influencing the audience, the methods and methods of forming public opinion in the information channels of mass media, the components that make up the communication process, especially its content, through various sociological methods. In order to determine the specific aspects of the model related to the language of publication in a certain direction, it is necessary to find sociolinguistic variables, that is, structural elements that change under the influence of extralinguistic factors that form the type of publication.



From the point of view of sociology, linguistics and sociolinguistics, the following can be included in the basic concepts of mass communication theory [4, 9].

Concept	Sociology	Linguistics	Sociolinguistics
1. Mass communication	Social phenomenon (TO)* – object of research	The field of application of the language	Linguistic and social phenomenon (TO)
2. Content of mass communication	Social Information (SO)	Text	One of the style generating (creating) components
3. Information	Social value	Meaning of the sentence and methods of expression	Text is one of the factors of sentence formation
4. Audience	Information recipients (TO)	Extralingual event	one of the factors determining the linguistic features of public communication texts
5. Language	The audience is one of the methods of influence	System, structure (TO)	Codification
6. Communication	Social process	Methods of language use in speech	One of the factors determining the choice and placement of language tools.
7. Oral transmission	A separate communication channel	Voice-over speech (TO) compared to other types of spoken and written speech and on-air	One of the factors of the linguistic and stylistic uniqueness of the language.

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DIGITAL CULTURAL RESOURCES IN LEARNING COMMONS: A STUDY WITH REFERENCE TO ASSAM

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ABSTRACT

Learning Commons has become an important topic in the literature of Library and Information Sciences. This paper tries emulating a feasibility aspect of digital cultural resources of Assam as a component of virtual Learning Commons.

KEY WORDS: *Multimedia Cultural Resource, Community Virtual Library, Assam.*

INTRODUCTION

“Where is the life we have lost in living?
 Where is the wisdom we have lost in Knowledge?
 Where is the knowledge we have lost in information?”
 ---Thomas Stearns Eliot, *the Rock* (1934).

In the knowledge hierarchy, the zenith entity wisdom seems to be based on qualitative levels of Data, Information, and Knowledge. As a key stakeholder in the scholarly communication ecosystem, libraries and information centers play an important role in terms of brokerage, access, curation of information and dissemination of the same. As practicing librarians, we often seek to improve library footfalls through various means and methods. The adoption of technology in the planning and management of library affairs is one of them. This has benefited the library operation in two ways: One can save time and effort and disseminate the processed information in an effective manner. The phenomenon of automation in library operations began in the late 20th century. Dr. Hans Peter Luhn, a German information scientist at IBM, and Henrietta Davidson Avarm, an American computer programmer, took the early initiative to preserve inventory data in a machine-readable format. This was just the beginning from prototypes to today's embedded application scenario.

The exponential growth of scientific data in various fields has led scientists to think about alternative ways of information management. This has affected the library sector in two ways: on storage/preservation and accessibility to the information. In adjacent to the process, great care has to be taken to ensure that the physical and logical stuffing of the information architecture is not manipulated. In addition, there is also to look into the legal aspect of doing the job and complying with the issues of Intellectual Property Rights (IPR). Many western philosophers of library and information science, now often question the

feasibility of physical spaces for providing library and information services to the user community, which has makes the information professionals to think of new innovative service oriented collaborative space for instructional support, research and learning; literally moving into an information commons. Indeed, it would be a technology indebted space with a variety of data processing and productivity (maker) equipment along with a supportive milieu, where the users inspired to feel like creative place-making for diverse aspects of social characteristics of the neighborhood. Additionally, the concept of metaverse has been evolved to obliterate the stripe between virtual and real world, which has incorporates the elements of cultural intelligence.

Let's take the example of a digital native. Their behavior in their infotainment approach is very different from that of their counterparts. This new way of consuming information could be a means of optimizing access to the cultural richness of Assam and northeast India. Assam is a cultural rendezvous with many unique elements of the people who inherit it. Even one single tribe has so many unique traditions and cultural objects that need to be mapped for easy access by tech-savvy information seekers.

LITERATURE REVIEW

In positive parlance, academic users are tempted to settle for information that satisfies the "three F" requirements (fast, fastest, full text). It means that users are looking for information in an easy way in all inclusive form. To address this situation, academic libraries have experimented with new ways of combining information resources, technology, and research support. Reconfiguring physical spaces and redesign services to meet new challenges, adopting the idea of a central location to provide information to the communities with various forms of information resources and staff assistance (MacWhinnie).The Internet has also played an important role in ethnography



research, transforming the traditional textual discourse scenario into a digital communication platform in terms of green content. Web 2.0 is a crusader in the theater of digital content mapping and optimization and a catalyst for science communication (Kavanaugh & Maratea). Overcoming the complexities of data ideologies of different cultural backgrounds, there is a need of digital infra (structuring) of Data to bridge the gap across technologies, disciplines, and countries to address the grand challenges of society (Poirier & Fortun et al.)

DISCUSSION

Assam is a plethora in much cultural diversity. The state inherits both tacit and explicit knowledge management issues of cultural resources that require proper documentation and digital archiving. Still, creating a metadata component for each visual object is a very costly affair and requires a good SWOC analysis to intervene in the process. Nevertheless, during the preparatory phase, open scientific and technology solutions can be helpful to take up the job. Even in some cases, social media platforms, embedded applications, podcasting media and some open source repository can be taken for freelance and for the purpose of discovery, access and use of information. For oral literature and history, cloud based apps such as Spotify could become viable tools for podcasting. Even YouTube can be a useful platform for multimedia narrative. Other interoperable platforms like Wix. , Bloggers can be used for the purpose as well. However, if the content (textual & pictorial) is published on the open web, crawlers may be confined within static pages and may not be able to index accurate and defined resources. In a larger context, adhering data ideology of the region a community virtual library could be developed based on autonomous technology, revealing multimedia cultural content.

CONCLUSION

Learning commons can become viable tool in terms of lifelong learning process. It also gives the opportunity to collective participation in the process of knowledge creation and dissemination. Step by step initiation can be a feasible aspect for enhancing the credibility of particular information content in various domain knowledge.

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WATER PURITY TESTING USING pH AND TURBIDITY SENSORS

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ABSTRACT

One of the main dangers to a nation's residents, as well as the plants and animals that live in its waterways, is water pollution. Since water makes up 70% of the earth's surface, it is our duty to maintain the water clean. The main cause of water pollution is due to disposal of industrial waste into the river. Residents of that area use the same water. Since it is polluted it causes adverse effect on a citizen's life. Thus it's important to find dirty water. With the use of sensors, the parameters necessary for detecting water contamination, such as pH and turbidity, are measured in real time. While turbidity is also a crucial parameter since it has a negative impact on aquatic ecosystems, pH is an important measure to define the composition of water. Here, we suggest a system for detecting water contamination while taking into account a number of factors, including cost, ease of setup, and ease of use. Using pH and turbidity sensors, we suggest designing and implementing a system to detect water contamination in this study.

KEY WORDS-pH sensor, water purity, Turbidity sensors

I.INTRODUCTION

There are many reasons why natural water resources get contaminated. One of the biggest issues facing the local population is industrial trash. Chemical tests and other laboratory tests can be used in a stationary lab to identify polluted water in a variety of ways. Furthermore, testing apparatus can be inserted into the water supply to detect dirty water remotely. Before providing water to any people, the quality must be checked in order to minimise risks to citizen safety. In the poor world, diarrheal diseases continue to be a major source of illness and mortality, according to the World Health Organization[1]. When it comes to water pollution, pH and turbidity are crucial factors to take into account. A measure of the amount of suspended sediments in water is called turbidity. In our proposed approach, we will take into account three separate factors to determine if water is normal, acidic, or basic. In order for water to be considered safe for use, the ideal pH value is seven, or for normal water. Governments have established standards for the amount of turbidity that is permitted in drinking water. The ideal turbidity value is zero.

Turbidity cannot, in the United States of America, be higher than 1.0 nephelometric turbidity units (NTU) at the plant outlet for systems that use traditional or direct filtration techniques. Systems that use filtration in addition to traditional or direct filtration are required to abide by state regulations, which include turbidity limitations of no more than 5 NTU[2]. There are numerous design standards and water quality standardisation techniques in use[3].

II.PROPOSED SYSTEM

The entities in our suggested system are as follows:

A. Water Purity Detection:

1.pH sensor: pH sensors detect Water is the solution in this case, and pH measures how basic or how acidic an aqueous solution is. It is quantified using the electrical potential method. Since pure water is neutral, its pH value should be 7. Water is considered acidic if the value is less than 7 or basic or alkaline if the value is larger than 7. Figure 1 below depicts the pH electrode that we employed in our system, as indicated by [4].



Fig.1.pH Electrode

2.pH meter: The voltage of the pH electrode is measured using a pH metre, which is nothing more than a precision voltmeter. Due to the extremely high internal resistance of the pH electrode, the majority of commercially available

voltmeters restrict their use. While the majority of currently available digital metres have internal resistance in the range of 1–10 M, a voltmeter must have an internal resistance at least 100 times bigger to accurately measure voltage. Consequently, they are inappropriate[5]. Careful selection of op-amp is most

important while building pH meter circuit. As the op-amp IC TL081 has a very high gain and a very high input impedance, we have used it here to build an amplifier. Switches and resistors in the circuit are necessary for calibration of pH electrode. The figure of pH meter is shown below in figure 2.

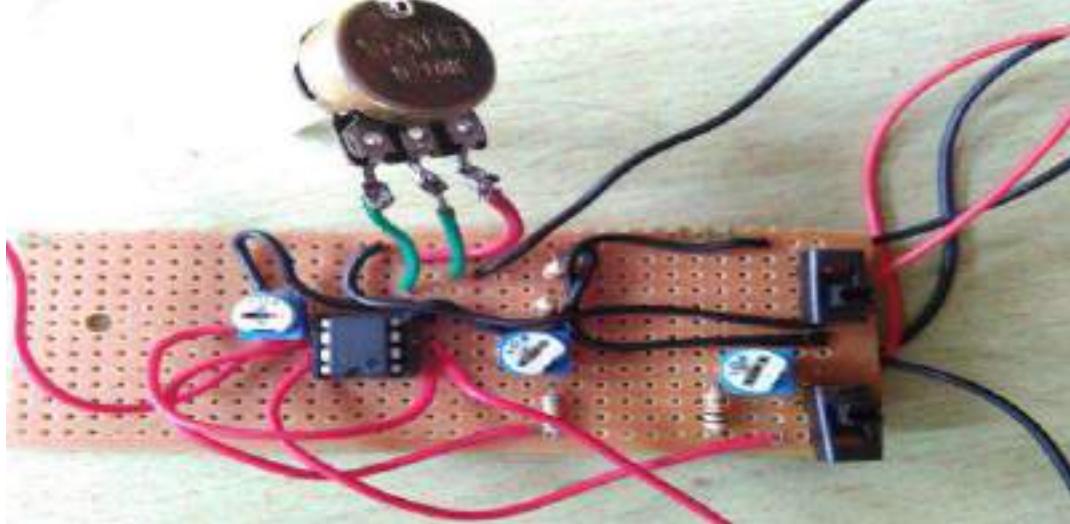


Fig.2.pH Meter

3.Turbidity sensor: An essential factor in determining the water quality is turbidity. Aquatic ecosystems are negatively affected by high turbidity in a number of ways. It includes things like a reduction in light penetration or, occasionally, sunlight blockage, which prevents photosynthesis and hence restricts plant growth, and erosion, which lowers the quality of fish and other creatures' habitats and hinders their ability to obtain food [6]. A high concentration of suspended particles, which is indicated by a high turbidity, can be harmful to fish and other aquatic life. Figure 3 shows the turbidity sensor that we employed in our system. Here, the light source is an LED.

When a pot filled with clear water is placed between an LED and a photo diode, full light will pass through the pot and break the photo diode's junction. This causes the transistor to turn on fully, producing an output of zero that is sent to the ADC of a PIC controller, or, in this instance, a turbidity value of zero. In contrast, less light will flow through the pot when a pot of turbid water is placed between an LED and a photodiode. This will increase the transistor collector voltage, which in turn will increase the amount of turbidity.



Fig.3.Turbidity Semnsor

4.Arduino: Arduino is an initiative, open-source hardware platform, and software environment for creating electronic gadgets. It creates and produces single-board interfaces and microcontroller kits for use in electronics projects. The original purpose of the Arduino boards was to assist students without a technological background. The controllers and microprocessors used in Arduino board designs are diverse. The Arduino board has groups of analogue and digital I/O (Input / Output) pins that can connect to expansion boards, breadboards, and other circuits. These boards have model, USB, and serial communication ports, which are used to load applications from computers. The Arduino is a single circuit board that has various connections or components on it. The board is made up of a number of digital and analogue pins that

are connected to other devices and components to enable the operation of electrical equipment. Fourteen digital I/O pins make up the majority of the Arduino.

5.Power Supply unit: Clock, reset, and power supply are the three essential components that a Arduino controller must have. As a fixed 5V supply is required to drive the Arduino microcontroller, we must utilise a power supply device that does this. A step-down transformer, a bridge rectifier, a filter, a voltage regulator, a power supply LED indication, and a current limiting resistor make up this device. Step down transformer reduces 230 volts of alternating current to 12 volts of alternating current, which is then transformed to 12 volts of direct current using a bridge rectifier and filter circuit. The

voltage regulator IC is the following part of this device. Here, a fixed positive 5V supply was created using a 7805 integrated

circuit. Figure 4 depicts an Arduino power supply unit with a clock and reset functionality.

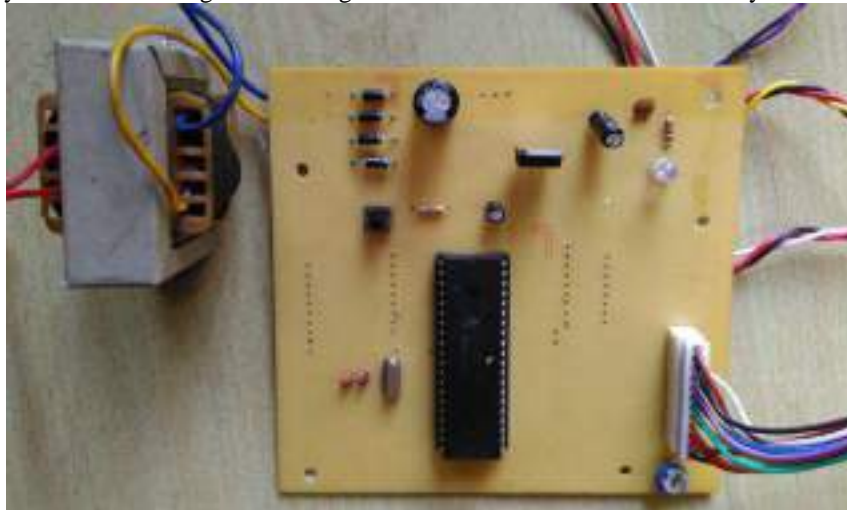


Fig.4.Power Supply

Figure 5 below displays the suggested system's block diagram. All the aforementioned things are included in it. The Arduino controller receives the output of the pH electrode and turbidity

sensor. Based on the pH and turbidity values, the outcome will be shown on the LCD.

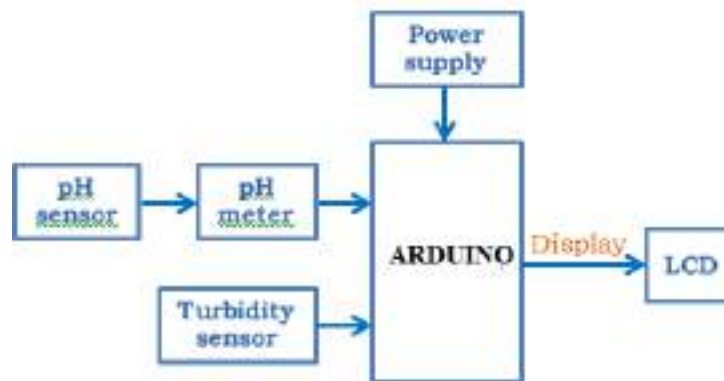


Fig.5.Block Diagram

III.SOFTWARE DESIGN

The Arduino compiler is used for programming. The flow chart below illustrates how pH and turbidity value detection work. The LCD, which is connected to the 16F887A PIC, will display the results in accordance with the pH level of the sample water. Depending on the pH value that was detected,

the buzzer will either be "ON" or "OFF".If the pH of the water is 7, the buzzer will be "OFF," signifying neutral water, or "ON," signalling either acidic or basic water. The buzzer will be "OFF" to indicate an acceptable value for water use if the turbidity value is between 0 and 5, and "ON" for values higher than 5 according to the same reasoning.

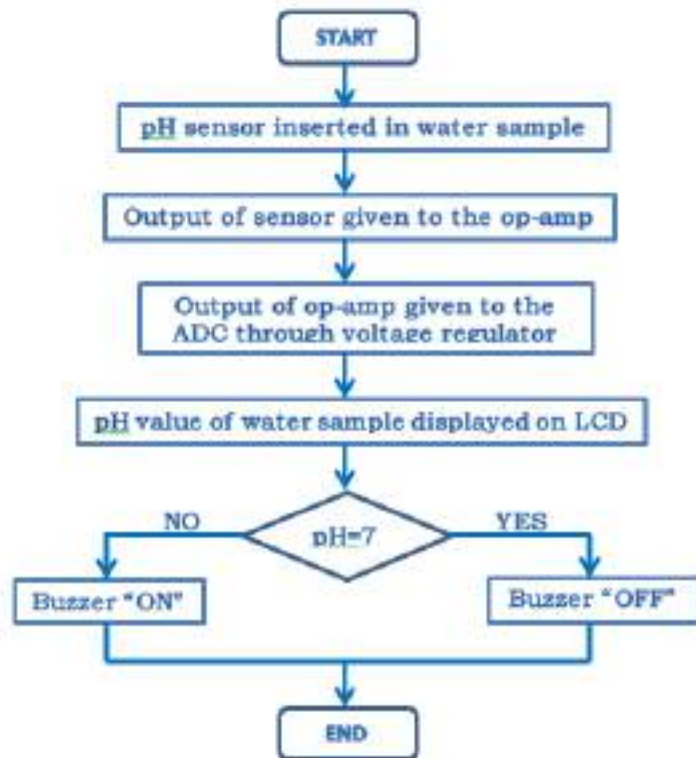


Figure 6: Flow chart showing operation of pH sensor

IV.RESULTS AND DISCUSSIONS

We put the suggested system for detecting dirty water into action. By using several sorts of water samples, we were able to gather a variety of results for different pH values under

diverse conditions (neutral, acidic and basic). The pH value for neutral water is 7, while the pH values for acidic and basic water are less than 7 and larger than 7, respectively. The hardware prototype has been shown in figure 7.

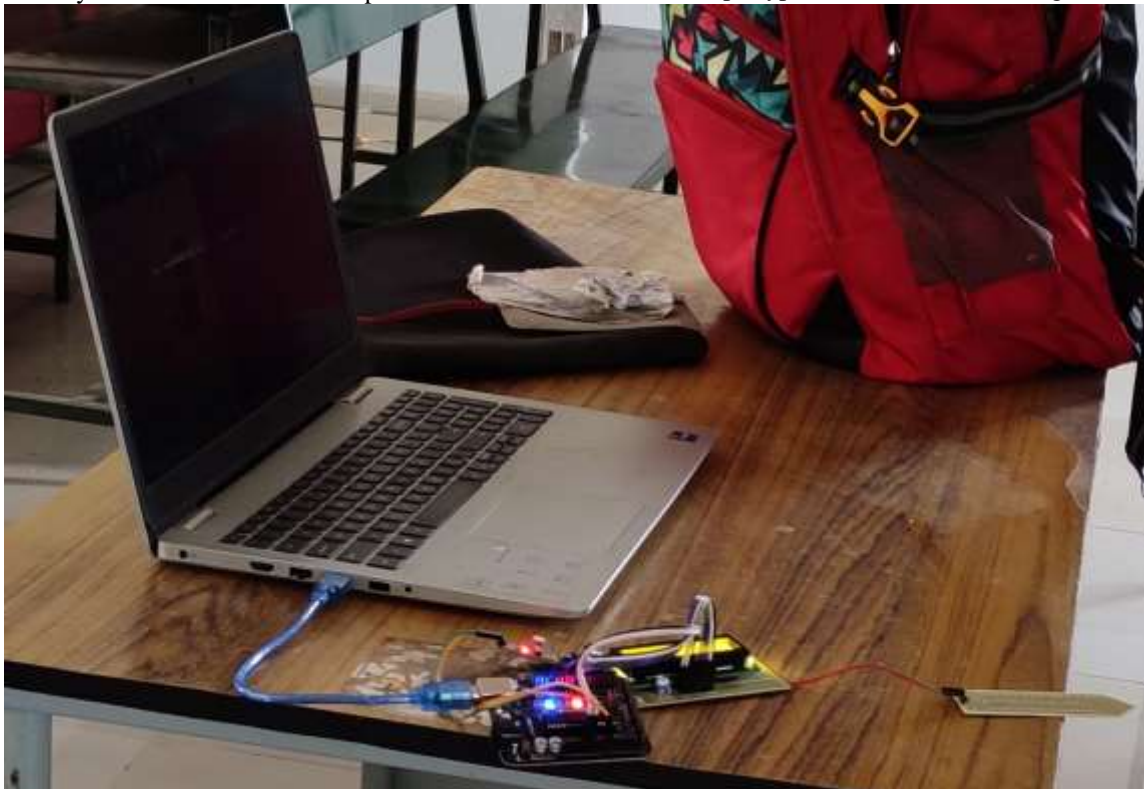


Fig.7.Hardware Prototypical Model



V. CONCLUSION

This work checks the purity of water using pH and turbidity sensors, this research provides a system for detecting water pollution. pH and turbidity sensors gather information on water quality, which is then provided to the 16F887A PIC microcontroller. On the LCD, pH and turbidity parameters are shown based on the type of water. In the future, a system that uses GSM and smart phones to transmit water quality data can be created.

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IMPACT OF PROFITABILITY, TYPE OF INDUSTRY, AND COMPANY SIZE ON THE SUSTAINABILITY REPORT (COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE FOR 2018-2021 PERIOD)

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ABSTRACT

The purpose of this study is to determine the disclosure of sustainability reports for Indonesian non-financial companies listed on the Indonesia Stock Exchange (IDX) from 2018 to 2021. This research also aims to examine the factors that influence the decision to issue a sustainability report.

The independent variables used in this study are profitability, type of industry and company size. The dependent variable used is the disclosure of the sustainability report. The population used are companies listed on the Indonesia Stock Exchange (IDX) with the exception of the financial sector which has been required by the OJK to make a sustainability report. The samples used for each type of industry were around 25 companies with a total sample of 823 companies from 10 different types of industries. This study uses logistic regression analysis with a dummy of 0 for companies that do not publish sustainability reports and 1 for companies that publish sustainability reports.

The results of this study indicate that profitability has no significant effect on the disclosure of sustainability reports. The type of industry has a significant and positive effect on the disclosure of sustainability reports. Meanwhile, company size has a significant and negative effect on the disclosure of sustainability reports.

KEYWORDS: Sustainability Report, Profitability, Type of Industry, Company Size

INTRODUCTION

The COVID pandemic has had a significant effect on changes in the existing economic structure in Indonesia. These changes affect every individual, government, and company. This change resulted in a lack of management and operations that disrupted the company's sustainability. But on the other hand, the COVID pandemic has proven that air pollution in Jakarta and other big cities can be reduced. This is because the biggest pollutant contributors are pollution from motorized vehicles and pollution from waste and factory smoke that were operating optimally before the COVID pandemic. Companies need to think about sustainable development after the end of the COVID pandemic. We don't want the level of air pollution and environmental damage to get worse after the pandemic is over.

Global warming, climate change, and high levels of pollution are largely caused by human behavior. Humans, through various existing companies, produce almost all the goods that are made, consumed, and discharged into the environment and play a large role in driving global warming, climate change, and high levels of pollution. Issues regarding environmental damage began to be intensively discussed in all parts of the world (Adhipradana & Daljono, 2014)

Sustainable development is not only the role of the government, but also involves the role of all citizens and various organizations including companies. Companies, in

achieving sustainable development, need a global framework with consistent and measurable language with the goal of being clearer and easier to understand. This concept became known generally as a sustainability report (Yustia Sari & Marsono, 2013).

Traditional financial reports are no longer adequate for stakeholders, because they do not contain information regarding social and environmental aspects of company operations (Martínez -Ferrero et al., 2015). Companies are currently demanded by various parties from stakeholders, not only investors and creditors, but also employees, suppliers, consumers, communities, non-governmental organizations, and the government to be more transparent and accountable in activities related to sustainable development. The Sustainability Report is a model for reporting corporate information to stakeholders that integrates financial reporting with social reporting, environmental reporting and corporate governance reporting in an integrated manner into a reporting package.

Trends regarding sustainability reporting in Indonesia are experiencing positive developments. From 2012 there were only 2 companies issuing sustainability reports, until 2016 many companies had issued sustainability reports. According to the National Center for Sustainability Reporting (NCSR), until the end of 2016 there were a total of 120 companies that published



sustainability reports in Indonesia, both companies that went public and private companies. However, this number is still far below the number of public companies listed on the stock exchange, especially when compared to the total number of companies in Indonesia.

Sustainability reports, usually using the GRI standards, are accountability reports used to disclose the economic, social, and environmental impacts of a company. According to the 2021 GRI Standards, a sustainability report is a company report to provide transparency about how the company aims and contributes to sustainable development. There are three sets of Standards supporting the reporting process in the 2021 GRI Standards, namely: the GRI Topic Standards, each of which is dedicated to a particular topic and includes disclosures relevant to that topic; GRI Sector Standard, applicable to certain sectors; and the GRI Universal Standards, which apply to all organizations. Using this Standard to determine what material and relevant topics to report on helps organizations demonstrate their contribution – positive or negative – to sustainable development.

LITERATURE REVIEW & HYPOTHESIS

Legitimacy Theory

Legitimacy theory considers organization as a social contract, linking societal expectations with business interests (Martínez-Ferrero et al., 2015). According to this theory, organizations can only survive if their actions are deemed legitimate by external stakeholders (Rossi & Tarquinio, 2017). The main argument behind the relationship between legitimacy theory and Sustainability Report disclosure is that a company's disclosure strategy almost always reacts to social expectations or environmental events. In this case, companies provide sustainability reporting to seek legitimacy for company activities (Martínez-Ferrero et al., 2015); (Adhipradana & Daljono, 2014); (Rossi & Tarquinio, 2017); (Setiany, 2020).

Legitimacy theory also explains that organizations will continuously operate in accordance with the boundaries and values accepted by the community around the company in an effort to gain legitimacy. Based on this theory, companies can operate with community permits, where the permit is not permanent so companies must be able to adapt to the wishes and demands of the community. An effective way or media to gain legitimacy from the public is by disclosing a sustainability report that describes the company's environmental and social responsibilities. Legitimacy theory provides views on the disclosure of social information, both positive and negative. Companies that continue to try to gain legitimacy through sustainable disclosure, hope that in the end they will remain a going concern (Adhipradana & Daljono, 2014).

Sustainability Report

In recent years, the company's profit growth has continued to increase, but in the same period, the escalation of the social and environmental crises has also increased. The social and environmental problems that arise are even more complex and dangerous. This phenomenon is often referred to

as the "paradox of economic growth" which results from greedy economic behavior. (Lako, 2018).

Minimal social responsibility can be caused by a lack of sustainable development. Concerns about the lack of sustainable development have increased public attention to pressing global issues of recent times such as poverty, human rights violations, pollution, global warming, climate change, and resource depletion. In this case, companies are expected to behave in a socially and environmentally responsible manner, while at the same time focusing on financial initiatives (Kiliç et al., 2015).

The company's sustainability performance has changed the traditional management process by focusing not only on the financial aspects of business performance, but also on the social and environmental dimensions (Laskar & Maji, 2016). Therefore, financial reporting alone no longer meets the needs of shareholders, customers, communities and other stakeholders for information about overall organizational performance (Siregar & Bachtiar, 2010). Thus, companies have started presenting their social and environmental initiatives through traditional annual reports and separate reports i.e., sustainability reports, CSR reports, and environmental reports (Kiliç & Uyar, 2014).

Companies that have ongoing concern and commitment to green economy and green business and transform their business organizations into green corporations actually grow and develop their business from time to time. These companies continue to grow their profits and develop into large companies in their respective industries. The company grew bigger and achieved glory because of its good deeds to the community and the environment. They are liked and supported by stakeholders. They become big and glorious because the basic pillars that support their business (planet, people, profit) are getting bigger and stronger (Lako, 2018).

The company's sustainability performance has changed the traditional management process by focusing not only on the financial aspects of business performance, but also on the social and environmental dimensions (Laskar & Maji, 2016). Therefore, financial reporting alone no longer meets the needs of shareholders, customers, communities and other stakeholders for information about overall organizational performance (Siregar & Bachtiar, 2010).

Profitability

Profitability is the company's ability to earn profits in relation to sales, total assets, and own capital. Profitability can be used to analyze a company's ability to generate profits. In addition, it is also to detect the causes of profit or loss generated by an information object in a certain accounting period (Eduardus, 2017). Profitability can show and predict company profits because it illustrates the correlation between profits and the amount of invested capital.

Profitability is one part of finance that affects the characteristics of a company. Profitability shows the level of net profit that can be achieved by the company in carrying out its operations. Shareholders always want profit from the investment they invest in the company. The greater the profit earned, the greater the company's ability



to pay dividends, so that more and more investors invest in the company.

Profitability ratio is the most widely used ratio in measuring financial performance. In this study, to measure the level of disclosure of sustainability reports, Return on Assets (ROA) is used. Where, ROA shows the ability of company management to generate income from managing assets owned to generate profits. The higher the level of this ratio, the higher the effective use of these assets. ROA also measures the effectiveness of management in managing its investments. Previous research using ROA is Adhipradana & Daljono, (2014) and Setiany, (2020).

Industry Type

Industry types are divided into two types, namely high profile or risky and low profile or not at risk. Uyar et al., (2013) define high profile companies as companies that have consumer visibility, a high level of political risk and a high level of competition. High profile companies include oil and other mining companies, chemical, forestry, paper, automotive, aviation, agribusiness, tobacco and cigarettes, food and beverage products, media and communications, energy (electricity), engineering, health, as well as transportation and tourism. Low-profile companies include construction, finance and banking, medical equipment suppliers, property, retail, textile, personal products and household products.

Companies with primary or high profile industries tend to disclose more Sustainability Reports compared to tertiary or low profile companies (Uyar et al., 2013); (Skouloudis et al., 2014). This is because high profile companies have more contact with consumers and have more active stakeholders seeking information about the company's sustainability performance in that sector. Based on legitimacy theory, high profile sector companies need more support from stakeholders to run their operations. Therefore, they tend to publish sustainability reports to increase their legitimacy.

Company Size

Company size is important in improving the company's financial performance. Company size in this

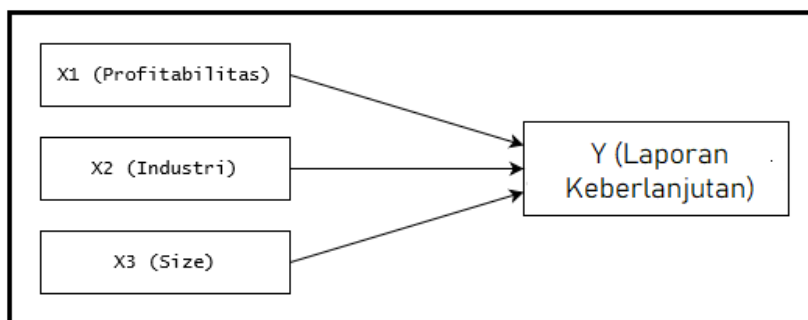
study is measured by looking at how much assets a company has. The assets owned by the company describe the rights and obligations as well as the company's capital. Companies with large assets will usually get more attention from the public, this will cause companies to be more careful in carrying out their financial reporting. In addition to financial reporting, large companies also disclose non-financial reporting carefully and with a high degree of accuracy to maintain their legitimacy in the eyes of stakeholders.

With regard to legitimacy theory, large companies will certainly pay more attention to the interests of stakeholders and their activities will follow the boundaries and values accepted by the public. Large companies are better known and highlighted by the community compared to small companies. Large companies have greater resources and social responsibility to the community. This can help them prepare and publish sustainability reports (Hidayah et al., 2019).

Large companies are entities that are widely seen by the capital market and the public in general, with more information disclosure companies can increase their legitimacy by the public. Large-scale companies tend to find it easier to issue Sustainability Reports because large companies obtain higher sales results than small companies. They have more resources and capabilities to issue Sustainability Reports. On the other hand, small-scale companies concentrate more on increasing sales results than disclosing Sustainability Reports. Small companies that have limited human resources, they may not have ready-to-use information, such as large companies, so large costs are required to make more complete disclosures (Setiany, 2020).

The size of the company in this study is measured using total assets because the total assets of the company describe the size of the company. Measurement of company size using total assets refers to the research of Adhipradana & Daljono, (2014), Hidayah et al., (2019) and Setiany, (2020). Total assets are all resources owned by a business or business entity. The greater the company's total assets, the company can be categorized as a large company. The company's total assets increase means the company's wealth increases.

Hypothesis



- H1.** Company profitability has a significant and positive effect on the disclosure of sustainability reports.
- H2.** The type of risky industry has a significant and positive effect on the disclosure of a sustainability report.
- H3.** Company size has a significant and positive effect on the disclosure of sustainability reports.



RESEARCH METHODS

Types of research

The type of research that the authors choose is causal research. The researcher aims to test the hypothesis about the effect of several variables (independent variables) on other variables (dependent variables). The independent variables that the authors choose are profitability, industry type, and company size. While the Dependent Variable that the authors choose is the issuance of a sustainability report. The author will use data from companies listed on the Indonesia Stock Exchange in 2018- 2021.

Definition Operationalization Variables and Variable Measurements

The dependent variable (Y) in this study is the issuance of a Sustainability Report. Issuance of a sustainability report is an indicator used to assess whether a company cares about sustainable development with issues related to social and environmental issues. This study uses a binary coding technique using a value of 1 if the company publishes a sustainability report and 0 if it does not. This approach is consistent with previous research (Legendre & Coderre, 2013); (Kend, 2015); (Kiliç et al., 2015); (Wang, 2017). Such a Y variable facilitates data collection for large amounts of data. Researchers want to examine a larger population than previous studies.

Profitability is the percentage of company profits with total assets used to earn profits. In this study, the same as the research of Adhipradana & Daljono, (2014) and Setiany, (2020) to measure the level of influence of sustainability report disclosure, namely using Return on Assets (ROA). ROA is used in this study because it can display the ability of capital invested in assets as a whole with the aim of generating profits.

Industry variables are classified into risky industries and non-risky industries. If the company is engaged in a risky industry, it will be given a value of 1, and 0 otherwise. In accordance with previous research, (Uyar et al., 2013); (Skouloudis et al., 2014); (Legendre & Coderre, 2013); (Kuzey & Uyar, 2017), divides the types of industry into two, risky and not risky. In this study the authors divide the types

of industries based on available data from industry classifications on the Indonesian Stock Exchange. The author categorizes the types of risky industries as follows: Basic Materials, Consumer Non-Cyclicals, Energy, Industrials and Transportation & Logistics. Meanwhile, non-risky industries are as follows: Consumer Cyclicals, Healthcare, Infrastructure, Property, and Technology.

Company size is the grouping of companies into several groups, including large, medium and small companies. Company scale is a measure used to reflect the size of a company based on the company's total assets. The larger the size of the company, the greater the total assets owned. Large companies have greater social resources and responsibilities to society. This company size variable will be measured using the natural logarithm of Total Assets.

Population and Research Sample

The population in this study are all companies with non-financial business classifications that are registered on IDX during the 2018-2021 period. The analysis period is limited from 2018 to 2021 for reasons of data availability. Financial companies are excluded from the analysis because they have been required by the OJK to issue sustainability reports. The total population to be analyzed is 510 companies. This number is obtained from the total number of companies registered on the IDX in 2018 of 606 minus the financial sector companies of 96 companies.

The sample is used because there are limitations when the analysis is carried out on the entire population. These limitations include that not all members of the population have complete data and collecting data on the complete population requires more effort (Gio, 2016). The sampling method used is purposive sampling. This sample will be taken on average for 10 industrial sectors listed on IDX so that each sector gets around 20 samples. The financial industry is excluded from sampling because it has been required by OJK through POJK Number 51/POJK.03/2017 to issue a sustainability report. The following is a sample that the author has collected based on the type of industry taken from the Indonesia Stock Exchange data from 2018 to 2021:

Table 1. Sample Data

INDUSTRY	2018	2019	2020	2021	Total
Basic_Materials	25	25	24	25	99
Consumer_Cyclicals	23	23	24	23	93
Consumer_NonCyclicals	25	25	24	25	99
energy	24	24	25	25	98
Healthcare	13	14	14	14	55
industrials	25	25	23	24	97
Infrastructures	23	22	24	24	93
Properties_RealEstate	24	24	25	24	97
Technology	9	9	9	8	35
Transportation_Logistics	15	15	13	14	57
Total	206	206	205	206	823



Data Analysis Method

The analysis in this study was carried out using regression analysis. The regression analysis used in this study is logistic regression. This analysis is used to find out whether the relationship between the independent variables and the dependent variable in the form of binary yes and no (Gio, 2016). The data used is panel-based data on the company for 3 consecutive years between 2018 and 2021. Logistic regression analysis is a regression that tests whether there is a probability that

the dependent variable can be predicted by the independent variable. Logistic regression analysis does not require a normal distribution in the independent variables. Therefore, logistic regression analysis does not require normality tests, heteroscedasticity tests, and classical assumption tests on the independent variables.

Hypothesis testing is done using logistic regression analysis with the following equation:

$$SR = \alpha + \beta_1(ROA) + \beta_2(INDUSTRI) + \beta_3(LnTA)$$

Information:

SR = Disclosure of sustainability report

α = Constant

ROA = Profitability proxied through the calculation of ROA.

INDUSTRY = Type of company's industry. (Dummy variable, value 1 for companies that are at risk and value 0 for those that are not at risk).

LnTA = Total assets proxied through the natural logarithm of the total assets of the company.

RESULTS AND DISCUSSION

Descriptive statistics

Table 2. Descriptive Test Results

Variable	Min	Max	Average	Std.Dev
Y (Publishing sustainability report)	0	1	0.2272	0.4193
X1 (Profitability)	(0.6594)	0.4468	0.0126	0.1146
X2 (Industrial Type)	0	1	0.5468	0.4981
X3 (Size)	11.91	32.45	22.70	5.4036
Number of Observations	823	823	823	823

Source: Data processed with RStudio

Disclosure of sustainability reports shows a minimum value of 0 and a maximum value of 1. Category 0 means the company does not issue a sustainability report. While category 1 means the company publishes a sustainability report, where the sustainability report is different from the company's annual report. The number of observations used in this study was 823. Of these, the average issuance of financial statements has a value of 0.2272, which means only about 23% of the sample observations issue sustainability reports. The standard deviation of 0.4193 shows variations in the issuance of financial reports. The standard deviation value is greater than the average value which means that research data on sustainability reports have varied results.

Profitability as measured by the ROA ratio shows a minimum value of -0.6594 and a maximum value of 0.4468. The average value of profitability in the sample observation data is 0.0126. This means that the average company included in the sample criteria has a low profitability ratio. The standard deviation of 0.1146 shows the variation in profitability. The standard deviation value in

this study is greater than the average value, which means that the profitability variable data has varied results.

The types of industries in this study are classified into risky industries and non-risky industries. This variable is in the form of categorical 0 and 1. If the company is engaged in a risky industry, it will be given category 1, and 0 otherwise. The type of industry has a minimum value of 0 and a maximum value of 1. The average value of the type of industry in the sample observation data is 0.5468. While the standard deviation value of 0.4981 shows the variation contained in profitability. The standard deviation value for the type of industry is smaller than the average value which shows the distribution of the data variables is small or there is no significant gap.

Company size is measured by the natural logarithm of total assets showing a minimum value of 11.91 and a maximum value of 32.45. The average value of firm size in the sample observation data is 22.70. The standard deviation of 5.4036 shows the variation in profitability. The standard deviation value of company size is smaller than the



average value which shows the distribution of the data variables is small or there is no large enough gap. Based on the observations made by the authors, the average size of companies that publish sustainability reports is 20.415.

Meanwhile, companies that do not publish sustainability reports have an average company size of 23,366. The average size of companies that publish sustainability reports is smaller than companies that do not publish sustainability reports.

Hypothesis test

Profitability

X1	Coefficient	Significance
Profitability	0.87449	0.25411

Testing the first hypothesis states that the level of profitability is not statistically related to disclosure of sustainability reports with a coefficient of 0.87449 and a

significance of 0.25411 without an asterisk which means it is not significant.

Industry Type

X2	Coefficient	Significance
Industry Type	0.55047	0.00238**

Testing the second hypothesis states that the type of industry is statistically related to disclosure of sustainability reports with a coefficient of 0.55047 and a significance of

0.00238 with two asterisks which means it is positively and significantly related.

Company Size

X3	Coefficient	Significance
Company Size	-0.09448	0.000000136***

Testing the third hypothesis states that company size is statistically related to disclosure of sustainability reports with a coefficient of -0.09448 and a significance of 0.000000136 with three asterisks which means it is negatively and significantly related.

This study reveals that the type of industry has a significant and positive relationship in line with the research by Legendre & Coderre, (2013) and Kuzey & Uyar, (2017). Based on legitimacy theory, risky companies tend to use the issuance of separate sustainability reports to seek the legitimacy of their operations from external parties. Risky companies are more likely increase public trust through publishing their sustainability reports, with the aim of maintaining their legitimacy.

Discussion

Company Profitability Does Not Affect the Issuance of Sustainability Reports.

Profitability, which is measured using ROA, is a company's ability to earn profits. However, in logistic regression testing, the company's profitability variable does not have a significant effect on sustainability report disclosure. This difference is due to the possibility that the company's ability to earn profits has decreased. This decrease in profit is likely due to the COVID 19 pandemic that hit Indonesia in 2020 and 2021. With a decreasing level of profitability, the company will reduce its social activities and disclosure of sustainability reports.

The author also briefly looks at several annual reports of companies that do not publish sustainability reports and are listed on the Indonesia Stock Exchange. Both companies with risky and non-risky industrial type, they will still make disclosures related to the environment and socials. This is evidenced by the integration of GCG disclosures into the annual reports of almost all companies on the Indonesia Stock Exchange. However, companies with risky industrial types tend to issue reports that are separate from annual reports such as sustainability reports. Based on legitimacy theory, they feel the need to continuously try to ensure that they carry out their activities according to the boundaries and norms of society.

ROA in 2020 and 2021 (COVID) decreased from 2018 and 2019. The average ROA in 2018 and 2019 was 0.02076335 while the average ROA in 2020 and 2021 was 0.004523358. With extreme differences in profitability values, profitability cannot be used as a reference in assessing the issuance of sustainability reports. This causes profitability to have no effect on issuing a separate sustainability report. This is in line with the results of Adhipradana & Daljono's research, (2014), where the research examined the post-2008 financial crisis with a research time span of 2008 to 2011. Adhipradana & Daljono's research, (2014) also shows that profitability does not affect issuance sustainability report.

Company Size Has a Significant and Negative Influence on the Issuance of Sustainability Reports.

The results of the logistic regression test can be seen that total assets have a significant and negative relationship with sustainability report disclosure. Big companies can also ignore sustainability reporting because they feel it is not necessary. Research conducted by Purnama, (2018) revealed that the bigger the company, they tend not to feel the need to do sustainability reporting. The results of Setiany's research, (2020) show that company size has no significant effect on social disclosure.

Type of Industry Has a Significant and Positive Influence on Issuance of Sustainability Reports.

Another thing that the author think influence sustainability report disclosure is that large companies will



have a wider scope of sustainability disclosure than companies with small sizes. In terms of size, small companies have an advantage because they are simpler and their management will be more flexible in disclosing sustainability reports. On the other hand, the management of large companies is likely to be more bound by the various consequences that large companies have for disclosing sustainability reports.

CONCLUSIONS AND SUGGESTIONS

Conclusion

Based on the results of the analysis of the logistics regression data test that has been carried out, it can be concluded that profitability does not have a significant effect on the issuance of financial statements. The type of industry has a significant and positive effect on the issuance of financial statements. The company size has a significant and negative effect on the issuance of financial reports.

Suggestion

This study uses logistics regression to determine the effects of independent variables on dependent variables. The author hopes that the research will come to find a dependent variable that is not binominal or dichotomy to further reflect the recognition of the company's sustainability report in Indonesia. In addition, this research only uses 3 independent variables, namely profitability, type of industry and company size. The author also hopes that further research will add independent variables to better know about the issuance of sustainability reports in companies in Indonesia.

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DEVELOPMENT OF SOCIAL INFORMATION COMPETENCE OF FUTURE ELEMENTARY SCHOOL STUDENTS

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ABSTRACT

This article is devoted to the effective effect of using modern information technologies in the educational process on increasing the effectiveness of educational methods, changing the work of teachers, improving their pedagogical skills, structural changes in pedagogical systems, and its specific tasks in organizing and managing the informatization of pedagogical processes.

KEY WORDS: *modern information technologies, pedagogical software tools, informatization of educational institutions, modern science integration.*

Today, there is a need to create a theoretical basis for the introduction of information technology in education and to put it into practice. It is necessary to emphasize that the teacher is becoming one of the sources of acquiring knowledge, not as an organizer of the learning process. At the developing stage of scientific and technical development, the sharp increase in information and the limitation of time for using it in the teaching process, as well as the requirements for perfect preparation of students for professional activities, require the introduction of modern technologies into the educational system.

Systematic integration of the educational process with information and telecommunication technologies and its management is one of the important directions of educational system reform. In the process of reforms, the main task is to organize the educational process, to fundamentally update its content, to organize the pedagogical activity of the teacher and the learning process of students in a computerized environment.

In the "National Personnel Training Program", one of the main areas of improvement of the personnel training system is the creation of an integrated information space of the educational system. It defines the development of education on the basis of modern information technologies, computerization and computer networks.

The capabilities of modern information technologies for intensification and optimization of education are of great importance in the organization of distance training. Therefore, the goal of improving the qualifications of teaching staff of general secondary education schools, secondary special and vocational educational institutions is to form the knowledge, skills

and abilities of teachers, as well as pedagogical skills, using the possibilities of modern information technologies.

Today, there are a number of problems that have not yet been solved, which are directly related to the improvement of the effectiveness of pedagogical education.

These problems are related to the informatization of the education sector, the training of teachers in the field of modern information technologies, and insufficient qualifications of teachers in the use of modern information and communication technologies. As one of the important aspects of these problems, it is possible to show the attitude of teachers towards equipping education with modern information technologies. It is worth noting that the teacher's pedagogical skill increases even more in the conditions of information.

Nowadays, all educational institutions are equipped with modern computer and telecommunication technologies. This, in turn, requires teachers to take a new approach to their work. The introduction of new technologies in the educational process does not push the teacher by technical means, but changes his tasks and role, turns teaching into a more active profession.

The rapid development of computers and modern information technologies now shows how brilliant the pedagogical skill of the modern teacher is. From today's modern teacher:

- designer of training courses - creator of training courses;
- facilitator - consultant on teaching methods;
- tutor - specialist in interactive presentation of educational courses;



- invigilator - is required to be an expert in methods of monitoring educational results.

Modern technologies create the basis for a new organization of distance higher pedagogical education. Such education requires the organization of new teacher training courses with the help of teachers, computer programmers and specialists. When creating distance learning courses, first:

- the purpose of the courses;
- ways to achieve the goal;
- methods of presenting educational materials;
- teaching methods;
- types of reading books;
- questions for discussions;
- ways of organizing discussions and debates;
- factors such as methods of interaction and communication should be determined.

U.Sh. Begimkulov offered the course "Information technologies in education" aimed at forming the knowledge, skills and abilities of students to use the possibilities of modern information technologies from the perspective of distance training of teaching staff in order to improve their pedagogical skills. It was developed in terms of content and standards, and forms the pedagogical skills of teachers based on the requirements of the present time.

Also, the purpose of the course is to form the knowledge, skills and qualifications of modern information technologies, technical tools and software necessary for professional activity and information society, learn to use modern information technologies in the educational process, as well as in solving any problems in their professional activities. Initially, teachers acquire the following requirements at the level of primary training:

- Knowledge of the main objects of the text editor and the actions that can be performed on them;
- Able to use a text editor to edit and format text;
- Appropriate use of raster and vector methods of presenting graphic information;
- Knowledge of the main objects of the graphic editor and the actions that can be performed on them;
- Able to use a graphic editor to create and edit an image;
- being able to use electronic tables with understanding of their possibilities and tasks;
- know how to create diagrams;
- Use of electronic tables in solving problems;
- Description of the possibilities and functions of the database;
- Description of types of database;
- Knowledge of the main objects of the database and the actions that can be performed on them;
- Ability to create a custom database;

- sort and search records.

The module structure of the course can be defined as follows:

Module 1. Information and communication technologies in education.

Module 2. Pedagogical software tools.

Module 3. Technologies for creating electronic learning materials.

Module 4. Modern technical means of teaching.

In this, teachers enrich their pedagogical skills by mastering the content of the following modules:

1. Information and communication technologies in education

Understanding of information and communication technologies, tools of information and communication technologies, the possibilities of their application in the educational process, modern information technologies and pedagogical software tools in the education and development of a person, creation of information and communication technology tools, didactic foundations of their use in the educational process, e-learning for educational purposes Pedagogical-ergonomic requirements in the creation and use of tools and their quality assessment, automation of the information-methodological support of the educational process and the organizational-management system of the educational institution and its prospects, the structure and composition of the electronic-learning materials base, educational Internet resources and their use in the educational process, the complex of electronic teaching-methodical materials, its structure and composition, pedagogical and ergonomic conditions for the effective and comfortable use of information and communication technologies for educational purposes, informatics and information requirements for technology room and methodical aspects of organization of educational process in it, promising directions and future of using information and communication technology tools in educational process.

2. Pedagogical software tools. Basic concepts: a general definition of pedagogical software tools, demonstration programs, control programs, training programs, didactic capabilities of software tools, expert-teaching systems, automated teaching systems, methods of creating interaction between users and pedagogical-software tools. Principles of creating pedagogical and software tools: taking into account the psychophysiological characteristics of students and the technical capabilities of the computer, the priority of the teaching strategy; pedagogical, psychological and functional completeness, motivational activation, universality of application and modular structure. The technology of creating a scenario of pedagogical and software tools: determining the purpose of use,



analyzing and selecting educational materials, structuring and formalizing it, presenting a pedagogical scenario. Management of educational activities based on pedagogical software tools. Technology of creating pedagogical and software tools in programming languages. Automated learning systems. Integration of information resources for teaching: harmony of didactic tools, integrated use of traditional and pedagogical-software tools. Technical means of creating pedagogical and software tools. "Lector" system and its use in creating pedagogical and software tools. Practicum on pedagogical and software tools.

3. Technologies for creating electronic educational materials.

Electronic educational materials and their types: electronic textbook, electronic study guide, electronic reference, electronic collection, electronic catalog, etc. Stages and technology of creating electronic educational materials; principles of creating electronic learning materials; Creating e-learning materials based on HTML and Java Script. Creation of e-learning materials based on modern programming languages (Delphi, Visual Basic, S++, etc.). Creating applications in PowerPoint and FrontPage environments. Creation of multimedia applications and e-learning materials in the Hypermethod environment. Voting technology for educational materials and its tools.

4. Modern technical means of teaching.

Audiovisual information: sources, converters, carriers. Audiovisual culture: history, concepts, structure, functioning. Psychophysiological basis of reception of audiovisual information by a person. Audiovisual technologies: picture and picture taking, optical projection (static and dynamic) and its means, sound recording (analog and digital) and its means, television and video recording (analog and digital) and its means, computers and multimedia means.

Audiovisual technologies of education: television and video conferences, their organization, audio, video and computer training manuals, a bank of audio, video and computer materials, didactic principles of creating audio, video and computer training manuals. Interactive technologies of teaching.

The teacher's "information culture" is formed based on the following criteria:

- mastering the methods and methods of obtaining, processing and using information related to his professional activity;
- a set of qualities that improve the teacher's pedagogical skills, reflecting knowledge and ideas about the information processes in the world, having an information medium, and ethics related to information culture

- mastering the system of ethical and professional standards, as well as having computer literacy;
- information efficiency consisting of computer literacy and information search skills, information use and evaluation, computer communication technologies, acquisition and use of information technology opportunities in all spheres of pedagogical activity.

Modern information resources help the teacher to improve his professional skills. In this situation, the teacher:

- As an educator - conducts trainings, ensures that the teaching process is properly and effectively organized from an educational and methodological point of view;
- As a consultant - manages the learning process, conducts group consultation and communicative activities, gives individual advice to students on various issues of the studied topic;
- As a manager - manages training, monitors the achievement of full-blooded goals (tests, exams, etc.).

At present, only the first, initial stage of forming the teacher's information culture is observed - the formation of modern computer literacy. Providing general education schools with information and computer tools creates conditions for the formation of computer literacy of the teacher. Changing the organization of the learning process, forming the skills of creating information products and educational programs on the computer is the next step in the development of the teacher's information efficiency.

The teacher's information culture implies the ability to build an information model.

Looking at modeling as a universal method of researching events, processes and objects in the real world, a teacher who has the method of building an information model involves the student in research work, creates conditions for his active participation in modeled situations.

Activities at the level of the educational institution should be built on the basis of the information program of the educational institution.

The goal of such a program is to improve the quality of education through the active application of information technology.

This goal can be achieved by solving the following issues:

- to create a uniform information environment of the school in order to increase the efficiency of methodical work, fulfill the needs of teachers and precisely control the flow of information in scientific and methodical documents;
- use of information technologies in continuous professional education and activation of the educational process;



- creating conditions for the formation of information culture in teachers and students.

The implementation of such a program provides an opportunity to effectively organize the educational process, analyze the results of the entire team and each participant's activity during the educational process, and determine the level of effectiveness of the application of information technologies to the educational process.

The following educational internet resources can be used for organizing activities aimed at theoretically and practically preparing teachers at all stages of mastering and applying information technologies to the program: The single information space of pedagogical educational institutions of the Republic of Uzbekistan is the portal www.pedagoe.uz, currently www.pedagog.uz portal consists of the following information and educational resources:

- unified electronic educational and scientific resources;
- a single database of graduates and an electronic ordering system for personnel;
- distance education resources;
- distance training courses;
- Educational electronic resources;
- Electronic educational-methodical complexes;
- open electronic system of activity of Specialized protection councils on pedagogy;
- Electronic system of methodical application of young teachers;
- Electronic conference-forum;
- The official site of the electronic promotion system of pedagogical education in the republic.

It is known that information obsolescence has the characteristic of rapid obsolescence, therefore, it is necessary for the teacher to continuously learn and create (independently and specially organized).

In the conditions of modernization of education, the requirements for the training of teaching personnel in the continuous pedagogical education system are increasing.

Distance courses provide invaluable assistance in self-improvement of the teacher based on modern information technologies. Choosing the topic of training through the Internet allows you to save time and increase the effectiveness of teaching. The ability to reveal oneself and one's own experience is an important aspect of the teacher's information culture.

Sometimes, teachers do not correctly accept the fact that the administration requires the computerization of work programs, work reports, based on modern business requirements. However, the skills and abilities to prepare documents using modern tools, both technical and software, more precisely, the desire to describe the teacher as a skilled teacher who is ready to innovate.

It describes the use of a computer in diagnostics and monitoring of educational activities, as well as the teacher's level of knowledge of information and communication technologies. Compliance with the standards of health care of both students and teachers when using a computer is an integral part of the teacher's information culture.

In conclusion, it should be noted that the implementation of new information technologies does not cancel the traditional technologies of education.

Computer tools and information technologies have a great impact on the didactic process, increase its activity, but at the same time, the principle of pedagogical expediency is found in the use of information and computer tools in the learning process.

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A BRIEF HISTORICAL-GEOGRAPHICAL DESCRIPTION OF THE NUROTA MOUNTAIN RANGE

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ANNOTATION

This article contains information about the geographical structure, relief and borders of the Nurota oasis, and it is based on the fact that the flora and fauna of this area created conditions that could be a place for ancient people.

KEYWORDS. North Nurota Mountains, South Nurota Mountains, Koytash, Zargartog, Katta Fozilman, Karchigai, Okchopsoy, Koshrabot.

Annotatsiya

Ushbu maqolada Nurota vohasining geografik tuzilishi, relyefi va chegaralari haqidagi ma'lumotlar joy olgan bo'lib, ushbu hududdagi flora va fauna dunyosi qadimgi odamlar uchun makon bo'la oladigan darajadagi shart-sharoitni yuzaga keltirganligi asoslangan.

Аннотация. В данной статье содержится информация о географическом строении, рельефе и границах Нуратинского оазиса, и она основана на том, что флора и фауна этой местности создали условия, которые могли быть местом проживания древних людей.

Kalit so'zlar. Shimoliy Nurota tog'lari, Janubiy Nurota tog'lari, Qo'ytosh, Zargartog', Katta Fozilmon, Qarchig'ay, Oqchopsoy, Qo'shrabot.

Ключевые слова. Северные Нуратинские горы, Южные Нуратинские горы, Койташ, Заргартог, Катта Фозильман, Карчигай, Окчопсой, Кошработ.

Historically, the Nurota oasis is adjacent to the northwestern branch of the Turkestan ridge and is located in today's Navoi, Samarkand and Jizzakh regions [1, 45; 2.78]. In the southeast, the Ilonotti mountain pass on the Sangzor river separates the Nurota mountains from the Molguzar ridge [3, 344-345]. It is bordered by the Zarafshan bog from the south and the Kyzylkum desert from the north. The Nurota mountains consist of two parallel ridges. The northern ridge is called the Nurota Mountains, more precisely, the Northern Nurota Mountains, and the southern one is called the Southern Nurota Mountains. The Koytash Mountains are located in the southeastern part of the Northern Nurota Mountains [3, 345-346]. For ancient people, both

mountain ranges created conditions for leather-breeding and hunting, and later cattle-breeding and partly for agriculture along the springs and mountain ridges. The location of the mountains above the sea level is crucial for water supply in the summer season. In particular, the Koytash Mountains go from the Sovurbel Pass in the northwest to the Sangzor River in the southeast [4, 53]. The length is 70 km, the average height is 1260 meters. The central part of the Northern Nurota ridge is relatively high, the average height is 1750 meters. The highest place (Zargartog) is 2169 meters. There are peaks like Katta Fozilman (2134 meters), Karchigai (2105 meters) in this part.



The northwestern part of the Northern Nurota Mountains is not very high, the average height is 900-1100 meters. For this reason, the share of agriculture in the economy of the inhabitants of this region is relatively small. For example, the Southern Nurota Mountains are cut by several meridional valleys; It consists of Gubdintog, Karaqitog, and Oktog, stretching from the southeast to the northwest [3, 345]. Karatog, northwest of Aktog, also belongs to the southern Nurota mountains. These mountains are separated from each other by Koshrobot, Koytash and Nurota. The Nurota Mountains extend 180 km to the north-west. The average height is 1000-1500 meters. It is composed of Paleozoic limestone, sandstone and shale, metamorphic rocks. There is a lot of loose rock among them. Neogene and Quaternary deposits are also distributed in the lower parts of the southern ridges and in botiks [4, 75]. Tectonically, the ridges have a megaticlinal structure, were formed during the Hercynian fold and were raised to their current height as a result of new tectonic movements.

Due to the fact that the Nurota oasis is located between the Northern and Southern mountains, known as the white mountain and the black mountain in the vernacular, and that these mountain ranges extend over relatively large areas, many rivers and streams flow from the Nurota mountains (Osmonsoy, Kulbasoy, Uchmasoy, Majrumsoy, Ukhumsoy, Sentabsoy, Tusunsoy, Oktepasoy, Koksaroysoy, Okchopsoy, etc.) begins [3, 346]. Due to their low water consumption, when they reach the plains, they dry up or are used for irrigation. Flood events also occur in them in the spring [5, 56-57]. By the early and late middle ages, artificial dams and dams were built from the waste water formed in the mountain ranges (Khonbandi in the 10th century and Abdullahkhan dam in the 16th century).

The flora and fauna of the oasis are also peaty, and in the Nurota mountains, mainly gray soils, brown gray soils are distributed at 1600-1700 meters altitude. Ephemera and ephemeroids grow in the foothills and up to 1600 meters altitude [6, 14]. Among the bushes and trees there are almonds, walnuts, sorghum, hawthorn and others. In the higher part, there are birch groves. Animals include wolves, foxes, ibex, hares, mountain goats, badgers, snakes, partridges, bullfrogs, and others.

The favorable conditions for living in the oasis require archeological research to suggest that it was also

the place where the oldest people lived. During 2018-2022, professors of the Department of Archeology of Samarkand State University and the team of researchers led by O. Ergashev carried out archaeological observation and excavation work in Nurota mountain massifs. During these years, the search results around the mountain belts and springs made it possible to obtain about 100 primitive weapons of the Stone Age and fragments of processed stone weapon raw materials [7, 1-45]. The details of the captured artifacts indicate that the Nurota oasis was one of the ancient places of mankind, and it is necessary to carry out in-depth research in the area.

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NATIONAL UNIVERSITY OF UZBEKISTAN NAMED AFTER MIRZO ULUG'BEK, TASHKENT, UZBEKISTAN

Burkhonov Sherzodbek Muxammadbobir O'g'li

Martin Heidegger's doctrine of human

ABSTRACT

The problem of man and his ability occupies a special place because natural scientific knowledge has very limited opportunities to study this problem. Philosophical and social knowledge cannot claim to know a person perfectly. Therefore, one can only hope for a comprehensive approach. This approach makes it possible to greatly expand the boundaries of human learning due to the use of the entire rationalist tradition of understanding human nature and the possibilities of esoteric thinking. This article discusses Martin Heidegger's viewpoints of human. He was a German logician whose work is maybe most promptly related with phenomenology and existentialism.

KEYWORDS: *Human, human problem, philosophy, existentialism, mind, concept, existence.*

INTRODUCTION

Human problem has always been one of the main topics of philosophy. Many thinkers and scientists tried to understand human nature, its place and mission in the world. Current scientific literature acknowledges the existence of a natural and social existence of a person. The biological approach is more limited because it focuses on the evolutionary-biological basis of the norms of human relations.

LITERATURE REVIEW

Russian philosophers - specialists in human problems I. Frolov, B. Grigoryan, L. Bueva, R. Karpinskaya tried to reject the scheme of socialized man. They emphasize that it is not correct to look at a person (like J. Locke) as a clean slate on which society writes the necessary words, and it is necessary to pay serious attention to the natural and biological foundations of the individual.

Currently, the problem of "mind – body", "nature – nurture" is being discussed in Western literature. But the main problem is not in the dichotomous description of the indicated essences, but in creating a single image of a person. This requires a comprehensive approach that incorporates the achievements of knowledge in the social-humanitarian and natural-scientific fields. However, the real life of a person is "quantized" by the biological dates of birth and death. According to R. Karpinskaya, life in these borders is continuous¹¹ and

full of changes depending on the relations between generations and the relations between the sexes. Modern philosophy and science in the study of man originates from his interpretation as a whole socio-biological being. Psychologist A. Leontev called human activity "unit of life". It is considered that the concept of "individual" serves as the basis for the concept of "person".

Modern science offers an approach to the study of human phenomena based on the synthesis of natural science and social science knowledge. Determining the socio-biological foundations of human social behavior is the main problem. The anthropological approach determines the specific characteristics of human existence, deals with the existential analysis of a person. The concept of "existence" directs the researcher's mind to the search for and determination of the connections between man and the world, which are manifested in human actions and sufferings.

Philosophical anthropology as a direction of contemporary Western philosophy was first developed in the works of German philosopher and sociologist M. Scheler (1874-1928) and German philosopher H. Plesner (1892-1985), German thinker A. Geler (1904-1976) developed in his works.



METHODS

Personalism, which declares the person as the main content of universal development, offers more complex approaches to its study. A person inevitably sees his essence outside of himself - this is exteriorization, he is fed by deep inner norms and goals, this is interiorization. Finally, a person goes beyond the narrow limits of his real empirical existence and strives for higher values: truth, goodness and beauty, this is transcendence.

Existentialism argues that man cannot be known using scientific methods, and that the real existence of a person is not equal to his real existence in the form of an object. S.S. Kierkegaard proposed a three-stage theory of the rise to true existence, with the aesthetic stage dominated by pleasure, the moral stage by the sense of duty and norms of moral law, and the religious stage by the principle of existence. This visualization of one's own experiences allows one to understand a new "transcendent" standard of existence. Anthropological issues are particularly relevant in times of crisis, when social norms of behavior, stable forms of communication and interaction change.

RESULTS AND DISCUSSION

Martin Heidegger (1889-1976) is one of the outstanding thinkers of the 20th century, who thoroughly and extraordinarily developed certain problems of culture and person. For many decades, the thought of this philosopher remained in the center of everyone's attention. The philosophical ideas of Heidegger had a noticeable impact on the spiritual atmosphere of our time. Heidegger's thoughts still remain a mystery to us, since his philosophizing is not amenable to simple reflection.

The paradox and significance of Heidegger's thinking lies in the desire to return humanity to man, that is, his own being. In his writings, he thought a lot about humanism, about the position of the human individual in the modern world, his freedom and moral responsibility. The problems of leveling the personality, the "inauthenticity" of the existence of the individual, alienation between people, which caused particular concern for the German philosopher, are still relevant today. The article discusses Heidegger's approach to solving the problem of human existence.

Heidegger emphasizes the exceptional uniqueness of human existence and urges us to avoid the errors inherent in "traditional metaphysics," which has lost

sight of Being in all its fullness and authenticity. Thinking must return to the source of metaphysics, which is "remembrance of Being itself." Heidegger emphasizes that "understanding the essence of man becomes necessary in the service of the question of the truth of being; because the unexpressed, for as yet unmanifested experience of oblivion of being includes the all-carrying conjecture that the relation of being to a human being belongs, to the extent of the unhiddenness of being, to being itself" [1].

According to Heidegger, "on the basis of the question of the truth of being... an attempt was made in the treatise "Being and Time" (1927) to determine the essence of man from his relation to being and only from this relation, which essence of man is characterized there, in a strictly delineated sense, as the presence" [3]. He emphasizes: "The name "presence" was chosen for the essential area in which man stands as a person in order to capture both the relation of being to the essence of man and the essential relation of man to the openness ("Here") of being as such at the same time and in one word." [1]

According to Heidegger, throughout the treatise "Being and Time", the content of thought in the word "presence" is stated in the thesis:

"The essence of presence lies in its being" [2]. This means that it is existence that determines human nature. Existence can only be inherent in man, only in the way he "is". Existence is precisely in which man stores the source of his definition. But what is existence? Heidegger defines this concept as follows: "It is that 'being', to which presence can be related in one way or another and is always related in one way or another, we call being" [2]. One's existence is characterized by him as one's position "in the light of being." The main concern of modern man, according to Heidegger, is "to listen to the call of being".

According to Heidegger, elementary existential understanding is constituted of man's 'being in the world'. The structure underlying all future knowing acts, which he called prior knowledge. Precognition cannot be described in terms of a theory of knowledge, in terms of a subject-object relationship. It can only be formed as an analytical Dasein ("here"). Knowledge is the way of human existence. The being is revealed to us by ourselves. Man must become the subject of a phenomenological interpretation. Man's task is to carry out an hermeneutic question of the world. Man belongs



to being, but this belonging is not unilateral, but plays the role of belonging to each other. Therefore, a person must “listen to the being, for it is entrusted to him” [3].

Considered as the primitive form of human existence, its existence is intimately linked with timing. Man is a finite and finite being; a person's existence consists of past, present and future, but his life horizon is always towards the future. Man interprets his being according to his plan for the world. According to Heidegger, a person does not have a solid structure that leaves him open to a variety of possibilities. A person appears as a projection of their own conscious choices. At the same time, understanding requires the realization of the conceived possibility, its implementation. And here Heidegger introduces the term “interpretation”. “Being here” is always projected in the process of knowing for self-knowledge, self-realization, i.e. the discovery and interpretation of this understanding. Interpretation is born in understanding. It is an interpretation, a development of understanding. Understanding and interpretation is possible in the presence of a comprehensive existential structure.

An important place in Heidegger's concept of man is occupied by the distinction between genuine and non-authentic existence. The German philosopher denotes the state of inauthentic existence with the indefinite pronoun “Man”. “Man” is all the impersonal forces of society, the objectification and reification of a person, “the domination of others”. “Man” is a certain way of life and behavior of a separate human individual, when he is forced to adapt to the “domination of others”, when his own existence is dissolved in the way of being of others. “Man” has a destructive effect on the personality, suppressing the will of the individual and erasing its individual characteristics.

In *Being and Time*, Heidegger describes human existence as a present being, thrown into an alien and hostile world. “Abandonment” is one of the main categories of being by the German philosopher, who emphasizes the ontological loneliness of the human personality, torn from all real connections with other personalities, devoid of inner history and doomed to meaningless vegetation [4]. Man ended up in this world against his will, and his existence in the world is accompanied by an experience of fear that never leaves him. It is in fear that a human being comprehends himself quite thoroughly and deeply, especially in fear of the threat of death, of death. Fear of death, according

to Heidegger, leads our Self to its own self. Death is predetermined by fate, therefore it is necessary, not accidental. Only death resists depersonalization and inauthentic existence, since it is always personal. Only in being-towards-death does a person become himself and comprehend the full depth of his unique and unrepeatable personality. Experiencing his mortality, realizing his finiteness, a person discovers the meaning of being. Heidegger, thus solving the problem of human existence as an “existential analytic of presence”, enters the field of fundamental ontology. The experience of Being, underlying the fundamental ontology, is open to man and only to man, since only he exists. Man alone is that being through which the connection between the truth of being and its existence is carried out.

In the “Letter on Humanism” Heidegger comes to the conclusion that “the highest humanistic definitions of a human being do not yet reach the dignity of a person” [5]. He seeks to explicate “humanism in the highest sense,” in which “it is not man who is put at the forefront, but the historical being of man with its source in the truth of being”. To do this, you need to rethink the essence of man and show the eventual nature of his being. The Heideggerian call addressed to us about “the need to think about the essence of one’s being” is connected with its reliable implementation of a decisive breakthrough in our way of thinking, which will lead beyond the subject-object opposition when comprehending the world through existence.

CONCLUSION

Thoughts about man led to the conclusion that it is necessary to distinguish the nature and essence of man. There cannot be a clear boundary here, because a person has always been an enigma of the universe, its unsolved secret. But, nevertheless, in science, it is accepted to study the set of human abilities and qualities in connection with his nature. Intelligence, communication and the ability to lead a social life are the main characteristics of a person.

Heidegger analyzes the problem of human being comprehensively and academically rigorously. His ideas include not only a statement of the universal conditions of human existence, understanding the potential of the human personality to overcome the absurdity and chaos of what is happening in the world, but also help to find ways to free a person from the negative trends of the modern crisis era through the development of the



creative abilities of the individual, the expansion of his ideals and value orientations, formation of the initiative. Heidegger's philosophy promotes awareness of the metaphysical foundations of negative trends in social development and opens up opportunities for us to overcome them by turning to the spiritual sphere.

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THE DIFFICULTIES AND CHALLENGES IN TEACHING AND LEARNING ENGLISH TO NON-NATIVE SPEAKERS USING QUALITATIVE RESEARCH METHOD

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ABSTRACT

Learning a language is a difficult process. Despite being a global language, learning all four micro skills is tough. Learning English presents a number of challenges and stumbling obstacles, particularly for non-native speakers such as Myanmar students. Inadequate teaching and learning materials, such as high numbers of students in courses, utilizing their home language instead of English, not being in an English-speaking context, being less secure in speaking English, and using the improper curriculum, are all examples. These are only a few instances. I occasionally teach English in Myanmar. While teaching and learning English in Myanmar, I met a number of challenges and roadblocks. It motivates me to undertake further study on the challenges that students and instructors confront in Myanmar.

To discover the unique challenges and obstructions experienced when teaching and studying English, I employed qualitative research methodologies. I visited with each of the five experienced English instructors individually: one retired teacher, a high school founder who teaches from primary to secondary school, two public high school teachers, and one senior lecturer. I asked them four questions regarding their teaching experience, the challenges they had when teaching English, and how they overcome them.

Following the interview, I documented their comments as well as the instructors' comparable experiences with the problems of learning and teaching English to their pupils, and the findings indicated how to overcome all of the hurdles throughout the whole learning and teaching process. They, as well as their sound advice on teaching and learning English. Then I concluded by describing how we could use approved tactics and new technology to overcome all of the problems that we have when teaching and learning English.

KEY WORDS: *Challenges¹, Obstacles², Encounter³, Non-native Speakers⁴, Qualitative Research Methodology⁵*

¹ Challenges: Something that requires a great deal of mental or physical strength to complete and thus puts a person's abilities to the test.

² Obstacles are defined as anything that prevents or makes it more difficult for you to move, act, or move forward.

³ Encounter means to have an experience, especially a bad one.

⁴ Individuals who learned a language as adults or children rather than as babies are considered non-native speakers.

⁵ Qualitative Research Methodology : An experimental method that involves collecting and analyzing nonnumerical data (e.g., text, audio, video) can be used to understand concepts, opinions, or experiences. It can be applied to understand a problem in greater detail or to generate new research ideas.



RATIONALE FOR THE RESEARCH

An expanding, intensifying, and accelerating interdependence in all spheres of modern social life is one of the first definitions of globalization. It is a natural progression. Many academics contend that English is no longer regarded as the exclusive property of the English-speaking world and has instead evolved into an international commodity known as the International Language of English. Businesspeople, dealers, engineers, scientists, and academics must also be fluent in English because it is the language used for international information interchange.

Because English is the key to accessing the world's free knowledge, students should study it.

A country's ability to engage in the global economy and to access information and knowledge depends on a significant portion of its population speaking English. Learning a second language is not as easy as flipping a coin. Myanmar English users, sometimes known as "non-native speakers," face a number of challenges. English as a foreign language is also taught in Myanmar schools at the secondary, college, and higher education levels. Furthermore, English is primarily taught in Myanmar's classrooms. As a result, students either solely study English in class or pay little attention to honing English skills outside of the school.

The fact that Myanmar students still have difficulty speaking English hinders their jobs and causes them to continue taking English classes even after graduating from university.

English proficiency is advantageous in the workplace and can help attract investment and increase career opportunities. The majority of issues with teaching English as a foreign language in other nations are comparable. English teachers encounter numerous challenges in nations where English is a second language, like Myanmar. English is one of the disciplines that are taught in almost all schools worldwide.

HYPOTHESIS

Non-native English speakers in Myanmar face challenges when teaching and studying English. We all know how difficult it is for many students to learn English and how difficult it is for teachers to teach the language. We discovered that speaking and writing are the most difficult for Myanmar students to master. They can master the grammar and occasionally identify the pronunciation, but they are terrified of speaking. They can communicate in English, but not always correctly, due to difficulties with vocabulary, grammar, structure, and pronunciation. When we encounter difficulties in English learning and teaching, we can utilize the implemented solutions listed below to solve all of our problems. We can use stories, situations, and other materials that students are already familiar with. If we engage in a positive English environment while developing English classroom routines. They should encourage students to get involved in English-speaking communities and practice English with native speakers. If we can teach students how to correct and improve their mistakes, and if they can learn from one another. Finally, because today's students are technologically savvy, we can incorporate multimedia English

Despite the fact that English is a topic that is required from primary school through university, the majority of students in Myanmar lack competency in the language, making it the most challenging subject for them. Teachers of English as a Second Language (ESL) or English as a Foreign Language (EFL) face many difficulties. We have a variety of problems that need to be solved. Myanmar students still struggle with the English language even after 11 years of basic education classes. Several Asia-Pacific nations receive dismal scores on the EF English Ability Index (EPI) 2021, which evaluates the proficiency of the English language in 112 nations.

Myanmar has an extremely low English proficiency rating (93 out of 112).

When the British colonized Myanmar, all of the high schools were run by missionaries. During their studies, they were required to speak English at school. Otherwise, students would be fined if they spoke a single Myanmar word. Even those who had dropped out of high school at the time were able to communicate effectively and confidently in English. Myanmar students today are overly reliant on their mother tongue and speak exclusively in Myanmar, even in English class. U Thant, the Secretary-General of the United Nations was among the scholars. The works of Dr. Htin Aung and Daw Khin Myo Chit were even published by Oxford University Press.

Their English expressions were admired by native English speakers. Why are younger generations less confident in English than older generations? What are their challenges?

How are we going to overcome them? That encourages me to investigate the actual problems and obstacles in teaching and learning English, as well as methods for resolving and highlighting such concerns and transforming them into positive changes in English study. The majority of researchers squandered the opportunity to produce useful results by utilizing teaching and learning pedagogies.

language labs into teaching and learning, and Myanmar students will conquer all English problems and enjoy studying English without issue.

RESEARCH QUESTIONS AND OBJECTIVES

Nowadays, one of people's fundamental needs is to learn English. Additionally, English is frequently utilized in a worldwide environment as a tool to access new opportunities and knowledge. Every continent uses a significant amount of English for daily necessities, so English teachers have a difficult job.

What difficulties do non-native English speakers encounter when learning and teaching English?

The difficulties are being overcome through efforts, right? What strategies are employed to combat them?

The primary goal is to look into the obstacles and problems faced by students in Myanmar. The second goal is to offer solutions to the difficulties and issues so that Myanmar students can easily and painlessly learn and teach English. Although Myanmar students now speak their native tongue at home or in



their country, this does not exclude them from learning a second language, with English being far more challenging to learn. Understanding learning within each competence (linguistic skills), which is composed of four microskills, involves additional factors as well. The only time that students are taught English is in the classroom, or they give little thought to honing their English skills outside of it.

Numerous problems might occur when learning a foreign language. There are many levels of difficulty and variance for each skill (listening, reading, speaking, and writing). As a result, teaching foreign languages to Myanmar students in the classroom might be challenging. There is a continuing need to find a way to get around, or at least decrease, the obstacles that students confront when trying to establish language patterns, from technological problems to the motivations of both students and teachers. The instructor must adopt a methodology to solve the current challenges in a foreign language class because the language skill, in particular, has its own impediments and challenges for students.

The purpose of this study is to analyze the difficulties in teaching English and to provide solutions. It is anticipated that the study's findings will give English teachers direction on how to effectively teach English. Additionally, it is anticipated that this study would improve the standard of English instruction in Myanmar. English teaching problems are obstacles, challenges, and barriers that arise when teaching English as a foreign language. As a result, identifying issues, identifying solutions, and assessing effective approaches are crucial elements in the teaching and learning process.

CRITICAL ANALYTICAL REVIEW OF PAST RESEARCH

One aspect of improving school quality is the contribution of the instructional process to increasing school quality (Fuller, 1985). According to him, a good textbook can have a consistent impact on students' success. This phrase implies that a textbook or coursebook should include at least one important component that contributes to improved learning. They might consider the Cambodian government's effort to collaborate on textbook development, which will promote a standard textbook for students' English learning needs.

According to Thu'aimah (1989), a variety of variables influence meaning while learning a second language. Students who have poor hearing, eyesight, memory, speech impairment, mental illnesses, and are less able to get along with their peers may contribute to these concerns. Some students may also be dealing with personal or social problems. Another issue is a lack of knowledge of second languages. Among the other variables listed, the characteristics of foreign languages that differ from the learner's native tongue have a significant impact on this topic. As a result, it is easy to see that no one can learn a new language without making mistakes. Making mistakes

demonstrates that students have learned from their mistakes and understand what they should do differently in the future.

When learning English, learners were influenced by issues such as shyness, pronunciation problems, a lack of linguistic knowledge, and incorrect vocabulary item usage, according to Khan (2007). The following description outlined the various problems that Bangladeshi students encountered when speaking English. In his research, he focused on phonological (pronunciation), morphological (word), semantic (meaning), and syntactic (sentence and grammar) issues: Disparities in L1 and L2 pronunciation patterns cause phonological issues. The first language influences the use of stress diphthongs and intonation. This happened as a result of less interaction with native English speakers in real life. As a result, they're unfamiliar with stress patterns and intonation. Abuse of parts of speech causes morphological problems. Learners will occasionally use nouns instead of verbs, such as (choice for choose and loss for lose).

As a result of negative language transfer, students developed issues with vocabulary, grammar, and pronunciation. Alam and Uddin (2013) discovered that when English learners improve their communication skills, they have some syntactic difficulty speaking and appropriately structuring spoken sentences. These issues were caused by teachers who relied solely on Grammatical Methods rather than Communicative Methods. When writing sentences, students frequently used subjective pronouns like "my" and "I" incorrectly. Another problem was that they incorrectly used the relative pronouns "who, which, whose, and that" in their spoken sentences. Learners did not make these errors when practicing writing skills because they had time to think about their sentences before writing them on paper.

Al-khresheh (2013) identified a number of issues that foreign and second language learners face. These are linguistic issues that impair all language skills. Although they now speak their native tongue, this does not rule out the possibility of learning a second language (English or any other language), which is much more difficult to master. Other factors contribute to understanding learning within each competence (linguistic skills), which is made up of four abilities. As a result, most non-native English speakers may easily misunderstand the rules and technical concerns of all four micro-skills, particularly in writing structure and style.

When it comes to learning science, challenges can be defined as difficulties in the context of learning. This is consistent with Dimyati and Mudjiono's belief that the problem preventing learning is the failure of schools to teach English as a foreign language at the secondary, college, and higher education levels. As a result, students either only study English in class or pay little attention to practicing English skills outside of the institution.



Thandar Soe's (2015) research was the first to report on "A study of contemporary trends and challenges in English language teaching in Myanmar." According to her research findings, English language education in Myanmar is similar to that of other Asian contexts in terms of the growing impact of globalization on English teaching, concern for teachers' English competence, and a gap between policy and practice. Teacher confidence, a gap between curriculum and student preparedness, a low wage, an over-reliance on the transmission model, and a large class size were also cited as challenges.

Aisyah Mumary Songbatumis (2017) investigated "English Teaching Challenges Facing English Teachers at MTsN Taliwang, Indonesia." The purpose of this study was to evaluate English teaching issues as well as the solutions implemented by English instructors at MTSN Taliwang. Teachers face challenges such as a lack of teacher training, language fluency, mastery of teaching techniques, familiarity with technology, and a lack of professional development.

In addition, there are facility issues such as insufficient resources and facilities, as well as a time constraint. English teachers' efforts in addressing English teaching challenges include suggesting solutions by using various teaching methods and techniques, matching students' proficiency level and learning situation, reflecting on how they use resources and facilities, providing motivated feedback, striving for the best methods or materials, and using resources and facilities.

According to **Harmer (2001)**, students cannot learn a language just in the classroom. They should continue to learn outside of the classroom. He went on to add that language learners should be encouraged and educated to be self-directed learners, which other academics refer to as autonomous learners.

It is necessary to talk about textbooks (**Dejene, 2017**). Students can study English utilizing an English handbook in addition to teachers and other sources. Many teachers contend that English textbooks are not always relevant for the demands of today's pupils (as reflected by Japan, Senegal, Mongolia, and Cambodia). It takes time and multiple procedures and modifications to create a well-prepared textbook depending on the demands of students.

According to studies, perceptions and attitudes can be examined using a variety of measures and evaluations. The perspectives of teachers on their students' work are a valuable skill and an important component of any language program. It is regarded as an essential component of the extensive learning process because it promotes the development of learners, motivates them, and ensures linguistic clarity. The responses of teachers to students' grammatical errors in text writing are critical for learners' progress. The curriculum is considered to be the most important aspect of the teaching and learning process. As a result, instructional materials must be tailored to the needs of the students (**Du, 2013; Chen, 2019**).

Another significant issue is classroom size, which is also the most challenging situation in those countries (China, Japan, Senegal, and Laos). With a small number of students, teaching English will be effective (**Broughton et al., 2003**). A class of 20-25 students will be most successful because learning English requires four skills: listening, speaking, reading, and writing.

This figure must be difficult for some countries, such as Senegal, where each district has only one school. When looking at underdeveloped countries or even wealthy countries that are **non-NESCs (non-Native English Speaking Countries)**, they all have the same problem: too large a classroom size. This problem is most likely solvable by employing a variety of teaching strategies and approaches, as well as providing supplemental material to teach English in large classroom settings. Internal challenges included linguistic competence, native language interference, and learner motivation, while external factors included the classroom environment, classroom sizes, teaching media, supporting resources, updated curriculum, and time management.

If we try our best to handle all of these issues and hurdles, we will finally overcome the difficulties of learning and teaching English.

METHODOLOGY

For this research study, the qualitative research was used to identify the challenges and obstacles in learning and teaching English to non-native speakers.

DESCRIPTION OF PARTICIPANTS OF THE STUDY

For the interview, 5 well-experienced English instructors were chosen as responses. The first two are male instructors; one is retired and 86 years old, while the other is 56 years old and teaches in a private school. The second and third are female; they are current public high school teachers between the ages of 40 and 45. The last is my classmate, a female instructor who is about 46 years old and works as a lecturer at Government College.

DESCRIPTION OF INTERVENTION (TREATMENT) AND/OR DATA COLLECTION TOOLS AND MATERIALS

My first interviewee was a respected former English teacher who taught me from high school to college. He educated students from middle school through college and runs his own private English school. The second was the principal of the private high school where I worked as an English tutor at the time. The third and fourth were English teachers from my alma mater high schools, where I had spent my whole youth. My last responded was a college friend lecturer with whom I studied English.



Four comparable questions on the problems and obstacles of teaching and studying English to Myanmar students were used in the interviews. Interview Transcript I, II, III, IV and V. contains a recording of all of the questions and responses.

DETAILED AND DESCRIPTIVE DATA COLLECTION PROCEDURE

Making appointments with instructors, as we all know, requires a great deal of patience. First, I met with my former English teacher. I believe meeting with my teacher will be simple because he is already retired. My assumption was incorrect. He didn't feel good enough to visit anyone outside of his immediate family. However, I was granted permission to meet him owing to his surprise desire to see me. I was greeted warmly and completely addressed all of my research inquiries. As I expected, given his extensive teaching expertise, his responses were very extraordinary.

Second, I scheduled another critical meeting with my former workplace, where I began teaching English after receiving my first degree. Fortunately, despite his busy schedule, I was granted permission to see him. He, too, had enough experience teaching English, therefore he flawlessly answered to all of the selected questions without any thought. Our meeting was over in less than 30 minutes.

Despite attending separate public schools, I was able to secure the third and fourth visits with high school English teachers. I was permitted to visit them twice a day, once in the morning and once in the afternoon. They are both teaching English immediately following their Bachelor of Education with a specialization in English Teaching. Despite having less experience than my previous two interviewees, they carefully and appropriately answer all of my questions with excitement in order to obtain valuable research statements.

My fifth and last visit was with a classmate with whom I had studied English in college. She is a senior lecturer at Mandalay's Yadanabon University. She, too, was teaching and arranging various lectures for college students majoring and minoring in English. But, for the sake of an old acquaintance, she backed me and agreed to let me visit her for the interview despite her schedule constraints. The study would not be as successful without her tireless efforts.

DATA ANALYSIS AND PRESENTATION OF FINDINGS

What I discovered during Interview (I) is: He has sixty years of English teaching experience at various levels of students. The majority of the students speak Myanmar rather than English. Students frequently misspell and mispronounce particular words. His students usually make grammar, tense, and syntax errors. He encouraged the students to speak English on a daily basis and to watch English movies appropriate to their level. He

urged students to speak English in front of English experts regardless of whether they would make mistakes.

During Interview (II), I observed: He founded a private high school and continues to teach English to students from elementary to high school. His teaching career spans more than 30 years. They are educating 50-80 students in one class according to his experiences. Because it is a huge classroom, it is impossible to focus on individual students. They lack an English-speaking environment as well as adequate resources. All of the issues in English teaching and learning can be solved by familiarizing oneself with the language, for example, by practicing speaking, listening, and viewing English movies and TV shows. He also supplied solid advice to students by speaking English with teachers and friends despite mistakes.

During Interviews (III) and (IV), I noticed: The former has over ten years of experience, while the latter has over twenty years of expertise teaching English to high school students. They are both employed at Public State High School. They both stress about the need to reduce classroom size in order to ensure optimal student attentiveness. They urge the students to use English frequently. They both discuss appropriate and up-to-date learning resources and desire to supply them in order to make the maximum success in teaching and learning English and overcome all the issues as quickly as possible. They inspire students to be active learners by exhibiting an interest in reading diverse English literature, watching movies, and mimicking their spoken styles in order to attain all of the English skills.

In Interview (V), I realized the following: She has 20 years of expertise lecturing to college students in English. She is well aware of the usual flaws and weaknesses of Myanmar college students, particularly in tenses, syntax, spelling, and mispronouncing and misinterpretation of specific words and phrases. She wants the students to form an English speaking circle in order to improve their speaking abilities and cultivate speaking habits. She individually recommends out what students should watch and listen to in order to develop their listening and speaking skills. She advises students to read newspapers and articles at their own pace. She instructs the students to emulate the writing styles of successful student writers. Finally, as it is the internet era, she advised all students to use multimedia technology to improve their English skills.

LIMITATIONS

Only English instructors who could be reached were interviewed. If we could expand the interviews to the majority of English instructors in Myanmar, we would undoubtedly see improved results and execution of how to overcome all of the obstacles associated with teaching and studying English in Myanmar. We should invest more time and patience with teachers around the country; we will undoubtedly receive a realistic response to those difficulties.



CONCLUSION, IMPLICATIONS, AND RECOMMENDATIONS

When I investigate all the interviews with 5 well-experienced teachers, I just conclude the following challenges are encountered in teaching and learning English in Myanmar.

Most of the schools and institutions both public and private alike in Myanmar have large class room sizes. Students in smaller classes earn higher grades and perform better. Every student is noticed. Learning is improved. Teachers at the front of a small class have more opportunity to monitor and assess the class as a whole as well as individual students. Teachers can spend more time presenting the content and less time trying to recover the attention of easily distracted students in learning spaces with a small number of students.

The Intersegmental Committee of Academic Senates (ICAS), USA states "Given the intensive contacts required by second language acquisition, institutions across all three systems should maintain a regular foreign language class size of no more than 25 students."

Moreover, National Council of Teachers of English Guidelines, USA equally proposes "Classes of more than 25 students prevent students and teachers from engaging with literary works through questions, discussion, and writing." To increase success in teaching and studying English, schools in Myanmar should shift away from overcrowded classrooms and toward smaller ones.

Myanmar students should speak English instead of their home tongue in English classrooms and engage in English-speaking environments more frequently in order to become confident English speakers. Myanmar students typically struggle with pronunciation, spelling, syntax, English tenses, and grammar. In general, students require appropriate learning tools in order to be effective in teaching and studying English.

All of the teachers agreed that students should become acquainted with English and communicate in English with one another through creating an English environment. Students should not be concerned about making mistakes when speaking, and they should continue to strive to speak English without fail. By providing students with appropriate and relevant English teaching and learning tools, they will undoubtedly overcome their hurdles and difficulties in learning English. They will have a better comprehension of English through watching movies and listening to English news and articles. Reading newspapers and articles within the students' abilities will help them understand English more consistently. Writing should be learned by skilled students and then practiced by the students themselves to develop a writing habit.

All students who are learning English are recommended by their teachers. These are really effective and benefit not just students but also any English learner. They encouraged all students,

regardless of mistakes, to speak English with their peers and teachers for the sake of universal language. They also advised students to watch English movies, read newspapers, books, and any other English literature that piqued their interest, and listen to native English speakers and mimic their speech patterns.

I recall one of my friends' family migrating to the United States. They have one daughter who does not speak English at all. At home, they speak Myanmar. When she starts kindergarten, they believe she will have a tough time communicating in English. Surprisingly, she speaks English fluently after only a few months. Now I understand why she can speak English like a native since she lived with and spent time with individuals who spoke that language. As an English instructor, this calls my attention to the fact that we need an English environment for our kids to learn English effectively. We can certainly supply all of these materials to gain a decent grasp of English through Multimedia Labs in our present day without having to make that sacrifice.

My research on "The Effectiveness of 21st Century Multimedia Lab English Teaching compared to Traditional English Teaching for Non-native Speakers of English" was stated the use of multimedia enhances and stimulates students' engagement, enthusiasm, and motivation in learning English. Teachers can establish a favorable learning environment, allowing students to participate in a practical and spontaneous way in the atmosphere of learning English without even recognizing it. Almost everything we need for the four micro-skills of English is available through information and learning resources in the Multimedia Lab for Teaching English. Students learn independently from them and utilize their native tongue less. All learning becomes more student-centered and takes less time as a result.

The use of multimedia technology can help both students' cognitive skills and practical language skills. When teaching English, this will secure and obtain a successful outcome. We can establish the necessary English-speaking atmosphere in modern multimedia classrooms by effectively teaching English in multimedia labs without traveling. So, I agree with the last English instructor who particularly asks students to use multimedia technology to master all four skills because they can access endless English learning resources through the internet.

The difficulties of teaching and learning English in non-native English-speakers of Myanmar were discovered in this study. The obstacles were classified into lots of major issues based on the findings: learning materials and the curriculums that do not meet students' needs, overcrowded classrooms and ; lack of English speaking environments, and students' too much reliance on their mother's tongue. Myanmar students on the other hand, had made some attempts to tackle such concerns. These explanations serve as the basis for this dissertation, which aims to be more specific in describing the typical issues encountered by non-native speaker students in Myanmar , particularly in the context of the "four language skills" and the linguistic



techniques applied to address each language skill's issues. Therefore, a method must constantly be offered to help students overcome or at the very least lessen the learning challenges they face as they establish their language patterns. By being aware of the issues raised in this study, teachers of English or any other second language will be better able to choose how to approach their lessons with the students. Each competence, but particularly the language skill, presents hurdles and difficulties for students. As a result, the teacher is under pressure to come up with an effective teaching method to address these issues in a foreign language class. In conclusion, students need to pay greater attention to the challenges associated with learning foreign languages. Each talent (listen, read, speak, and write) offers a range of possibilities and varying degrees of difficulty. This makes it challenging for students to learn a foreign language in a classroom setting, beginning with technology challenges and progressing to the motivations of both students and teachers.

"To have another language is to have a second soul," said Charlemagne. Learning a language allows you to make new relationships with fascinating people, experience the world through fresh eyes, and explore new ideas and cultures to the point that you may believe you have a second soul.

According to British novelist Frank Smith, one language locks you in for life, whereas two languages unlock every door along the way. Learning a language may be a challenging and unpleasant experience for students at times. Learning a new language is never easy, but when that new language lacks a common root with your own tongue, the process becomes much more difficult. Thus, students must remain motivated and remember that speaking a foreign language not only opens new possibilities, but also provides several additional benefits, despite the challenges and hurdles.

Previous researchers performed all of their studies based on their results, which corresponded with all of the issues and barriers in teaching and learning to non-native speakers in Myanmar identical.

We can still depend on their advice. Despite the expense, I would suggest the Multimedia Lab English Teaching technique based on my experience and the views of my colleagues. The classroom size will be reduced in the multimedia lab. We may concentrate on the demands of each person. We can quickly practice all of the micro-skills. It may appear to be expensive. But if we invest one moment, it will be beneficial to both students and instructors for the rest of their lives. Not just Myanmar, but every nation that wants to enhance all of its residents' English and stay ahead of other countries' men should support and pay for the sake of their people.

We constantly consider profit and loss when we undertake something. Although there may be several hurdles in the process of teaching and learning English, there is no loss for those who

learn English successfully. Because everything you want to learn about future innovative technology and all references are only available in English. It is very worthwhile to try studying English not only for today's success but also for tomorrow's if we conquer the hurdles.

Finally, this study has limitations since it only includes specific Myanmar students and teachers, which is deemed insufficient to investigate the true rising issues in English teaching in non-native English-speaking nations. However, this study may be used as a starting point for other researchers who want to pursue a comparable problem in greater depth and complexity so that research can be developed throughout time.

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APPENDIX

INTERVIEW . I Transcript

When did you start teaching English?

I started teaching junior high students the day after I graduated from high school. Until I retired, I taught students ranging from middle school to college. As a result, I've spent over 60 years teaching English.

What are the difficulties and obstacles you face when teaching English to your students?

Despite my efforts to communicate with them in English, they preferred to speak Myanmar throughout class. Despite my corrections, the majority of students consistently misspelled and mispronounced specific words. Grammar, tense, and syntax errors were common among my students.

How do you overcome all of the difficulties that come with teaching and learning English?

We can overcome the difficulties of learning and teaching English in Myanmar by requiring students to speak English rather than their native language on a regular basis. We should encourage students to watch English movies and dramas with authentic English accents by delivering English movies and dramas appropriate to their English levels.

What advice would you give to English learners?

It is normal for humans to make mistakes. Sometimes English speakers and teachers make unintentional errors. If students want to master the English language, they must speak it without fear of making mistakes. Students should be able to speak English confidently in front of professionals, professors, and native speakers. When students make mistakes, experienced professors and seniors may correct them.

INTERVIEW . II Transcript

When did you first begin teaching English?

As soon as I completed my English degree in 1990, I opened this private high school and began teaching English to students in grades kindergarten through high school. So I've been teaching English for over 30 years.

What challenges do you face when attempting to teach English to your students?

We are unable to focus on each individual student's English language improvement due to our large class size. We need to be in an English-speaking environment in order to learn the language. There is a limited supply of English study materials available to us.

What challenges must you overcome in order to teach and learn English?

Any difficulties encountered along the way will be resolved by becoming acquainted with the English language. Frequent practice with native English speakers, listening to audio books, and watching movies and TV shows can all help to alleviate the difficulties associated with learning English.

What advice would you give to English students?

Students should not be discouraged and should keep studying English despite errors and flaws. I encourage students to converse and practice English with their classmates and teachers. Being active and motivated in studying English, as a global language, will lead to a brighter future.

INTERVIEW . III Transcript

When did you start teaching English?

I've been instructing English for over ten years.

What difficulties do you have while attempting to teach English to your students?

Because we have a huge class room, it is tough to focus on each student. Aside from English instruction, pupils use Myanmar language exclusively during the day, resulting in a lack of English practice. Students hardly speak English even in English class. They rely far too heavily on their native tongue. They must comprehend that each language has its own set of rules and grammatical techniques.



What obstacles do you need to overcome in order to teach and learn English?

We can overcome all of the barriers to learning English by providing students with updated curriculum that is appropriate for them, assisting them with relevant learning tools, and establishing an English speaking atmosphere and allowing them to practice English more regularly.

What suggestions would you provide to English students?

When we bring up the issue of English, many students feel afraid. A significant interest in any language, such as speaking and reading, is required. Reading newspapers, watching English movies, and reading fascinating novels, short tales, and science fiction are all ways to learn English.

INTERVIEW . IV Transcript

For how long have you been teaching English?

I've been teaching English for over two decades.

What challenges do you face when attempting to teach your students English?

Students learn English less effectively because instructional materials are scarce. Students prefer to communicate in Myanmar rather than English. Importantly, we should have a smaller class size so that we can concentrate on students who are weak in English.

What challenges must you face in order to teach and learn English?

We will be able to overcome all obstacles if we provide students with appropriate teaching and learning resources; if we motivate students to speak English most of the time, regardless of their mistakes; if we make them watch movies with subtitles and assist them in reading with word-limit books; if we make them active learners and make them realize learning English is fun.

What suggestions would you make to English students?

Pay attention to native English speakers and try to imitate their speech patterns. Their English accents will be instantly recognizable. If you read a variety of English literature, use the usages and vocabulary in your writing, and practice a lot, you will be an English master.

INTERVIEW . V Transcript

How long have you been instructing English?

Since receiving my MA in English from Mandalay University, I've been teaching English. So, in total, I taught English to college students for nearly 21 years.

Do you have any difficulties teaching English to your students?

Yes. I certainly have. Myanmar students are occasionally perplexed when it comes to using tenses because the Myanmar language lacks as many as English. When writing and speaking English, they made grammar mistakes. Tenses and sentence structure placement in Myanmar have completely different criteria. Students frequently make mistakes in tenses, active and passive voice, vocabulary, spelling, irregular verb patterns, and pronunciation that even native English speakers find difficult to understand.

What obstacles must you overcome in order to teach and learn English?

Students should establish an English Circle and speak English with one another. Communicate as much as possible with English speakers. This gradually improves their comprehension and makes spoken English more understandable. Watching English films, documentaries, and news, reading word-count articles and newspapers, and listening to English speakers' observations are all good ways to practice your English. Students should write more and explore the writing styles of other brilliant students before developing their own writing and inventive approaches. All of these habits will familiarize students with the English language, allowing them to overcome all of the difficulties on their learning path.

What advice would you give to English learners?

Because we live in the internet age, we can use multimedia technology to improve all four English skills. Students can improve their reading and writing skills by reading a variety of stories and articles using modern technology. They can download their favorite English movies and television shows. They may improve their speaking and listening skills by observing them.



FRACTURES OF THE BONES IN THE ANKLE JOINT

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SUMMARY

Introduction: Ankle fractures are usually frequent in emergency departments worldwide, with an incidence of 187/100,000 inhabitants per year. Especially the type B fracture according to Weber's classification, which may lead to long-term osteoarthritis in approximately 14%. It is essential to recognize that stability in the ankle joint is the fundamental pillar in the correct treatment strategies in ankle trauma.

Objective: to describe current information related to ankle bone fractures, etiology, anatomy, epidemiology, mechanism of action, presentation, classification, evaluation, prognosis, treatment and complications of ankle fractures.

Methodology: a total of 38 articles were analyzed in this review, including review and original articles, as well as clinical cases, of which 26 bibliographies were used because the other articles were not relevant to this study. The sources of information were PubMed, Google Scholar and Cochrane; the terms used to search for information in Spanish, Portuguese and English were: ankle fracture, fractura do tornozelo, ankle, tibia, fibula, ankle fracture.

Results: Bimalleolar ankle fractures occur in a quarter of the patients and trimalleolar fractures in the remaining 5% to 10%. The incidence of ankle fractures is close to 187 per 100,000 inhabitants per year. Open fractures are infrequent, representing only 2 % of all fractures of the ankle joint. In children, these injuries are also frequent, occupying the second place after hand and wrist injuries, especially in those between 10 and 15 years of age. Likewise, pediatric ankle fractures occur in a 2:1 male to female ratio, representing 5% of all fractures in children and approximately 9% to 18% of all fissure injuries.

Conclusions: the ankle joint is complex, in *gynglimus*, formed by the fibula, the tibia and the talus and also deeply related to the ligamentous complexes. The bony anatomy that provides stability is formed by the distal part of the tibia and fibula, its articulation with the talus and with each other. Generally ankle fractures are caused by different trauma mechanisms such as impact, twisting and crushing injuries. Ankle injury depends on several factors such as mechanism, chronicity, bone quality, patient's age, magnitude, direction, impact velocity and foot position. A complete and comprehensive medical history is essential in the medical evaluation. X-rays are the first-line adjunctive tests that aid in the evaluation of an injury that impacts the ankle. The classification system is important for the treatment decision. The treatment of fractures of the ankle bones can be performed conservatively or surgically, depending on certain criteria, and immobilization should be performed afterwards to reduce the risk of complications. It is essential to follow the ATLS scheme in order to define and manage any alteration that may be life-threatening for the patient. Ankle fracture-dislocation requires urgent manipulation to recover the ankle mortise.

KEY WORDS: fracture, ankle, tibia, fibula, bones.



INTRODUCTION

Ankle fractures are a common occurrence in emergency departments worldwide, with an incidence of 187/100,000 inhabitants per year, especially type B fractures according to Weber's classification, which can lead to long-term osteoarthritis in approximately 14%(1).

It is essential to recognize that stability in the ankle joint is the fundamental pillar in the correct treatment strategies in ankle trauma. A stable and normal ankle can be conceptualized as one that can move along its physiological limits; however, conceptualizing instability within a fracture is a relatively more difficult, because in instability, the physiological limits are exceeded actively or passively proving that the stabilizing structures are insufficient. Usually, the stability of the ankle is passively ensured by the compliance of the bones that form the joint, the ligaments that surround the joint and the nearby extrinsic muscles; these often lose their stabilizing competence through trauma(2,3).

METHODOLOGY

A total of 38 articles were analyzed in this review, including review and original articles, as well as cases and clinical trials, of which 26 bibliographies were used because the information collected was not important enough to be included in this study. The sources of information were Cochrane, PubMed and Google Scholar; the terms used to search for information in Spanish, Portuguese and English were: ankle fracture, fratura do tornozelo, ankle, tibia, fibula, ankle fracture.

The choice of bibliography exposes elements related to ankle bone fractures; in addition to this factor, etiology, anatomy, epidemiology, mechanism of action, presentation, classification, evaluation, prognosis, treatment and complications of ankle fractures are presented.

DEVELOPMENT

Etiology

Fractures of the ankle most of the time are caused by different types of trauma: Impact injuries: consequence of a descent from a height with repercussions on the distal portion of the tibia and fibula against the talus.

Twisting injuries: such as the forces presented in some types of trips, falls and sports injuries.

Crush injuries: as in those caused by traffic accidents or when the ankle is trapped under a heavy artifact.

The level of bone comminution and soft tissue damage is proportionally linked to the energy of the trauma(4).

Epidemiology

The literature suggests that ankle fractures have sharply increased in incidence since the 1960s. Being more common in older women, however, they are not considered to be fragility fractures. Most ankle fractures are isolated, approximately two thirds. Bimalleolar ankle fractures occur in a quarter of patients and trimalleolar fractures in the remaining 5% to 10%. The

incidence of ankle fractures is close to 187 per 100,000 inhabitants per year. Open fractures are infrequent, representing only 2 % of all fractures of the ankle joint. Fractures of the posterior malleolus account for 7-44% of all ankle fractures. Ankle fractures account for 9% of all ankle fractures. These fractures are closely related to high body mass index(5-9).

Regarding children, these injuries are also frequent, occupying the second place after hand and wrist injuries, especially in those between 10 and 15 years of age. Similarly, pediatric ankle fractures occur in a 2:1 male to female ratio, representing 5% of all fractures in children and approximately 9% to 18% of all fissure injuries. Triplanar fractures account for 5% to 15% of ankle fractures in children and occur in adolescents with a mean age of 13 years and 5 months and a range of 10 to 17 years(10-12).

Anatomy

The ankle joint is complex, in *gynglimus*, formed by the fibula, tibia and talus and also deeply related to the ligamentous complexes. The bony configuration of the ankle joint is primarily responsible for stability. The bony anatomy that provides stability is formed by the distal part of the tibia and fibula, their articulation with the talus and with each other. The distal articular surface of the tibia together with the medial and lateral malleoli generate a cavity or mortise, this creates a compact articulation with the dome of the talus. The articular surface of the lower leg is concave in the anteroposterior plane and convex in the lateral plane. It is wider at the front to be congruent with the talus. This provides intrinsic safety, particularly between loads. The dome of the talus is trapezoidal in configuration, 2.5 mm wider anteriorly than posteriorly. The body of the talus is almost completely covered by articular cartilage. The medial malleolus connects to the medial part of the talus and has 2 small tubercles, anterior and posterior, which aid in attachment to the superficial and deep deltoid ligament. The lateral malleolus provides lateral support to the ankle joint. The ankle is functionally dependent on the subtalar joint and the talonavicular joint because they have a sequence of ligamentous stabilizers that function synergistically when the rearfoot is displaced. There are no articular areas between the distal tibia and distal fibula. The distal tibia is covered with articular cartilage on the medial aspect. The syndesmosis is located between the distal ends of the tibia and fibula. Its function is to withstand axial, rotational and translational forces, in addition to preserving the structural integrity of the shroud. It is formed by different ligaments such as:

- A. Anteroinferior tibioperoneal ligament.
- B. Posteroinferior tibioperoneal ligament.
- C. Transverse tibioperoneal ligament.
- D. Interosseous ligament.

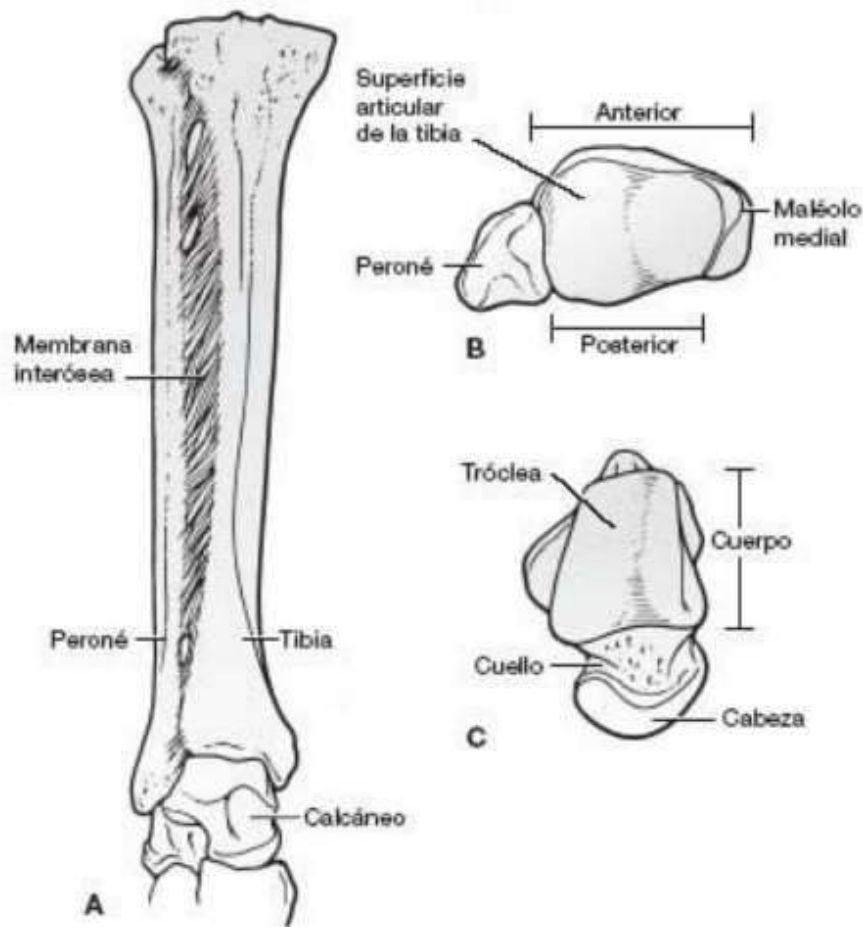
In addition, the deltoid ligament provides support to the medial aspect of the ankle. It consists of a superficial component formed by the tibio-scaphoid ligament, tibiocalcaneal ligament and the superficial tibiotalar ligament; and a deep component in which the intra-articular or deep tibiotalar ligament, the peroneal



collateral ligament, the anterior astragaloperoneal ligament, the posterior astragaloperoneal ligament and the calcaneoperoneal ligament are present. A lateral displacement of 1 mm of the talus decreases the contact surface by 40%. The normal range of motion of the ankle is 30° dorsiflexion and 45° plantar flexion. Gait studies have shown that a minimum of 10° of dorsiflexion and 20° of plantar flexion is required for normal gait. The ankle

flexion axis is between the distal portions of both malleoli and has 20° of external rotation with respect to the knee axis. Rupture of the syndesmosis can reduce tibioperoneal overlap. When a junctional tear is associated with a fibula fracture, the talus may be displaced 2 to 3 mm laterally, even when the deep deltoid ligament is intact(2,4-6,13).

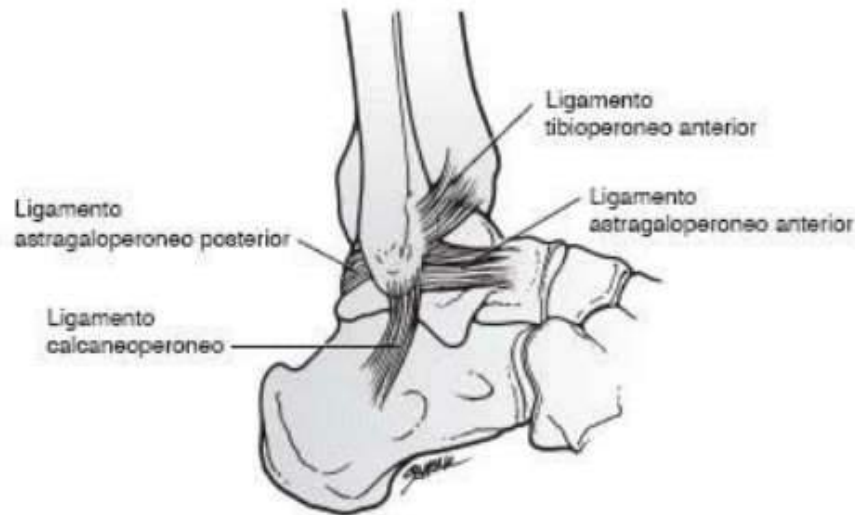
Figure 1. Ankle anatomy



Source:Bucholz RW, Heckman JD, Rockwood CA, Green DP. Rockwood & Green's(6)



Figure 2. Collateral ligaments and anterior syndesmosis.



Source: Bucholz RW, Heckman JD, Rockwood CA, Green DP. Rockwood & Green's(6)

Mechanism of Action

Ankle injury depends on several factors, such as mechanism (axial versus rotational force), chronicity (recurrent ankle instability can lead to chronic ligamentous laxity and distort ankle biomechanics), bone quality, patient age, magnitude, direction, impact velocity and foot position.

Rotational injury is the mechanism most commonly associated with fracture of the posterior malleolus. Similarly, posterior malleolus fracture is seen in pronation-abduction, because abduction results in avulsion of the syndesmosis with failure of the lateral malleolus, which usually results in a posterior malleolus fracture. Infrequently, injury mechanisms such as axial loading and shear fracture of the posterior malleolus are combined. The torsion generated by a spiral fracture of the distal tibia can also cause a fracture of the posterior malleolus, being common in cases of high fibula fracture(5,6,14,15).

In ankle fracture-dislocations the functional prognosis is not the best due to the fact that they present greater damage to the ligaments surrounding the ankle joint(16-18).

Clinical Assessment

A complete and comprehensive medical history is essential in the medical evaluation. The following are needed: medical history, history and injury history, evaluation of the risk of venous thromboembolism.

Trauma patients should be evaluated with the ATLS algorithm to rule out any life-threatening injuries:

- A: airway management and cervical spine stabilization.
- B: Respiration
- C: Circulation and hemorrhage control.
- D: inability to assess neurological status
- E: Exposure

Neurovascular status, soft tissue and proximal fibula status should be assessed using the Ottawa ankle standards. In case of pain or tenderness in any of the malleoli, complementary imaging tests are recommended:

Bone tenderness at the posterior edge or tip (within 6 cm) of the lateral or medial malleolus.

Patients unable to bear weight at the time of injury or in the ED.

Weight bearing will be observed by the patient's ability to take four steps(4,19).

Ankle fractures present in multiple ways, ranging from difficulty to inability to walk, accompanied by pain, swelling and deformity. Special attention should be paid to the neurovascular status of the extremity, to the soft tissue injury and compare it with the contralateral one. It is necessary to touch the fibula in all its extension if possible, looking for pain. It is also necessary to perform the pressure maneuver 5 cm proximal to the intermalleolar axis, for a probable lesion of the syndesmosis. Ankle dislocations are clinically evident and should be reduced and immobilized quickly to preserve lesions in the talar dome and to maintain neurovascular congruence(5,6).

Imaging assessment

X-rays are the first-line adjunctive tests that aid in the evaluation of an injury that impacts the ankle. Some studies suggest not to delay an urgent reduction of the obviously deformed ankle by obtaining X-rays. It is recommended to request anteroposterior, lateral and mortise projections.

Anteroposterior projection: the 10 mm tibioperoneal overlap is anomalous and indicates a lesion of the syndesmosis. An increase of the tibioperoneal radiolucent space greater than 5 mm is abnormal and indicates a lesion of the syndesmosis. Displacement of the talus with a difference in width greater than



2 mm between the top of the medial and lateral joint spaces is pathological showing medial or lateral rupture.

Lateral projection: here it is possible to differentiate the fractures of the posterior tibial tuberosity and the outline of the lesion of the fibula, in addition it manages to show the fractures by avulsion of the talus by the anterior capsule. The dome of the talus must be aligned under the tibia and be congruent with the articular surface of the tibia.

Mortise view or mortise projection: it is essential to evaluate the ankle mortise (lateral malleolus, tibial plateau, medial malleolus and dome of the talus). It is performed with the foot in 15° to 20° of internal rotation to remediate the intermalleolar axis. A medial radiolucent space greater than 4 mm to 5 mm is not normal and demonstrates a lateral offset of the talus.

Astragalocrural angle: the angle created by the intermalleolar line and a line parallel to the distal articular surface of the tibia should be 8° to 15°. This can vary by a maximum of 2 to 3 degrees compared to the uninjured side. A tibioperoneal overlap of 1 cm demonstrates a rupture of the syndesmosis. A displacement of the talus > 1 mm is considered abnormal.

Sometimes it is useful to perform a stress projection, forcing the foot into external rotation while keeping the ankle in dorsiflexion to diagnose a medial injury related to an isolated fibula fracture. Computed tomography allows better delineation of the bony anatomy, particularly in those with injuries to the articular surface of the tibia. This study is widely used to examine fracture configurations, the degree of bone comminution, the articular surface and for surgical planning in complex fractures. Nuclear magnetic resonance can help in hidden cartilaginous, ligament or tendon injuries and stress fractures(4-6,20,21).

Classification

Years of research on ankle fractures have generated several classifications that focus on the mechanism of injury as well as its correlation with the type of fracture. The most common classifications recognized and used by most practitioners are those of Lauge-Hansen and Danis-Weber. Both classifications should be considered in order to correlate fracture, mechanism of injury and optimal treatment(9,14).

The Lauge-Hansen classification admits four types of injuries, based on a sequence of "pure" injuries, each of which is divided into stages of increasing severity. It is based on cadaver studies. The system takes into account:

- 1) the position of the foot at the time of injury.
- 2) the direction of the deforming force.

Supination-adduction comprises 10 to 20% of ankle fractures. Besides being the only type involved in medial displacement of the talus.

Stage I: transverse avulsion fracture of the fibula, distal to the joint, or a rupture of the lateral collateral ligaments.

Stage II: vertical fracture of the tibial malleolus.

Supination-external rotation covers 40% to 75% of malleolar fractures.

Stage I: rupture of the anterior syndesmosis (anterior tibioperoneal ligament) with or without an avulsion fracture of its tibial or peroneal insertions.

Stage II: the typical spiroid fracture of the distal part of the fibula, extending from the anteroinferior zone towards the posterosuperior zone.

Stage III: rupture of the posterior syndesmosis (posterior tibioperoneal ligament) or a fracture of the posterior malleolus.

Stage IV: transverse fracture by avulsion of the medial malleolus or a rupture of the deltoid ligament(4-6).

Pronation-abduction covers 5% to 20% of malleolar fractures.

Stage I: transverse fracture of the medial malleolus or a rupture of the deltoid ligament.

Stage II: rupture of the syndesmosis or a fracture by avulsion of its insertions.

Stage III: transverse or short oblique fracture of the distal end of the fibula at or above the syndesmosis; causing a lateral comminution or a butterfly wing fragment.

External pronation-rotation It accounts for 5% to 20% of malleolar fractures.

Stage I: transverse fracture of the medial malleolus or a rupture of the deltoid ligament.

Stage II: rupture of the anterior syndesmosis (anterior tibioperoneal ligament) with or without fracture by avulsion of its insertions.

Stage III: spiroid fracture of the distal fibula at or above the syndesmosis extending from anterosuperior to posteroinferior.

Stage IV: rupture of the posterior tibioperoneal ligament (posterior syndesmosis) or an avulsion fracture of the posterolateral portion of the tibia(5,6).

The Danis-Weber classification is based primarily on radiographic criteria at the level of the fibula fracture. The more proximal, the greater the risk of syndesmosis rupture and instability. It presents three types:

A: Fracture of the fibula below the level of the horizontal articular surface of the tibia. Equivalent to Lauge-Hansen supination-adduction.

B: Oblique or spiroid fracture of the fibula, produced by external rotation at or near the level of the syndesmosis. Equivalent to Lauge-Hansen supination-eversion injury.

C: Fracture of the fibula above the level of the syndesmosis generating a rupture of the syndesmosis almost always associated with a medial injury. It includes Maissonneuve and corresponds to stage III of the Lauge-Hansen pronation-eversion or pronation-abduction fractures(4-6,9,22).



Figure 3. Fracture of the ankle bones classified as Dennis Weber type C and treated surgically.



Source: The Authors.

Variants of these fractures

Maisonneuve: traditionally associated with a fracture of the proximal third of the fibula, it is an external pronation-rotation type injury; it is essential to differentiate it from a fracture of the fibula produced by a direct impact. It requires surgical treatment. This mixes a fracture of the proximal fibula with tibioperoneal syndesmosis and injury of the deltoid ligament with or without fracture of the medial malleolus.

Curb fracture: avulsion fracture of the posterior part of the tibia caused by a stumble.

Bosworth fracture-luxation: the fibula dislocates posteriorly, the tibial edge of the posterolus blocks the reduction of the fibula and therefore requires surgical treatment.

LeForte-Wagstaffe: fracture by avulsion of the anterior tubercle of the fibula produced by traction of the anterior tibioperoneal ligament.

Tillaux-Chaput: avulsion of the anterior border of the tibia generated by the anterior tibioperoneal ligament, tibial equivalent of the LeForte-Wagstaffe fracture.

Tuberosity fractures of the medial malleolus: fracture of the anterior tubercle and fracture of the posterior tubercle.

Dorsal pronation-flexion fracture: displaced fracture of the anterior articular surface(4-6,23).

Treatment

The treatment of ankle bone fractures can be conservative or surgical, depending on some criteria, and immobilization should be performed after the treatment to reduce the risk of complications such as defective consolidation. Patients present stiffness, weakness, pain, swelling and a reduced ability to participate in activities due to the fracture and subsequent immobilization(24).

The main goal of treatment is to anatomically restore the ankle joint, maintaining anatomical rotation and length of the fibula. In fractures that are obviously displaced, a closed reduction should be attempted in the emergency, which will help to reduce the edema produced by the injury, as well as minimize stress on the articular cartilage, reduce the risk of skin injury and reduce pressure on the neurovascular structures. Reduction takes priority over imaging. Careful cleaning should be performed on open wounds and abrasions in addition to proper draping according to severity. It is recommended to leave the phlyctenas intact and cover them with a well-padded sterile dressing. After fracture reduction it is suggested to use a posterior U-splint to provide stability to the fracture and comfort to the affected person, also use local ice, keep the affected limb elevated and perform a post reduction imaging(5,6).

Conservative treatment

Indications for conservative treatment include:



Non-displaced, stable fractures with syndesmosis integrity; place a suropedic cast or suropedic orthosis and allow weight bearing to tolerance.

Displaced fractures that allow an anatomical reduction of the ankle mortise by closed manipulation; put a very cushioned posterior splint with a U-shaped component during the first days, while it has inflammation, then put an inguinopedic cast for 4 to 6 weeks to prevent rotation, making serial imaging

examinations to verify the reduction and consolidation. When there is a correct healing, a suropedic plaster cast or an orthosis can be applied. Weight bearing is restricted until fracture healing.

Polytraumatized or unstable patient in whom surgery is contraindicated due to the condition of the extremity or the affected person; taking into account that most unstable fractures are best treated surgically(5,6,22).

Figure 4. Visualization of an ankle fracture intraoperatively.



Source: The Authors.

SURGICAL TREATMENT

Open reduction with internal fixation is indicated primarily for patients with an uneven ankle mortise who are suitable for surgery and have optimal soft tissue status. Unstable fractures that may result in displacement of the talus or widening of the ankle mortise.

Open reduction with internal fixation should be used when the general condition of the patient, soft tissues and edema around the ankle joint allow. Swelling, blistering and local soft tissue problems often resolve spontaneously within 5 to 10 days with the aid of local ice, compression bandages and elevation. Occasionally, a closed fracture with fundamental soft tissue injury or massive swelling requires reduction and stabilization with an external fixator to ensure definitive fixation of the previous soft tissue procedure. Fractures of the lateral malleolus distal to the syndesmosis can be fixed with a compression screw or K-wires. For fractures at or above the syndesmosis, it is important to restore the length and rotation of the fibula, where a compression plate and screws can be used. The procedure for medial malleolus fractures is controversial. As a general rule,

when the deltoid ligament is torn, the talus follows the fibula. Guidelines for surgical fixation of the medial malleolus include concomitant injuries, persistent enlargement of the radiolucent space of the intima after reduction of the fibula, failure to achieve adequate reduction of the fibula, or sustained internal motion of the fracture. fibula. Fractures of the internal malleolus can usually be stabilized with cancellous screws or shrouds. Criteria for fixation of subsequent ankle fractures are more than 25% joint area involvement, more than 2 mm of motion, or sustained subluxation of the posterior talus. Posterior ankle fixation may be preferable to fusion fixation because the posteroinferior tibioperoneal ligament remains attached to the part. Fixation can be achieved through indirect reduction followed by placement of an anteroposterior compression screw or a plate and/or screws placed posteriorly through a separate incision. Fractures of the fibula in the articular area of the tibia may require fixation of the syndesmosis. After fixation of the medial and lateral malleolus, the syndesmosis should be tightened intraoperatively by pulling the fibula laterally with a bone hook or by forcing the ankle into external rotation. This being the case, instability of the syndesmosis can be detected clinically or through intraoperative fluoroscopy. Reduction of



the distal tibioperoneal joint is obtained using a giant reduction forceps. A 1.5 cm to 2.0 cm transyndesmal screw is then placed 1.5 cm to 2.0 cm above the articular surface of the tibia from the fibula to the tibia. Posterior fixation of the ankle piece may obviate the need for syndesmosis fixation(5,6,22).

Very proximal fibula fractures with syndesmotic rupture can usually be managed with syndesmotic fixation without direct reduction and stabilization of the fibula. However, before fixation of the syndesmosis, it is necessary to ensure that the length and rotation of the fibula is restored. After the fracture is fixed, the limb is immobilized with a thick plaster splint and then progressively weight bearing is performed. Open fractures require emergency cleaning and debridement in the operating room. The external fixator may be used temporarily until the soft tissue improves. An extensible external fixator is mostly indicated as a temporary fixation procedure for unstable ankle fractures in cases of severe soft tissue swelling or open fractures. Stable immobilization is a basic preventive measure against infection and aids soft tissue healing. Plates and screws can be left exposed, but every effort should be made to cover the synthetic material. Primarily, there is no need to use an ischemic cuff in such cases. This leads to increased postoperative swelling and possible reperfusion injury. In the postoperative period, antibiotic prophylaxis should be continued. a series of debridements may be required to remove necrotic, infected or involved tissue(4-6).

Internal fixation of this fracture is indicated when syndesmal instability, articular step greater than 1-2 mm, impaction of the tibial articular area and of the intercalary piece are observed(9).

A bimalleolar fracture is common, its most recurrent late complication is tibial osteoarthritis secondary to depletion defect or osteochondral impingement. The quality of the outcome of an orthopedic procedure depends on the centering of the talus and the outcome of the surgical procedure depends on the accuracy of the reduction of the fracture lesion(25).

Differential Diagnosis

Among some of the differential diagnoses we find:

- A. Achilles tendon rupture.
- B. Lateral collateral complex sprain.
- C. Deltoid ligament sprain.

Prognosis

Those patients with stable fractures that do not require surgical repair, the prognosis is very good and can progressively bear weight and recover within 6 to 8 weeks. In those with unstable fractures undergoing surgical treatment, although full weight bearing may occur as early as 6 to 8 weeks, it may sometimes take longer for optimal functional results to be obtained(4,26).

Complications

Pseudoarthrosis: infrequent, but more in medial malleolus. Related to soft tissue interposition, conservative treatment, residual displacement, lateral instability causing shear forces through the deltoid ligament. When symptomatic, open reduction and internal fixation or electrical stimulation may be used. If internal fixation is not possible, excision of the fragment may be necessary.

Malposition consolidation: usually with shortening and malrotation of the lateral malleolus; the increase of the medial radiolucent space and the presence of a large posterior malleolar fragment predict not very encouraging results. It occurs in the medial malleolus when there is residual instability or when it consolidates in an elongated position.

Wound healing problems: necrosis of the skin edges can be observed in up to 3% of those affected, however this risk decreases when the inflammation decreases, when the ischemia cuff is not used and when the surgical procedure respects the soft tissues. The surgical procedure in the presence of cutaneous flitenas or abrasions increases the rate of complications to double.

Infection: less than 2% of closed fractures usually require serial debridement and possible arthrodesis as a salvage technique. Implants can be removed after fracture healing.

In addition to other complications such as, reflex sympathetic dystrophy, loss of ankle mobility, skin ulceration due to cast pressure, compartment syndrome of the leg or foot, ankle stiffness, prominent screws, chronic ankle instability, painful scarring, wound dehiscence, deep vein thrombosis, pulmonary embolism, tibioperoneal synostosis, loss of reduction, post-traumatic osteoarthritis (4-6).

There is little evidence in favor of early initiation of weight bearing and the use of a removable type of immobilization as to free physical exercise in the immobilization period after surgical fixation. There is also insufficient evidence for rehabilitation at the time of immobilization after conservative orthopedic treatment, as well as for stretching and manual therapy after the immobilization period. Individual clinical trials have shown that some electrotherapy modalities may be beneficial(24).

CONCLUSIONS

The ankle joint is complex, in ginglymus, formed by the fibula, the tibia and the talus and also deeply related to the ligamentous complexes. The bony anatomy that provides stability is formed by the distal part of the tibia and fibula, its articulation with the talus and with each other. Bimalleolar fractures of the ankle occur in a quarter of patients and trimalleolar fractures in the remaining 5% to 10%. The incidence of ankle fractures is close to 187 per 100,000 inhabitants per year. Open fractures are infrequent, representing only 2 % of all fractures of the ankle joint. Similarly, pediatric ankle fractures occur in a 2:1 male to female ratio, accounting for 5% of all fractures in children and approximately 9% to 18% of all fissure injuries. Generally ankle



fractures are caused by different trauma mechanisms such as impact, twisting and crushing injuries. Ankle injury depends on several factors such as mechanism, chronicity, bone quality, patient's age, magnitude, direction, impact velocity and foot position. A complete and comprehensive medical history is essential in the medical evaluation. X-rays are the first-line adjunctive tests that aid in the evaluation of an injury that impacts the ankle. The classification system is important for the treatment decision. The treatment of fractures of the ankle bones can be performed conservatively or surgically, depending on certain criteria, and immobilization should be performed afterwards to reduce the risk of complications. It is essential to follow the ATLS scheme in order to define and manage any alteration that may be life-threatening for the patient. Ankle fracture-dislocation requires urgent manipulation to recover the ankle mortise.

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PARTICIPATION OF THE RUSSIAN FEDERATION IN TREATIES ON PRIVATE INTERNATIONAL LAW

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ABSTRACT

This article discusses the types and contents of international treaties to which the Russian Federation is a party, types of agreements are designed to regulate many legal relations in various fields of national and social life involving foreign factors.

KEY WORDS: *Legal relations, private law relations, private international law, conventions*

INTRODUCTION

Our era is a new stage in the historical development of the international community, with its own characteristics, including the universality and globalization of international relations, which gives people the right to view international maritime law from the perspective of "digitalization", and emphasizes the new challenges and opportunities faced by the commercial industry. This chapter also mentions the experience of the development and implementation of the maritime law of the Russian Federation and the legal regulation of China's maritime transport and maritime activities.

THE STATUS OF PRIVATE INTERNATIONAL LAW IN THE LEGAL SYSTEM OF RUSSIAN FEDERATION

The main significance of private international law given by major jurists is to change and implement the application of foreign laws in the territory of the nation-state. This is because in cases involving external (foreign) factors or foreign-related factors, special legal relationship coordination procedures should be adopted.

At present, the most popular and acceptable position to determine the status of private international law is to regard private international law as an independent legal branch in the branch system of national law. According to the last point of view, private international law is a branch of domestic law. According to this branch, the State formulates and adopts rules by itself. These rules will then regulate the choice of legal system under various circumstances. The interaction between civil relations and international factors has an international nature. In this case, the conflict of laws rules arising prior to the occurrence of disputes related to private international law will be resolved in the Russian Federation using domestic law, that is, the conflict of laws rules of the state have priority, and the fact of concluding international contracts should be taken into account. Through

negotiation and compromise, the equality of rules has been achieved, and it is easier to solve problems involving foreign factors.

Finally, private international law plays an important role in the management structure of legal relations. It is a system of legal rules aimed at regulating private international law relations with foreign characteristics. The position of this discipline and the definition of the concept are still outstanding issues, but can highlight the current multi-system theory. It involves a multifunctional core and system, closely interacting with domestic law, but dealing with external relations. Therefore, it must be pointed out that private international law has not yet fully formed in the Russian Federation, and its transformation depends on the development of international relations.

INTERNATIONAL TREATIES AS THE SOURCE OF PRIVATE INTERNATIONAL LAW OF THE RUSSIAN FEDERATION

At present, international treaties are an integral part of the system from which private international law originates. They regulate individual and specific private international law relations and cover a wide range of issues. According to Article 15 of the Constitution of the Russian Federation, the recognized norms and principles of international law are an integral part of the legal system of the Russian Federation. Among the sources of international law, international treaties that regulate the particularity of legal relations to which Russia is a party are of special significance. This provision actually repeats Article 1186 of the Civil Code of the Russian Federation. According to this article, it can be concluded that international treaties are the main source of the legal system of the Russian Federation, and the applicable laws are determined on this basis.

An international treaty can be regarded as an international agreement to which the Russian Federation is a party and a foreign country or international organization is



the other party. The treaty is written and regulated by international law. The 1969 Vienna Convention on the Law of Treaties and the 1986 Vienna Convention on the Law of Treaties between States and International Organizations or between International Organizations give the same interpretation to the concept of "treaty".

This kind of agreement refers to the public law act that the sovereign state can act as the subject, and its rules are binding on all parties to the treaty. However, some international treaties include rules aimed at regulating private international law relations between citizens and legal persons of States. These rules originated from international law, but in essence belong to the private international law of all countries.

The starting point of modern law enforcement practice is the special importance of the substantive law rules of international treaties governing private law relations. Therefore, according to paragraph 3 of the decision of the plenary session of the Supreme Court of the Russian Federation No. 24 of July 9, 2019 "On the application of rules of private international law by the courts of the Russian Federation", if the international treaties of the Russian Federation contain rules of substantive law applicable to the relevant relations, they shall be determined according to the rules of conflict of laws applicable to the issue. These substantive law norms are fully resolved. At first glance, this explanation seems logical. However, considering that not in every case, all countries with which their legal system has controversial legal relations are parties to an international treaty, it is totally unreasonable to apply an international treaty to such relations. In addition, the provisions of the treaty may have different interpretations in the domestic legislation of different States parties to the treaty. These circumstances still seem to support the need to determine jurisdiction, that is, the court must apply the conflict-of-laws rule.

Considering the relationship between Russian domestic legislation and international treaties, two key aspects deserve attention:

1) The international treaties concluded by Russia are an integral part of the national legal system;

2) International treaty rules take precedence over domestic law rules.

The general issues of concluding, revoking or modifying international treaties are stipulated in the International Treaty Law of the Russian Federation. Russia's formal consent to join international treaties takes the form of enacting relevant federal laws, such as ratification, which means that Russia accepts its obligations under international treaties.

According to the norms of the Constitution of the Russian Federation, the norms of international law are an integral part of national law. According to Article 1186 of the Civil Code of the Russian Federation, the following sources of private international law can be considered:

1) International treaties to which the Russian Federation is a party;

2) Civil Code of the Russian Federation and other federal laws;

3) Customs recognized by the Russian Federation.

PURPOSE AND TYPE OF INTERNATIONAL TREATIES TO WHICH THE RUSSIAN FEDERATION IS A PARTY

According to Federal Law No. 101-FZ of July 15, 1995, "International Treaty on the Russian Federation", the main purpose of international treaties is to ensure the maintenance of world peace and security and promote the development of international legal relations and international cooperation system.

The main international treaties to which the Russian Federation is a party are as follows:

1) The international treaties on the establishment of foreign economic relations, in particular the rules of the treaty group, stipulate the legal relations of trade with foreign factors, trade and economic cooperation, goods sales and payment system issues, treaties regulating payment agreements, financial and property claims mechanisms and others. For example, the Treaty between the Russian Federation and the Republic of India on Civil and Commercial Legal Assistance and Legal Relations

(Signed in New Delhi on October 3, 2000), the Free Trade Agreement signed by the Government of the Russian Federation and the Government of the Republic of Belarus on November 13, 1992;

2) The second group of treaties is the scientific and technological cooperation treaties, whose system includes regulating the legal relations in the field of energy supply, industrial development cooperation, the legal relations in the oil and gas sector, and the construction industry, radio and television issues. For example, the resolution of the Government of the Russian Federation of 12 November 1992. No. 866 Agreement between the Government of the People's Republic of China and the Government of the Russian Federation on Science and Technology Cooperation;

3) Treaties regulating the economic activities of different economic entities. In general, this group of treaties provides for cooperation in the field of small and medium-sized enterprises, anti-unfair competition and anti-monopoly policy, such as the Agreement on the Support and Development of Small Enterprises by the CIS Member States (Moscow, 17 January 1997);

4) Treaties on international transport and transportation, especially those on railway, international air transport and maritime transport of goods, such as the Agreement between the Government of the Russian Federation and the Government of the Republic of Türkiye on Maritime Transport (Ankara, May 12, 2010);

5) International treaties regulating the protection mechanism of subject intellectual property rights, copyright protection issues, industrial property rights, intellectual property rights, technology and other fields of cooperation. For example, the Agreement between the Government of the Russian Federation and the World Intellectual Property Organization on the Establishment of a Representative Office of the World Intellectual Property Organization in the Russian Federation on April 10, 2013 (entered into force on



June 18, 2014, Russian Ministry of Foreign Affairs No. 9484/DP on June 23, 2014);

6) Standardize contracts involving civil and family legal relations involving foreign factors, and realize contracts in the field of international labor legal relations;

7) Civil litigation contract. International treaties concluded by the Russian Federation enter into force when the following basic conditions are met:

1) The consent expressed by the Russian side through signing agreements, exchanging documents constituting treaties, ratifying, approving, accepting or acceding to international treaties;

2) The manner and duration of the entry into force of international treaties shall be determined by agreement between the two parties.

Therefore, an international treaty is an agreement signed by the Russian Federation. According to the agreement, in the private law relationship that is the subject of the treaty, individual rights and obligations are allocated among the subjects.

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ARTIFICIAL INTELLIGENCE: A TOOL FOR ENHANCEMENT OF LENDING FACILITIES IN BANKING INSTITUTIONS

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ABSTRACT

More customers. Improved analysis quicker judgments. Lower risk robotic process automation and artificial intelligence are shaping the future of credit and risk management. From siri to self-driving cars, AI is at a rapid pace. Each bank around the world has to dissect numerous credit operations from its guests and prospects, individual, professionals or companies, Banks develop their standing system grounded on different parameters but utmost of them do not take benefit of the tremendous set of big data available and gathered continuously. To prize precious information, Big data analysis(BDA) and artificial intelligence lead to intriguing operations for banking industry similar as segmentation, customized services, client relationship operation, fraud recovery, credit threat assessment and in all back, middle and front office operation. This paper discusses the impact of the rapid-fire acceptance of artificial intelligence in the financial sector. Artificial intelligence is a method of making a computer or a software think intelligently like the human mind. It has a lot of influence on our lifestyle. AI provides high securities in related areas. It is an intelligent machines that work and react like humans. People are daily interact with AI but probably they are not well aware like with the help of Smartphones, Chabot's, self-driving cars, smart assistance, virtual travel booking agent, social media monitoring and many more.

KEY WORDS: *Deep learning, Technology, Recognition, credit operations, moving towards digitalization*

INTRODUCTION

Interactive web-grounded connections have nearly entirely taken over face-to-face communication. The impact of AI is broad in our day-to-day lives. All diligence has now incorporated it into their operations and advancing businesses are no exception. The fiscal deregulation led to a ocean of changes in the banking and fiscal services assiduity with the accumulating of numerous Internet-grounded fiscal and lending institutions. This in turn has led to the digitization of fiscal deals, including the entire process of lending, right from the original loan operation to the final disbursement, and all the stages after that too. The ease of applying for loans, and the vacuity of truckloads of data related to the aspirants, has led to an extravagancy of openings for advancing institutions. It is now possible to get perceptivity from this data, to make loan operation simpler, with the help of sophisticated logical tools thanks to AI. Regardless of any prediction, one component is clear AI in banking will be in addition carried out and it will go to deliver huge sales. To have higher draw shuts on how the era is covered into banking, and deposit hazard manage mainly, one have to find out several key areas of adoption.

REVIEW OF LITERATURE

Our review of digital credit lenders revealed that numerous digital credit enterprises in particular claim to use AI algorithms for threat modeling and credit underwriting opinions. This

review is grounded on our analysis of websites, news reports and exploration reports relating to the use of AI in lending in India.

Artificial intelligence primarily based totally help for the literature assessment method entails each innovative and mechanical responsibilities, which creates thrilling possibilities for superior AI primarily based totally gear to lessen potential authors efforts for time-eating and repetitive responsibilities and to devote greater time to the innovative responsibilities that require human interpretation, intuition, and expertise. To familiarize the reader with cutting-edge information on this area, we keep in mind every step of the assessment method in turn; outlining cutting-edge AI-primarily based totally gear in addition to the capacity for AI-primarily based totally device help. Corresponding possibilities for similarly device improvement and development are mentioned withinside the following agenda. The review is in keeping with the stairs of the assessment method that templier and pare have synthesized from the methodological literature.

OBJECTIVE OF THE STUDY

- To examine the benefits of AI in Banking Industries.
- To understand the changing dynamics of financial access using disruptive technology in banking sector.



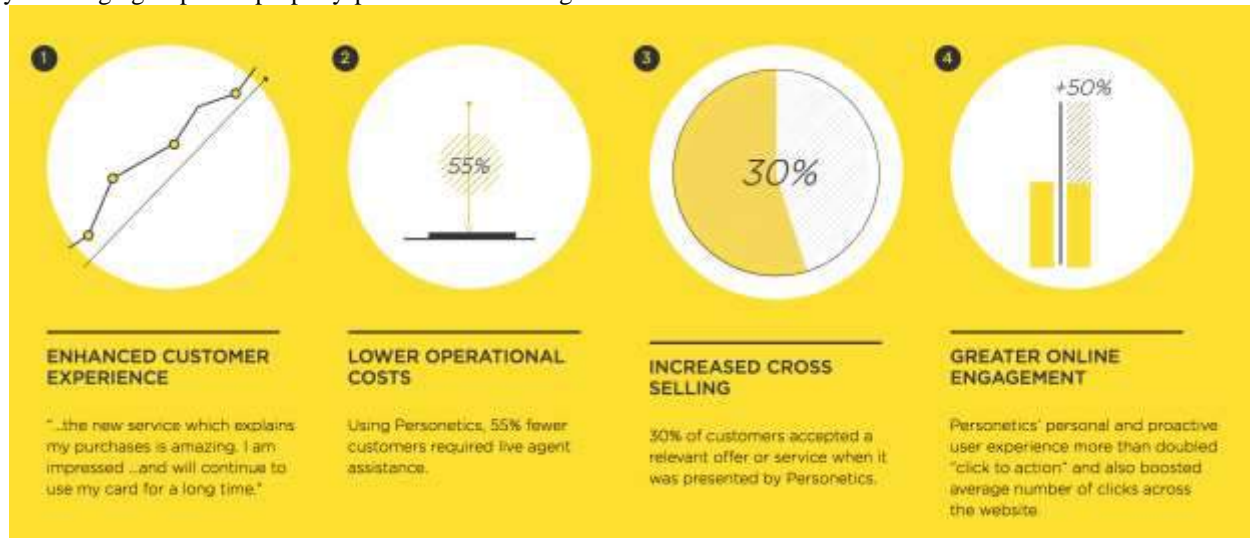
- To study the problems faced by banks and their customers while using services based on artificial intelligence technology.

of synthetic intelligence. There is no AI in banking except data. However, the monetary enterprise collects many statistics in the everyday direction of business.

BENEFITS OF AI IN BANKING INDUSTRY

Artificial genius has the workable to lead to huge value savings. According to study by Accenture, banks can leverage AI banking equipment to extent their transactions with the aid of two and half of instances the use of the identical headcount. Monetary offerings groups are properly positioned to take gain

The use of synthetic genius and computer getting to know for banking offerings and in the finance industry is not new. Artificial intelligence is already accountable for detecting suspicious credit scorecard activity. With identification to hire the proper science to shield its clients and mitigate its liability.



Source: screen shot from Personetics.com, featuring their purported features and benefits

1. Streamline operations: Automation is one of the most common uses of AI, and 55% of mortgage industry executives believe AI helps their company become more competitive.

As we mentioned in our post titled "AI and the Transformation of the Mortgage Industry", manual processing accounts for as much as 40% of the typical lending procedure. However, many redundant tasks can be eliminated through automation, allowing lenders to concentrate on more difficult cognitive tasks. As a result, you will work more effectively and produce more work.

2. Maximize marketing benefits: Because AI is so adept at automating processes, your marketing spend is maximized. Through social media, AI tools can be utilized to more effectively contact potential millennial and Gen z customers in a manner similar to Facebook's marketing algorithms. Large-scale personalized marketing based on user surfing preferences help to increase client conversion and retention rates. You merely need to set up one of these automated system, then relax, at least until the software alerts you to actionable insight based on ad performance. This might assist you in optimizing your marketing initiatives.

3. Lower costs: With automation, you can accomplish more in less time and on a large scale while reducing costs and eliminating the possibility of human error. In fact, AI can overall overhead expenses. The number of mortgage applications also increased when finance minister Rishi sunak passed a tax cut earlier this year, potentially delaying deals. Thankfully,

technology makes filing out papers easier as well. Some systems can pre-fill specific documents by gathering client data. This accelerates the application process, allowing you to complete more transactions and make payments in less time.

4. Enriches customer experience: AI is a virtual tool that mortgage lenders may use to offer borrowers services that are secure, swift, practical, and simple to understand. Lenders become more proactive thanks to AI, which also encourages them to continuously enhance their services and boost profit margins by informing them of potential problems early on but AI is capable of more than just automation. More sophisticated machine learning software can analyse data and draw conclusion from it, which is incredibly helpful for mortgage lenders worldwide.

5. Reduced operational costs and risks: As a whole lot as we experience human interaction, it has one widespread drawback. Errors are common, and they can have serious repercussions. Even when skilled employees are at the helm, the incorrect keystroke may want to expose the organization to legal responsibilities and motive irreparable reputational damage. Decision administration structures minimize this threat with the aid of growing common sense flows in information seizes and combining predictive and prescriptive methods to resolve enterprise problem.

6. Improved Loan and Facility Evaluation: Using deposit rankings to consider eligibility for financing regularly depends



on old-fashioned information, misclassification, and errors. However, these days there are so extra records available on line that can supply an extra practical image of the individual or commercial enterprise below evaluation. An AI-based machine can provide approval or rejection tips by using thinking about extra variables even when the party, whether or not private or business, has little documentation.

TRANSFORMING THE FUTURE OF BANKING

Digital technology is influence nearly every industry, not just changing diligence but also changing the way businesses operates. Every industry is presently examined operations and enforcing strategies to succeed in this tech-driven world.

Currently every country is moving ahead in terms of digitalization, and this is the reason the number of guests is continuously increase in the banking sector. Now the question comes is how the banking sector can help further and further guests without adding pool charges?

It is difficult for the industries to healthy the special needs of the customers. Customers nowadays have extraordinarily excessive expectations. Nowadays, clients are digitally state-of-the-art and count on the industries to supply them with a satisfactory and satisfied consumer experience, the identical factor the additionally assume from the banking sector.

In order to deliver services like mobile banking; e-banking, and real-time money transfers, the banking industry has increased its presence in the retail, IT. In addition, telecom sectors. These cutting-edge features provide users access to banking sector money.

The likelihood of transmitting sensitive data across virtual networks has increased with the involvement of IT, telecom and retail. It occasionally results in cyber-attacks and fraud in the banking industry. This type of fraud not only damages the bank's financial standing but also undermines public confidence.

APPLICATIONS OF AI

1. **Personalized Finance Guidance:** Artificial intelligence in finance allows customers make brief and correct monetary choices with the aid of using supplying them with the maximum up to date marketplace information. As a result, we are able to count on that AI can help clients with personalized monetary guidance.
2. **Digital wallets:** Without a doubt, the development of digital wallets has elevated the use of digital currency. Customers only need to provide their cellphone number or a one-time password (OTP) to make purchase online, which is a special function of digital wallets.
3. **Interactive voice responses system (IVRS):** An interactive voice response system is used to contact customers. This application's major goal is to provide consumers with an excellent banking experience by accurately answering their questions.

4. **Credit scoring / direct lending:** By analyzing data from a variety of standard and non-traditional data sources, artificial intelligence plays a crucial role in helping alternative lenders assess the creditworthiness of clients. This assist lender in creating creative lending programs that are supported by reliable credit scoring models, even for those people or companies with a short credit history.
5. **General purpose/ predictive analytics:** Predictive analytics and general-purpose semantic and natural language applications are two of the most prevalent use cases for AI. AI that were previously undetectable can found data patterns and correlations by traditional technology. These trends could point to underutilized cross-sell or sale opportunities, operational data measures, or even revenue-impacting variables.
6. **AI Chabot:** Chatbots are computer programmes that use chat interfaces to reproduce textual human discussion. They are a digital counterpart of the customer care agent that many banks employ. Chatbots, like their human match, are well organized, dependable, and successful in answering client questions. You may have an account with a chatbot if you require a bank to keep track of your money. It assists you in managing numerous aspects of your personal financial needs.
7. **Tracking market trends:** Banks can process huge amounts of data and forecast the most recent market movements, currencies and equities thanks to artificial intelligence in financial services. Modern machine learning methods offer investment suggestions and assist in evaluating market sentiment. AI for banking also recommends when to buy equities and issues alerts when there is a possible risk. This cutting-edge technology also helps to speed up decision-making and makes trading convenient for both banks and their clients due to its high data processing capability.
8. **Process automation:** By automating time-consuming repetitive processes, robotic process automation (RPA) algorithms improve operational efficiency and accuracy while lowering expenses. Users can now concentrate on harder tasks needing human interaction. RPA is currently being successfully used by banking organisation to speed up transactions and improve efficiency. For instance, examines documents and extracts data from them considerably more quickly than people can.
9. **Risk management:** The banking and financial sector are significantly impacted by external global variables such exchange rate fluctuations, natural disasters, and political upheaval. Making business decisions with extra caution is essential in such uncertain times. AI-driven analytics can provide a pretty accurate forecast of future events,



assisting you in remaining organized and making timely decisions.

AI also assists in identifying hazardous applications by calculating the likelihood that a client would default on a loan. By examining historical behavioral patterns and smartphone data, it forecasts this future behavior.

10. **Cybersecurity and fraud detection** : Every day, massive range of digital transactions take location as customers pay bills, withdraw money, credit checks, and do a lot grater through apps or on-line accounts. Thus, there is an growing want for the banking area to ramp up its Cybersecurity and fraud detection efforts. This is when synthetic genius in banking comes to play. AI can assist banks enhance the safety of on line finance, song the loopholes in their systems, and limit risks. AI alongside with computer gaining knowledge of can without problems pick out fraudulent things to do and alert clients as nicely as banks.

ISSUES AND CHALLENGES

Artificial intelligence has had a startling effect on both the economy and human life. By 2030, artificial intelligence will have increased the global economy by around \$15.7 trillion. That is roughly equivalent to the current economic production of China and India, to put things in context.

AI implementation in banking is primarily driven by client demand. Accenture conducted a poll of banking customers and their ever-changing needs and discovered that 71% would prefer computer-generated customer service. While 78% of respondents would utilize automated investment support.

1. Data Quality: AI is a data-driven technology, as data quality affects the vaccination power of an algorithm. Lack of acceptable and believable data encumbers its applicable processing and that call for perspicacious data operating using advanced analytics and end-to-end AI modeling.

2. Complex AI models: A major problem with AI that it's relatively complex. AI is grounded on algorithms, and people who aren't familiar with these algorithms might find it delicate to grasp the functioning of AI-driven decision timber. This lack of understanding may lead to apprehension regarding AI among workers. For illustration, banks use simple algorithms that are grounded on direct mathematics, similar as direct/logistic retrogression. AI has failed to gain wide acceptance.

3. AI and cyber security: Indeed, although it may additionally experience that AI is the best result to each problem, it is a double-whetted brand, which if now not treated exactly ought to lead to indecorous judgment and safety incidents.

4. Lack of integration: Financial organizations continue to make substantial use of legacy systems. They are not well suited to be employed directly in AI applications due to the constraints on the volume, diversity, and velocity of data that these systems san process. Application development teams must integrate AI models into new or current applications for these firms in order for them to be useful. Still, the difficulties are indeed more

severe, If colorful suppliers are in charge of the apps. Also the maturity of web development work done for a business isn't AI friendly.

CONCLUSION

In general, AI can ameliorate numerous aspects of banks operations, indeed, if it cannot replace bankers. It seems likely that AI'll work with mortal decision-makers rather than acting singly. And by adding effectiveness and reducing threat for banks has a significant eventuality to reduce costs for their customers. AI powered technological know-how is quicker going to change the common banking and business lending space. With the introduction of cloud-based banking-as-a-service, computing device learning, predictive analytics, IoT, and extra coming into the picture, AI-led digital lending would assist pressure built-in banking experiences for clients worldwide. Greater profitability standards customers who demand quick answers. Stricter laws and regulations. An effort at fraud workers are buried in paperwork, and worksheets. Although there isn't a button you can click to instantly solve all of these issues, the present state of credit and risk management is being ushered in by technology that enables for the lightning-fast flow of data and automated choices. 'AI is much more than a tool for marketing or a technical issue. Data optimization and data-driven management are key. AI is radically altering society.

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VERTICAL FARMING BOON OR BANE IN INDIA: A REVIEW

Shane Aalam¹, Amir Khan²

ABSTRACT

The main forces influencing the development of agricultural research include advances in science and technology as well as global urbanisation. Food tastes have evolved as a result of career shifts, rising per capita wealth in developing countries, and worldwide connections. The production of more and better food is made more difficult by these developments and the growing population. Utilizing methods from traditional agriculture from the 20th century to increase productivity of agriculture has its limitations. The dependency on chemical fertilisers and pesticides for productivity enhancement and pest management, respectively, poses a hazard to the environment and is a significant restraint on world food supply. These developments imply that new agricultural innovations are unavoidably required, and that these technologies should be included into mainstream agriculture (the big agriculture as we may call). The research focuses for overcoming these limitations include vertical farming and organic farming. By vertically stacking the farms, more may be produced on a less amount of area thanks to vertical farming. The needs for food supply may be satisfied within cities with this method, which lowers transportation costs and the harm that fuels due to the environment. It is also ideally suited for the continually expanding urban population across the world. On the other hand, organic farming adheres to the principles of minimising the use of chemicals in agriculture and is therefore environmentally beneficial. In order to fulfil the rising demand for food, these approaches may be used to increase output and productivity.

KEYWORDS: Global urbanisation, Agriculture innovation, Vertical stacking, organic farming,

INTRODUCTION

Vertical farming is the new concept came in the year 1915 when Gilbert Ellis Bailey coined the term “vertical farming” and wrote a book titled “Vertical Farming”. But the modern concept of vertical farming was proposed in 1999 by Professor Dickson Despommier. With the geometric growth of population in the world the need and future of vertical farming is parallely grow at faster rate. In India the rapid growth of population require food on a large scale. India have only 2.4% of world land surface and constitute 17.4% population which require food for their livelihood. The tremendous growth of population require land to live and this will directly affect the agriculture land as well. Shrinking of agriculture land due to high growth of population result the new way of agriculture practices vertical farming is best option to make sustainable agriculture practices without creating environmental affect and fulfil food demand for growing population. **In the view of Dickson Despommier 2007** vertical farming will save the environment through without harming forest and decrease the CO₂ which is highly toxic to human health as well.

TYPES OF VERTICAL FARMING

Shape and size of vertical farming depend upon the area available to do such types of farming but it is noted that mainly three types of vertical farming based on soil used in such farming namely Hydroponics, Aeroponics, and Aquaponics.

1. **Hydroponics:** The predominant growing system used in vertical farms; hydroponics involves growing plants in nutrient solutions that are free of soil. The plant roots are submerged in the nutrient solution, which is frequently monitored and circulated to ensure that the correct chemical composition is maintained
2. **Aeroponics:** The most effective method of producing plants for vertical farms is an aeroponic system, which may use up to 90% less water than even the most effective hydroponic ones. These aeroponic systems have also been demonstrated to increase vitamin and mineral absorption, making the plants healthier and maybe more nutrientdense.
3. **Aquaponics:** An aquaponic system expands on the hydroponic system by integrating fish and plants into one environment. Fish are raised in indoor ponds, and the excrement they produce is nutrient-rich, serving as a source of food for the plants in the vertical farm. The effluent is filtered and cleaned by the plants before being recycled into the fish ponds.

Even though aquaponics is utilised in smaller-scale vertical farming systems, the majority of commercial vertical farming systems concentrate on cultivating a select number of quickly expanding vegetable crops and do not have an aquaponics component. **Scenario of Vertical Farming in India:** India is currently home of more than 125 crore of population which is second most densely populated in the



world. This high concentration of population of require food security even though high production of cereals and other crops with the helps of water facility and availability there are severe problem of hunger and food insecurity in India. To meet the demand of food for growing population directly affect the climate change through use of water, pesticides in the fields, fertilizers and other anthropogenic factors as well. To reduce the burden on climate especially soil, and water used vertical farming introduce in India with the objective of better organic production, food security, better job opportunity, and so on so forth. It is noted that Vertical farming is definitely a solution to critical problems in Indian farming like lack of supply or oversupply of farm produce, overuse of pesticides, overuse of fertilizers, deteriorating soils and even the unemployability **M.S Sonawane (2018)**. **In the view of A Chatterjee et al (2020)** Vertical farming helps in proper utilization of land, food security, and poverty alleviation in country.

RESEARCH ON VERTICAL FARMING IN INDIA

Vertical farming is outcome of research innovation in agriculture sector which is need of hour especially in India because geometric growth of population requires food security and environment safety. Indian council of agriculture and Vertical farming association works together technological innovation and its implication on vertical farming in major cities in India which is fruitful in near future. The research and its adaptation are in major cities in India and extend in another minor city as well.

MAJOR COMPANY OF VERTICAL FARMING IN INDIA

With the growing demand of food especially in city premises the number of companies set and develop vertical farming provide tools and technique to grow and cultivate crops such as **UrbanKisaan**, **UGF Urban green fate**, **Triton foodwork**, **365Dfarms**, etc.

1. **UrbanKisaan:** Due to the operation of several vertical farms in the cities of Hyderabad and Bangalore, UrbanKisaan is unquestionably one of India's largest vertical farms. UrbanKisaan takes pleasure in generating 30 times more produce than conventional farming while using 95% less water, The company's website and app allow customers to purchase a range of its items online.
2. **UGF Urban Green Fate:** The following vertical farm, which works locally in Mumbai and internationally in the US, was founded in 2012. UGF farms began its adventure towards vertical farming by creating healthy hydroponic micro-farms out of abandoned locations including vacant lots, gaps between homes and buildings, and restaurants. The firm, which produces leafy greens and microgreens with minimal carbon footprint, is devoted to micro farming. Additionally, UGF educates families, schools, and communities on how to grow their own food and lower their carbon footprints through its educational programmes and seminars.
3. **Triton Food works:** Modern farming techniques like hydroponics and aeroponics are used at this vertical farm

in Delhi to produce fresh veggies. Additionally, the business has created its own aeroponics technology, enabling it to produce practically any crop more quickly and with a lower risk of infections and illnesses. A remarkable 150,000 square feet of vertical farms are owned and run by Triton FoodWorks, a company that was founded in 2014. In addition to more than 20 different crop varieties, they also cultivate oregano, bell peppers, cucumbers, bell pepper plants, microgreens, cherry tomatoes, strawberries, tomatoes, coriander, broccoli, and leafy greens.

4. **365Dfarms:** 365Dfarms, located in Pune is India's first movable hydroponic vertical farm. Built-in a shipping container, this farm produces lettuce all year round, using high-tech. The irrigation system of 365Dfarms cuts water consumption by 90% compared to horizontal farming due to its smart irrigation system.

MARKET AND GROWTH OF VERTICAL FARMING INDIA

High immigration in the city make pressure on food security resultant vertical farming need and demand to fulfil the requirement of migrated and growing population. **According to market data of Asia pacific vertical farming** in the year 2021 the total value of vertical farming is 0.78 billion US Dollar and estimated that 2.77 billion US dollars in the year 2026 with CAGR of 29%.

Discussion and Conclusion: food is basic requirement of growing human population. The country like India which is second most populated in the world have more crisis of food especially in urban centre because shrinking of agriculture land due to puccanization of land by build a mall, office, residential centre, etc. this makes pressure on food growing for residential population live in the city as well. So, reduce the food crisis and availability vertical farming is urgent need in the country which helps to sustainable agriculture practice by using minimum water and land surface of the country. It is necessary to grow such type of agriculture practices in India. Apart from that vertical farming also help in employment generation especially for white colour labour or specialised agriculture labour.

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THE IMPORTANCE OF HISTORICAL-CULTURAL HERITAGE IN DEVELOPING SPIRITUAL CULTURE

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ABSTRACT

The article describes the importance of the issues of preserving historical and architectural monuments. The paper deals with the methodological directions and systems of introducing students to architectural monuments include, and pre-planning and discussion of lessons, conducting excursions and organizing their creative activities have been analyzed from the author's point of view.

KEY WORDS: *educational, cultural education, historical, cultural heritage, spiritual culture, learners, teaching.*

INTRODUCTION

Currently, rational and purposeful organization of spiritual and educational work in the general secondary education system, which covers a large part of the youth of our country, is a task at the level of national policy. Thus, in the Decree "On Education" in our Republic, special attention is paid to the spiritual, educational and cultural education of the young generation [2].

Scientific and technical progress, modern discoveries can increase the power of mankind and create new opportunities. Situations like this might require a person to rise to a higher level of spirituality. In addition to this, the spiritual growth of a person increases his social activity and accelerates the development of society [1]. Actually, raising spirituality is one of the urgent tasks of today, instilling a rich spiritual heritage into the hearts and minds of young people, which is the foundation of the future, and forming a perfect generation that embodies the culture of behavior on the basis of instilling the ideas of independence is the main task of the day. In general, future of the Motherland, achievement of the great goals facing our people, depends first of all on the young people, on their growing up as well-rounded people.

LITERATURE REVIEW

Main methodological directions and systems of attracting students to historical monuments provide for the preliminary interview, excursion, final interview, organization of artistic and creative activities of students. One of these solutions is to introduce children to the architecture of the villages where they were born and raised. Methodological directions and systems of introducing schoolchildren to architectural monuments include, first of all, pre-planning and discussion of lessons, conducting excursions and organizing their creative activities.

For a long time, culture in science meant only spiritual culture. After all, they believed that existence is defined by truth, goodness, and beauty. For this reason, in the first place, the basis of scientific research has become scientific ethics and sophistication. As a result, no attention was paid to studying the material life of society and its economy. Material culture is considered interesting for research [4]. The first spiritual need of a person is the need to know. Without it, a person would not have a social essence, would not be able to know nature, people, and himself. It is impossible to imagine any human activity that is not based on knowledge. According to Hegel, the most serious need is the need to know the truth [5].

Today, issues related to the study and preservation of cultural heritage in the regions have become particularly relevant. In our country, interest in regional specifics has increased due to the historical process that we are witnessing at the present time. Cultural heritage is the totality of all material and spiritual cultural achievements of society, its historical experience that remains in the arsenal of public memory [6]. The cultural heritage is made up of achievements of various antiquity, as well as passing to new generations in new eras. Important role in the program of cultural heritage preservation allocated to cultural institutions – museums, libraries and archives. It is in them that the historical and cultural heritage of the country is concentrated, in which it is preserved and promoted. And each of these cultural repositories is unique.

Furthermore, the inculcation of the forms of national value in the human activity, which is of great importance in the development of the thinking that raises the spirituality of the society and the individual, which is important in the development and education of a person, is the reason for the progress of the society. In this case, spirituality has a strong



influence on the development or crisis of society. If the spirituality is enriched, the society will prosper, and on the contrary, if the spirituality is impoverished, the society will gradually decline.

There are the following types of competences: 1) Ability to understand historical reality and explain it logically, competences to work with historical sources and literature – to provide information about important facts, events and processes related to history, to explain historical processes, can provide information about important events and processes that left a certain mark in the history of mankind from the earliest periods of Uzbekistan and the world history to the beginning of the 20th century, reacting to the studied historical periods, to provide information about historical and architectural monuments in our country and historical figures who contributed to the development of science and statehood, to create stories based on historical illustrations; 2) Self-development competence – Pursuit of self-development, physical, spiritual, mental and intellectual perfection; 3) Competence in working with information – to search for, sort, process, store and use the necessary information from media sources; 4) National and general cultural competencies – Be loyal to the motherland, be kind to people and believe in universal and national values, understand art and works of art; 5) Socially active civic competence – feeling of involvement and active participation in events, events and processes happening in the society; 6) Mathematical literacy, awareness and use of science and technology news – Being able to read various diagrams, drawings and models in daily activities.

RESULTS AND DISCUSSION

Currently, much is being written about the problems of cultural – historical heritage, and the upbringing of a harmoniously developed person. In this case, the school plays a vital role in the life of every person. It can make the greatest contribution in terms of coverage of people and in terms of national significance to the dissemination of spiritual values. The special importance of preserving the historical – cultural heritage lies in instilling in young people a sense of a “small motherland”, responsibility for the fate of their village, city, strengthening a sense of patriotism and pride in their great Motherland. The spiritual activity of people is diverse, and each has a wide choice of its forms and types. And on what values a person prefers, and what he himself largely depends on. Also, the teacher who leads the way of knowledge will remain in the hearts of learners for a long time. Additionally, having conversations with parents, acquaintances, peers testify that it is the school and the teacher who are the main guardians and distributors of spirituality for the younger generation.

For learners, acquaintance with the historical traditions and cultural life of the city plays a very important role. One of the main tasks in this direction helps to solve museum pedagogy, which is defined as an interdisciplinary field of scientific research, formed at the intersection of pedagogy, psychology, art history, museology, which studies the tasks, principles, methods, forms of implementation of the educational activities of museums and is focused on the transfer of cultural experience in the museum environment. When it comes to the uniqueness of the museum, we

emphasize once again that the experience of personal contact with the reality of history and culture is the main thing that other institutions of civilization cannot provide [7].

Development of students’ spiritual culture based on the national cultural heritage of the Karakalpak people, ensuring that they enjoy examples of material cultural masterpieces in the educational process, studying the current situation in this regard, looking for measures to enrich it, eliminating shortcomings is directly related to setting current plans.

Based on the historical and cultural heritage of the Karakalpak people, it is appropriate to implement the following tasks from a scientific, theoretical and practical point of view in developing the spiritual culture of students:

- arousing students’ interest in historical and cultural heritage;
- Formation of feelings of enjoyment and pride in historical and cultural heritage;
- To apply theoretical knowledge in practice;
- Educating students in the spirit of respect for national cultural heritages, leading them to become fully mature, high moral pure people;
- To develop students' need to understand the historical, cultural and national features of the Karakalpak people;
- Formation of students' feelings of patriotism, loyalty to their people, and national pride.

Thus, we have made an attempt to study and analyze the current state of solving these tasks in practice. In the course of the research, we studied the curriculum and textbooks, programs and textbooks on the subject “History of Karakalpakstan” taught in the 6th-7th grades of general secondary schools, and the manuals.

Also, feeling the national cultural heritage from the heart is the realization of the individuality of each person, instilling national cultural masterpieces into the minds of the young generation and ensuring their enjoyment requires continuous, consistent, systematic and purposeful inculcation, starting from the family and preschool educational institutions.

CONCLUSION

Thus, history lessons in general secondary schools serve as an important tool in the development of students' moral culture, providing comprehensive and thorough education to students in the subject of “History” largely depends on textbooks, teaching-methodical manuals and programs. The object of historical and cultural heritage is wide and is reflected in the content of various social and humanitarian sciences. In particular, a total of 34 hours are allocated to the history of Karakalpakstan, which is taught in grades 6-7 in general schools, and 6 hours are devoted to the study of historical and cultural heritage.

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PEER SEXUAL BEHAVIOURS, AS CORRELATE OF SECONDARY SCHOOL ADOLESCENTS' SEXUAL RISKY BEHAVIOURS IN ANAMBRA STATE

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ABSTRACT

Adolescence is an important developmental period when they get involved in sexual activities with their peers, which have the tendency to expose the parties involved to risky sexual behaviours. This study investigated peer sexual behaviours as a correlate of secondary school adolescents' sexually risky behaviours in Anambra State. One research question guided the study, while one null hypothesis was formulated and tested at the 0.05 level of significance. The design for the study was correlational survey research. The sample comprised 1,200 students drawn from a population of 19,048 SS2 adolescents in public secondary schools. A standard instrument, the "Adolescent Sexual Behaviour Index," developed by Hansen, Paskett, and Carter (1999), was used for data collection. The internal consistency reliability coefficient for the instrument was 0.86. Data was collected through direct delivery of the instrument to the respondents and analysed using the Statistical Package for Social Sciences (SPSS). The research question was answered using Pearson Product Moment Correlation Coefficients, while the null hypothesis was tested using a t-test for significant correlation. The findings of the study revealed that there is a low positive relationship between sexual behaviour and sexual risk behaviours among public secondary school students in Anambra State. The findings further revealed that the relationship existing between peer sexual behaviour and sexual risk behaviours of secondary school adolescents in Anambra State is significant. Based on the findings of the study, it was recommended that school management set up school health programmes that can help young people adopt lifelong sexual behaviours that support their health and well-being, including behaviours that can reduce their risk for HIV and other STDs.

KEYWORDS: *peer, sexual behaviours, sexual risky behaviours, adolescents, correlate*

1. INTRODUCTION

Adolescents' engaging in risky sexual activities in schools has become a source of concern to many stakeholders in education. It has become a concern because adolescents who participate in risky sexual behaviors could be at risk for sexually transmitted infections (STIs), including HIV. It is also more of a concern because adolescence is a period of life in which the adolescents tend to witness a lot of physical changes to their bodies, their mental and psychological attitudes, as well as their relationships in society, which seem to make them raise issues about their personalities and how they could fit into the ever-changing world around them.

Adolescence is a period of life with specific health and developmental needs and rights (Babatunde, 2019). Desale, Argaw, and Yalew (2016) noted that it is also a time to develop knowledge and skills, learn to manage emotions and relationships, and acquire attributes and abilities that will be important for enjoying the adolescent years and assuming adult roles. In the context of this study, adolescence is

described as a period during which these young people are expected to undergo major physical, emotional, and social developments, with a significant impact on their sexual and reproductive health behaviors.

According to Laddunuri (2013), sexual behavior is any activity that occurs alone or in a group that causes sexual arousal. Sexual behavior encompasses all actions and reactions related to pleasure seeking. In the view of Envuladu (2016), it also includes actions such as kissing, hugging, and erotic touch, among others, that one considers sexual. These could also include things people do with others like kissing, erotic touch, intercourse, oral sex, anal sex, and manual sexual stimulation.

Sexual behaviors could be healthy or risky. Risky sexual behaviors, as Ali (2017) noted, are any sexual activities that increase the risk of contracting the human immunodeficiency virus (HIV), other sexually transmitted infections (STIs), or becoming pregnant. Risky sexual behaviors, according to



Omeje, Ekueme, and Omeje (2013), also include early sexual debut, unprotected sexual activity, inconsistent use of condoms, high-risk partners (injection drug users), survival sex (sex in exchange for money, drugs, food, or shelter), or sex with a partner who has other partners or more than one partner at a time.

Adolescent sexual risk behaviour is defined as any activity that increases the likelihood that an adolescent engaging in sexual activity with another adolescent infected with a sexually transmitted infection will become infected, become pregnant, or cause a partner to become pregnant (Dimbuene, Emina, and Sankoh, 2014). It refers to all those actions, whether online or offline, that put adolescents at risk of sexually transmitted infections (STIs), unplanned pregnancy, and being in a sexual relationship before they are mature enough to know what makes a healthy relationship. Some of the factors noted to contribute to sexual risk behaviours among adolescents include smoking, alcohol, drug abuse, joblessness, family instability, age, and puberty. On the other hand, adolescents who reported no substance use were found to be the least likely to engage in sexual risk-taking (Potard, Courtois, and Rusch, 2018). Therefore, in this study, risky sexual behaviour is defined as behaviours, whether online or offline, that put adolescents at risk for STIs, unintended pregnancies, and having sex before they are old enough to understand what constitutes a good relationship.

Adolescents' proneness to risky sexual behaviours increases their likelihood of being vulnerable to reproductive health problems like sexually transmitted infections (STIs), unintended pregnancy, and abortion. Globally, as UNICEF (2017) noted, 2.1 million adolescents aged 10–19 years were living with HIV, which is mostly due to risky sexual behaviours compared to older adults. The Center for Disease Control and Prevention (CDC, 2017) noted that sexually active adolescents aged 15–19 years seem more at risk of acquiring STDs for a combination of factors like behavioural and cultural reasons. In south-eastern Nigeria alone, 17% of adolescents have STIs and HIV, while 32% have had unsafe abortions (Udigwe, Adogu, and Nwabuez, 2014). Usually at this stage, many changes are experienced concomitantly by these adolescents, including physical maturation, a drive for independence, increased salience of social and peer interactions, and brain development (Blakemore, 20018; Casey, Getz, and Galvan, 2018; and Casey and Hare, 2018). Moreover, sexual behaviours during adolescence may offer social rewards, thus providing greater opportunity for risky sexual behaviour.

Peer sexual behaviours are the sexual practises and activities commonly engaged in among members of a peer group (Agan et al., 2015). There is a diverse array of activities that could be classified as sexual behaviour among adolescents in Nigerian society. These activities include masturbation, oral-genital stimulation, penile-vaginal intercourse, and anal stimulation or anal intercourse. Such sexual behaviours may also include activities to arouse the sexual interest of others or attract partners, such as watching pornography, participating in sexual talks or sex chats on social media, dating, or courtship.

Peer sexual behaviour can be seen as healthy or unhealthy. Healthy sexual behaviours are overt behavioural patterns, actions, and habits that individuals take that affect their health positively and enable them to achieve some developmental tasks in the course of their sexual development. Such actions also help them develop healthy relationships with the opposite sex. Unhealthy behaviours, on the other hand, are overt behavioural patterns, actions, and habits that individuals take that affect their health and general wellness negatively. Such behaviours, whether healthy or unhealthy, may be heavily influenced by peer attitudes towards sexual behaviour.

According to the findings of Asrese and Mekonnen's (2018) study, embedding within higher sexual practice-approving norm networks was found to be more likely to lead to risky sexual behaviours. Similarly, a study that sought to assess correlates of sexual risk behaviours among adolescents reported that alcohol use, sexual activities, and pressure from peers were associated with multiple sexual risk behaviours. Therefore, these adolescents, if not properly monitored and guided, may be negatively influenced to engage in more risky sexual behaviours, which could be destructive and harmful to their lives. This is a problem that needs to be addressed, which has given rise to this research.

Statement of the Problem

Adolescents' exposure to and engagement in risky sexual behaviors presents a social and public health problem (Srahbzu and Tirfeneh, 2020; Teva, Paz, and Buela-Casal, 2016). Adolescents who engage in risky sexual practices may face problems with school dropouts, the potential need for unsafe abortions due to unintended pregnancy, and increased exposure to STIs, including HIV and AIDS. Asrese and Mekonnen (2018) noted that many adolescents are engaging in sexual intercourse in exchange for money or gifts, which is increasing the risk of acquiring STIs. Furthermore, the use of alcohol and drugs among these adolescents, which leads to risky sexual behavior, has caused considerable public concern.

In Anambra State, the situation has become even more worrisome, especially as it has to do with adolescents in secondary schools. In an effort to address the problem, schools, churches, and some concerned organizations have organized seminars and workshops geared towards addressing it, yet the problem has persisted. Scholarly research efforts have also been made. However, most of these studies were conducted outside of Nigeria. Few of the studies done in Nigeria were done outside Anambra State, and none known to this researcher have investigated peer sexual behavior as a correlate of adolescents' sexual risky behavior in Anambra State. The researcher is thus motivated to carry out this study in order to bridge the identified gap in the literature by investigating peer sexual behavior as a correlate of adolescents' sexually risky behaviour in Anambra State, Nigeria.

2. OBJECTIVE OF THE STUDY

The purpose of the study is to investigate peer sexual behaviour as correlate of adolescents' sexual risky behaviour



in Anambra State. Specifically, the study sought to investigate.

Research Question

The following research question was posed to guide study.

1. Relationship between peer sexual behaviour and sexual risky behaviours of secondary school adolescents in Anambra State.

Hypothesis

1. The relationship between peer sexual behaviour and sexual risk behaviours of secondary school adolescents in Anambra State is not significantly.

3. METHODOLOGY

The study was conducted using a correlational research design. The design was used because it sought to establish the relationship that exists between variables; peer sexual behaviour and sexual risky behaviour of secondary school adolescents in Anambra State.

4. SAMPLING DESIGN

A total of 1,200 adolescents drawn from a population of 19,048 SS2 adolescents in public secondary schools in Anambra State made up the sample for this study. In selecting the sample for the study, A multi-stage sampling approach was used.

Two research instruments were used in this study to elicit information from secondary school adolescents. The instruments include the Adolescent Sexual Behavior Index (ASBI) developed by Hansen, Paskett, and Carter (1999) and the Sexual Risk Behavior Scale (SRBS) developed by Fino,

Jaspal, Lopes, Wignall, and Bloxsom (2021) but adapted for this study.

The Adolescent Sexual Behaviour Index was developed by Hansen, Paskett, and Carter (1999), but was modified by the researcher to suit the purpose of this study. It is a measure that will be used to index the spectrum of sexual behaviors typical of adolescents within the past 12 months. It is a 14-item instrument with "yes" or "no" response options.

The Sexual Risk Behavior Scale (SRBS) was developed by Fino, Jaspal, Lopes, Wignall, and Bloxsom (2021) but adapted for this study. The SRBS focuses on key sexual risk behaviors among students and contains seven items with four response options of "Never," "Rarely," "Sometimes," and "Always."

5. STATISTICAL DESIGN

All the participants in the study were administered the two research instruments through a direct delivery approach. The data collected for the research questions were analyzed using the Pearson product-moment correlation coefficient (Pearson *r*), while a t-test for significant correlation was used to test the null hypothesis.

6. RESULTS

In this section, the data collected from the field for this study were analysed and the summaries presented in tables and charts to highlight the findings as follows:

Research Question 1: What is the relationship existing between peer sexual behaviour and sexual risk behaviours of secondary school adolescents in Anambra State?

Table 1: Pearson r on the relationship between peer sexual behaviour and sexual risk behaviours

Variables	N	Peer sexual behaviour	Sexual risk behaviours	Remarks
Peer sexual behaviour	1079	1.00	0.197	Low positive relationship
Sexual risk behaviours	1079	0.197	1.00	

The Pearson's correlation coefficient (*r*) in Table 1 is 0.197. This shows that there is a low positive relationship between sexual behaviour and sexual risk behaviours among public secondary school students in Anambra State.

Testing the Null Hypotheses

Hypothesis 1: Peer sexual behaviour and sexual risk behaviours of secondary school adolescents in Anambra State is not significantly related

Table 2: Test of Significance of Relationship between Peer sexual behaviour and sexual risk behaviours of secondary school adolescents

Variable	Cal. r	df	Cal. t	P-value	Remark
Peer sexual behaviour	0.197	1077	6.181	0.000	*S

*Significant



Table 2 indicates that at the 0.05 level of significance and 1077 df, the calculated $t = 6.181$ with a P value of 0.000, which is less than 0.05, the first null hypothesis is rejected. The relationship existing between peer sexual behaviour and sexual risk behaviours of secondary school adolescents in Anambra State is significant.

7. DISCUSSIONS

The results from the field of study are discussed:

Findings of the study revealed that there is a low positive relationship between sexual behaviour and sexual risk behaviours among public secondary school students in Anambra State. This shows that any increase in the sexual behaviour of secondary school students will lead to a commensurate increase in the students' sexual risk behaviours. The findings further revealed that the relationship existing between peer sexual behaviour and sexual risk behaviours of secondary school adolescents in Anambra State is significant. This shows that, though the strength of the existing relationship between peer sexual behaviour and sexual risk behaviours of secondary school students is low, it is still statistically considerable. The findings are in agreement with those of previous studies such as Udigwe, Adogu, and Nwabueze (2014); Pengpid and Peltzer (2015); and Chi, Yu, and Winter (2012).

Pengpid and Peltzer (2015) observed that alcohol use, school truancy, older age, and sexual activities were associated with multiple sexual risk behaviours among the study population. On the other hand, Udigwe, Adogu, and Nwabueze (2014) indicated that sexual behaviour where there is incorrect knowledge of the fertile period, low risk perception of HIV, premarital sex, and use of condoms among the respondents were all significantly correlated with an increased chance to engage in risky sexual behaviour.

Among all the factors identified as predicting university students' sexual behaviours, Chi, Yu, and Winter (2012) revealed that having romantic relationship experience had the strongest explanatory power for both males and females. The reason for these findings could be attributed to the notion that dating, especially a steady romantic relationship, is a prominent factor associated with sexual behaviours. Having a boyfriend or girlfriend may increase the opportunity for engaging in intimate and pre-coital behaviours, such as kissing and fondling, which may be followed by sex.

Furthermore, having a boyfriend or girlfriend may expose a student to a new set of friends, who may share more permissive norms about sex; studies such as van de Bongardt, Reitz, Sandfort, and Dekovic (2015) revealed that sexual risk norms among peers (peer sexual behaviour) may play only a small role in adolescents' engagement in risky sexual behaviour. The study thus demonstrated that adolescents whose peer norms encourage sexual activity have an increased likelihood of being sexually active and of being exposed to sexually risky behaviours. The findings have also shown that regardless of the country in which the studies were conducted, the findings suggest that perceptions of peer sexual behaviour are an important correlate of adolescents' sexual risk behaviour across cultures. Notwithstanding this similarity between countries, the outcome seems to have supported the

researcher's expectations of the possible correlation between peer sexual behaviour and adolescent sexual risk behaviours.

8. IMPLICATIONS OF THE STUDY

Based on the findings of the study, it was observed that the findings have implications for health education and prevention strategies that aim to promote adolescents' sexual health.

Understanding how adolescents' behavioural goals and choices relate to different peer norms, such as sexual behaviours and pressure to have sex, which correspond with their possible exposure to sexual risk behaviours, is essential to effectively fostering healthy adolescent development.

9. RECOMMENDATIONS

Based on the findings of the study, the following recommendations are made:

1. School management should set up school health programmes that can help young people adopt lifelong attitudes and sexual behaviours that support their health and well-being, including behaviours that can reduce their risk for HIV and other STDs.
2. The government should endeavour to ensure that resources are directed at various sexual risk behaviour prevention strategies. These include sex education starting in primary school, health counselling facilities at all levels of educational institutions, from primary to tertiary.
3. The school management should initiate prevention programs aimed at widening adolescents' aspirations for the future, increasing social and interpersonal skills, and involving them in more school and community activities may reduce their participation in a variety of deviant activities.

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UNDERSTANDING GEN Z CONSUMER PREFERENCES FOR PRICING METHODS: A CASE STUDY IN CEBU, PHILIPPINES

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ABSTRACT

This study investigates how pricing methods affect the likelihood of purchase decisions made by Generation Z (Gen Z). Data from a sample of Gen Z buyers were gathered using a descriptive survey method in order to examine the different pricing indicators on their purchase behavior. The findings revealed that pricing strategies significantly play a role in the purchasing behavior of Gen Z consumers, and the mean scores of the different pricing categories indicate their importance in the decision-making process. The study identifies that value-based pricing is critical to Gen Z consumers, who place significant emphasis on the perceived value of products. Hence, aligning pricing with product value can increase the likelihood of purchase. The findings also indicate that regular discounts or promotional offers can trigger the behavioral tendency of motivating Gen Z consumers to make purchases. The results also suggest that pricing strategy has a substantial impact on consumer loyalty and brand-switching behaviors. Companies can use pricing as a tool to encourage brand loyalty and reduce the likelihood of customers switching to competitor products. Offering personalized pricing and loyalty rewards are some ways to strengthen brand-consumer relationships. Finally, the findings suggest that pricing strategies are crucial to the purchasing decisions of Gen Z consumers. Businesses must prioritize pricing as a vital component of their marketing strategy and tailor it to meet the needs and preferences of this demographic. The study contributes to the existing literature by providing insights into the role of pricing on Gen Z consumer behavior and providing recommendations for businesses seeking to target this demographic.

KEYWORDS: Gen Z, purchasing decisions, pricing, descriptive survey method, value-based pricing, discount pricing, brand loyalty, brand switching, marketing strategy, competitive advantage.

INTRODUCTION

The younger generation, known as Generation Z or Gen Z, is an important market segment for businesses to consider (Thangavel et al., 2019). Born between 1997 and 2012, Gen Zs have grown up in a digital age and are known to be tech-savvy and socially conscious (Goldring & Azab, 2021). As this generation enters the workforce and gains purchasing power, businesses must understand consumer behavior and preferences to develop effective marketing strategies (Hanifawati et al., 2019).

As the newest generation of consumers, Gen Zs are increasingly becoming an important market for businesses to target. With their significant buying power and unique characteristics, understanding their likelihood of purchase decisions is critical for companies to succeed in the market (Thangavel et al., 2019). Pricing strategies are one of the essential tools businesses can use to influence the purchase decisions of Gen Zs.

One of the critical factors that influence consumer behavior is pricing (Abrate et al., 2019). Pricing strategy is an essential consideration for businesses as it affects consumers' perception of the value of a product or service. The right pricing strategy can make a product more attractive to Gen Zs, while the wrong pricing strategy can deter them from purchasing. Therefore, businesses must understand how Gen Zs make buying decisions based on pricing.

Additionally, pricing is one of the most critical elements of the marketing mix, as it is a crucial factor influencing consumers' purchase decisions. In today's highly competitive business environment, companies need an effective pricing strategy that can help them attract and retain customers. The importance of pricing strategies is evident in the fact that businesses of all sizes and industries invest significant resources in developing and implementing effective pricing strategies (Ali & Anwar, 2021).



Gen Zs are known for their financial savviness and high expectations for value, making pricing strategies a critical factor in their purchase decisions. Understanding the effectiveness of different pricing strategies for this generation can provide valuable insights for businesses seeking to succeed in this market (Goldring & Azab, 2021; Munsch, 2021). Skimming pricing involves setting a high initial price for a new product, gradually decreasing over time companies typically employ this strategy for products that have increased innovation, perceived value, and exclusivity (Yuan et al., 2022). On the other hand, penetration pricing is a strategy that involves setting a low initial price for a new product to attract customers and gain market share (Sara Azad Fouad Arif, 2022). This pricing method is commonly used by businesses entering a new market or facing stiff competition. In contrast, discount pricing is a strategy that offers customers discounts on products to encourage purchases. Companies often use this method to clear inventory, attract customers during off-peak periods, or reward loyal customers (Armstrong & Chen, 2020; Q. Wang & Wang, 2005).

Value-based pricing is another strategy that has become increasingly popular in recent years. This approach involves setting prices based on the customer's perceived value of the product rather than the cost of production. Value-based pricing considers the customers' willingness to pay, competition, and the benefits and features of the product. This strategy allows businesses to capture better the value they provide to customers and create a more decisive competitive advantage (Christen et al., 2022; Garrison et al., 2019; Gross et al., 2021).

Understanding the impact of these pricing strategies on Gen Zs' purchase decisions is critical for businesses targeting this generation. The unique characteristics of Gen Zs, such as their focus on social responsibility, authenticity, and experiences, require companies to consider their pricing strategies carefully. By examining the effectiveness of these pricing strategies, businesses can make informed decisions on how to price their products to appeal to Gen Zs and maintain a competitive edge in

the market (Adirinekso et al., 2020; Li et al., 2021; Waluya et al., 2019).

In this study, we focus on examining the impact of four pricing strategies - skimming pricing, penetration pricing, discount pricing, and value-based pricing - on the likelihood of purchase decisions of Gen Zs.

METHODOLOGY

This study examines how likely Gen Zers will focus their purchase decisions on pricing strategies. To ensure that the sample is representative of the population, the respondents for this study are from various colleges of varied geographical origins. The survey will ask participants about their buying propensity in response to different pricing methods. This study uses the descriptive method. The study collected pricing strategies and consumer behavior data by designing a structured questionnaire. The researcher administered the survey to a random sample of consumers who recently purchased products or services from various companies, ensuring it adequately represents the target population.

The researchers organized the questionnaire into four categories, skimming pricing, penetration pricing, discount pricing, and value-based pricing, consisting of 20 Likert scale questions. Furthermore, we categorized 20 Likert scale questions into six consumer behavior categories: purchase behavior, brand loyalty, brand switching, willingness to pay, price sensitivity, and perceived value.

RESULTS AND DISCUSSION

Gen Z, the youngest generation of consumers, has been identified as a unique and diverse group with distinct preferences and attitudes toward products and services. With the rise of digital platforms and social media, businesses increasingly seek to understand how to reach and engage this demographic effectively. A critical aspect involves developing pricing strategies that resonate with Gen Z's buying behaviors and preferences. The results of the study are as follows:

Table 1. Biological Sex

Sex	Frequency	Percent
Female	56	81.2
Male	13	18.8
Total	69	100.0

The table shows that most participants (81.2%) were female, while a smaller proportion (18.8%) were male. This gender distribution may significantly impact the study findings, especially if there is a significant difference in purchase decision likelihood between males and females. This difference in likelihood would suggest that pricing strategies may need to be tailored to different consumer segments, considering gender-specific preferences and behaviors (Friedmann & Lowengart, 2019).

The distribution of biological sex is a crucial factor in understanding consumer behavior, and this holds for the study on Gen Zs' Likelihood of Purchase Decisions based on pricing. The data presented in the table provides valuable insights into the gender composition of the study sample and has implications for interpreting the study results (González et al., 2021; Lin et al., 2019).



Table 2. Income

Income	Frequency	Percent
1-10,000	54	78.3
10,001-20,000	9	13.0
20,001-30,000	4	5.8
30,001-40,000	1	1.4
40,001-50,000	1	1.4
Total	69	100.0

The table shows that a large proportion of the study sample (78.3%) had an income range of 1-10,000 Pesos, with a small percentage falling in the higher income brackets. This income distribution has significant implications for the study findings, especially if there is a substantial difference in the likelihood of

purchase decisions between different income groups. This difference in income would suggest that pricing strategies may need to be tailored to different income segments, taking into account their specific spending patterns and purchase behaviors (Shahriar & Sajib, 2021).

Table 3. Price Skimming

Indicators	Mean	Category	Description
1. How likely are you to purchase a product when it is introduced at a higher price than similar products?	2.536	Unlikely	It is unlikely that the pricing strategies in the study will have an impact on my consumer behavior
2. How likely are you to consider the quality of a product when it is introduced at a higher price point than similar products in the market?	3.667	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
3. How likely are you to purchase a product that is marketed as a luxury item?	2.42	Unlikely	It is unlikely that the pricing strategies in the study will have an impact on my consumer behavior
4. How often do you buy products when they are first introduced?	2.797	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior
Average	2.855	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior

The table on price skimming provides critical insights into Gen Zs' Likelihood of purchase decisions based on pricing strategies. The data presented in the table has implications for businesses seeking to understand and cater to the purchasing preferences of Gen Z consumers.

similar products in the market. This quality assessment suggests that businesses may be able to implement price-skimming strategies that leverage product quality to justify higher prices (Mappesona et al., 2020; Muliastari, 2020; Rosillo-Díaz et al., 2020).

The table shows that, on average, Gen Zs are neutral on whether the pricing strategies in the study will impact their consumer behavior. However, when considering specific indicators, the table reveals that Gen Zs are more likely to assess the quality of a product when it is introduced at a higher price point than

The table also shows that Gen Zs are unlikely to purchase a product marketed as a luxury item or introduced at a higher price than similar products. This characteristic suggests that businesses must be cautious when using these pricing strategies and carefully consider the specific product and market context.

**Table 4. Penetration Pricing**

Indicators	Mean	Category	Description
5. How likely are you to purchase a product when it is introduced at a lower price than similar products?	3.87	Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior
6. How likely are you to consider the quality of a product when it is introduced at a lower price point than similar products in the market?	3.928	Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior
7. How likely are you to purchase a product marketed as a budget item?	4.014	Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior
8. How often do you buy products introduced at a lower price than similar products?	3.754	Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior
Average	3.8915	Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior

The table on penetration pricing provides valuable insights into the Likelihood of Gen Zs making purchase decisions based on pricing strategies. The data presented in the table has implications for businesses seeking to understand and cater to the purchasing preferences of Gen Z consumers.

The table reveals that, on average, Gen Zs are likely to be influenced by penetration pricing strategies when making purchase decisions (Ali & Anwar, 2021). This influence suggests businesses may leverage lower prices to increase sales and capture market share among Gen Z consumers (Yuan et al., 2022).

The table also shows that Gen Zs are likely to consider the quality of a product when it is introduced at a lower price point than similar products in the market. This likelihood highlights the importance of product quality in driving purchasing decisions among this demographic, even when the price is a crucial factor (Sara Azad Fouad Arif, 2022).

Furthermore, the table indicates that Gen Zs will likely purchase products marketed as budget items and buy products introduced at a lower price than similar products. This result suggests businesses can appeal to Gen Z consumers with budget-friendly pricing strategies that offer a good value proposition (Ali & Anwar, 2021).

Table 5. Discount Pricing

Indicators	Mean	Category	Description
9. How likely are you to purchase a product when it is offered at a discount?	4.116	Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior
10. How likely are you to purchase a product in bulk when offered at a discount?	3.594	Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior
11. How often do you wait for sales or discounts before purchasing a product?	3.536	Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior
12. How likely are you to purchase a product offered at a discount even if it is not something you typically buy?	2.652	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior
Average	3.474	Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior

The mean score for question 9, "How likely are you to purchase a product when it is offered at a discount?" was 4.116, indicating

that the respondents were likely to buy a product when it is offered at a discount. This suggests that discount pricing is an



effective strategy for influencing the purchasing decisions of Generation Z. The mean score for question 10, "How likely are you to purchase a product in bulk when offered at a discount?" was 3.594, indicating that the respondents were also likely to purchase products in bulk when offered at a discount. This implies that bulk discount pricing can be a successful strategy for encouraging consumers to buy more of a product. The mean score for question 11, "How often do you wait for sales or discounts before purchasing a product?" was 3.536, suggesting that the respondents were likely to wait for sales or discounts before making a purchase. This implies that Generation Z is price-sensitive and actively seeks out discounts when making purchasing decisions. The mean score for question 12, "How likely are you to purchase a product offered at a discount even if

it is not something you typically buy?" was 2.652, indicating that the respondents were neutral on whether discount pricing would influence their purchasing behavior for products they wouldn't typically buy. This suggests that discount pricing may not be as effective for products that are not already of interest to the consumer.

The average mean score of the four questions was 3.474, indicating that Generation Z is likely to be influenced by discount pricing strategies. The findings suggest that businesses targeting this demographic should consider offering discounts and sales to increase the likelihood of purchase (Armstrong & Chen, 2020; Sharma et al., 2019).

Table 6. Value-Based Pricing

Indicators	Mean	Category	Description
13. How likely are you to purchase a product if you believe it is worth the price?	3.826	Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior
14. How likely are you to purchase a product if you believe it is high quality?	3.855	Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior
15. How often do you consider the value of a product before making a purchase?	4.058	Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior
16. How likely are you to purchase a product marketed as a premium item?	3.043	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior
Average	3.6955	Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior

Table 6 presents the results of the survey questions related to value-based pricing. The table suggests that Gen Zs are likely to consider the value and quality of a product before making a purchase decision. The mean scores for questions 13, 14, and 15 indicate that Gen Zs are likely to be influenced by value-based pricing strategies, as they are more likely to purchase if they believe that the product is worth the price and is of high quality (Christen et al., 2022; Garrison et al., 2019).

The neutral score for question 16, suggests that value-based pricing may not have as much of an impact on this aspect of consumer behavior. However, the average score of 3.6955 indicates that value-based pricing strategies will likely significantly affect Gen Zs' purchasing decisions.

These findings imply that companies targeting Gen Zs must focus on value-based pricing strategies to influence purchasing decisions. Companies offering high-quality products at reasonable prices are likely to attract Gen Zs as customers successfully. Companies may also consider emphasizing the value and quality of their products in their marketing strategies to appeal to this demographic (Jianhua Wang et al., 2020).



Table 7. General Pricing Questions

Indicators	Mean	Category	Description
17. How important is the price to you when making a purchase decision?	4.464	Very Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior
18. How likely are you to switch to a different brand if the price of your current brand increases significantly?	3.58	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
19. How likely are you to recommend a product to others if you feel it is priced reasonably?	3.797	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
20. How likely are you to purchase a product priced higher than your typical budget if you believe it is superior?	3.116	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior
Average	3.73925	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior

Table 7 presents general pricing questions aimed at understanding the overall attitude of Gen Z consumers towards pricing. The mean score of each question and the category and description provide insights into how important price is to Gen Z consumers. This result indicates the likelihood of switching brands due to price increases and their willingness to recommend and purchase relatively priced products or higher than their typical budget.

The first question in Table 7 (Indicator 17) asks how important price is to Gen Z consumers when making a purchase decision. The mean score of 4.464 in the "Very Likely" category indicates that price is a crucial factor in the purchase decision-making process for Gen Z consumers. This result implies that pricing strategies will significantly impact their purchasing behavior, and companies should carefully consider their pricing strategy to target this demographic effectively.

The second question (Indicator 18) asks about Gen Z consumers' likelihood to switch to a different brand if the price of their current brand increases significantly. The mean score of 3.58 in the "Likely" category suggests that price increases could result in brand switching for Gen Z consumers. These findings underscore the importance of a competitive pricing strategy to retain loyal customers(Sharma et al., 2019).

The third question (Indicator 19) examines Gen Z consumers' likelihood to recommend a product to others if they feel it is priced reasonably. The mean score of 3.797 in the "Likely" category indicates that pricing fairness is a significant factor in their willingness to recommend products to others. These findings allow companies to use pricing to create brand ambassadors and attract new customers(Ferraris et al., 2020).

Finally, the fourth question (Indicator 20) asks about Gen Z consumers' likelihood of purchasing a product that is priced higher than their typical budget if they believe it is superior. The mean score of 3.116 in the "Neutral" category suggests that Gen Z consumers are unsure about purchasing higher-priced products, even if they perceive them to be of superior quality. These findings highlight the importance of clear product differentiation and effective marketing to justify higher prices and convince consumers of their value.

Overall, the average mean score of 3.73925 in the "Likely" category suggests that pricing strategies will likely impact Gen Z consumers' behavior. As such, companies should carefully consider their pricing strategy to target this demographic and remain competitive in the market effectively.



Table 8. Purchase Behavior

Indicators	Mean	Category	Description
Buy products on impulse	2.855	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior
Conduct thorough research before making a purchase	3.609	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Buy products from my favorite brands, regardless of price.	3.232	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior
Buy products in bulk to save money.	3.507	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Pay a premium price for products of high quality.	3.493	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Average	3.3392	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior

Table 8 provides insights into Gen Z's purchase behavior and how pricing affects it. The results show that Gen Z consumers have a mixed approach to purchasing products. Some behaviors indicate a likely impact of pricing strategies on their behavior, while others express a neutral stance. The first indicator, "I frequently buy products on impulse," has a neutral mean score of 2.855. These findings suggest that pricing may not significantly impact impulse purchases (Tien NGUYEN & Trung NGUYEN, 2022). However, pricing strategies that promote affordability and value may still effectively attract impulse purchases. The second indicator, "I always conduct thorough research before making a purchase," has a mean score of 3.609, indicating that pricing strategies that offer value and affordability may influence the Likelihood of Gen Z consumers conducting research before purchasing (Kasmad, 2022). This finding means that pricing is essential for Gen Z consumers, who are likely to research extensively before buying. The third indicator, "I often buy products from my favorite brands, regardless of price," has a neutral mean score of 3.232. These findings indicate that brand loyalty is a factor in Gen Z's purchase decisions, and pricing may not be the sole

consideration. However, it is still essential for brands to offer competitive pricing to retain brand loyalty. The fourth indicator, "I prefer buying products in bulk to save money," has a mean likelihood score of 3.507, indicating that pricing strategies that offer bulk discounts or other value-added incentives can influence Gen Z's purchase behavior. The fifth indicator, "I am willing to pay a premium price for high-quality products," has a mean likelihood score of 3.493. These findings indicate that Gen Z consumers value quality highly, and pricing strategies that emphasize quality may influence their purchase decisions (Chen et al., 2017).

The average mean score of 3.3392 indicates a neutral stance toward pricing strategies among Gen Z consumers. This average suggests that while pricing is an important consideration, other factors such as brand loyalty, quality, and value also play a significant role in their purchase decisions. Thus, pricing strategies that offer a combination of value, quality, and affordability will likely be most effective in attracting Gen Z consumers (Tien NGUYEN & Trung NGUYEN, 2022).

**Table 9. Brand Loyalty**

Indicators	Mean	Category	Description
Stick to my favorite brands, even if cheaper options are available.	3.13	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior
Buy products from the same brand I have used before.	3.638	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Strong emotional attachment to my favorite brands	3.377	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior
Switch to a different brand despite a promotional offer.	2.913	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior
Confident when I use products from my favorite brands.	3.942	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Average	3.4	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior

Table 9 explores Gen Zs' loyalty and attachment to their favorite brands. The table consists of five indicators with a mean score and corresponding category.

The first indicator shows that the respondents are neutral regarding always sticking to their favorite brands, even if cheaper options are available. These findings imply that the pricing strategies may not significantly impact their behavior (Padillo et al., 2021). The second indicator indicates that respondents will likely buy products from the same brand they have used before. This finding suggests that the pricing strategies of a brand may play a crucial role in retaining loyal customers and attracting potential ones. The third indicator shows respondents have a neutral emotional attachment to their favorite brands. This finding could suggest that brands must work harder to create stronger emotional connections with their

consumers to maintain brand loyalty. The fourth indicator reveals that the respondents are neutral about switching to a different brand despite a promotional offer. These findings could mean that brands must offer more than just promotions to attract potential customers. The fifth indicator indicates that respondents will likely feel confident using products from their favorite brands. This finding suggests that brands must maintain quality products to retain loyal customers (Nijssen et al., 2017).

The average mean score of 3.4 indicates that the study's pricing strategies will likely impact Gen Zs' brand loyalty and purchase behavior. Brands may need to focus on creating emotional connections, maintaining product quality, and offering more than just promotions to retain their loyal customers and attract potential ones (Fauzi & Ali, 2021).

**Table 10. Brand Switching**

Indicators	Mean	Category	Description
Try new brands when they offer a promotional discount.	3.768	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Switch to different brands depending on availability and price.	3.826	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Loyal to several brands but willing to try new ones occasionally.	3.725	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Switch to new brands if I find their products better than my current brand.	3.87	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Switch brands unless my current brand fails to meet my expectations.	3.435	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Average	3.7248	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior

The table presents the mean scores and descriptions of brand switching indicators among Gen Z consumers based on pricing strategies. The average score for all the items is 3.7248, implying that pricing strategies will likely impact Gen Z consumers' purchase decisions.

The first indicator, "I am open to trying new brands when they offer a promotional discount," has a mean score of 3.768, indicating that Gen Z consumers will likely switch brands if offered promotional discounts. This finding implies that promotional pricing strategies, such as discounts and coupons, can attract Gen Z consumers to try new brands (Sharma et al., 2019). The second indicator, "I switch to different brands depending on the availability and price," has a mean score of 3.826, indicating that price is a crucial factor in Gen Z consumers' brand-switching behavior. This finding implies that pricing strategies such as dynamic pricing, price-matching, and bundle pricing can effectively attract Gen Z consumers to change brands.

The third indicator, "I am loyal to a few brands but willing to try new ones occasionally," has a mean score of 3.725. This result indicates that Gen Z consumers are open to trying new brands

but still have some loyalty to their preferred brands. This result implies that loyalty-based pricing strategies, such as loyalty programs, can effectively retain Gen Z consumers. The fourth indicator, "I switch to new brands if I find their products better than my current brand," has the highest mean score of 3.87, indicating that product quality is a critical factor in Gen Z consumers' brand-switching behavior. This result implies that quality-based pricing strategies, such as premium and value-based pricing, can effectively attract Gen Z consumers. The fifth indicator, "I do not switch brands unless my current brand fails to meet my expectations," has the lowest mean score of 3.435, indicating that Gen Z consumers are relatively less loyal to their preferred brands. This result implies that pricing strategies such as penetration pricing and discounting can effectively attract Gen Z consumers to switch brands (Sara Azad Fouad Arif, 2022).

The table suggests that pricing strategies influence Gen Z consumers' purchase decisions. To attract and retain Gen Z consumers, companies need to consider a range of pricing strategies that target different brand-switching indicators, such as promotional, loyalty, quality, and penetration pricing (Tien NGUYEN & Trung NGUYEN, 2022).



Table 11. Willingness to Pay

Indicators	Mean	Category	Description
Buy cheaper products, even if they are of lower quality.	2.826	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior
Pay a premium price for products with unique features.	3.261	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior
Buy eco-friendly products even if they are more expensive.	3.145	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior
Pay a premium price for products made from high-quality materials.	3.449	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Pay more for products that are convenient to use.	3.986	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Average	3.3334	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior

The table provides insights into the Likelihood of Gen Z to decide on a purchase decision based on pricing. Based on the indicators provided, Gen Z appears to be relatively price-conscious, as they prefer buying cheaper products even if they are of lower quality. They are neutral on the willingness to pay a premium price for unique features and eco-friendly products. However, Gen Z is also willing to pay a premium price for high-quality materials and convenient products, indicating that the lowest price does not solely drive them (González-Rodríguez et al., 2020).

The mean score of 3.3334 suggests that, on average, Gen Z is neutral on whether the pricing strategies in the study will impact consumer behavior. This result could mean that Gen Z is open to considering various pricing strategies depending on the product, brand, and other factors.

This table implies pricing is essential to Gen Z's purchasing decision-making process. Companies that target Gen Z should consider their price sensitivity when developing their marketing strategies. Offering affordable pricing options can effectively appeal to this generation, but balancing it with other factors such as quality, convenience, and environmental concerns is essential. Companies should also be aware that high-quality materials and convenience are factors for which Gen Z is willing to pay a premium, so it may be worth investing in these areas to attract this demographic. Understanding Gen Z's attitude toward pricing is crucial in designing effective marketing strategies that resonate with this group (González-Rodríguez et al., 2020; Huang, 2021; Kucher et al., 2019).



Table 12. Price Sensitivity

Indicators	Mean	Category	Description
Compare prices before making a purchase.	4.217	Very Likely	The pricing strategies in the study will very likely have an impact on my consumer behavior
Buy products only if they are on sale or available at a discount.	3.435	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Pay a higher price for products with a good reputation.	3.449	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Sensitive to prices when I buy products.	2.638	Neutral	I am neutral on whether the pricing strategies in the study will have an impact on my consumer behavior
Tend to buy only products at a significant discount.	3.681	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior
Average	3.484	Likely	The pricing strategies in the study will likely have an impact on my consumer behavior

The table provides insights into the price sensitivity of Gen Z and their likelihood to make purchase decisions based on pricing. The indicators suggest that Gen Z is highly price-sensitive, with a mean score of 3.484, indicating that pricing strategies will likely impact consumer behavior.

Gen Z tends to compare prices before purchasing, indicating they are looking for the best deal possible. This behavior suggests that companies that target Gen Z should consider offering competitive pricing or discounts to appeal to this generation. Additionally, the fact that Gen Z tends to buy products only if they are on sale or available at a discount further highlights the importance of offering promotional pricing and deals (Wen et al., 2020). The table also suggests that Gen Z values reputation and is willing to pay a higher price for products with a good reputation. This result could mean companies with a strong brand reputation could charge a premium for their products and still attract Gen Z buyers (Mappesona et al., 2020; Thangavel et al., 2019).

However, the fact that some Gen Z respondents were neutral on the price sensitivity indicators suggests that pricing is not the only factor in their purchasing decision-making process. Other factors, such as quality, convenience, and environmental concerns, may also play a role.

This table implies that companies that target Gen Z must be aware of their price sensitivity and offer competitive pricing and promotional deals. Companies should also consider building a solid brand reputation to potentially charge a premium for their products. However, it is crucial to balance pricing with other factors that may influence Gen Z's purchasing decisions.

Overall, understanding Gen Z's price sensitivity and purchasing behaviors is vital for companies that want to market to this demographic effectively (Jianming Wang et al., 2020).

CONCLUSIONS

Based on the mean scores of the various pricing indicators, it is evident that the pricing strategies studied are likely to have a considerable impact on the purchasing decisions of Generation Z consumers. The high mean score of the Value-Based Pricing category suggests that consumers in this demographic place significant emphasis on the perceived value of the products they purchase. Hence, companies should focus on aligning their pricing with the perceived value of their products to ensure that their pricing strategy resonates with Gen Z consumers.

The high mean score of the Discount Pricing category also indicates that businesses that offer regular discounts or promotional offers may have a higher chance of influencing the purchasing behavior of Gen Z consumers. These findings support prior research indicating that discounts can trigger the behavioral tendency of loss aversion, which can motivate consumers to make purchases.

Moreover, the high mean scores of the Brand Loyalty and Brand Switching indicators suggest that the pricing strategy can have an impact on consumer loyalty and brand switching behaviors. Companies can use pricing as a tool to encourage brand loyalty and reduce the likelihood of customers switching to competitor products. For instance, offering loyalty rewards and personalized pricing can help build customer loyalty and strengthen brand-consumer relationships.



Finally, the study indicates that pricing strategies are likely to influence the purchasing decisions of Generation Z consumers. Therefore, companies must prioritize pricing as a vital component of their marketing strategy and tailor it to match the needs and preferences of this demographic. Businesses that adopt value-based pricing, offer regular discounts, and focus on building customer loyalty may stand to gain a competitive advantage in the Gen Z market.

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ANALYSING THE EARNING LANDSCAPE OF SELECTED INDIAN CEMENT COMPANIES BY UTILISING POPULAR METRICS

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ABSTRACT

The main objective of these study to analysing the earning landscape of selected Indian cement companies by utilising profitability metrics. For the period 2017-2018 to 2021-2022. The secondary data is used for the research. It has been collected from selected five cement companies' annual reports. Profitability analysis is a process of evaluating a company's financial performance by assessing its ability to generate profits. The used tools & techniques: profitability ratios analysis, statistical analysis and analysis of variance (ANOVA). It is concluded that profitability metrics, Shree Cements Ltd. appears to be the best-performing company among the five, with Ultratech Cement Ltd. and Ambuja Cements Ltd. following closely behind. ACC Ltd. and The India Cements Ltd. have lower performance than the other three companies. It is also concluded that all the null hypotheses have not been accepted meaning thereby all alternative hypotheses are accepted. There are significant differences between the selected all profitability ratios (Based on sales and related to overall return on assets / investments ratio) of selected five cement companies of India.

KEY WORDS: Profitability analysis, Sales ratio, Return on assets / investments ratio and Analysis of variance (ANOVA).

JEL Classification: M410

1. INTRODUCTION

Company is sole purposes of it is to make profits. Basically, to earn more than you spend. Profitability analysis to measure and evaluate a company's ability to generate revenue relative to, assets, operating costs, and shareholders' equity. The primary objective of profitability analysis is to provide insights into a company's financial health and to identify areas where it can improve its performance. It involves analysing various financial metrics and ratios to determine how effectively a company is managing its resources to generate profits. This analysis can be done using a variety of financial ratios, such as the profit margin, return on investment (ROI), return on net worth (RONW) and return on assets (ROA). India is the world's second-largest producer of cement. The annual production of cement in India January 2021 was 232.57 million tons, indicating that India is a significant producer of cement globally. The consumption volume of cement in India is estimated to be 379 million tons for the year 2022, There is a high demand for cement in the country. The export market for cement is growing: India exported US\$ 82.98 million worth of cement in the year 2021-22.

2. REVIEW OF LITERATURE

Owino, E. (2010)

Has study the relationship between liquidity and leverage of companies quoted at the NSE. The study considered thirty

companies out of forty-seven quoted firms at the NSE between 2006 to 2010. Secondary data was collected from the financial statements of individual companies and analysed using multivariate regression analysis. The T statistics and F significance ANOVA were used to test the hypothesis. The findings revealed that there is negative insignificant relationship between liquidity and leverage. Firms adopt the best market practices by putting in place good working capital management practices and short cash conversion cycles. The study is in agreement with other studies done in developing countries that portray negative relationship between liquidity and leverage.

Nishanthini, A. & Nimalathan, B. (2013)

Determinants of profitability: A case study of listed manufacturing companies in Sri Lanka. data were collected from secondary sources mainly from financial report of the selected companies, which were published by Colombo stock exchange in Sri Lanka. The results revealed that the profitability of manufacturing companies is less satisfactory. On the basis of result and analysis, selected manufacturing companies has different ranking based on each profitability indicators. Based on the gross profit ratio, operating profit ratio, net profit ratio, Royal Ceramic PLC is at first whereas Chevron Lubricants PLC is at first based on ROI, ROCE.



Outcome of the study is beneficial to academicians, policy makers, practitioners and so on.

Jamuna, L. (2017)

Undertook a study to analyse relationship between liquidity and profitability of select cement companies in India – an empirical study. during the study period of ten years from 2004-05 to 2013-14. The study found that liquidity performance of Ambuja cements was better than ACC Ltd. in terms of current ratio. But both the companies managed their collection and payments very efficiently. These companies collected their dues from customers as quick as possible and they delayed the payments to their creditors as long as possible. It was also found that average payments period, inventory conversion period and cash conversion period had significant relationship with profitability of the company, of which cash conversion period had negative relationship. In case of Ambuja cements no liquidity ratios had significant relationship with profitability

Parmar, H. & Shukla, D. (2021)

Have study comparative financial analysis of cement manufacturing company and relationship between inventory management and profitability ratio. In such a scenario inventory management is one of the important tools to improve the company performance. ratio analysis of financial statements is performed to know the profitability performance of the Indian cement industry by using descriptive statistics. also, this paper analysed and discusses the impact of inventory management practices on profitability performance by correlation analysis. The required data has been collected from the annual reports of the respective cement companies for the period of 2011 to 2020. The result helps the investor in the investment decision. Correlation analysis was used to determine the nature and magnitude of the relationship between inventory turnover ratio and gross profit margin. The results indicate that there exists a positive correlation between the variables.

Gjoni, A. & et al. (2022)

Through the analytical study on determinants of financial performance in Albanian economic entities, case of construction industry in Albania. The financial ratios used to

measure the financial performance of the construction sector are the debt ratio, the liquidity ratio and the profitability ratio from the period 2018-2020 for 100 construction companies in Albania. Return on assets (ROA) is taken as the predictor variable and three financial ratios are taken as the predictive variables. This research reveals that the financial ratios have positive correlation with the dependent variable whereas the leverage ratio has negative correlation. To overcome the limitations of the forthcoming studies, the considered number of years need to be increased and other models such as market value added, capital asset pricing model and economic value added can be used to be tested for research to analyses other factors that may affect financial performance.

2.1. Research Gap

The research gap in the proposed topic “Analysing the earning landscape of selected Indian cement companies by utilising popular metrics.” Such as profitability metrics. While there are several studies on the financial performance of cement companies in India, there is a dearth of research that specifically examines the profitability aspect of these companies. It was also found that there is possibly lacuna of study covering the pre-COVID and post-COVID contextual research for this topic. Also, the other studies covered different set of companies, while we have taken the top five companies in the cement industry. In addition, all the profitability metrics have been utilized which most other studies lack to cover. The combination of all these aspects makes high argument for reckoning to be a fine research gap.

3. RESEARCH METHODOLOGY

3.1. Objectives of the Study

The study has the following objectives:

- ❖ To analysing the earning landscape of selected five Indian cement companies by profitability metrics.
- ❖ To study various ways to measure the profitability based on sales of selected five cement companies of India.
- ❖ To study various ways to measure the profitability related to overall return on assets / investments of selected five cement companies of India.

3.2. Hypothesis of the Research Study

Table No.3.1. List of Hypothesis will be Taken Under Study

Null Hypothesis (H ₀)	Alternative Hypothesis (H ₁)
There is no significant difference between the profitability ratios based on sales of selected five cement companies of India.	There is significant difference between the profitability ratios based on sales of selected five cement companies of India.
There is no significant difference between the profitability ratios related to overall return on assets / investments of selected five cement companies of India.	There is significant difference between the profitability ratios related to overall return on assets/ investments of selected five cement companies of India.



3.3. Sample Design

The companies hereunder are selected on randomly for the period 2017-2018 to 2021-2022.

Table No.3.2. List of Selected Five Cement Companies		
No.	Company Name	Market Cap (₹ Crore)
1	Ultratech Cement Ltd.	204,102.92
2	Shree Cements Ltd.	90,974.54
3	Ambuja Cements Ltd.	70,162.77
4	ACC Ltd.	32,647.75
5	The India Cements Ltd.	5,815.22

Source: 14 March 2023 BSE.

3.4. Data Collection

Secondary sources of data will be utilized for this proposed research study secondary data have been collected from selected five cement companies' annual reports. Ratio data is taken from different sources like screener, moneycontrol etc.

3.5. Period of Study

Five years of financial statements will be analysed for cement companies taken under study. Financial ratios from 2017-2018 to 2021-2022 will be studied.

3.6. Tools & Techniques

This study has been done by analysing and interpreting data in following ways.

- ❖ Profitability ratios analysis.
- ❖ Statistical analysis. (Average, Std. deviation, Minimum and Maximum)
- ❖ Analysis of variance (ANOVA)

Table No.3.3. Profitability Ratios Analysis

Profitability Ratios Based on Sales		
Name of Ratio	Meaning	Calculation Formula
EBITDA Margin Ratio	It is a measure measures how much in earnings a company is generating before interest, taxes, depreciation, and amortization, as a percentage of revenue.	$EBITDA \text{ Margin Ratio} = \frac{EBITDA}{\text{Net Revenue from Operation}} \times 100$
EBITDA = Earnings Before Interest, Taxes, Depreciation, and Amortization		
EBIT Margin Ratio	It is a financial ratio that measures the profitability of a company by dividing its earnings before interest and taxes by its revenue. it is also measuring the profitability of a company's core business activities.	$EBIT \text{ Margin Ratio} = \frac{EBIT}{\text{Net Revenue from Operation}} \times 100$
EBIT = Earnings Before Interest and Taxes		
Net Profit Margin Ratio	The net profit margin ratio shows the percentage of sales revenue a company keeps after covering all of its costs including interest and taxes.	$\text{Net Profit Margin Ratio} = \frac{\text{Net Profit (PAT)}}{\text{Net Revenue from Operation}} \times 100$
PAT = Profit After Tax		
Profitability Ratios Related to Overall Return on Assets / Investments		
Return on Capital Employed (ROCE)	Return on capital employed is designed to show how efficiently a company makes use of its available all capital by looking at the net profit generated.	$\text{Return on Capital Employed} = \frac{EBIT}{\text{Capital Employed}} \times 100$
Return on Net Worth (RONW)	This ratio shows how much profit a company generates with the invested money of equity shareholders.	$\text{Return on Net Worth} = \frac{\text{Net Profit}}{\text{Total Equity}} \times 100$
Return on Assets (ROA)	Return on assets shows how much profit a company is able to generate from its available assets.	$\text{Return on Assets} = \frac{\text{Net Profit}}{\text{Total Assets}} \times 100$



3.7. Limitations of the Study

- (1) The present study will be largely based on secondary data which would be taken from official websites of respective organization, annual reports of selected five cement companies in India. and various published data books, journals, circulations, websites, reports etc. as such finding depends entirely on the accuracy of such data.
- (2) The present study will be largely based on profitability ratios analysis which has its inherent limitations. The

different views have been applied in the calculation of different ratios.

- (3) There is proper care taken to overcome the limitations of the statistical tools used in the present study but still limitations of the tools applied in the present study.
- (4) The present study has been undertaken comprising only five selected companies. The financial data taken has been taken for a duration of five years. also, out of the wide range of financial ratios, this study has focused on selected 6 profitability ratios.

4. DATA ANALYSIS AND INTERPRETATION

4.1. Profitability Ratios Based on Sales

4.1.1. EBITDA Margin Ratio = EBITDA / Net Revenue from Operation × 100

Table No.4.1. EBITDA Margin Ratio (%)

Company Name	2021-2022	2020-2021	2019-2020	2018-2019	2017-2018	Average	S.D	Min	Max
Ultratech Cement Ltd.	22.79	27.21	23.07	19.58	21.75	22.88	2.78	19.58	27.21
The India Cements Ltd.	10.13	18.69	12.11	11.89	13.76	13.32	3.27	10.13	18.69
Ambuja Cements Ltd.*	25.01	26.54	22.07	19.95	21.98	23.11	2.63	19.95	26.54
ACC Ltd.*	19.84	18.54	17.37	14.74	15.36	17.17	2.13	14.74	19.84
Shree Cements Ltd.	29.25	35.05	33.14	24.72	29.10	30.25	4.01	24.72	35.05

* = Ambuja Cements Ltd*and ACC Ltd* follows the calendar year.

Table No.4.1. Shows the EBITDA margin ratio of 5 cement companies in India for the years 2017-2018 to -2021-2022. EBITDA margin ratio shows the mixed trends in all selected cement companies. Under this study the minimum EBITDA margin ratio is 10.13% in the year 2021-2022 for The India Cements Ltd. The maximum EBITDA margin ratio is 35.05% in the year 2020-2021 for Shree Cements Ltd. Looking at the 5 years of EBITDA margin ratios figures, we can see that the average number for all companies ranges between 13 – 30%. Shree Cements Ltd and Ambuja Cements Ltd. have first and second highest average EBITDA margin ratio of 30.25% and

23.11%. The India Cements Ltd. and ACC Ltd. have first and second lowest average EBITDA margin ratio of 13.32% and 17.17%. Shree Cements Ltd. has the highest standard deviation (S.D) of 4.01%, indicating that its EBITDA margin ratio has the highest variability over the past five years. This could suggest that the company's financial performance is more volatile or subject to external factors that impact its earnings. On the other hand, ACC Ltd. has the lowest standard deviation of 2.13%, suggesting that its EBITDA margin ratio has been more consistent over the past five years. This could indicate a more stable financial performance.

Table No.4.2. Hypothesis Testing of EBITDA Margin Ratio

Hypothesis					
Null Hypothesis (H ₀)	There is no significant difference between the EBITDA margin ratio of selected five cement companies of India.				
Alternative Hypothesis (H ₁)	There is significant difference between the EBITDA margin ratio of selected five cement companies of India.				
ANOVA					
EBITDA Margin Ratio (%)					
Source of Variation	Sum of Squares	DF	Mean Square	F	P-value
Between Groups	833.51	4.00	208.38	22.66	0.00
Within Groups	183.92	20.00	9.20		
Total	1017.42	24.00			



Results Discussion	
Pc > Pt H ₀ = Accepted and H ₁ = Rejected	Pc < Pt H ₀ = Rejected and H ₁ = Accepted
[Calculate P-value = 0.00 and P-value of table (α) = 0.05] = Pc < Pt = 0.00 < 0.05	
Null Hypothesis (H ₀)	Rejected
Alternative Hypothesis (H ₁)	Accepted
Significant difference between the EBITDA margin ratio of selected five cement companies of India.	

4.1.2. EBIT Margin Ratio = EBIT / Net Revenue from Operation × 100

Table No.4.3. EBIT Margin Ratio (%)

Company Name	2021-2022	2020-2021	2019-2020	2018-2019	2017-2018	Average	S.D	Min	Max
Ultratech Cement Ltd.	17.94	21.57	17.03	13.95	15.83	17.26	2.83	13.95	21.57
The India Cements Ltd.	5.47	13.24	7.23	7.42	8.82	8.44	2.94	5.47	13.24
Ambuja Cements Ltd.*	21.06	21.96	17.41	15.13	16.50	18.41	2.96	15.13	21.96
ACC Ltd.*	16.14	13.93	13.52	10.69	10.54	12.96	2.37	10.54	16.14
Shree Cements Ltd.	22.00	25.99	18.87	12.85	19.95	19.93	4.80	12.85	25.99

* = Ambuja Cements Ltd*and ACC Ltd* follows the calendar year.

From the table no.4.3. we can see that all companies have a fluctuating trend in EBIT margin ratio. Under this study the minimum EBIT margin ratio is 5.47% in the year 2021-2022 for The India Cements Ltd. The maximum EBIT margin ratio is 25.99% in the year 2020-2021 for Shree Cements Ltd. Looking at the 5 years of EBIT margin ratios figures, we can see that the average number for all companies ranges between 8 – 20%. Shree Cements Ltd and Ambuja Cements Ltd. have first and second highest average EBIT margin ratio of 19.93%

and 18.41%. The India Cements Ltd. and ACC Ltd. have 1st and 2nd lowest average EBIT margin ratio of 8.44% and 12.96%. Shree Cements Ltd. has the highest standard deviation of 4.80%, indicating that its EBIT margin ratio has the highest variability over the past five years. On the other hand, ACC Ltd. has the lowest standard deviation of 2.37%, suggesting that its EBIT margin ratio has been more consistent over the past five years.

Table No.4.4. Hypothesis Testing of EBIT Margin Ratio

Hypothesis					
Null Hypothesis (H ₀)	There is no significant difference between the EBIT margin ratio of selected five cement companies of India.				
Alternative Hypothesis (H ₁)	There is significant difference between the EBIT margin ratio of selected five cement companies of India.				
ANOVA					
EBIT Margin Ratio (%)					
Source of Variation	Sum of Squares	DF	Mean Square	F	P-value
Between Groups	437.59	4.00	109.40	10.12	0.00
Within Groups	216.27	20.00	10.81		
Total	653.85	24.00			
Results Discussion					
Pc > Pt H ₀ = Accepted and H ₁ = Rejected			Pc < Pt H ₀ = Rejected and H ₁ = Accepted		
[Calculate P-value = 0.00 and P-value of table (α) = 0.05] = Pc < Pt = 0.00 < 0.05					



Null Hypothesis (H ₀)	Rejected
Alternative Hypothesis (H ₁)	Accepted
Significant difference between the EBIT margin ratio of selected five cement companies of India.	

4.1.3. Net Profit Margin Ratio = Net Profit (PAT) / Net Revenue from Operation × 100

Table No.4.5. Net Profit Margin Ratio (%)

Company Name	2021-2022	2020-2021	2019-2020	2018-2019	2017-2018	Average	S.D	Min	Max
Ultratech Cement Ltd.	13.94	12.36	13.42	6.88	7.49	10.82	3.37	6.88	13.94
The India Cements Ltd.	0.82	5.00	-0.70	1.23	1.94	1.66	2.10	-0.70	5.00
Ambuja Cements Ltd.*	14.89	15.74	13.10	13.09	11.94	13.75	1.53	11.94	15.74
ACC Ltd.*	11.27	10.26	8.67	10.17	6.89	9.45	1.71	6.89	11.27
Shree Cements Ltd.	16.61	18.36	13.19	8.11	14.07	14.07	3.91	8.11	18.36

* = Ambuja Cements Ltd*and ACC Ltd* follows the calendar year.

The table no.4.5. shows the net profit margin ratio, for five companies in the cement industry over the past five years. Net profit margin ratio shows the mixed trends in all selected cement companies. Under this study the minimum net profit margin ratio is -0.70% in the year 2019-2020 for The India Cements Ltd. The maximum net profit margin ratio is 18.36% in the year 2020-2021 for Shree Cements Ltd. Looking at the 5 years of net profit margin ratios figures, we can see that the average number for all companies ranges between 1 – 14%. Shree Cements Ltd and Ambuja Cements Ltd. have 1st and 2nd

highest average net profit margin ratio of 14.07% and 13.75%. The India Cements Ltd. and ACC Ltd. have 1st and 2nd lowest average net profit margin ratio of 1.66% and 9.45%. The standard deviation values in the table provide an insight into the level of volatility or stability in the net profit margin ratio of the five companies over the past five years. Overall, a high standard deviation indicates higher variability and potential risks, while a lower standard deviation indicates a more stable performance.

Table No.4.6. Hypothesis Testing of Net Profit Margin Ratio

Hypothesis					
Null Hypothesis (H ₀)	There is no significant difference between the net profit margin ratio of selected five cement companies of India.				
Alternative Hypothesis (H ₁)	There is significant difference between the net profit margin ratio of selected five cement companies of India.				
ANOVA					
Net Profit Margin Ratio (%)					
Source of Variation	Sum of Squares	DF	Mean Square	F	P-value
Between Groups	505.86	4.00	126.46	17.40	0.00
Within Groups	145.37	20.00	7.27		
Total	651.23	24.00			
Results Discussion					
P _c > P _t H ₀ = Accepted and H ₁ = Rejected			P _c < P _t H ₀ = Rejected and H ₁ = Accepted		
[Calculate P-value = 0.00 and P-value of table (α) = 0.05] = P _c < P _t = 0.00 < 0.05					
Null Hypothesis (H ₀)	Rejected				
Alternative Hypothesis (H ₁)	Accepted				
Significant difference between the net profit margin of selected five cement companies of India.					



4.2. Profitability Ratios Related to Overall Return on Assets/ Investments

4.2.1. Return on Capital Employed = EBIT / Capital Employed × 100

Table No.4.7. Return on Capital Employed (%)

Company Name	2021-2022	2020-2021	2019-2020	2018-2019	2017-2018	Average	S.D	Min	Max
Ultratech Cement Ltd.	14.78	15.32	12.03	10.70	10.88	12.74	2.18	10.70	15.32
The India Cements Ltd.	2.83	7.04	4.24	4.81	5.16	4.82	1.53	2.83	7.04
Ambuja Cements Ltd.*	12.89	11.92	9.01	8.00	8.42	10.05	2.21	8.00	12.89
ACC Ltd.*	17.47	14.40	17.08	13.97	13.93	15.37	1.75	13.93	17.47
Shree Cements Ltd.	16.69	18.67	14.46	11.40	11.36	14.52	3.23	11.36	18.67

* = Ambuja Cements Ltd*and ACC Ltd* follows the calendar year.

Return on capital employed shows the fluctuating trends in all selected cement companies. Under this study the minimum return on capital employed 2.83% in the year 2021-2022 for The India Cements Ltd. The maximum return on capital employed is 18.67% in the year 2020-2021 for Shree Cements Ltd. Looking at the 5 years of return on capital employed figures, we can see that the average number for all companies ranges between 4 – 15%. ACC Ltd. and Shree Cements Ltd. have 1st and 2nd highest average return on capital employed of 15.37% and 14.52%. The India Cements Ltd. and Ambuja

Cements Ltd. have 1st and 2nd lowest average return on capital employed of 4.82% and 10.05%. In the given table no.4.7. the standard deviation is used to measure the variability or dispersion of the return on capital employed (ROCE) of the different companies over the last five years. For example, Shree Cements Ltd. has the highest standard deviation of 3.23, indicating that its ROCE has varied significantly over the years. In contrast, The India Cements Ltd. has the lowest standard deviation of 1.53, suggesting that its ROCE has been relatively stable over the years.

Table No.4.8. Hypothesis Testing of Return on Capital Employed

Hypothesis					
Null Hypothesis (H ₀)	There is no significant difference between the return on capital employed of selected five cement companies of India.				
Alternative Hypothesis (H ₁)	There is significant difference between the return on capital employed of selected five cement companies of India.				
ANOVA					
Return on Capital Employed (%)					
Source of Variation	Sum of Squares	DF	Mean Square	F	P-value
Between Groups	362.00	4.00	90.50	17.79	0.00
Within Groups	101.75	20.00	5.09		
Total	463.75	24.00			
Results Discussion					
P _c > P _t H ₀ = Accepted and H ₁ = Rejected			P _c < P _t H ₀ = Rejected and H ₁ = Accepted		
[Calculate P-value = 0.00 and P-value of table (α) = 0.05] = P _c < P _t = 0.00 < 0.05					
Null Hypothesis (H ₀)	Rejected				
Alternative Hypothesis (H ₁)	Accepted				
Significant difference between the return on capital employed of selected five cement companies of India.					



4.2.2. Return on Net Worth = Net Profit / Total Equity × 100

Table No.4.9. Return on Net Worth (%)

Company Name	2021-2022	2020-2021	2019-2020	2018-2019	2017-2018	Average	S.D	Min	Max
Ultratech Cement Ltd.	14.34	12.32	14.24	8.79	8.61	11.66	2.82	8.61	14.34
The India Cements Ltd.	0.66	3.95	-0.65	1.33	1.93	1.44	1.70	-0.65	3.95
Ambuja Cements Ltd.*	9.36	8.81	6.88	7.07	6.25	7.67	1.34	6.25	9.36
ACC Ltd.*	12.79	11.17	11.79	14.31	9.77	11.97	1.71	9.77	14.31
Shree Cements Ltd.	13.76	15.16	12.13	9.90	15.55	13.30	2.33	9.90	15.55

* = Ambuja Cements Ltd*and ACC Ltd* follows the calendar year.

This table no.4.9. presents the return on net worth for five cement companies over a period of five years, from 2017-2018 to 2021-2022. The average, standard deviation, minimum and maximum values are also provided. Shree Cements Ltd. had the highest average return at 13.30%, with a standard deviation of 2.33%. The company's minimum return was 9.90%, while the maximum was 15.55%. ACC Ltd. had an a second-highest

average return at 11.97%, with a standard deviation of 1.71%. The company's minimum return was 9.77%, while the maximum was 14.31%. The India Cements Ltd. had the lowest average return at 1.44%, with a standard deviation of 1.70%. The company's minimum return was -0.65%, while the maximum was 3.95%.

Table No.4.10. Hypothesis Testing of Return on Net Worth

Hypothesis					
Null Hypothesis (H ₀)	There is no significant difference between the return on net worth of selected five cement companies of India.				
Alternative Hypothesis (H ₁)	There is significant difference between the return on net worth of selected five cement companies of India.				
ANOVA					
Return on Net Worth (%)					
Source of Variation	Sum of Squares	DF	Mean Square	F	P-value
Between Groups	464.98	4.00	116.25	27.74	0.00
Within Groups	83.82	20.00	4.19		
Total	548.80	24.00			
Results Discussion					
P _c > P _t H ₀ = Accepted and H ₁ = Rejected			P _c < P _t H ₀ = Rejected and H ₁ = Accepted		
[Calculate P-value = 0.00 and P-value of table (α) = 0.05] = P _c < P _t = 0.00 < 0.05					
Null Hypothesis (H ₀)	Rejected				
Alternative Hypothesis (H ₁)	Accepted				
Significant difference between the return on net worth of selected five cement companies of India.					



4.2.3. Return on Assets = Net Profit / Total Assets × 100

Table No.4.11. Return on Assets (%)

Company Name	2021-2022	2020-2021	2019-2020	2018-2019	2017-2018	Average	S.D	Min	Max
Ultratech Cement Ltd.	8.76	6.64	7.59	4.20	4.10	6.26	2.07	4.10	8.76
The India Cements Ltd.	0.33	2.04	-0.31	0.63	0.94	0.73	0.87	-0.31	2.04
Ambuja Cements Ltd.*	7.38	7.02	5.66	5.90	5.07	6.21	0.96	5.07	7.38
ACC Ltd.*	8.70	7.80	7.95	9.40	6.14	8.00	1.22	6.14	9.40
Shree Cements Ltd.	10.14	10.98	8.11	6.25	9.14	8.92	1.84	6.25	10.98

* = Ambuja Cements Ltd*and ACC Ltd* follows the calendar year.

The table no.4.11. shows the return on assets (ROA) for five companies in the cement industry for the last five years (2021-2022 to 2017-2018). The average and standard deviation (S.D) for each company's ROA are also provided, along with the minimum and maximum ROA values for the period. Return on assets shows the mixed trends in all selected cement companies. Under this study the minimum return on assets -0.31% in the year 2019-2020 for The India Cements Ltd. The maximum return on assets is 10.98% in the year 2020-2021 for Shree Cements Ltd. Looking at the 5 years of return on assets figures,

we can see that the average number for all companies ranges between 0 – 9%. Shree Cements Ltd. and ACC Ltd. have first and second highest average return on assets of 8.92% and 8.00%. The India Cements Ltd. and Ambuja Cements Ltd. have 1st and 2nd lowest average return on assets of 0.73% and 6.21%. In this table, we can see that Ultratech Cement Ltd. has the highest S.D, indicating that its ROA has been more variable over the last five years. Conversely, The India Cements Ltd. has a very low S.D, indicating that its ROA has been consistently low and not very variable.

Table No.4.12. Hypothesis Testing of Return on Assets

Hypothesis					
Null Hypothesis (H ₀)	There is no significant difference between the return on assets of selected five cement companies of India.				
Alternative Hypothesis (H ₁)	There is significant difference between the return on assets of selected five cement companies of India.				
ANOVA					
Return on Assets (%)					
Source of Variation	Sum of Squares	DF	Mean Square	F	P-value
Between Groups	202.32	4.00	50.58	23.35	0.00
Within Groups	43.32	20.00	2.17		
Total	245.64	24.00			
Results Discussion					
Pc > Pt H ₀ = Accepted and H ₁ = Rejected			Pc < Pt H ₀ = Rejected and H ₁ = Accepted		
[Calculate P-value = 0.00 and P-value of table (α) = 0.05] = Pc < Pt = 0.00 < 0.05					
Null Hypothesis (H ₀)	Rejected				
Alternative Hypothesis (H ₁)	Accepted				
Significant difference between the return on assets of selected five cement companies of India.					



5. FINDINGS

Table No. 5.1. Findings of Profitability Ratios Based on Sales

EBITDA Margin Ratio (%)	EBIT Margin Ratio (%)	Net Profit Margin Ratio (%)
The study found out that Shree Cement Ltd. maintained the highest average EBITD margin ratio of 30.25% across the five-year study period out of all the selected five cements companies. While The India Cements Ltd. recorded the lowest figure at 13.32% on this profitability metric.	The study found out that Shree Cement Ltd. maintained the highest average EBIT margin ratio of 19.93% across the five-year study period out of all the selected five cements companies. While The India Cements Ltd. recorded the lowest figure at 8.44% on this profitability metric.	The study found out that Shree Cement Ltd. maintained the highest average net profit margin ratio of 14.07% across the five-year study period out of all the selected five cements companies. While The India Cements Ltd. recorded the lowest figure at 1.66% on this profitability metric.
Shree Cements Ltd. has the highest standard deviation (S.D) of 4.01%, indicating that its EBITDA margin ratio has the highest variability over the past five years. On the other hand, ACC Ltd. has the lowest standard deviation of 2.13%, suggesting that its EBITDA margin ratio has been more consistent over the past five years.	Shree Cements Ltd. has the highest standard deviation of 4.80%, indicating that its EBIT margin ratio has the highest variability over the past five years. On the other hand, ACC Ltd. has the lowest standard deviation of 2.37%, suggesting that its EBIT margin ratio has been more consistent over the past five years.	High standard deviation (Shree Cements Ltd.) indicates higher variability and potential risks, while a lower standard deviation (Ambuja Cements Ltd.) indicates a more stable performance.
ANOVA		
Significant difference between the EBITDA margin ratio of selected five cement companies of India.	Significant difference between the EBIT margin ratio of selected five cement companies of India.	Significant difference between the net profit margin ratio of selected five cement companies of India.

Table No. 5.2. Findings of Profitability Ratios Related to Overall Return on Assets / Investments

Return on Capital Employed (%)	Return on Net Worth (%)	Return on Assets (%)
The study found out that ACC Ltd. maintained the highest average return on capital employed of 15.37% across the five-year study period out of all the selected five cements companies. While The India Cements Ltd. recorded the lowest figure at 4.82% on this profitability metric.	The study found out that Shree Cements Ltd. maintained the highest average return on net worth of 13.30% across the five-year study period out of all the selected five cements companies. While The India Cements Ltd. recorded the lowest figure at 1.44% on this profitability metric.	The study found out that Shree Cements Ltd. maintained the highest average return on assets of 8.92% across the five-year study period out of all the selected five cements companies. While The India Cements Ltd. recorded the lowest figure at 0.73% on this profitability metric.
Shree Cements Ltd. has the highest standard deviation of 3.23%, indicating that its ROCE has varied significantly over the years. In contrast, The India Cements Ltd. has the lowest standard deviation of 1.53%, suggesting that its ROCE has been relatively stable over the years.	High standard deviation (Ultratech Cement Ltd. 2.82%) indicates higher variability and potential risks, while a lower standard deviation (Ambuja Cements Ltd. 1.34%) indicates a more stable performance.	We can see that Ultratech Cement Ltd. has the highest S.D, indicating that its ROA has been more variable over the last five years. Conversely, The India Cements Ltd. has a very low S.D, indicating that its ROA has been consistently low and not very variable.
ANOVA		
Significant difference between the return on capital employed of selected five cement companies of India.	Significant difference between the return on net worth of selected five cement companies of India.	Significant difference between the return on assets of selected five cement companies of India.

6. SUGGESTIONS

Based on the research study, for the five companies, here are some overall suggestions for each financial ratio:

EBITDA Margin Ratio: Shree Cements Ltd. has the highest EBITDA margin ratio for all the years, with an average of

30.25%. This suggests that the company is able to generate high earnings before interest, taxes, depreciation, and amortization for each rupee of revenue. The India Cements Ltd. has the lowest EBITDA margin ratio for all the years, with an average



of 13.32%. This suggests that the company needs to increase its operational efficiency to improve its profitability.

EBIT Margin Ratio: Shree Cements Ltd. has the highest EBIT margin ratio for all the years, with an average of 19.93%. This suggests that the company is able to generate high earnings before interest and taxes for each rupee of revenue. The India Cements Ltd. has the lowest EBIT margin ratio for all the years, with an average of 8.44%. This suggests that the company needs to improve its operating efficiency to increase its profitability.

Net Profit Margin Ratio: Shree Cements Ltd. has the highest net profit margin ratio for all the years, with an average of 14.07%. This suggests that the company is able to generate high earnings after all expenses and taxes are paid for each rupee of revenue. The India Cements Ltd. has the lowest net profit margin ratio for all the years, with an average of 1.66%. This suggests that the company needs to improve its cost management to increase its profitability.

Return on Capital Employed (ROCE): ACC Ltd. has the highest ROCE for all the years, with an average of 15.37%. This suggests that the company is able to generate high returns on the capital employed in the business. The India Cements Ltd. has the lowest ROCE for all the years, with an average of 4.82%. This suggests that the company needs to improve its efficiency in using capital to generate profits.

Return on Net Worth (RONW): Shree Cements Ltd. has the highest RONW for all the years, with an average of 13.30%. This suggests that the company is able to generate high returns on the investment made by the shareholders. The India Cements Ltd. has the lowest RONW for all the years, with an average of 1.44%. This suggests that the company needs to improve its profitability and efficiency in using shareholders' funds to generate profits.

Return on Assets (ROA): Shree Cements Ltd. has the highest ROA for all the years, with an average of 8.92%. This suggests that the company is able to generate high profits from its assets. The India Cements Ltd has a very low average ROA of 0.73%, indicating that it is not using its assets efficiently to generate profits. The company could focus on improving its asset turnover ratio by increasing its revenue, reducing its costs, or selling underutilized assets. Alternatively, the company could focus on improving its profitability by increasing its profit margin, although this might be challenging in the current economic environment.

7. CONCLUSION

We can draw the following conclusions about the research study:

Shree Cements Ltd. has the highest EBITDA margin ratio, EBIT margin ratio, and net profit margin ratio on average, while The India Cements Ltd. has the lowest values in all three ratios. Ultratech Cement Ltd. and Ambuja Cements Ltd. have similar average ratios across all three measures, with Ultratech Cement Ltd. having a slightly higher EBITDA margin ratio and Ambuja

Cements Ltd. having a slightly higher EBIT and net profit margin ratio. ACC Ltd. has the lowest average EBIT and net profit margin ratio among the five companies, but its EBITDA margin ratio is slightly higher than that of The India Cements Ltd.

Shree Cements Ltd. and ACC Ltd. have consistently shown a high return on capital employed, return on net worth, and return on assets across the years covered by the data. Ultratech Cement Ltd. also consistently showed good returns, although not as high as Shree Cements Ltd. and ACC Ltd. On the other hand, The India Cements Ltd. showed lower returns compared to the other companies, with negative returns in some years. Ambuja Cements Ltd. had mixed results, with average returns falling between the other companies but with more variability in its returns over the years.

It is also concluded that all the null hypotheses have not been accepted meaning thereby all alternative hypotheses are accepted. There are significant differences between the selected all profitability ratios (Based on sales and related to overall return on assets / investments ratio) of selected five cement companies of India.

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ACADEMIC FREEDOM AND ITS PEDAGOGICAL INTERPRETATIONS

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ABSTRACT

This article highlights that the core part of the center of academic freedom is the teacher, professor and student, and without analyzing the subjects and objects related to this core from the anthropological point of view, without determining the ways and methods of effective relations between them, it is impossible to think about academic freedom and the initiative education of the individual.

KEYWORDS. *Pedagogical teachings, autonomy, education of a free person, human freedom, academic freedom, political freedom, philosophical freedom.*

The subject is not just an external object or a part of it, it is a thing, an event, a phenomenon or a society that expresses what the problem is, what processes or external object it is related to, what the researcher should focus on. Therefore, research is necessary to identify this subject, to pay attention to its qualities, and to hypothetically imagine how it will appear in the future. R. Descartes wrote that "in order to know, we need to define something that we can clearly and exactly see or reliably reach. Knowing cannot be otherwise" [1]. Therefore, academic freedom is primarily related to knowledge, especially scientific knowledge. That is its scientific importance and value.

According to experts dealing with the problems of academic freedom, the idea of academic freedom (independence) was put forward by the German philosopher, the founder of linguistics K.W. von Humboldt (1767-1835). He was influenced by the philosophical and linguistic views of I. Kant, I. G. Fichte, K. K. Jacob. Humboldt founded a university in Berlin in 1809. His ideas of connecting educational processes at the university with science, making socio-pedagogical research broad and "open" were later continued by German scientists as certain pedagogical views [2]. Until the 18th century, education was influenced by the church and religious dogmatics. Humboldt strives to free higher education from this influence, thus ensuring the independence of the university. In this place, it is also noticeable that he followed the calls of the Enlightenment period, the ideas of equality, freedom and brotherhood of the French Revolution. Especially the human will of the Enlightenment period, the role of knowledge and enlightenment, free from dogmatic views and institutions, instead of standards in education and training, an educational system that corresponds to the interests and aspirations of the people being educated, and arouses interest in science in them. Humboldt's conceptual ideas that views on creation played an important role [2] are expressed in scientific pedagogical

experience. According to Humboldt's teaching, university education is secular, it differs from religious education. The basis of the idea of academic freedom is to make university education free from religion, especially from the influence of the church.

Sociopsychological factors of academic freedom include:

- understanding of the connection of society's development with scientific and technological research as an epistemological need;
- it is accepted as an objective necessity to direct the practical activities of the state to support higher education;
- turning interest in higher education into a spiritual need of young people;
- coordination of academic freedom with the strategy of supporting general education;
- directing academic freedom to the concept of democratic education and the formation of a free personality;
- coordination of socio-psychological goals, interests and motives based on academic freedom and personal freedom.

The fact that the development of society is connected with scientific and technological research as an epistemological need arises from the strategic goal of the society. For example, New Uzbekistan is opening branches of universities in advanced countries in order to adopt and introduce the higher education system of advanced countries. These branches differ sharply from the subject (teacher) and object (student) system formed in the national higher education system. Education in them is aimed at teaching students to think freely and conduct independent scientific research. During the lesson, the student can drink coffee, tea, cola, leave the lesson if he needs something, and if he is not interested, he can attend other lessons. The existing national higher education cannot accept this order, as a result of which antipathy appears between the teacher and the student.



Graduated from the University of World Economy and Diplomacy, ranked among the TOP 500 universities in the world ranking, J. Saydaliyev, a master's student of the University of Pusan (South Korea), said that in these educational institutions, "students are given full freedom. That is, he is completely freed from any kind of events, gatherings and supervision. There is no excess pressure or loading. International students from different countries attend classes in a comfortable position without any symbolic uniforms."

Academic freedom is not "full freedom" or "absolute freedom" as I. Kant and Hegel meant, it is freedom in the field of learning.

Universities in the USA and Europe have been ensuring and protecting their academic freedom through creative cooperation with the state, fulfilling its orders, or training necessary personnel for the state. The young country of Uzbekistan, which has made democratic development its goal, cannot forget this factor. The management and organizational function of the state applies to the entire education system, including higher education. On the one hand, science is interested in the conceptual enrichment of management activities, and on the other hand, practicing managers strive for scientific understanding of their activities, their theoretical foundation. Management consists of pedagogical activities in many ways. The leader persistently conveys his ideas to the executors and teaches them to implement them. [1]. The support of higher education is characterized not only by the state, but also by the fact that the former serve the latter, and that they are in constant creative coordination. Coordinating relations with society enriches the university not only with empirical materials, but also with theoretical knowledge, views and modern ideas[2].

Today, along with "academic freedom", the terms "independent education", "academic education", "academic leave", "academic mobility", "academic cluster", "academic IT", "financial independence", "academic level", "academic exchange", "academic research", "academic ranking", "academic tradition", "academic project", "academic competition", "academic accreditation" are being used. Each of them has its own morpho-linguistic and spiritual significance [3]. For example, emphasizing reforms in higher education, A. Tashkulov developed "academic mobility" and "certificate programs of foreign universities" for students who travel from far away places to train students for new professions that do not require full academic education. In this place, the author means "academic mobility" as the rapid adaptation of higher education institutions in Uzbekistan to the educational system abroad, and "full academic education" means the complete study of subjects in the curriculum of the university or institute. refers to the processes of transition.

The Dutch philosopher Benedikt Spinoza (1632-1677) played a big role in the formation of liberal democratic views. In the Netherlands, it was natural that the need for new relations and capitalist development began with the formation of new views in social thought. The bourgeois revolution in the Netherlands of 1566-1609 was directed against the Spanish colonial policy, as a result of which the Dutch people won their freedom. According to the philosopher, people feel powerless in front of the complexities of life, especially tragic

natural disasters, as a result of which their mind and imagination are filled with fear.

It is known from the history of pedagogy that the first universities, such as the University of Bologna, appeared in Europe in 1088. Religious knowledge and subjects promoting Christianity are taught at this university. Later, faculties of jurisprudence, theology and medicine appeared in it. There are different opinions against the recognition of the University of Bologna as the first university in Europe. It is recognized as a symbol of the unity of the Italian people. If we interpret university education as a corporation, a combination of teaching professors and students, then the first university in Europe will be the University of Paris, founded in 1208. The term "University" means "community", "organized", "gathering". In the first universities, there was a guild of students, it was they who represented the meaning of the educational community and unity of the university. These student groups determined the direction of the university, control of classes, contingent of teachers, and self-service systems.

When talking about the idea of academic freedom in university education, it is necessary to talk about W. von Humboldt. Humboldt introduced the philosophical ideas of his compatriot I. Kant on moral imperative and individual freedom into the educational system. Education and training, scientific research serve to expand the freedom of the individual, and as a result, the improvement of society's life comes as a manifestation of these aspirations. Pedagogical teachings, relying on individual freedom, make science and creativity an integral part of society's life. It is better to ensure the freedom of the individual in education, not with monologues, but with lessons in the style of Socratic dialogues. The "formation" of a free person ("Bildihg") can be a product of Socratic dialogue.

I. Kant was the first in the history of philosophy and higher education to combine religious knowledge with secular knowledge. He revealed the differences between theology and philosophy and confirmed that the idea of freedom in university education is related to human freedom, his civil rights. Philosophy is characterized by freedom and superstition, which is why it helps the emergence of a free way of thinking in other sciences. Philosophy contributes to the development of science and freedom due to its aspiration to evaluate all scientific ideas, to lead thinking towards true knowledge. Academic freedom in the university is a continuation of freedom in philosophy.

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MERGER OF VODAFONE AND IDEA

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ABSTRACT

The Vodafone-Idea merger, the largest merger in the history of the Indian telecom industry, was an attempt to address the growing dominance of Reliance Jio, which started offering free services, thereby gaining a significant market share. The primary aim of the merger was to instill confidence in the telecom companies during a price war. The merger of Vodafone and Idea had a significant impact on the telecom sector, surpassing Bharti Airtel to become the largest cellular service provider in some markets and the second-largest in others. This paper discusses the reasons behind the merger, the conditions of the merger and the impact of the merger on telecom industry.

KEYWORDS: *Vodafone, Idea, Merger, Reliance Jio, Telecom Industry.*

INTRODUCTION



The largest telecom company in India, Vodafone Idea Ltd, is headquartered in Mumbai, Maharashtra. Under the names Vodafone and Idea, Vodafone Idea is a pan-Indian integrated GSM operator that provides 2G, 3G, and 4G (LTE) mobile services. In addition, Vodafone Idea offers services like mobile payments, IoT, advanced enterprise options, and entertainment, all of which are accessible through both online and offline touch points with locations all across the nation. To connect and inspire every Indian to achieve a brighter tomorrow, the company's aim is to "produce world-class digital experiences"! With 418.745 million customers as of December 2018, Vodafone Idea had a 35.61% market share in India, making it the largest mobile telecommunications network there and the second largest mobile telecommunications network globally.

REASONS FOR VODAFONE IDEA MERGER



- The primary motive behind the merger of Vodafone and Idea was to address the growing dominance of Reliance Jio in the telecommunications industry, which started offering free services for the first six months, thereby gaining a significant market share.
- In addition, the provision of free services by Reliance Jio triggered a price war among the companies in the telecom sector, given its oligopoly market structure.
- Consequently, a merger can instill confidence in companies during a price war, thanks to the potential for synergy benefits.
- In the end, it was anticipated that the combined Vodafone and Idea will have a significant impact on the telecom sector, surpassing Bharti Airtel to



become the largest cellular service provider in some markets and the second-largest in others. The combined business has the opportunity to improve its market position by concentrating on becoming a pan-Indian service provider.

VODAFONE AND IDEA CELLULAR LIMITED RIGHT ISSUE

On March 20, 2019, the board of directors of Vodafone Idea Limited approved the proposed Rs. 25,000 crore rights issue at the cost of Rs. 12.50 per equity share, a significant 61% discount to the going market rate. In a regulatory filing, the company stated that the rights entitlement ratio has been set at 87 equity shares for every 38 equity shares held by eligible shareholders of the company on the record date, which is April 2, 2019. According to the filing, the closing date for the issue has been scheduled for April 24, 2019, while the issue's opening date has been set for April 10.

When compared to the current market price of Rs 30, the rights issue price of Rs 12.50 offers a significant 58% savings. We examine the fundamentals of the rights issue. The total size of the issue is up to Rs 25,000 crore. The set issue price of Rs 12.50 represents a significant reduction of about 60% off the market price of Rs 30.

For every 38 Equity Shares held by Eligible Shareholders of the Corporation on the Record Date, the entitlement ratio is fixed at 87 Equity Shares. The issue's launch date is April 10, 2019, and it ends on April 24, 2019.

Vodafone Idea received Rs 17920 crore from its promoters, UK's Vodafone Group Plc. and Aditya Birla Group, via the Rs 25000 crore rights issue in funding that the telecom market leader will utilise to compete with Reliance Jio and Bharti Airtel.

The promoters also requested for 90 crore more than their entitled to aggregate rights, in addition to a public participation that was 1.2 times the offering. The promoters, Aditya Birla Group and UK-based Vodafone Group, received a share allocation of 17,920 crores, boosting their ownership to 71.57% from 71.33% previously.

In order to promote viewing on their mobile app, Vodafone Idea Limited enhanced their client services in 2019 through a variety of content collaborations. With its OTT platform, Sun NXT, which is now available to Vodafone Idea consumers, Sun TV Network and Vodafone Idea Limited formed the first cooperation. With more over 50,000 hours of material, Sun NXT caters to Tamil, Telugu, Kannada, and Malayalam viewers. Customers of Vodafone and Idea may access Sun NXT's exclusive digital content for free thanks to the agreement.

For their subscribers, Vodafone Idea Limited announced a collaboration with Shemaroo, Zee5, or other reasonably priced

video viewing options. For consumers of Idea's Nirvana postpaid service, an extra agreement between Idea and Amazon Prime was established.

Vodafone Idea Limited was formerly known as Vodafone India and Idea Cellular. Benefits are anticipated to trickle down to the customers as well with the new company claiming the top spot in the Indian telecom industry and ousting Bharti Airtel for the first time in 15 years. Both businesses will continue to use their distinct public brands for the time being. There won't be a significant shift for customers when it comes to duties like mobile phone recharging and phone bill payment. The websites for Vodafone and Idea are still accessible using their previous domain. Nonetheless, there may be greater advantages for users as a result of the combined money and expanded reach.

MERGER CONDITIONS

The merger agreement also had a clause of break fee of 3.3 billion in case any parties back out from fulfilling their obligation towards merger deal, they will be obligated to pay the break fee to the aggrieved party. The approval to the merger deal was given by Department of telecommunication on the condition that the merging companies were required to pay upfront payment of 3.3 billion on account of one-time spectrum fee which was owed by Idea cellular and Vodafone. This payment was part in cash and part in bank guarantee.

KEY MANAGEMENT



- CEO and COO – Joint appointment.
- CFO – Vodafone nomination.

While Idea and Vodafone will have joint control over the appointment of CEO and COO, the exclusive rights to appoint a CFO reside with Vodafone. Vodafone is therefore not only a major shareholder but also has many financial rights.

THE DEAL HIGHLIGHTS

Idea and Vodafone's merger agreement, worth US\$23 billion, was finally finalised in August 2018 after being announced in 2017. The deal was agreed upon in such a manner that both the companies get the equal shares in the new merged entity. According to the agreement, Vodafone PLC has joined Idea cellular from the Birla group with its Indian subsidiary Vodafone India with an swap ratio of 1:1, that means for every share held



by the shareholder of Idea and Vodafone will get the one share of the merged company. On the completion of the deal, Vodafone received 45.1% shareholding whereas Idea received 26% shareholding. Later Idea acquired 4.9% shares from Vodafone for 3.9 billion. Also, Idea has the option to purchase Vodafone's 9.5% shares over the course of the following four years from the date of the official announcement.

Vodafone will be required to sell such shareholdings on the open market in order to achieve equalisation if Idea Cellular is unable to acquire a 9.5% shareholding. But, until equalisation is achieved, Vodafone cannot exercise its voting rights over those 9.5% shares; instead, Idea and Vodafone must jointly exercise this right. Nonetheless, Vodafone has more financial powers in the combined company because Vodafone nominated the CFO, whereas Vodafone and Idea jointly nominated and hired the CEO and COO. Vodafone and Idea jointly nominated Mr. Kumar Mangalam Birla to lead the company. It was also agreed upon between the parties that profit from sale of towers will be used to reduce the debt component in capital structure over the next four years. With this merger deal, both the companies' combined 300 million customer base, 41% revenue market share and 35% market share.

Enterprise values for Vodafone and Idea were 828 billion and 722 billion, respectively, at the time of the merger. Until the merger was completed both the companies operated separately under their own brand name.

IMPACT OF MERGER ON TELECOM INDUSTRY



There are many implications that this merger will bring forth on the telecom industry.

1. To start, actions based on a reaffirmation of pricing control are possible because Jio's disruptive arrival has resulted in some significant unbalance.
2. The telecom industry's bad financial standing can also be shown. And via such mergers, health and life will be infused. India has the fastest-growing subscriber base of all the markets.
3. By joining together, Vodafone and Idea will be able to pay off their obligations and inject a significant amount of credit into the economy.

4. The agreement has also prevented both telecom companies from selling their operations. As they had originally intended, and this would have a significant impact on the calibre of services offered by various industry players.
5. The merger will undoubtedly quicken the telecom industry's speed. Also, it has been discovered that the savings, synergies, and spectrum will have a significant influence on the accelerating expansion.
6. The operation will save more than 60% of its cost, and by making investments with the money that is saved, the service's performance and quality will be enhanced.
7. Network infrastructure improvements will be seen as operational efficiencies improve and have a chance to excel. Additionally, it is anticipated that the entity's scope will exceed the established caps and its revenue market share would increase across the board.

CONCLUSION

In conclusion, it can be argued that Vodafone and Idea customers now have improved network coverage in cities and towns as a result of the merger. With the merger, customers may anticipate a wider range of services as well as access to cutting-edge technologies like VoLTE, digital wallets, and the internet of things.

The merger between Vodafone and Idea will make them a leading player. Synergies of up to INR 670 billion and INR 140 billion on operational costs for the fourth year may be acquired for the benefit of cooperative management. Also, it will help a combined corporation get credit for the sale of Towers Assets.

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DOMESTIC VIOLENCE AND ROLE OF FEMINISM

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ABSTRACT

Violence against women is not only restricted in India but also it is world wide. Women's are victim of domestic violence from ancient period of time. Generally domestic violence victim are women, children, adult and men. In our male dominant Indian society most of the percentage of victim is women. There are some reasons like slavery, illiteracy, dowry, emotional, sexual harassment and others for domestic violence. The concept, causes, analysis of domestic violence is well explained here with the help of phenomenon feminism. Feminism, women's movement definitely inspiring and enriching the others. Social, cultural, political movements, theories and moral philosophies for gender inequalities, equal rights also explained the feminism. The women's struggle for their rights is not only restricted in India but in world also focus such serious issues.

KEY WORDS:- Domestic violence, Feminism

INTRODUCTION

India is a country of south Asia. It is seventh largest country of area, the second most populous country and most populous democracy in the world. Officially it is a "Republic India". India is a largest megadiversity with flora and fauna. It contain religious, cultural, spiritual, social importance. Among socio-economic challenges India faces many problems like gender inequality, child malnutrition, poverty, child labour, human trafficking, corruption, population etc. The gender inequality creates imbalance between men and women. This is due to male dominance over women. Nowadays women's empowerment increases strength of women due to education. She has a chance to go in every sector due to her strength, power of intelligence and she is trying to balance equality with men. The gender equality awareness programmed run by Government by various ways like social media, newspaper, T.V.channels, educational departments, various offices,schools,colleges etc. The aim of this programme is to remove inequality between men and women but one of the major issues related to this fact is the domestic violence. There is a complex relationship between gender and violence .The male, female, childrens and adult with their specific behavior in society. Differences in gender roles and behaviours often create inequalities, whereby one gender becomes empowered to the disadvantages to the other. The present paper deals with the issues related to domestic violence in India and world. The term feminism also helps to explain this concept.

DOMESTIC VIOLENCE

For a relationship honesty, emotion, mutuality, respect and love is essential. It makes a good partnership. Domestic violence can be broadly defined as a pattern of abusive behaviors by one or both partners in an intimate relationship such as marriage, dating, family friends or cohabitation. According to the UN, "there is no region of the world, no country and no culture in which women's freedom from violence has been secured.(1)

Domestic violence happens between people who are dating, married, separated and divorced. It occurs in heterosexual as well as in gays and lesbian relationships and in adolescent dating relationships. Domestic violence can happen to any one of any race, age, sexual orientation, religion or gender. It can happen to couples who are married, living together or who are dating. This way of life is nothing new to humans. It has gone on for hundreds of years.

Domestic violence is not caused by stress, mental illness, alcohol or drugs. It classify into criminal domestic violence and non criminal domestic violence. Generally the physical domestic violence contain hitting, verbal or sexual but in mental domestic violence psychological, emotional, economical(FOW). Domestic violence not only restricted for women but also for men, children, adult of the society also the victim of them.(4) Every day 4 women,1 man and almost 5 children die as result of domestic violence. In 2003,Lesbians,gays,bisexuals or transgendered people experienced 6,523 incidents of domestic violence,44% were men,36% women and 2% transgendered for every hour, as many as 115 children are abused.90% of children from violent homes witness their fathers beatings their mothers. Mothers are also often abused in front of their children, which may trigger shame/embarrassment, compromising their role as mothers, as men's violence affects all aspects of women's lives, including their physical and mental health, which makes it difficult to perform the already strenuous work involved in mothering (2).Children exposed to domestic violence experience fear, anxiety, low self esteem, withdrawal and poor performance in school. Everyday nearly ten people die as a result of domestic violence in the United States. Domestic violence can happen to anyone of any race, age, sexual orientation, religion or gender.(5)



Domestic violence may start when one partner feels the need to control and dominate the other. Some men with very traditional beliefs may think they aren't equal to men. Domestic violence affects people of all socioeconomic backgrounds and education levels. 1/3rd of women in the world have experienced sexual, physical, emotional or other abuse in their lifetime. Violence against women and girls is a problem of pandemic proportions. At least one out of every three women around the world has been beaten, coerced into sex, or otherwise abused in her lifetime with the abuser usually someone known to her. (8). In US in 1970's the term 'The family violence' originated. There are various forms of violence like rape, domestic violence, sexual harassment, acid throwing reproductive coercion, female infanticide, prenatal sex selection, obstetric violence and mobile violence, honor killings, dowry violence, female genital mutilation, marriage by abduction and forced marriage. The term gender based violence refers to "any acts or threats of acts intended to hurt or make women suffer physically, sexually or psychologically and which affect women because they are women or affect women disproportionately. (9)

DOMESTIC VIOLENCE IN INDIA

There are various reasons for domestic violence like Feticide, infanticide, physical assaults, rapes, molestations, dowry deaths, female literacy rate etc.

Feminism- Feminism is a collection of movements and ideologies including establishing, defending, political, socio-economic rights for women, women suffrage. Feminism has shown and continues to show that poverty is very much a feminist issue. Whilst the inequality exists in wages and on the work floor, women will find it a greater struggle to reach out of poverty. Whilst they are kept in poverty, they remain powerless, and men continues to oppress them. Feminism are of various types like radical feminism, socialist feminism, cultural feminism, liberal feminism, islamic feminism. According to American Heritage Dictionary- feminism is someone male or female who believes in social, political and economic equality between the sexes. Generally feminism is a philosophy in which women and their contributions are valued. Using a feminist framework, we found that patriarchal family structures, gender and power dynamics contribute to the use of violence. The term was developed in France (Feminism) in the mid-1800s.

Feminism form three waves :- During **first wave of feminism** start in 19th century in UK and USA including equal property rights and opposition to "chattel" marriage, later for political power and suffrage, voting rights, antislavery, against abortion. It's activity in 19th and 20th century in united kingdom and USA it focused on equal contract, marriage, parenting, property rights but at the end of 19th century political power, women suffrage, women's reproductive, economic rights. It also shows combination of social and economic forces, campaigns for vote and equality.

During **second wave of feminism** in 1960-80's- In 1963- criticized the ideas that women could only find fulfillment through childrearing and homemaking, women are victims of a false belief system that requires them to find identity and meaning in their lives through husbands and children, women

lose their identity in that of their family, new technologies made households less difficult making women work less meaningful and valuable. In 1960's – the end of the 'patriarchy' women became active in politics, demanded and won the rights to university education, to a career, to easy divorce, suddenly women began voting differently to men. During third waves early 1990's- 2nd wave over-emphasize the experience of upper middle-class white women.

During **third wave of feminism** sudden representation of women at all levels of Government issues which appear to limit or oppress women, gender violence has become a central issue for third wave feminists. There are criticisms between waves.

Feminist theory is the extension of feminism into theoretical or philosophical fields and in other disciplines like anthropology, sociology, economics and women's studies, literacy criticism, art history and philosophy. Feminist theory aims to understand gender inequality and focuses on gender politics, power relations. In the field of literature the feminist movement produced both feminist fiction and non-fiction and created new interest in women's writing. Gender inequality have a large and wide ranging impact on society. For example, they can contribute to gender inequities in health and access to health care, opportunities for employment and promotion levels of income, political participation and representation and education. For instance, traditional beliefs that men have a right to control women make women and girls vulnerable to physical, emotional and sexual violence by men (6) (7)

The world health organization reports that 40-70% of women murdered in the US, Canada, Australia and Israel were killed by their husband or male partners. Rape is a threat to women everywhere in the US, 74 women are raped every hour, 1 in 4 women in her lifetime. In India a woman is raped every 35 minutes and 1 in 10 reported to police. Feminist constructions of domestic violence as a social problem vary and range from early constructs focusing on family preservation to later ones emphasizing mental illness, sex differences in intersubjectivity, male domination, family conflict and survival.

According to **Thomson Reuters foundations** experts survey found the ten most dangerous countries for women were seen to be India, Afghanistan, Syria, Somalia, Saudi Arabia, Pakistan, Democratic Republic of Congo, Yemen, Nigeria, USA.

THE WORLD MOST DANGEROUS COUNTRIES FOR WOMEN 2018

INDIA- RANK-01-causes- 1) the risk of sexual violence and harassment against women. 2) the danger women face from cultural, tribal and traditional practices. 3) the country where women are most in danger of human trafficking including forced labour, sex slavery and domestic servitude.

AFGANISTAN-RANK-02-causes- 1) the most dangerous in terms of non sexual violence such as conflict-related violence and domestic abuse 2) the worst access to healthcare and a lack of access to economic resources and discrimination over jobs and land.

SYRIA- RANK-03-causes- 1) in terms of access to healthcare and regards non violence which includes conflict related violence as well as domestic abuse. 2) Syria was a joint third



with the united states with regards to the risks women faced of sexual violence and harassment and named seventh worst for lack of access to economic resources.

SOMALIA-RANK-04-causes-1) Somalia as the third most dangerous country for women in terms of access to healthcare and for putting them at risk of harmful cultural and traditional practices.2) Somalia was named as fifth worst country in terms of women having access to economic resources, tied ninth when it came to non sexual violence such as conflict related violence and tied 10th on sexual violence.

SAUDI ARABIA-RANK-05-causes-1) customary gender segregation in most workplaces still limits the way in which women can be employed and a guardianship law by which women need permission from a male relative to travel abroad, marry and other activities remains in place.

PAKISTAN-RANK-06-causes-1) regarding the risks women faced from cultural, religious and traditional practice including so-called "honour" killings.2) Pakistan ranked fifth when it come to non-sexual violence including domestic abuse and point seventh regarding sexual violence and harassment.3) World Bank Data shows almost one in the three married Pakistani women report facing physical violence from their husband although informal estimates are much higher.4) Rights groups say hundreds of women and girls are killed in Pakistan each year by family members angered at perceived damage to their honour. In Pakistan the feminists work for women's like Asma Jahangir, Fareeda Kokikhel Afridi, Kishwar Naheed, Khalida Brohi etc.

DEMOCRATIC REPUBLIC OF CONGO-RANK-07-causes-1) The vast Central African country ranked as the second most dangerous country for women as regards sexual violence.2) it ranked between seventh and ninth including non sexual violence, access to healthcare, economic resources and cultural and traditional threats.

YEMEN-RANK-08-causes-1) Yemen was named as the eighth most dangerous country for women.2) It ranked poorly on access to healthcare, economic resources, the risk of cultural and traditional practices and non sexual violence.

NIGERIA-RANK-09-causes-1) Africa's most populous country was named as the sixth worst nation regards the risks women face from cultural and traditional practices and tied 10th when respondents were asked about the risks of sexual violence, human trafficking, the tens of thousands of Nigerian women have been trafficking into Europe from sexual exploitation.

USA-10-causes-1) According to #Me Too campaign against sexual harassment or abuse. Thousands have joined this campaign was accused of sexual misconduct.

Affected women can complain to the concerned protection officer, police officer, service provider or magistrate. Aggrieved woman has right to be informed about the available services and free legal services from the protection officer. Domestic violence is still not viewed as a serious criminal offence by the judiciary in India. None of the judgement over the year acknowledge that domestic violence is a closed-door crime, ignored by neighbors and the community. In 1983, domestic violence was recognized as a specific criminal offence by the introduction of section 498-A into the Indian penal code. This section deals with cruelty. Some myths about

domestic violence that causes of domestic violence are not known to date. The research carried out in different parts of the world indicates that any social structure which treats women as fundamentally of less value than men is conducive to violence against women.

Personal safety skills require to avoid the violence. Personal safety skills will not effective to solve the violence problem, but in some extent it avoid getting into a destructive relationship, handle in each and every situation and help them. Protecting physically without fighting back, creating a safety plan, assessing that what is normal and what is dangerous in relationship, keeping the children as safe as possible, paying attention and surviving at the time of dating, abusiveness etc.

DISCUSSION AND CONCLUSION

Violence against women is deeply rooted in our country. To spread awareness and knowledge about what feminism works for equality. Everyone who has a mother, sister, daughter, son or a friend would want them to have respect and rights, commitment to achieving the equality of the sexes. For the feminist movement there is a need to address radically the additional layers of discrimination women experience because of class, race, sexuality, disability and age and also the heightened impact on women and children of war, poverty and environmental degradation. Domestic violence is both a national and a worldwide crisis. According to a 1100 UNICEF study, 20-50% of the female population of the world will become the victims of domestic violence (10) The domestic violence and feminism are related concept on women issues. The domestic violence not only restricted for women but also it is found in children, adult and even in men also. In some extent women also responsible for domestic violence but due to male dominancy and gender inequality it's effect mostly found on women. The daughter, children, mother, sister, girlfriend, wife, women's in the society etc were the victims of domestic violence. To stop the domestic violence personal safety skill is also help to handle the situation. Discrimination starts even before women are born and continue till they die. In India, each and every person take part to oppose the domestic violence then we are not in the list of topper rank of world most dangerous country of domestic violence. If we start to oppose such a thing from our house then definitely victims are decrease, women's power increases which is beneficial for our society and also for our nation India.

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AYURVEDIC MANAGEMENT OF YUVANPIDIKA WITH ORAL MEDICATION, JALAUKA VCHARANA AND NIDANPARIVARJANA – A CASE REPORT

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ABSTRACT

Yuvanpidika is a type of Kshudra Roga. The diseases which are Kshudra or diminutive in nature, whose symptoms and signs are less in quantity and quality compared to other diseases and which are not life threatening are termed as 'Kshudra -rogas' in Ayurvedic context. Alternative name for Yuvanpidika is Mukhadushika. Acne Vulgaris is its contemporary equivalent. It is the chronic inflammation of sebaceous glands. Modern medicine takes a lot of time and may have side effects on prolonged use along with comparatively fewer long-lasting positive outcomes. The younger generation is well aware of the benefits of holistic approach towards beauty and seeks for appropriate guidance for a healthy lifestyle in addition to treatment. In the current study, an adolescent girl with grade 3 acne vulgaris was treated for one month only with Ayurvedic treatment which comprised of oral medication, Jalaukavacharana and Nidanaparivarjana. She was also counselled afterwards to adopt a healthy lifestyle and appropriate diet was advised to her.

KEYWORDS: yuvana pidika, kshudra roga, Jalaukavacharana, Acne Vulgaris

INTRODUCTION

Diseases that are *Kshudra*, or minute in nature, with fewer or mild signs & symptoms than other diseases, and which do not pose a serious threat to life, are referred to as *Kshudra -rogas* in the context of *ayurveda*.

One of the *Kshudra -rogas* is *Yuvanpidika*. The primary sign of *Yuvanpidika*, according to *Acharya Sushruta*, is - *Pidika*, an eruption that resembles *Shalmali Kantaka* (Thorn of the herb named *Shalmali malabarica*). It occurs because of vitiated *Kapha-Vata* and *Rakta Doshas*.¹ *Acharya Vagbhata* included these signs: *Ghana* or dense in nature, *Saruja* i.e. with mild pain², *medogarbha* i.e. filled with pus at centre; and *taruna aakriti* i.e. soft in texture.

All of these *Yuvanpidika* symptoms can be compared to *Acne Vulgaris* as per contemporary science. Prolonged inflammation of a pilo-sebaceous follicle causes acne. Teenagers are thought to be affected the most. Acne may be classified as mild, moderate, or severe based on the number and type of skin lesions and their severity³. The disease is benign in nature, however, it may produce scarring, erythema, and

hyperpigmentation of the skin of face resulting in physical and psychological problems especially in teenagers and youngsters⁴.

CASE REPORT

A 21 years old female patient came to the hospital OPD, complaining of painful small eruptions on her cheeks, few of which had pus discharge from them. Her skin was quite greasy. She had complaint of itching and similar eruptions from past 3 year which used to subside after treatment only for time being on taking various topical/local application and oral antibiotics advised by the dermatologists she visited. She noticed that with that treatment, complaints used to resolve for instance, but once the medication was stopped, the symptoms would again escalate and become more severe. She sought out allopathic treatment from various dermatologists, but was unable to find a long-lasting relief. She then visited our hospital in search of *Ayurvedic* treatment.

MATERIALS AND METHOD

After taking history and examination, she was advised to avoid the causes, i.e. *Nidanaparivarjana*. The patient was instructed to refrain from eating curd, pickles, sesame, groundnuts, salty fried meals, and junk food. She was also counselled to follow



Dinacharya as advised by *aacharyas* (regular diet and sleep pattern). She then underwent *Shodhana Chikitsa* and *Shamana Chikitsa* (pacification and purification therapies). *Shodhana Chikitsa* included *jalaukavcharana* done once weekly for 4

weeks. Along with this, the patient received *Shamana* treatment for one month as described in table no.1 and was observed every 7 days

ORAL MEDICATIONS

Table no. 1

S. No.	Medicines	Dose	Anupana
1.	<i>Panchatikta ghrith guggulu</i>	10ml twice a day	With milk
2.	<i>Nimbaharidraadi choorna</i>	1/2 teaspoon twice a day	With lukewarm water
3.	<i>Gandhakraja rasayan 125mg</i>	2 tablets twice a day	With lukewarm water

GRADING OF ACNE VULGARIS

Table 2: According to Indian acne grading system

Mild acne	Grade 1	Comedones < 30 and papules < 10, no scarring
Moderate acne	Grade 2	Comedones any in number, papules > 10, nodules < 3 and few pustules, scarring +/-
Severe acne	Grade 3	Comedones, papules any number, numerous nodules, scarring
Cystic acne	Grade 4	Cysts, nodules and widespread scarring

Observations

The patient was given *shamana* and *shodhana chikitsa* for a duration of 4 weeks and was observed weekly for any improvement in her condition.

She was also asked to follow the *nidana-parivarjana* advised to her at the starting of treatment.

Her symptoms gradually reduced every week and by the end of 4th week, all her chief complaints were almost subsided.

Symptoms	Before treatment	After			
		7 days	14 days	21 days	28 days
<i>Shalmali Kantaka pidika</i>	++++	+++	++	+	-
<i>Saruja</i> (pain)	++++	+++	++	+	-
<i>Shoatha</i> (inflammation)	+++	++	+	+	-
<i>Kandu</i> (pruritis)	+++	++	+	+	+/-
<i>Ghana</i> (denseness)	++++	+++	++	+	-

DISCUSSION

Reference of *panchatikta ghritha guggulu* is found in *Bhaishjyarnavali Kushthrogadhikara*. *Ghritha*, *Panchatikta Gana Dravyas*, and *Guggulu* are the key ingredients of this medication. It has considerable *vranashodhak*⁵, *tridoshaghana* property and primarily acts as an anti-inflammatory agent. It also has anti-histaminic and antioxidant properties. Thus, it was selected for the treatment plan.

Nimbaharidraadi choorna which is referenced in *ashtanga hridya* helps to reduce all sorts of *Shoatha*, *kandu* and *pitika*. *Nimbaharidraadi choorna* passifies *pitta* and *kapha* therefore is advised orally to the patient, to lower acne-related itching and inflammation.

The two principal *Dushya* in *Yuvanpidika*, are *Rakta dhatu* and *Twacha*. *Gandhaka Rasayana* works efficiently on these two. It is referenced in *Yogaratnakara's Rasayana Prakarana*.⁶ It also functions as a *Rasayana* (rejuvenating factor) for the skin. It helps to reduce scars from various skin disorders. Thus,

Gandhaka Rasayana was chosen to be administered orally, and it did assist to reduce scarring and haste the healing of acne outbreaks.

Blood-letting with the aid of leech is known as *Jalaukavacharana*, and it is a common treatment for vitiated *Rakta dosha*. *Acharya Sushruta* has said *jalaukaavcharana* for *raktamokshana* in *sukumaras*⁷ In the management section of *Mukhadushika*, *Acharya Vagbhata* has recommended bloodletting.

Leech draws contaminated blood from the treated area. Numerous enzymes, vasodialators, hyaluronidase compounds, thrombolytic *Hirudin*, anti-inflammatory *Bdellin*, and anti-platelet aggregation factor, are found in leech saliva. So, *Jalaukavacharana* was opted for that.

Taking into account the patient's age, Leech therapy was done 4 times, with an interval of 7-days between each leech therapy session. After the treatment, her complaints were significantly reduced and symptoms were subsided.



Ambikadutta Shastri, Choukhambha Sanskrit Sansthana, Varanasi, 9th edition.

CONCLUSION

The most prevalent adolescent skin condition and which is most frequently found on the face is *Yuvanpidika*, The role of *Ayurvedic* management given here is to balance the vitiated *Doshas* and eliminate the toxins. Avoiding the causes prevents further recurrence of the acne. Leech therapy has also been found to be a simple and effective method for symptomatic and instantaneous relief for complaints like pain and itching. According to this study, we can conclude that *Shamana Chikitsa*, *Jalaukavacharana* and *Nidanaparivarjana* can prove to be successful in managing *Yuvanpidika*.

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SCIENTIFIC ANALYSIS OF THE REQUIREMENTS FOR SPECIAL SHOES FOR EQUESTRIAN SPORTS GAMES

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ABSTRACT

The article presents the requirements for shoes, development of a survey created for the purpose of studying the requirements for equestrian sports shoes, and the procedure for conducting them. The appearance and details of the special shoes for equestrian sports, the height of the heel part of the shoes, the analysis of the materials used for the upper part of shoes are described.

INTRODUCTION

The construction of shoes, the choice of materials for their manufacture depends to some extent on the structure of the foot and the state of its functioning. The shoe is worn in a dynamic environment unlike most leather footwear, the foot undergoes different movements when walking, running, and jumping at different amplitudes. When wearing shoes and walking, the heel, especially its front part, bends, hits the shoe. The heel releases sweat from itself (in the form of steam and in the form of a wet drop), which the shoe must expel. The functioning of the body is accompanied by the release of heat, which is partially transferred to the shoes and released into the environment through it. Normal functioning of the foot is possible when using shoes that are correctly selected in terms of size and fullness.

Requirements for footwear and materials for its manufacture depend on the climatic conditions in which it is worn. For regions with an average temperature of -20°C , shoes designed for winter wear are characterized by closedness (boots, semi-boots), materials with low thermal conductivity are used (fur, porous rubber), thick details (first of all, soles) are used. Shoes worn for the summer season have an open construction (the top is made of straps) and they are made of thin fabrics.

Ergonomic properties are also called consumer properties of the product (or operational). This term refers to the operational characteristics of the product, which are determined by its weight, shape, structure and other properties. However, one should not forget the other consideration of the consumer value of the product - the presence of public needs, compatibility with the consumption structure, etc.

An item may have an excellent set of technical characteristics, but because it does not fit the fashion requirement, it may not be in demand, it may be abundant in the market, that is, it may lose its moral value.

These days it is very important to take into account the demand for the product, because the development of techniques and technology, the use of new materials slow

down the physical decay of the product, and the growth of the population and the improvement of material capabilities accelerate the moral decay. When designing a product and choosing fabrics for it, it is necessary to choose the optimal option. In this position, it is unreasonable to choose, for example, velour fabric, whose appearance deteriorates quickly, for the top, and polyurethane, which is resistant to warping, for the sole.

MATERIALS AND METHODS

Ergonomic indicators include anthropometric, physiological, psychophysiological and hygienic. Anthropometric indicators describe the conformity of the product to the size and shape of the human body (shoes to feet, gloves to hands).

Physiological and psychophysiological indicators are assessed by matching the weight of an object to human strength, sensory and other capabilities (for example, shoes or a briefcase).

Psychophysiological indicators describe the arrangement of product elements according to human skills. For example, a bag zipper, a button on a glove, or an unusual position of a shoe zipper causes temporary difficulty when using the item.

Indicators of hygienic properties (heat conductivity, air, vapor and moisture permeability, etc.) are determined by the conformity of the product to the normal standards of human life. Among leather products, hygienic properties are more important for shoes and gloves, which should protect a person from the unpleasant effects of the surrounding environment (changes in temperature and humidity) and create conditions for normal functioning (must ensure the exchange of body temperature, moisture and air with the surrounding environment).

In recent years, when finding a solution to quantitatively supply the population with leather goods, the hygienic properties of fabrics have become an important criterion in the selection, as well as aesthetic properties.



Hygienic requirements for materials include the presence of a porous structure. Porous materials have low weight and thermal conductivity, and less raw materials are used for their production. Fabrics with a cross-linked pore structure (e.g. leather)

Vapor, air and moisture permeable. Non-porous materials (for example, porous rubber) do not swell, have good heat-insulating properties, but are not vapor-permeable. Materials for leather goods are hydrophilic and hydrophobic, in other words wettable and non-wettable. Hydrophilic materials have high water evaporation, moisture absorption and moisture repellency, while hydrophobic materials are water resistant. Hydrophilic materials (for example, leather) are used for the lining and pad for the shoe upper, which should evaporate the sweat released from the heel, and hydrophobic materials are used for the sole and heels and they should not swell in water. Many materials will have both properties. The leather surface layer for the shoe upper is hydrophobic because it is treated with polymer compositions, the main part of which is hydrophilic.

In order to ensure a normal microclimate inside shoes and gloves, first of all, the parameters of vapor permeability, moisture evaporation, moisture elasticity and moisture release should be high.

Under the influence of steam, moisture, heat, light, materials emit toxic mixtures of products or unbound components. They destroy the material, change its appearance, cause skin diseases in the wearer, therefore, materials for leather goods should have especially artificial, ecological properties, that is, different substances should be released in the amount specified in the normative document.

Several properties of the material are associated with ease of use and production technology. From the point of view of hygiene, the material should have the properties of expansion, compression and bending, should not hit the heel, should not compress the fingers when the size changes and when the configuration changes during operation.

At the same time, the materials should not change the shape given to the product during operation.

The materials have low stiffness depending on where they are used, meaning the heel and toe must be able to form.

Mechanical requirements determine the possibility of making a product from the given materials. Depending on the appearance of the details of the shoes, these requirements include properties such as deformability (flexibility or plasticity), resistance to tearing, 1-time or multiple bending, compression, seam breaking, adhesive absorption, paint and apprehension.

Technological properties are manifested during the manufacture of the product. These properties of materials depend on the nature of the manufacturing process. For example, depending on the structure and properties of materials, they are printed, pierced with a needle, glued, shaped, flowed in different ways. Changes in technology lead to changes in the requirements for materials. For example, in earlier leather goods, only natural leather was used and mechanical processing methods were used, so the main requirement was good cutting (cutting, punching) and good connection with nails and screws.

Currently, due to the wide use of synthetic and artificial materials (artificial leather, rubber, cardboard), easy forming when heated is important (casting, hot vulcanization), requirements such as welding and gluing in the field of high frequency current are imposed.

The technological requirements of the materials may differ from each other due to the fact that the processing methods for different parts are not the same.

Technological requirements for materials are imposed only in the sphere of production, consumers are not interested in these requirements. Their interest is to a certain extent embodied in these properties of materials in the sum of consumer properties of the product.

Great importance is attached to the economic indicators of the quality of materials. When choosing a material (in the given technology and equipment), it is necessary to predict the cost-effectiveness of its use, while weighing the cost of the fabric with its complex properties. For example, when preparing for the production, the following question is answered: should the part be cut from the rubber plate for the base, losing 30% of its area, or should the formed base be used, which does not require processing?

The details of leather goods require different materials with different character and characteristics. The same type of leather is used for the upper part of the shoe (per pair), and in some cases, two different types of materials are used in combination. When using chrome leather, the requirements for the details of the upper part of the shoe are different, taking into account its thickness, density and air permeability. The main part of the shoe is made from the leather part and the secondary detail is made from the edges.

The toe and the upper part are the parts that hold up the shoe, so aesthetic requirements are placed on the materials of these parts and they must be resistant to cracking.

When the outside air temperature is low, shoes mainly act as protection and transfer less heat from the body to the outside environment. The heat protection feature of the shoe is said to prevent the heat from the sole of the foot from escaping to the outside environment.

Heat protection properties of shoes are greatly influenced by the heat properties of the lining and insole materials. The construction of shoes with details made of porous materials will have high heat resistance. Therefore, it is possible to design shoes with the desired heat protection properties by choosing materials for the upper and sole details of the shoes. The heat protection properties of the shoes are greatly affected by the humidity of the shoes. Experiments (L.V. Kedrov) show that if the material absorbs 50-60 g of moisture from the air, the heat transfer resistance of shoes decreases by 33-43%. Thus, when designing shoes, it is necessary to choose constructions and materials that are suitable for the weather conditions and the season of the year, that prevent overheating in winter and overheating in summer.

When walking or running, the shoe bends many times. The number of bends reaches 3 million. As a result, the details of the shoes shrink and expand by 15-20%. This causes creases to appear on the shoe. The radius of folds can be from 1 to 10 mm, depending on the thickness of the material.



Requirements for footwear are divided into two groups: consumer and technical-economic. Consumer requirements are aimed at satisfying human needs, they include social, aesthetic, ergonomic and operational requirements.

Social requirements - determine the suitability of footwear to the needs of the population, the necessity of its production and sale.

Functional requirements - characterize the conformity of the footwear to the main function, psychological characteristics and appearance of the consumer. The main function of shoes is daily wear and a means of protecting the human heel from the effects of the external environment.

Aesthetic requirements - plays an important role in evaluating the quality of shoes and characterizes the decoration of the appearance of shoes, the compositional solution. Selected men's ankle boots are in line with the modern fashion trend, and its composite solution and decorative elements are suitable for everyday wear.

Ergonomic requirements - determine the characteristics of the shoe to create comfortable conditions for a person during wearing.

Exploitative requirements - during the use of shoes, i.e., during wearing, they determine whether their appearance will not change, they will not wear out quickly, and they will be able to serve for a certain period of time. The material of the set is soft and has a smooth texture, so it absorbs less dirt and dust.

Technical-economic requirements - characterize the technical improvement of the construction of shoes, the methods of its design and preparation, the costs of production.

Technical-economic indicators include unification and standardization indicators, technological convenience, economy indicators.

In the process of human movement, the foot is usually in various positions, and also its size and shape change. When determining the characteristics of shoes, it is necessary to take into account the specific characteristics of the foot as a supporting and movement organ. With the help of biomechanical analysis, it is possible to determine the reasonable shape of the inner surface of the shoe, the shape of the foot and the height of the heel, its stability, weight, flexibility, etc.

One of the most popular equestrian sports in Uzbekistan is the "Ko'pkari". Let's take a look at the requirements for footwear for the "Ko'pkari" equestrian sport. For this purpose, a survey was conducted among equestrian horse riders and amateurs.

RESULTS AND DISCUSSION

As a result of the survey, the following was determined. In Uzbekistan, "Kopkari" equestrian sport is practiced from 12, 15 years old to adults. They buy special equestrian shoes from specialized stores or order them individually. For "Kopkari" horse sports, high-heeled shoes in the form of boots with natural leather uppers are preferred. The height of the boot covers the calf as well as the knee. The boots worn by typical horse riders have a widened upper part that wraps around the knee with a special detail to protect the knee.



The survey on the development of complex requirements for special shoes for "Ko'pkari" equestrian sport.

1. Your main measurements, cm

- Your heel size (size)
- Your height
- Your weight

2. Where do you usually get special shoes?

- From special stores
- from the online store



- C. to make an order from shoemaker
- 3. What kind of equestrian shoes do you prefer?**
- A. Half-length
 - B. Boots
 - C. Semi - boots
- 4. What is the most comfortable shoe height?**
- A. Must cover the ankle
 - B. Partially cover the calf
 - C. Cover the calf completely
 - D. Close the knee
- 5. What shape should the muzzle of shoe be?**
- A. Broad
 - B. Narrow
 - C. Average
- 6. What is the height of the heel?**
- A. High....mm
 - B. Averagemm
 - C. Low....mm
- 7. What is the best fabric for equestrian shoes?**
- A. Natural leather
 - B. Artificial and synthetic leather
 - C. Mixed fabrics
- 8. Determine the sequence of the most important indicators for you when choosing horse sports shoes?**
- A. Quality of preparation
 - B. Upper fabric
 - C. Price
 - D. Design
- 9. What style of equestrian shoes do you prefer?**
- A. Classical style
 - B. Sports style
 - C. Elegant
 - D. Folklore
 - E. It does not matter
- 10. Which method do you prefer to attach upper details to lower details?**
- A. Using glue
 - B. Casting
 - C. Using nail
 - D. Using thread
- 11. How do you want the upper outer details to look?**
- A) Whole
 - B) Fragmented
 - C) Voluminous
 - D) Spatial

Information about myself:

Full name ---

Age -----

My profession -----

My information -----

My connection to "Ko'pkari" equestrian sport:

- Amateur

- Horse rider

CONCLUSION

According to the results of the survey, 67% of "Ko'pkari" equestrians buy their shoes from specialized stores, 25% order from a shoemaker, and 8% go to online stores. All of the participants preferred that the footwear look like a boot, with 42% preferring to partially cover the calf and 58% preferring to cover the knee. 33% of the

participants defined the width of the muzzle as medium width, 67% of the participants defined it as narrow. 42% of riders consider the height of the heel to be high, and 58% consider the heel of average height to be acceptable. 78% of equestrians preferred natural leather as the fabric for the upper, while 75% of respondents chose natural leather and 25% rubber for the sole.



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CHARACTERISTICS OF THE CLINICAL COURSE OF ACUTE PANCREATITIS IN CHILDREN

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ABSTRACT

Acute pancreatitis is one of the most severe diseases in the pathology of the digestive system. The diagnosis of the disease is based on three signs: severe pain in the epigastrium or lumbar pain, pain that does not decrease after antispasmodic drugs, pain radiating to the heart area, behind the temporal bone, nausea, feeling no relief after vomiting, and tension in the upper abdomen. Clinical signs characteristic of the disease: acute, constant wedge-shaped pain in the epigastric region and dyspeptic disorders. The disease can also be confirmed using Shchyotkin-Blumberg, Kerte, Kach, Mayo-Robson symptoms.

KEY WORDS: *acute pancreatitis, pancreas, patients, clinical course, lumbar pain, diagnosis.*

INTRODUCTION

Today, acute pancreatitis is one of the most severe diseases in the pathology of the digestive system, and if acute pancreatitis is not diagnosed in time, it can lead to the transition to a tumor [1,6,7,9,10,13,17,20]. 4 levels of acute pancreatitis are distinguished: 1) a mild level of acute pancreatitis, in which inflammation, diffuse swelling is observed, and there is no necrosis and insufficiency; 2) moderate severity of acute pancreatitis, with transient organ failure (less than 48 hours) or pseudocysts, infiltrates, abscesses; 3) severe degree of acute pancreatitis, in which pancreonecrosis or peripancreonecrosis or persistent organ. 4) critical level of acute pancreatitis, with the development of infected pancreonecrosis or peripancreonecrosis and persistent organ failure. According to the revised Atlanta classification, there are a number of criteria for evaluating acute pancreatitis, a diagnosis is made if 2 out of 3 are present: a) a typical clinical appearance (triple sign) according to UTT: enlargement of the pancreas, decreased echogenicity, unclear contours, distribution of free fluid in the abdominal cavity; c) amylase and lipase increase in concentration by 3 times or more than normal [4,5,11,14,18].

The diagnosis of acute pancreatitis is based on three signs: severe pain in the epigastrium or lumbar pain, pain that does not decrease after antispasmodic drugs, pain radiating in the area of the heart, behind the sternum, nausea, lack of relief after vomiting, and tension in the

upper abdomen. Dry mouth, thirst, the patient's tongue is covered with a white coating. These symptoms are caused by the intake of fatty, fried and large amounts of food and diseases of the biliary tract [2,3,8,12,15,16,19].

THE PURPOSE OF THE STUDY

To determine the diagnostic criteria of acute pancreatitis.

Sources and verification methods. 25 children aged 9 to 15 years who were hospitalized in Samarkand city hospital with acute pancreatitis were surveyed. 10 (40%) were boys, 15 (60%) were girls, the average age of the patients was 12 years.

TEST RESULTS AND DISCUSSION

According to the questionnaire, 100% of patients experienced pain within the first 1.5-2 hours, and patients clearly indicated the location of pain. Of these, 59% of patients had severe, stabbing pain in the epigastric area, and 33% had pain on the left side. After 2-3 hours, pain was given to the back and spine, and in 6.3% to the left shoulder. 84% of patients had severe pain in the abdomen, and these patients turned to medical personnel on the 2-4th day of the disease. 62% of patients took painkillers at home ("no-shpa", "baralgin"), but the pain did not disappear completely, the pain decreased within 1.5-2 hours, and then severe pain started again. When we pay attention to the causes of acute pancreatitis, it was found that 35% of patients had an excessive intake of fatty, fried foods in their diet. 24% of patients had biliary dyskinesia, cholecystitis, and the remaining 31% were found to have



a genetic predisposition to the development of this disease. The clinical presentation of the disease varied, but often nausea, vomiting were observed, and patients did not feel relief afterwards. Symptoms of dry mouth, constipation, flatulence, profuse sweating, and weakness were observed in all patients. Diarrhea, high blood pressure, fainting, headache in patients signs are rarely observed. Most of the patients admitted to the department did not seek emergency medical care. Biliary dyskinesia and cholecystitis were also detected in the patients. When palpating the patients, the following signs were revealed: positive Shchyotkin-Blumberg symptom, 95% of patients also had a positive Kerte symptom (muscle tension in the projection of the pancreas and pain 5 cm above the navel), 58% of patients had a positive Kach symptom (transverse 8-11 thoracic vertebra) pain on palpation of the tumor), 50% of patients had a positive Mayo-Robson symptom (pain on palpation of the left costo-spinal angle) and 45% of patients had Mondor's triad (pain, vomiting, flatulence). Analyzing the anamnesis of patients diagnosed with acute pancreatitis, it was found that boys and girls have the same incidence of this disease. The main reason for the development of acute pancreatitis is a large and excessive intake of fatty, fried foods, biliary dyskinesia, cholecystitis, and genetic predisposition. The clinical course of the disease in patients was different. In children, the pain often started in the epigastric area or under the left rib. The pain is strong, wedge-shaped, spread to the entire abdomen within 2-3 hours. In some cases, the pain spread to the lower back, to the left shoulder, and was often lumbar. In most cases, dyspeptic changes were observed: nausea, flatulence, constipation, profuse sweating, dry mouth and thirst. Shchyotkin-Blumberg, Mayo-Robson, Kerte, Kach's symptoms, Mondor triad helped to diagnose "acute pancreatitis" in patients. These symptoms are used to confirm the diagnosis.

CONCLUSIONS

Thus, today, despite the high incidence of acute pancreatitis in children, diagnosis is insufficient. The Mondoran triad is an accurate universal method in the diagnosis of acute pancreatitis. The clinical picture characteristic of the early stage of development of acute pancreatitis is a sharp, constant wedge-shaped pain in the epigastric area, often the pain spreads to the left rib, to the surface of the abdomen, and is accompanied by dyspeptic disturbances: that is, nausea, lack of relief after vomiting,

flatulence, diarrhea. The disease can be confirmed using additional palpation methods (Shchyotkin-Blumberg, Kerte, Kach, Mayo-Robson symptoms).

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CLINIC, DIAGNOSIS AND TREATMENT OF DUODENAL ULCER IN CHILDREN

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ANNOTATION

The problem of duodenal ulcer (DU) in children attracts special attention, as it is very common, the clinical features are both bright and asymptomatic with a high probability of developing serious complications (ulcer bleeding, perforation, perforation) In the formation of duodenal ulcer intestines in children play the main role: neuropsychic, endocrine, hereditary-constitutional factors, drug and toxic effects, food allergies, eating disorders and great importance is attached to the infectious agent Helicobacter pylori. In children and adolescents, there is a tendency to an asymptomatic course of the disease, and in connection with this, cases of hospitalization of children with complications such as bleeding, perforation, and pyloric stenosis without any clinical manifestations have become more frequent. Also, a feature of the disease in adolescents is the localization of the ulcer in its upper part (95%) up to 1 cm in size, occasionally there are ulcers of large sizes from 3 to 6 cm. Often the disease occurs with frequent prolonged exacerbations and in a more severe form, which contributes to the development of complications. Conducting active medical examination and rehabilitation of children with this pathology reduces the likelihood of relapses and complications of the disease.

KEY WORDS: duodenal ulcer, clinic, patients, diagnosis, treatment.

Peptic ulcer of the duodenum is a chronic relapsing disease of the duodenum, manifested by a defect in the mucous membrane (ulcers). These disorders occur against the background of destabilization of the nervous and humoral mechanisms in the human body that regulate secretory-reparative processes in the duodenum. Ulcer disease is characterized by periods of exacerbation (spring and autumn) and remission. The result of the healing of ulcers is the formation of a scar.

Currently, the problem of duodenal ulcer (DU) in children attracts special attention, as it has a high prevalence, clinical features, both bright and asymptomatic course with a high probability of developing serious complications (ulcer bleeding, perforation, perforation) [1, 2,3,5,7,13,15].

The prevalence of duodenal ulcer in adolescent children is 8 times higher than in children under 10 years of age [2,8,10,12,16]. It is important that diseases of the gastroduodenal zone begin at an early age, often recur, affect the quality of life of children and can lead to early disability.

As you know, an important role in the development of duodenal ulcer in children is played by: a violation of the diet, hereditary-constitutional factors, neuropsychic, endocrine, drug and toxic effects, food

allergies, and paramount importance in the formation of ulcers is given to the infectious agent Helicobacter pylori (Hp).

The frequency of Helicobacter pylori infection in children of all age groups is 65-70% [3,4,9,11,14]. Currently, Hp is found in 52–55% of children with chronic gastritis and gastroduodenitis, and in erosive and ulcerative processes, their number increases to 82–98% [3,6]. At the same time, the data of recent studies confirm the changed conditions, there is an increase in atrophic, neoplastic processes of the stomach and duodenum associated with Helicobacter pylori and a decrease in the growth of Hp associated duodenal ulcers.

In the structure of peptic ulcer, duodenal ulcer prevails, which is – 81-87%, gastric ulcer is much less common - 11-13%, as well as the combined localization of ulcerative defects in the stomach and duodenum 4-6% [1,3,9].

The peak incidence in girls is 10–12 years old, in boys it is 12–14 years old, boys and girls get sick equally often. A distinctive feature of peptic ulcer is the cyclical nature of its course, with exacerbations in spring and autumn.

Exacerbation of DU can last from weeks to several months, the remission phase is always much



longer than the period of exacerbation. In some children, the disease occurs with frequent prolonged exacerbations and in a more severe form, which contributes to the development of complications.

In recent years, there has been a tendency for adolescents to have an asymptomatic course of the disease, and in connection with this, cases of hospitalization of children with complications such as bleeding, perforation, and pyloric stenosis without any clinical manifestations have become more frequent. Also, a feature of the disease in adolescents is the localization of the ulcer in its upper part (95%) up to 1 cm in size, occasionally there are large ulcers from 3 to 6 cm.

Of great importance in the diagnosis of duodenal ulcer in children is the totality of clinical examination data, the results of instrumental, morphological and laboratory research methods. Of primary importance is endoscopic examination, which allows you to clarify the localization of the ulcer and determine the stage of the disease.

It is mandatory to determine *Helicobacter pylori* using a breath test with urea, serological methods. The above aspects in childhood dictate the need for individual complex treatment, including exposure to aggression factors in order to reduce them and a parallel effect on defense mechanisms to restore the mucous membrane of the stomach and duodenum.

Patients during intense pain need bed rest, followed by its expansion. The diet should be mechanically, chemically and thermally gentle on the gastric mucosa. Acute foods are excluded from the diet, salt is limited, the consumption of foods rich in cholesterol. Meals are taken 4-5 times a day.

Assign with diet No. 1a, No. 1b, No. 1 in the acute phase of the disease. After reducing the severity of the disease, the patient can be transferred to diet No. 5. An analysis of current trends in the problem of Helicobacteriosis made it possible to identify the basic principles of anti-*Helicobacter* therapy in childhood and to form promising eradication treatment regimens [3,4,8]. The only generally accepted goal of eradicating *Helicobacter pylori* is to prevent recurrence of ulcers. Antibacterial therapy is indicated for all *Helicobacter*-associated patients with duodenal ulcer at the first clinical manifestations of the disease [2,4].

The modern approach to treatment involves choosing the most effective combination of drugs that has minimal side effects and is convenient for the patient.

Currently, one of the most successful, allowing to destroy the pathogen in 90% of cases, is the so-called three-component therapy, which includes proton pump blockers, amoxicillin, clarithromycin or Macmirror. A two-week course of triple therapy in combination with a six-week intake of colloidal bismuth subcitrate accelerates ulcer healing compared with H₂-blocker monotherapy and reduces the recurrence rate to 15% or less. After monotherapy with H₂-blockers, relapses occur in 60-100% of patients. At the second stage, when it is possible to achieve control over aggressive factors, the main emphasis in treatment is shifted to the activation of defense factors in order to restore its resistance. The duration of this stage is 14–20 days.

At the last stage, non-drug interventions are preferable: physiotherapy, psychotherapy and restoration of the functional state of the gastrointestinal tract, aimed at local and general regulatory systems of the child's body. Its duration can be 1-3 months. This approach makes it possible to achieve good results in the treatment of DU and will create the preconditions for achieving a long-term and complete remission.

Thus, peptic ulcer of the duodenum in adolescents has its own age characteristics and determines the need for a differentiated approach to the treatment of patients with the obligatory consideration of the infectious factor. When establishing Hp associated peptic ulcer in adolescent children, it is necessary to carry out eradication therapy based on modern principles recommended in pediatrics as part of the complex treatment of such patients. Conducting an active medical examination and rehabilitation of children with this pathology will reduce the likelihood of relapses and complications of duodenal ulcer.

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ASSESSMENT OF COGNITIVE EFFECT OF COMBINED EXTRACTS OF ZINGIBER OFFICINALE AND OCIMUM SANCTUM IN SCOPOLAMINE INDUCED AMNESIA

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ABSTRACT

In the current investigation the rhizome of *Zingiber officinale* and leaf of *Ocimum sanctum* were extracted using ethanol-water (70:30) and the anti-amnesic potential of the combined extracts was evaluated in experimental model. The extraction yield of the hydroalcoholic mixture was found to be 10.4 % for *Zingiber officinale* and 17.7 % for *Ocimum sanctum*. Preliminary phytochemical analysis suggested the presence of alkaloids, saponin glycosides, phenolics, terpenoids, and flavonoids in the leaf of the *Zingiber officinale* while alkaloids, sterols and glycosides were not present in *Ocimum sanctum*. The total phenolic content of the extracts of *Z. officinale* and *O. sanctum* were 73.61 ± 0.238 and 65.71 ± 0.265 GAE mg/g, respectively. The phenolic content was highest in the combined extract (CPE, 2:1) of all the three combinations with total phenolics 149.56 ± 1.247 GAE mg/g. The combination of these extracts (1:1, 1:2 & 2:1) were evaluated for anti-amnesic potential using Morris water maze and Elevated plus maze models. The number of movements in open arm of the elevated plus maze apparatus on administration of CPE, 2:1 was highest of all the extracts administered (5.14 ± 0.408). In the Morris method, the mice treated with CPE, 2:1 required only 14.22 ± 0.894 seconds on the 4th day to find the hidden platform as compared to 52.00 ± 3.577 for the scopolamine treated mice.

KEYWORDS: *Zingiber officinale*, *Ocimum sanctum*, extraction, Morris water maze, elevated plus maze

INTRODUCTION

Dementia is a serious brain pathology that affects memory, reasoning, orientation, thoughtfulness, learning ability, and poignant reliability, among other functions of the superior cortical role. Memory loss precedes the gradual loss of other cognitive processes, including behavioural abnormalities, making it a neurodegenerative condition (Huang and Mucke, 2012). The cholinergic neurotransmission is essential for learning and memory (Auld et al., 2002).

The ginger rhizome, also known as *Zingiber officinale*, is frequently used in cooking and can be used fresh, dried, or powdered. Ginger essential oil can be extracted from the fresh rhizome. *Ocimum sanctum* L., also known as tulsi, is a 30–60 cm tall, upright, heavily branched subshrub with simple, opposite, fragrant green or purple leaves and hairy stems.

Experimental studies have shown several pharmacological activities of *Zingiber* species including nootropic (Joshi and Parle, 2006), antidepressant (Singh et al., 2012) and antinociceptive (Phukan and Adhikari, 2017) among others. The genus *Ocimum* has also been reported to possess a manifold of pharmacological actions like anti-inflammatory, analgesic and

antipyretic (Godhwani et al., 1987), anticancer (Karthiyan, 1999), hypotensive (Singh et al., 2001), antimicrobial (Auil et al., 2005; Singh et al., 2005), anti-amnesic (Singh et al., 2016).

The objective of the present investigation was to combine the hydroalcoholic extracts of *Zingiber officinale* and *Ocimum sanctum* and evaluate their effects on scopolamine-induced amnesia in rats.

MATERIAL AND METHODS

Preparation of the Plant Material

The plant material after authentication, were washed with distilled water and dried under shade. The dried material were powdered using a blender at low speed. The powdered material were stored in closed container till use.

Extraction of Leaves (Sahira Banu and Cathrine, 2015)

100 g of powder was evenly packed in soxhlet apparatus and extracted with 300 ml of ethanol-water (70:30) by aid of heat. The extracts were filtered while hot and then concentrated by under vacuum. The concentrated extracts were transferred to 100 ml beakers and the solvents were evaporated on water bath. The oleo-resinous/semisolid extracts collected and the excessive moisture was removed by placing the extracts in desiccators.



The dried extracts were stored in desiccators for further procedures of analysis.

Preliminary Phytochemical Screening

Phytochemical analysis of the extracts was done to check the presence or absence of common plant secondary metabolites. The evaluation was done for triterpenes/steroids, alkaloids, glycosides, flavonoids, saponins, tannins, and phenolic acids. Precipitate formation or color intensity was used as analytical response to these tests.

Preparation the combined extracts

The hydroalcoholic extracts obtained from *Zingiber officinale* and *Ocimum sanctum* were mixed in various ratios (1:1, 1:2 & 2:1) respectively and used for determination of the total phenolic content and anti-amnesic action using the reported methods reported in the succeeding sections. The anti-amnesic activity of the combined extracts was compared to that of the individual extracts and studied statistically for significance.

Total Phenolic Content (Tiwari et al., 2017)

The total phenolic content in the hydroalcoholic extracts of both the plants was determined by Folin-Ciocalteu method. For total phenolic content determination, 200 µL of each extract (1 mg/ml) was mixed with 3 ml purified water and 0.5 ml of Folin-Ciocalteu reagent. After 3 min, 4 ml of 75 g/L sodium carbonate

aqueous solution was added, the mixture was vortexed for 15 sec and allowed to stand for 1 h in dark for color development and the absorbance was measured at 765 nm using a UV-Vis spectrophotometer. Calibration curve was prepared by similar treatment of gallic acid instead of the extract. The obtained results were expressed as milligrams of gallic acid equivalent (GAE) per g of the dry sample, calculated according to the following formula:

$T = C \times V/M$; where T is total phenolic content, C- concentration of gallic acid in extract, V- volume of extract solution, M is the weight of the extract in g.

EVALUATION OF ANTI-AMNESIC POTENTIAL

Animals

Healthy Wistar rats of either sex, weighing about 180-250g were used. The animals were housed in cages maintained at 12 day and night cycle and a temperature maintained at 17-26°C, fed with standard rodent pellet feed and water *ad libitum*. The animals were fasted 12 hours before the experiment with free access to only water.

Grouping of animal for treatment

The animals were divided in 12 groups with 5 animals in each group. The grouping and treatment per group (Table 1) is presented below.

Table 1 Grouping of animal for anti-amnesic study

Group No.	Treatment	Dose
1	Control	Normal Saline
2	Scopolamine (SCOP)	2mg/Kg, i.v for 21 days
3 & 4	ZOE	100 mg/Kg, oral +SCOP 2mg/Kg, i.v for 21 days
5 & 6	OSE	100 mg/Kg, oral +SCOP 2mg/Kg, i.v for 21 days
7 & 10	CPE (1:1)	100 mg/Kg, oral +SCOP 2mg/Kg, i.v for 21 days
8 & 11	CPE (1:2)	100 mg/Kg, oral +SCOP 2mg/Kg, i.v for 21 days
9 & 12	CPE (2:1)	100 mg/Kg, oral +SCOP 2mg/Kg, i.v for 21 days

Morris water maze test (Morris, 1984; Vorhees and Williams, 2006)

The testing system consisted of a circular pool (150 cm wide and 30 cm deep) filled with water and surrounded by visual cues. The pool was divided in four quadrants. A black circular hidden platform was placed in the northwest (NW) quadrant 2 cm under the water surface so that rat could escape swimming and drowning. Rat were screened for their swimming ability by recording the latency to reach the visible platform post training to exit the water tank onto the platform by using the visual cues. Each rat was placed inside the water tank facing the tank wall, at one of the four randomly selected entry points. The test was performed on four consecutive days (8 trials per day). The starting position was changed randomly for each trial and the animal was allowed to search for 60 s to find the hidden platform. At the end of the trials, the rat was allowed to remain on the platform for 30 s.

Elevated plus maze test (Scheider et al., 2011; Itoh et al., 1990)

The Elevated plus-maze comprised of two open (50cm × 10 cm) and two enclosed (50cm × 10 cm×40 cm) arms radiating from the central platform (10cm × 10 cm) to form a plus sign. The plus maze was elevated to a height of 50 cm above from the floor level by a single central support. The experiment was conducted during the dark phase of the light cycle (9:00 – 14:00 h). The trial was started by placing an animal on the central platform of the maze facing an open arm. During the 5 min experiment, behavior of mice was recorded as (i) preference of the mice for its first entry into the open and closed arms, (ii) the numbers of entries into the open or closed arms, and (iii) time spent by the mice in each of the arms. The mice were considered to have entered an arm when and four paws were on the arm.

Statistical Analysis

All analysis was performed using graph pad prism 5 for Windows. All statistical analysis was expressed as mean ± standard deviation (SD). Data were analyzed by two-way ANOVA.



RESULTS AND DISCUSSION

The extraction yield in ethanol-water (70:30) was found to be 10.4 % for *Zingiber officinale* and 17.7 % for *Ocimum sanctum*.

Phytochemical Screening

The phytochemical screening of extract was done for detecting the presence alkaloids, glycosides, tannins, saponins, flavonoids,

steroids and terpenoids. All the extracts were tested for the presence of various categories of phytochemicals and the results are presented in Table 2.

The findings suggest the presence of alkaloids, saponin glycosides, phenolics, terpenoids, sterols, and flavonoids in the plants.

Table 2 Phytochemical analysis of the extracts

Phytochemical Tested	Observation	<i>Z. officinale</i> extract	<i>O. sanctum</i> extract
Alkaloids	Orange color precipitate/ solution	+	-
Saponins	Continual frothing	+	+
Cardiac glycosides	Brown ring at junction	+	-
Tannins	Green colored precipitate	+	+
Flavonoids	Yellow colored precipitate	+	+
Steroids	Formation of Green Color	+	-
Terpenes/terpenoids	Appearance of Grey color	+	+

Total Phenolic content

The quantification of total phenolic content in the extract of *Zingiber officinale* and *Ocimum sanctum* was done by Folin-Ciocalteu method. The results of the total phenolic content of

the extracts examined, using Folin-Ciocalteu method, are depicted in table 3. The total phenolic content of found in the extract of *Zingiber officinale* and *Ocimum sanctum* were 73.61 ± 0.238 and 65.71 ± 0.265 GAE mg/g, respectively.

Table 2 Total phenolic content of extracts

Plant	Total phenolic content (GAE mg/g)
<i>Zingiber officinale</i>	73.61 ± 0.238
<i>Ocimum sanctum</i>	65.71 ± 0.265
CPE, 1:1	84.37 ± 1.633
CPE, 1:2	116.9 ± 3.155
CPE, 2:1	149.56 ± 1.247

Data expressed as gallic acid equivalent (GAE) mg per g of the extract, Values are mean \pm SD of triplicate determinations; CE – Combined extract of *Zingiber officinale* and *Ocimum sanctum* extract.

Determination of Anti-amnesic Potential

The extracts were individually and in combination (1:1, 1:2 & 2:1) subjected to *in vivo* determination of anti-amnesic potential using morris water maze and elevated plus maze models. As evident from table 4, scopolamine treated group increased the

entries of mice in the closed arm entries along with the total time spent in the closed arm. All the extracts were able to improve the open arm activity exhibited by the animals. The time spent in open arm by the mice treated with vehicle was not significant while CPE, 2:1 exhibited a significant result compared to SCOP ($p < 0.0001$) in two way ANOVA. The number of movements in open arm on administration of CPE, 2:1 was highest of all the extracts administered and was found to be 5.14 ± 0.408 while it was just 1.5 ± 0.547 in Scopolamine treated mice.

Table 4 Memory assessment in elevated plus maze paradigm

Treatment	Dose (mg/kg)	Number of open arm entries	Number of close arm entries	Total arm Entries
Vehicle	0.5 ml/kg, i.p.	2.16 ± 0.408^{ns}	$4.66 \pm 0.516^{***}$	7.0 ± 0.752
SCOP	2 mg/kg, i.p.	1.5 ± 0.547	6.16 ± 0.752	7.66 ± 0.816
ZOE	100 mg/kg, p.o.	$2.36 \pm 0.066^*$	$3.11 \pm 0.408^{***}$	5.47 ± 0.474
OSE	100 mg/kg, p.o.	$2.48 \pm 0.301^{***}$	$1.87 \pm 0.516^{***}$	4.35 ± 0.817
CPE, 1:1	100 mg/kg, p.o.	$3.33 \pm 0.547^{***}$	$1.75 \pm 0.752^{***}$	5.08 ± 1.299
CPE, 1:2	100 mg/kg, p.o.	$4.26 \pm 0.408^{***}$	$1.62 \pm 0.516^{***}$	5.88 ± 0.924
CPE, 2:1	100 mg/kg, p.o.	$5.14 \pm 0.408^{***}$	$1.48 \pm 0.816^{***}$	6.62 ± 1.224

Values represent mean \pm SD ($n = 5$). ^{ns}- not significant; * ($p < 0.05$); ***($p < 0.001$)

The elevated plus-maze is a validated predictive test for anxiety-like behavior of rodents in which the animal prefers to stay in

the closed arms rather than open arm. The CE were able to significantly improved the on scopolamine- induced learning



and memory impairment in mice as exhibited by the positive response in elevated plus-maze.

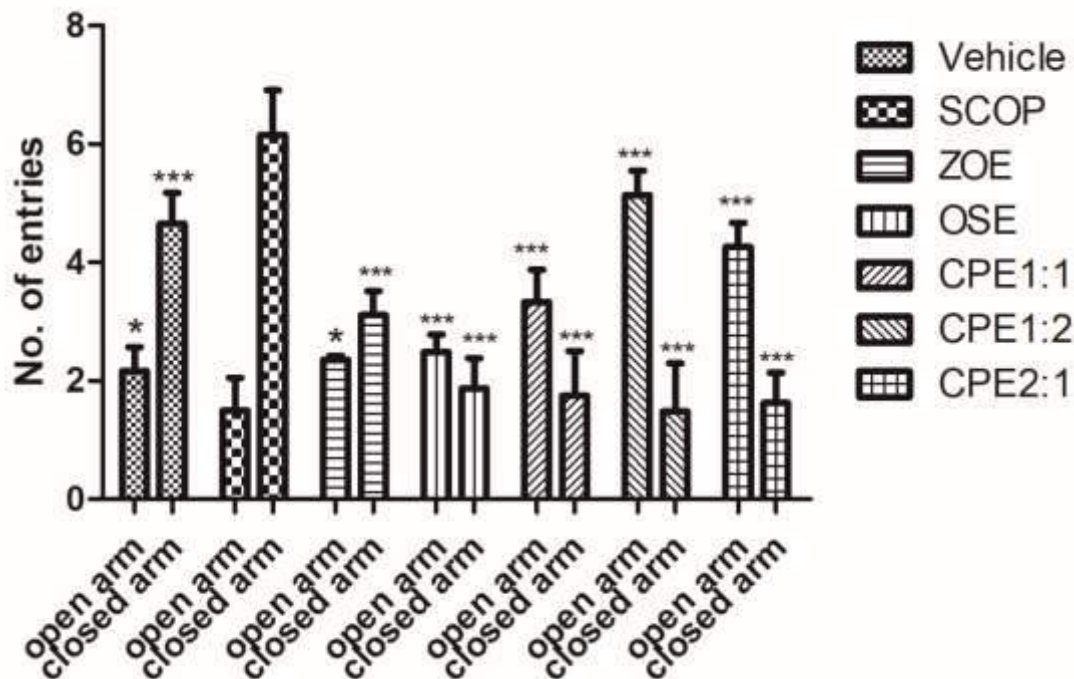


Figure 1 Effect of extracts on mice in EPM test

The average latency to find the hidden platform is exhibited by MWM (Morris water maze) test. Our observations reveal that all experimental groups exhibiting learning tendency by finding the hidden platform by the fourth experimental day. Results of MWM test in experimental animals confirmed a significant

effect of the extracts, in comparison to control group on the latency to climb the hidden platform. The two-way ANOVA confirmed a significant interaction between treatment (control vs. SCOP treated) \times trial days ($p < 0.001$) and SCOP + CE treated \times trial days ($p < 0.001$) (Figure 2).

Table 5 Time to reach hidden platform in Morris water maze test

Treatment	Dose (mg/kg)	Time to reach platform (sec)			
		Day 1	Day 2	Day 3	Day 4
Vehicle	0.5 ml/kg, i.p.	57.66 \pm 4.32*	53.83 \pm 3.544*	52.24 \pm 2.422 ^{ns}	48.67 \pm 2.786 ^{ns}
SCOP	2 mg/kg, i.p.	63.16 \pm 4.792	59.33 \pm 4.456	56.00 \pm 4.816	52.00 \pm 3.577
ZOE	100 mg/kg, p.o.	49.43 \pm 2.857**	46.24 \pm 2.529**	41.88 \pm 1.940**	38.22 \pm 2.483**
OSE	100 mg/kg, p.o.	48.21 \pm 3.970**	44.86 \pm 3.449**	39.17 \pm 2.483**	35.24 \pm 0.894**
CPE, 1:1	100 mg/kg, p.o.	42.37 \pm 2.483**	39.53 \pm 1.940**	36.11 \pm 2.522**	33.64 \pm 1.449**
CPE, 1:2	100 mg/kg, p.o.	39.61 \pm 0.924**	33.92 \pm 2.857**	28.53 \pm 4.483***	28.11 \pm 1.887**
CPE, 2:1	100 mg/kg, p.o.	36.18 \pm 3.970***	21.18 \pm 3.449***	17.24 \pm 2.483***	14.22 \pm 0.894

Values represent means \pm SD ($n = 5$), ^{ns} - not significant; **($p < 0.05$); ***($p < 0.001$)

The mice treated with CPE, 2:1 required only 14.22 \pm 0.894 seconds on the 4th day to find the hidden platform as compared to 52.00 \pm 3.577 for the scopolamine treated mice. It was also

suggestive from the results that in all the treatment groups, the animal were able to find the hidden platform much quickly from the 3rd day. The mice treated with CPE, 1:2 did not show much significant improvement on the 4th day of experiment in a searching the hidden platform.

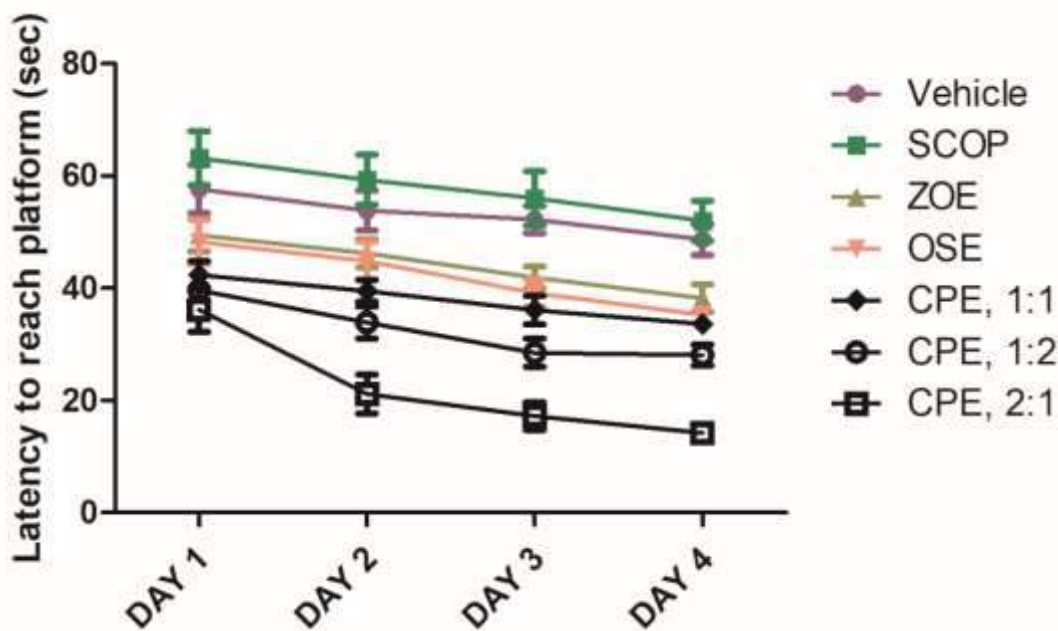


Figure 2 Latency to reach platform

CONCLUSION

The objective of the present study was to assess the anti-amnesic potential of combined extracts of *Zingiber officinale* and *Ocimum sanctum* using the elevated plus maze and Morris water maze models. The hydro-alcoholic fraction of both the plants displayed anti-amnesic action. The results led to the conclusion that by mixing extracts of different species of plants one can obtain synergistic or additive biological action thereby opening newer therapies for dementia and amnesia.

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VON HIPPEL-LINDAU DISEASE, DESCRIPTION, GENETICS, MOLECULAR BASIS, CLASSIFICATION AND MANIFESTATIONS OF THE DISEASE

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SUMMARY

Introduction: Von Hippel-Lindau disease (VHL) is autosomal dominant tumor syndrome that debuts mostly in young adults, patients with this disease are linked to the triggering of various types of benign and malignant neoplasms in multiple locations, systems and organs, in particular affecting more the nervous system and other internal organs. Approximately this tumor syndrome shows an incidence rate of 1 in 36,000 live births with a penetrance greater than 90%. The molecular basis of VHL disease is the impairment of VHL protein function and the consequent clustering of hypoxia-inducible factors with subsequent consequences on cell differentiation and metabolism.

Objective: to present current information related to Von Hippel-Lindau disease, description, genetics, molecular basis, classification and manifestations of the disease.

Methodology: a total of 33 articles were analyzed in this review, including review and original articles, as well as clinical cases, of which 26 bibliographies were used because the other articles were not relevant to this study. The sources of information were PubMed, Google Scholar and Cochrane; the terms used to search for information in Spanish, Portuguese and English were: Von Hippel-Lindau, VHL, tumor suppressor gene, pheochromocytoma, hemangioblastomas.

Results: VHL has an incidence of approximately 1 in 36,000 live births, with a penetrance of over 90%. These present tumors are initiated by inactivation of biallelic VHL and are related to pathologic activation of hypoxic gene response pathways.

Conclusions: Von Hippel-Lindau disease is an autosomal dominant disorder that is generated by mutations in the VHL tumor suppressor gene. Within the field intrafamilial variation may evidence correctly shaped genotype-phenotype connections for renal cancer and pheochromocytoma risks. Visceral cysts (renal, pancreatic and epididymal) are frequent, however organ function involvement is rare. They usually occur with hemangioblastomas of the central nervous system and retina, as well as renal cancers. Unusually it includes non-functioning pancreatic endocrine cancers, adrenal and extra-adrenal pheochromocytomas, endolymphatic sac tumors, as well as head and neck paragangliomas.

KEYWORDS: Von Hippel-Lindau, VHL, gene, suppressor, tumor, pheochromocytoma, hemangioblastomas.



INTRODUCTION

The understanding of the molecular mechanisms of tumor growth is becoming increasingly influential in the development of diagnosis and treatment of human neoplasms. One of the diseases in which this plays a fundamental role is Von Hippel-Lindau disease (VHL) which is an autosomal dominant tumor syndrome that usually occurs in young adults. This syndrome increases the likelihood in those who present it of triggering both malignant and benign tumors in various organs and systems; especially in the nervous system and internal organs. VHL has an incidence of approximately 1 in 36,000 live births, with a penetrance of over 90%. This disease is so named thanks to the collaboration of the German ophthalmologist Eugen von Hippel, who described and identified the retinal characteristics and Arvid Lindau, a Swedish pathologist, who discovered the association between cerebellar and retinal hemangioblastoma with cysts and tumors in visceral organs. Treatment and operative recommendations have been improved over time, in recent years pharmacological therapies have evolved strongly, however many therapies are still in an experimental stage.

The classification system for this disease is clinically based and is divided into two main groups:

Type 1: those predominantly without pheochromocytoma.

Type 2: those with predominantly pheochromocytoma.

The molecular basis of von Hippel-Lindau disease is the suppression of VHL protein activity and subsequent storage of hypoxia-inducible factor with subsequent effects on cell differentiation and metabolism. Tumorigenesis in those affected with VHL disease exhibits elementary principles in the afflicted systems and organs. Inactivation of the VHL germline leads to the insistence of microscopic structures arrested in development. These microscopic cell assemblies already show inactivation of biallelic VHL and subsequent positive regulation of hypoxia inducible factor (HIF) and downstream endings such as VEGF, EPO(1,2).

METHODOLOGY

A total of 32 articles were analyzed in this review, including review and original articles, as well as cases and clinical trials, of which 26 bibliographies were used because the information collected was not important enough to be included in this study. The sources of information were Cochrane, PubMed and Google Scholar; the terms used to search for information in Spanish, Portuguese and English were: Von Hippel-Lindau, VHL, tumor suppressor gene, pheochromocytoma, hemangioblastomas.

The choice of bibliography exposes elements related to Von Hippel-Lindau disease, description, genetics, molecular basis, classification and manifestations of the disease.

DEVELOPMENT

Von Hippel-Lindau (VHL) disease is an autosomal dominant disease that can produce multiple neoplasms in affected

individuals. Germline pathogenic variants in the VHL gene associate those affected with specific varieties of benign tumors, malignant tumors and cysts in different organs and systems such as:

- Central nervous system hemangioblastomas.
- Hemangioblastomas of the retina.
- Clear cell renal cell carcinomas and renal cysts.
- Pheochromocytomas.
- Tumors of the endolymphatic sac.
- Cysts, cystadenomas and neuroendocrine tumors of the pancreas.
- Cystadenomas of the epididymis.
- Cystadenomas of the broad ligament.

The VHL gene is a tumor suppressor gene located on the short arm of chromosome 3 on cytoband 3p25-26. Pathogenic variants of VHL occur in all 3 exons of the gene. Most patients inherit a germline pathogenic variant of VHL from an affected parent and a normal (wild-type) copy of VHL from the unaffected parent. Von Hippel-Lindau disease-related neoplasms fit into Knudson's "two-hit" hypothesis, which states that the clonal origin, or the first cell to become neoplastic, occurs only after the 2 VHL alleles are inactivated in a cell. The germline pathogenic variation that occurs in VHL is the first "hit", which shows up in the totality of body cells. The second "hit" is the somatic mutation, which occurs in a particular tissue at a given time after the birth of a prospective patient. This alters the normal, or wild-type, VHL allele, forming a cell of clonal neoplastic origin, possibly developing a tumor mass (3-9).

Von Hippel-Lindau disease has the following clinical classification:

VHL Type 1: those predominantly without pheochromocytoma.

VHL Type 2: those with predominantly pheochromocytoma.

2A (with renal cancer).

2B (without renal cancer). They develop only pheochromocytomas(1,2,10).

Renal cell carcinomas form in about 70% of humans with VHL disease during their lifetime. In the surgical setting, the risk-benefit for the well-being of the affected person must be assessed clinically, although surgical treatment is generally recommended. Partial nephrectomy reduces the risk of metastatic disease in patients with renal tumor masses that increase in size to more than the 3 cm diameter limit and in rapidly proliferating renal tumors. A nephron-sparing approach is used in the resection of renal masses when feasible, but does not initiate the surgical procedure in renal cell carcinoma tumors smaller than 3 cm in diameter because they present a minimal risk of body metastases. Patients with this type of disease are usually surgically intervened several times during their lifetime, these are performed resection of tumor masses in the kidneys and excision of other neoplasms related to this autosomal dominant disease. Systemic therapy would potentially help individuals with renal cell carcinomas associated with VHL disease by preventing tumor enlargement to greater than 3 cm in diameter, thereby decreasing the requirement for surgery and the danger of renal failure and subsequent metastases. Systemic therapy would possibly give similar improvements for



individuals with other neoplasms associated with VHL disease(9,11-13).

Von Hippel-Lindau disease targets a special subgroup of organs by the usual progression of specific tumor varieties with abundant vascularization. Multiple and bilateral tumor masses occur frequently: retinal hemangiomas with 60% mean age of onset 25 years, cerebellar and spinal hemangiomas 65% mean age of onset 33 years, endolymphatic sac tumors 10% age of onset 22 years, renal clear cell carcinomas and cysts 45% age of onset 39 years, pheochromocytomas 20% age of onset 30 years, pancreatic cysts, microcystic serous adenomas, neuroendocrine tumors with 35-70% onset at 36 years of age and cystadenomas of the epididymis and broad ligament in more than 50% of men (1,14,15).

Each offspring of an individual with VHL has a 50% chance of inheriting the pathogenic VHL variant allele from his affected father. The age of onset of von Hippel-Lindau disease (VHL) varies both among different families and among members of the same family. This fact informs the guidelines for age of onset and frequency of presymptomatic surveillance testing. Of all the manifestations of VHL, retinal hemangioblastomas and pheochromocytomas (PHEO) have the earliest age of onset; therefore, targeted screening is recommended in children younger than 10 years. At least one study has shown that the incidence of new lesions varies according to the age of the patient, the underlying pathogenic variant and the organ involved(5,12).

This multisystem disorder requires the synchrony of a multidisciplinary medical team, as treatment can be challenging, being paramount to prevent morbidity and mortality. Correct diagnosis in a timely manner improves prognosis and reduces complications(13).

Table 1. Example of a routine surveillance protocol for von Hippel-Lindau disease (modified from Maher).

1. Screen for retinal angioma: Annual ophthalmic examinations, beginning in infancy or early childhood.
2. Screen for CNS hemangioblastoma: MRI scans of the head for every 12–36 months, beginning in adolescence.
3. Screen for renal cell carcinoma and pancreatic tumors: MRI (or ultrasound) examinations of the abdomen every 12 months, beginning from the age of 16 years.
4. Screen for pheochromocytoma: Annual blood pressure monitoring and 24-h urine studies for catecholamine metabolites.
More intense surveillance (eg, annual measurement of plasma normetanephrine levels, adrenal imaging,

beginning from the age of 8 years should be considered in families at high-risk for pheochromocytoma).

Source: Maher ER, Neumann HP, Richard S. von Hippel-Lindau disease (13,16).

Retinal Hemangiomas

Retinal hemangioblastomas are benign tumors that can occur randomly, as well as in patients with VHL. The neoplasms present around 50% bilaterality and multiplicity. The histologic presentation is similar in both retinal hemangioblastomas and CNS hemangioblastomas. The high expression of vascular endothelial growth factor (VEGF) in these masses causes an increase in the number of local blood vessels, accompanied by vascular leakage and exudation, and subsequently retinal detachment. Almost all peripheral retinal hemangioblastomas can be controlled with cryotherapy or laser photocoagulation. For larger neoplasms, vitrectomy is indicated. As for non-surgical treatment, the beta-blocker or non-selective beta-blocker drug known as propranolol has been used for retinal hemangioblastomas. Usually the prognosis of patients with VHL is optimal when they present timely detection and treatment(1,2,17-19).

Central nervous system (CNS) hemangioblastomas.

Hemangiomas are usually the first to appear in people with VHL compared to other conditions being index tumors of the disease. Multiple hemangioblastomas in people with VHL occur periodically. Contrast MRI of the spine and head is used to diagnose them. CNS hemangiomas occur in different locations and with the following frequency:

Cerebellum in 45 %.

Spinal cord in 36%.

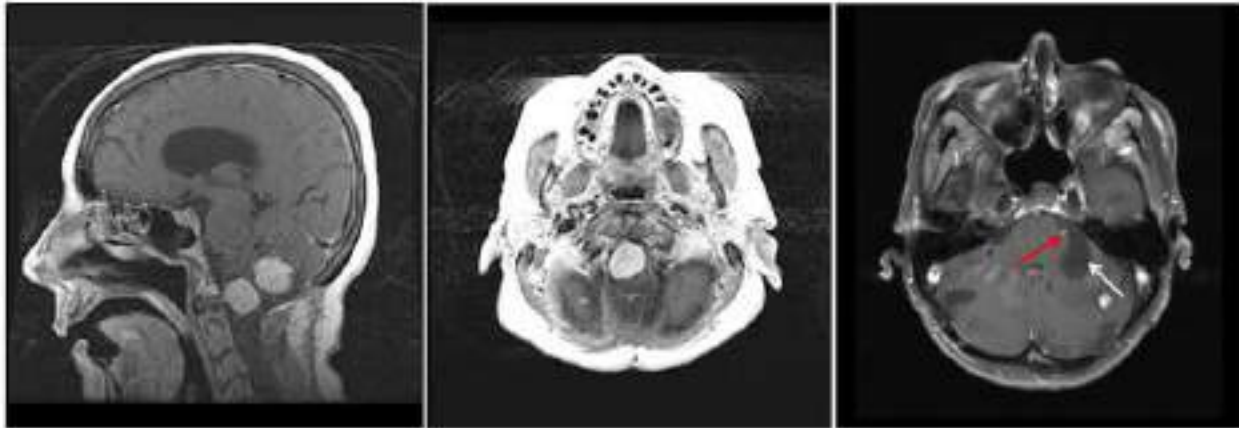
Cauda equina in 11 %.

Encephalic trunk in 7 %.

The burden of CNS hemangioblastoma in VHL disease is related to incomplete germline deletions and males. In posterior fossa tumors the main symptoms are dysmetria, ataxia, slurred speech and nystagmus; they also have the possibility of developing increased intracranial pressure or brainstem herniation due to cerebrospinal fluid obstruction. The neurological symptoms of spinal hemangioblastomas are usually focal neurological losses, paresthesias and weakness. Surgical treatment should be performed if possible in all symptomatic tumors and in all tumors that generate cerebrospinal fluid obstruction, however, it is not necessary to perform excision of all the tumors properly speaking of the asymptomatic ones. When surgical treatment is not feasible, radiotherapy can be used as an alternative(2,5,20-22).



Figure 1. Hemangioblastomas in patients with VHL. Left view of brainstem and cerebellar lesions. Middle view of a brainstem lesion. Right shows a cerebellar lesion (red arrow) with a dominant cystic component (white arrow).



Source: PDQ Cancer Genetics Editorial Board. Von Hippel-Lindau Disease (PDQ®): Health Professional Version(5).

Tumors of the endolymphatic sac

Almost all of them behave in a benign way, these tumors appear in the vestibular aqueduct and can be directed towards the extraosseous part of the lymphatic sac, inner ear and the petrous bone. The fact that they are benign does not mean that they should go unnoticed, because these lesions can increase their size locally in the temporal bone presenting an invasive behavior. Patients may present the following symptoms:

Hearing loss or hearing loss in 100 %.

Tinnitus 77 %.

Imbalance 62 %.

Facial paresis 8%.

In almost 50 % of those affected, the symptoms, especially hearing loss, appear suddenly, perhaps caused by acute intralabyrinthine hemorrhage. Removal by posterior retrolabyrinthine petrosectomy can be resolute and can prevent the onset, deterioration and impairment of hearing and improve vestibular symptoms(1,5).

Renal clear cell carcinomas and cysts.

About 55% of people with von Hippel-Lindau disease hardly have multiple renal cell cysts. Renal cell carcinomas show as combined cystic and solid masses, those related to VHL are mainly multifocal and bilateral. Masses larger than 3 cm increase in grade as they grow and are associated with metastasis(5,7,23).

Pheochromocytomas (PHEO).

The average age for the diagnosis of pheochromocytoma and progressive multifocal leukoencephalopathy is around 30 years. Approximately 25-30% of all patients with VHL develop pheochromocytoma and of these 44% have disease in both adrenal glands (5).

Pancreatic cysts, serous microcystic adenomas and neuroendocrine tumors.

Patients with Von Hippel Lindau often develop single pancreatic cysts, multiple serous cystadenomas and pancreatic neuroendocrine tumors. In those with VHL who present with pancreatic cysts, there is almost never symptomatic bile duct obstruction. Multiple serous cystadenomas have benign features and usually do not require any intervention. Pancreatic neuroendocrine tumors in most cases are not functional, however, they metastasize, especially to the liver and lymph nodes; these tumors should be kept under surveillance through imaging tests and if they are larger than 3 cm they require intervention(5,7).

Cystadenomas of the epididymis and broad ligament.

Cysts in the epididymis are frequent in adult males, they usually present abundant spermatoceles or fluid. In Von Hippel Lindau disease the epididymis may develop more differentiated cystic neoplastic cystic masses which are called papillary cystadenomas. Painless scrotal swelling and slow enlargement are the most common forms of presentation within symptomatic ependymal cystadenomas. Unlike the aforementioned, broad ligament tumors only occur in females with VHL, yet they are also called papillary cystadenomas because they are histologically the same as epididymal cystadenomas. These can present an indolent behavior, however sometimes they can become large in size(2,5).

Surveillance.

Individuals affected with Von Hippel Lindau syndrome should be kept under surveillance, especially for those with a pathogenic variant of VHL and relatives at risk because they are genetically related and their status is unknown. Age appropriate evaluations and testing are recommended. After 12 months of age, ophthalmologic, neurologic and hearing screening, as well as blood pressure control. From 5 years of age onwards, it is



suggested to perform contrasted thin-slice nuclear magnetic resonance in the internal auditory canal in those who present repeated otic infections, in addition to audiological evaluation every 2 or 3 years, 24-hour urine for fractionated metanephrines and plasma once a year. Surveillance examinations in individuals of 16 years of age that are indicated are brain, spine and abdominal MRI every 2 years and abdominal ultrasound once a year. In pregnant women, an intensified surveillance for cerebellar pheochromocytoma and hemangioblastoma should be performed during pregnancy and preconception; it is advisable to perform a non-contrast MRI especially of the cerebellum at 4 months of gestation(5,24).

When the pathogenic variant is known in a family, there is the possibility of using molecular genetic tests to recognize the genetic status of the relatives at risk, so as not to require surveillance of the family that has not been affected by the pathogenic variant. It is suggested not to perform contact sports activities in patients with adrenal or pancreatic lesions, as well as not to smoke or use tobacco products since they are considered a risk factor for renal cancer, and not to use industrial toxins or chemical products since they modify the organs affected by the disease(24).

Genetic counseling.

About 20% of those with VHL syndrome are the result of a de novo pathogenic variant and 80% represent those inherited from one parent.

In this autosomal dominant syndrome, parental mosaicism with unknown incidence has been reported. A patient with VHL has approximately a 50% chance of inheriting the pathogenic variant of the disease, so prenatal testing can be performed in possible at-risk pregnancies(24).

Targeted drugs have the potential to provide new therapeutic advantages for individuals with VHL disease in the future, such as tyrosine kinase inhibitors in sporadic renal cell carcinoma that primarily target the VEGF pathway. At the moment these drugs are under evaluation in clinical trials with encouraging preliminary results in certain tumors(13,25,26).

CONCLUSIONS

Von Hippel-Lindau disease is an autosomal dominant disorder that is generated by mutations in the VHL tumor suppressor gene. These present with tumors that are initiated by inactivation of biallelic VHL and are associated with pathological activation of hypoxic gene response pathways. Within the field intrafamilial variation may evidence correctly shaped genotype-phenotype connections for renal cancer and pheochromocytoma risks. Visceral cysts (renal, pancreatic and epididymal) are frequent, however organ function involvement is rare. They usually occur with hemangioblastomas of the central nervous system and retina, as well as renal cancers. Unusually, they include non-functioning pancreatic endocrine cancers, adrenal and extra-adrenal

pheochromocytomas, endolymphatic sac tumors, as well as head and neck paragangliomas.

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LEXICO-GRAMMATICAL PROBLEMS OF TRANSLATING THE ENGLISH NEOLOGISMS TO UZBEK

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ABSTRACT

The lexical composition of the English and Uzbek languages is constantly changing – new words and phrases appear, in parallel with this, many words emerge from active use and become archaisms. During the period of rapid economic, technical, and political development of society, research on language changes plays a big role, which is primarily a qualitative indicator of various transformations in society. At the moment, the overwhelming majority of languages are experiencing the phenomenon of “neologic boom”, English and Uzbek languages are no exception. The emergence of new words in the languages in question occurs with great speed. Moreover, at the present time English words are entering the Uzbek language without any “bridge language”, as the Russian language served once. On the basis of the analysis of neologisms used in English and Uzbek mass media, the author of the present article discusses the lexical and grammatical problems of translating neologisms from English to Uzbek.

KEY WORDS: *neologism, lexical problems of translation, grammatical problems of translation, phraseology, mass media, antonymic translation, explication, compensation, literal translation, sentence division, grammatical substitutions.*

DISCUSSION

The vocabulary of the media of the XXI century differs significantly from the vocabulary of the previous century. It can be assumed that the reason for this, on the one hand, is globalization, the mixing of cultures, the emergence of new technologies, and of course, the endless development of language. On the other hand, the material of the Internet media is already quite predictable, the public is fed up, therefore, in order to attract their attention, the authors of articles have to resort to new “tricks” to attract their attention.

The development of the media language is largely due to the development of its word-formation system, the formation of new word-formation models of words, changes in existing ones, an increase or decrease in their productivity, and many other factors of the word-formation process [1, 232-233].

The creation of new words reflects, first of all, the needs of society in expressing new concepts that constantly arise as a result of the development of science, technology, culture, social relations, etc. [2, 133].

At the moment, the English language, as well as many other languages, is experiencing an “the boom of neologisms”. The huge influx of new words and the need to describe them led to the creation of a special branch of lexicology – neology – the science of neologisms.

In 2016, the Oxford Dictionary named the word *selfie* (selfie: photographing oneself with a phone and digital camera) – the word of the year. And every year, the dictionary is replenished with new words that appear first in the texts of the media, then imperceptibly became part of vocabulary stock of the English language.

Here are examples of neologisms in English-language journals over the past three years.

• *Phablet* (phone + tablet) is a smartphone whose screen is larger than that of a phone, but smaller than a tablet computer (the word is formed by a word combination. Such words are also called words - *ingots, blends*)

It also revealed an update to its Galaxy Note model - a so-called “phablet” that is larger than most phones, but smaller than most tablets.

GearVR виртуал реаллик телефон қобиғи ва эғилувчан дисплейли NoteEdge смартфонидан ташқари, компания янги, планшет имкониятларига эга смартфонни, шунингдек, ақли соатни намойиш этди.

In this example, a descriptive translation is used to convey the meaning of the neologism to the Uzbek-speaking audience. Later in the text, however, transliteration was used and the new word “phablet” appeared in our society.

Another lexical transformation is translation using phraseological units. At the present time, both print and online media are sources of appearing phraseological units. With their help, expressiveness is increased during translation, the text becomes more emotional and interesting for the reader.

Incidentally, Hammond has also punctured the idea that the bubbles in soft drinks are themselves a hazard, debunking claims that it could harm your stomach and weaken your bones.

Айтганча, параллел равишда Хеммонд сода таркибдаги пуфакчаларнинг ошқозонга зарар етказиши ва суяк зичлигини камайтириши мумкинлиги ҳақидаги афсонани йўқ бўлишига сабабчи бўлди.



Another example:

Memory for the event will be significantly improved if the witness rehearses the sequence of events as soon as possible afterwards.

Воқеа ёки жиноят гувоҳи воқеалар ривожини зудлик билан хаёлан тиклашга ҳаракат қилган бўлса, гувоҳлик янада аниқроқ бўлади.

Another example:

These rankings can be seen as a warning that the rest of the world is catching up with us and Asian universities, in particular, are snapping at our heels.

Бундай рейтингларни дунёнинг қолган қисми бизга етиб олаётгани ва айниқса Осиё университетлари аллақачон бизга яқинлашиб олишаётганлиги ҳақидаги огоҳлантириш сифатида кўриш керак.

In this case, the main task is to adapt the phraseology to the audience of the translation text, while choosing the most advantageous match.

It is worth noting another interesting feature in the texts of the media today – the use of colloquial vocabulary.

In a nutshell – Яқунлаймиз.

This expression (in a nutshell) is peculiar to colloquial vocabulary, but in recent years it has often appeared in informational and journalistic articles, while attracting the attention of the audience. Quite often, in the translations of English-language media, one can notice the use of such lexical transformations as concretization and generalization.

Here is an example of using concretization in the translation of media from English into Uzbek.

Many Swedish firms have mandatory fika breaks and employees are given free hot drinks.

In Sweden, in many companies, regular breaks for fika are mandatory for all employees, and coffee is distributed at the expense of the company. Concretization in this case has a semantic connotation. The process of using the transformation of concretization, does not distort the meaning, but only added specific information. The opposite phenomenon is called generalization. Let's discuss an example:

While the World Health Organization has announced overwhelming evidence that bacon (and other kinds of processed meat) can contribute to colorectal cancer, the real dangers are not quite as worrying as the subsequent headlines would have us believe.

...Бироқ, аслида, хавф баъзи ОАВ бизни ишонтиришига ҳаракат қилганидек катта эмас.

In addition to lexical, in translations of texts of English-language journals from English to Uzbek, one can find many lexical-grammatical and grammatical transformations, such as antonymic translation, explication, compensation, literal translation, sentence division, grammatical substitutions.

Antonymic translation is a complex substitution that applies to both vocabulary and grammar. Its purpose is to make the text the most accessible and interesting for the reader, to show the problem from the opposite side.

The antonymic translation is sometimes used when translating headings.

Are any foods safe to eat anymore? Here's the truth.

Ҳаммаси зарарлими? Озиқ-овқат ҳақидаги афсоналарни фош қиламиз.

Explication or descriptive translation is another lexical and grammatical transformation. With the help of explications, it is possible to convey non-equivalent vocabulary, any missing or unusual reality in the text of English-language journals.

Even monumental events, like meeting a film star, can sometimes fade surprisingly quickly.

Ҳатто баъзида биз учун ўта муҳим бўлган учрашувларнинг тафсилотлари ҳам ҳайратланарли тезлик билан унутилиши мумкин.

"Meeting a film star" was translated as "биз учун ўта муҳим бўлган учрашувлар", and not literally, because it is not so typical for a Uzbek-speaking audience to meet movie stars. The unit in translation "биз учун ўта муҳим бўлган учрашув" will allow readers to create a brighter image.

As Peter Green at Columbia University "People who promote an anti-grain or anti-gluten agenda sometimes cite our work in celiac disease, drawing far-ranging conclusions that extend well beyond evidence-based medicine".

Яқинда Колумбия университети (АҚШ) тадқиқотчиси Питер Грин айтганидек, "бошоқли донсиз ёки глютенсиз диетанинг тарафдорлари кўпинча бизнинг целиакия касаллиги бўйича тадқиқотимизга иқтибос келтириб, унга асосланиб, далилларга асосланган тиббиёт постулатларидан жуда узоқда бўлган хулосалар чиқарадилар".

In this case, the explication was made in order to explain the location of Columbia University for other readers, while the readers of the original are probably familiar with this fact.

According to research by Chris Byrd at the University of Sussex, all it requires is a few seconds of your time and a bit of imagination.

Бу усул яқинда Британиянинг Сассекс округи университети олими Крис Бирднинг экспериментал тадқиқоти билан тасдиқланди.

The explication is "Британиянинг Сассекс округи университети", might not so well known to all Uzbek readers.

Another example:

Taking all the evidence into account, one major review in the Annals of Internal Medicine recently concluded that "high levels of saturated fat intake had no effect on coronary disease".

Барча мавжуд маълумотларни кўриб чиққандан сўнг, яқинда Американинг Annals of Internal Medicine илмий журналида чоп 'тилган кенг қўламли шарҳ муаллифлари "тўйинган ёғларни юқори даражада истеъмол қилиш юрак томирлари касаллигининг ривожланишига таъсир қилмайди" деган хулосага келишиди.

In this example, we see that the name of the magazine speaks for itself for the readers of the original. Uzbek-speaking readers are hardly familiar with this publication, therefore an explication is necessary.

Lars Akerlund has built a business empire on fika.

Швециялик галбиркор Ларс Окерлунд эски анъаналар асосида бутун бир бизнес империясини курди.

The next category of analysis is grammatical features of translation, which in turn are divided into syntactic and morphological.

US faces renewed challenge from Russian navy.

Россия ҳарбий денгиз кучлари флоту Америкага таҳдид солмоқда.



In this sentence, the rearrangement of the members of the sentence is used, trying to focus on Russia, and not on the United States, that is, adapting to the audience of the Russia.

It is worth noting that substitutions as translation transformations can be not only morphological, but also syntactic.

Americans have a predominant left hemisphere; Russians have a right hemisphere.

Америкаликларда миянинг чап ярми, русларда ўнг ярми устунлик қилади.

In this example, the replacement of sentence members is used, thereby restructuring the syntactic structure of the sentence.

Consequently, a change in the structure of a sentence is often not only a syntactic, but also a morphological transformation.

Bird recently asked some students to lie in a brain scanner and view a series of short clips from YouTube (involving, for example, neighbors playing practical jokes on each other).

Мия томографияси ёрдамида ўтказилган тажриба давомида врач тадқиқотда иштирок этувчиларни (ўзининг шогирдлари орасидан) YouTube-да қисқа видеоларни томоша қилишга таклиф қилди (сюжетлар орасида, масалан, бир-бирлари билан ҳазил қилаётган қўшнилари ҳақидаги роликлар ҳам бор эди).

Such a translation technique is very common and absolutely “harmless”. The main thing is not to distort the meaning of the sentence and preserve its logical connection when translating.

According to the last example, we see that not only the structure of the sentence can be changed, but also parts of speech be replaced. “To lie in a brain scanner” – “Мия томографияси”. Instead of a verb, a noun appeared in translation.

Here are some more interesting examples:

Husband James says there's also been a change in consumers' expectations, with people tiring of mass-market products and requesting one-off, carefully crafted goods.

Унинг турмуш ўртоғи Джеймс мижозларнинг тахминларида муҳим ўзгаришлар бўлгани ва энди уларнинг бозорда мавжуд маҳсулотлардан ноёб истеъмол товарлари ва маҳорат билан тайёрланган маҳсулотларга ўтиб кетаётганини таъкидлади.

Another example:

Sweden's coffee-quaffing neighbor Norway is the second most productive nation, behind champs Luxembourg, while the workhorses of the US are fourth.

...Ишга муккасидан кетган Америкаликлар эса фақат тўртинчи эдилар.

In the first example, the phrase “mass-market products” was replaced with the word “бозорда мавжуд маҳсулотлар”. Nevertheless, the essence was conveyed, and morphological transformation was used as a technique.

In the second example, on the contrary, the word “workhorses” was replaced by the phrase “ишга муккасидан кетган”. Perhaps the literal translation – “plowing like horses”, would have sounded a little rude and insulting in the original, thus it was decided to choose a less emotional match.

Among the interesting and popular syntactic transformations, one can distinguish the translation of attribute chains, the change in the structure of a sentence in PT, the division or vice versa, the union of sentences in the translation text.

A translator faces a difficult task when there are attribute chains in the original text. According to V.N. Krupnov, “... in order to achieve the correct translation of attributive phrases, the translator is to know the structural and semantic features of such phrases and imagine what means s/he has in the native language to overcome the difficulties that arise”.

Here is an example from recent BBC material.

Even so, you may want to reconsider a 20-rashers-a-day habit.

Аmmo шунга қарамай, кунига **20 бўлак бекон истеъмол қилиш одатини** қайта кўриб чиқиш лозимга ўхшайди.

It is necessary to do considerable analytical work in order to correctly convey in translation the semantic connections between the elements in English attributive phrases. There are no such complex constructions in Uzbek, so the translator most often uses a descriptive translation to convey the meaning in a sentence.

Another common syntactic transformation in translation is splitting or vice versa combining sentences. More often, the sentence is divided into two in the translation text, since in the Uzbek version the sentences look more cumbersome. *Sweden's coffee-quaffing neighbor Norway is the second most productive nation, behind champs Luxembourg, while the workhorses of the US are fourth – Швециянинг кофе бўйича яна бир қўшнисини Норвегия Люксембургдан кейин иккинчи ўринни эгаллади. Ишга муккасидан кетган америкаликлар эса фақат тўртинчи бўлишди.*

The sentence in the original was split into two separate sentences when translated. The connecting word while or “while” was omitted. Most often, this technique is used by the translator to preserve the dynamics of the text, the essence of the sentence or sentences does not change at all.

Another example:

Instead of the crystal clear images you wanted to recall, you're instead left with scraps of images and mangled sentences, or more frustratingly still, nothing at all. – Хотиранигда сақламоқчи бўлган аниқ тасвирлар ўрнига фақат расм парчалари, айрим иборалар парчаларинигини эслаб қолинганини тўсатдан аниқлаб қолишингиз мумкинми? Ёинки яқинда содир бўлган воқеа хотираларидан ҳеч қандай аниқлик қолмаган бўлиши ҳам мумкинми?.

In this example, they do not only divide the sentences, but also added a question, thereby increasing the expressiveness of the text, attracting the reader's attention, the text became more concise and perceptible.

Thus, we reviewed articles from English-language magazines from such news sites as The BBC, The Financial Times and The Moscow Times. Then we analyzed the translation of the main lexical and grammatical problems using the example of these articles. At the end we came to conclusion that as English and Uzbek belong to different language families, it becomes inevitable, that there are some lexical and



grammatical problems of translating any linguistic unit, including neologisms from one language to the second.

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CONTENT AND METHODOLOGY OF ORGANIZATION OF PEDAGOGICAL EXPERIMENTAL WORKS FOR THE DEVELOPMENT OF STUDENTS IN MEDIA CULTURE

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ANNOTATION

This article provides an analysis of the content of pedagogical experiments on the development of student media culture in higher education, the methodology of organization and the results of experiments.

KEYWORDS: *culture, media culture, media education, experimental mathematical statistics*

INTRODUCTION

Recently, in local pedagogy, a wide range of cultural studies issues related to the new stage of society's development are being developed. The identity crisis in modern society depends not only on external causes, but also on internal ones: moral education, loss of motivation to educate national pride, spirituality and patriotism. The need to return to universal values, to educate a person who understands himself as a part of existence, a person of the world, a part of world culture, who understands himself based on the dialogue of cultures, and who increases the cultural experience of all mankind, is unquestionable. All these rules form the basis of the cultural studies paradigm of modern pedagogical education.

Pedagogy as a science, it is becoming more and more closely connected with cultural studies, therefore new pedagogical concepts are emerging: media education, media culture, media competence, media literacy, media pedagogy, media technologies, media texts, media perception.

The cultural paradigm of modern pedagogical education forms the basis of our research aimed at the problem of developing students' media culture.

In this research, we have shown that there are the following areas of development of students' media culture in higher educational institutions:

active application of media and cultural technologies to the studied subjects;

creation of facultatives of the media-educational cycle;

introducing a new subject or special course related to the development of media culture into the curriculum.

METHODOLOGY

In the experimental research, relying on the rules of pedagogical, socio-psychological and person-oriented approaches, "Development of media culture of students" on the basis of media education in connection with the development of media culture of preschool education students. We are developing a special optional course aimed at preparing young professionals for life in an information-rich society.

Thus, the purpose of the experimental research was determined - to develop the media culture of preschool education students by organizing their media-educational activities with the help of a facultative course in the media-education cycle in the conditions of a higher educational institution.

Objectives of experimental research:

- to study methods of researching the media culture of a person, media competence, and to develop a methodology for researching the media culture of a student's personality;

- to determine the level of development of personal media culture and its components in students of preschool education;

- justification of the use of the optional course in the development of media culture of the students of preschool education;

- development of a program for the development of media culture of students of preschool education through optional classes;

- comparative analysis of the media culture development level of preschool education students who participated in the formative experiment and those who did not participate in the experiment;

- evaluation of the effectiveness of the facultative activities of the media-educational cycle on the development of the media culture of the students of preschool education.

We describe the main stages of experimental research.

The first stage - organization - covers a number of important cases, important aspects, the development of a hypothesis, the effectiveness of which should be experimentally proven. Currently, when conducting research, a working hypothesis is first developed, which is a necessary condition for the effective development of the research process.

In the future, the content of the hypothesis predetermines many things: the organization, the methods of scientific research, the focus on the situation of the problem in the literature, the reference to the past experience, its historical understanding, and many other things.



Based on the analysis of the problem studied in the theory of pedagogy and educational practice, we decided to express the following hypothesis: if the definition of the essence of the concept of "student's media culture" is determined; when the characteristics of the development of students' media culture are determined; when the model of media culture development of students is created; Pedagogical conditions that ensure the effectiveness of this process are created only when the content and technologies of this activity are developed.

These pedagogical conditions are as follows: the educational process in higher educational institutions is aimed at the active use of media technologies and their methods; media technologies are directly included in the educational process; inclusion of the optional course "Development of media culture of students" in the educational process of students; optimal combination of collective, group and individual forms of working with students; continuity, consistency and sequence of all stages of education; interaction of subjects of the educational process using media tools and technologies; Pedagogical conditions are created that ensure the effectiveness of the psychological and pedagogical diagnostic process.

Based on the analysis of psychological-pedagogical theory and normative documents, we have developed and theoretically justified the model of development of media culture of students in the educational process of the higher educational institution. Experimental validation of the model requires setting goals, tasks and decisions during the implementation of the model.

Based on this, the purpose of the experimental work was determined: verification and justification of the pedagogical conditions put forward in the hypothesis. The expected result is an increase in the level of media literacy of students.

In accordance with this goal, we determined the tasks of the experimental work.

Determining experience: developing a diagnosis of the level of media culture of students; to determine the current level of development of students' media competence.

Formative experiment: testing the developed model to determine its effectiveness.

Control experiment: determining the level of development of students' media competence based on formative experience materials.

The second stage - implementation - ensures the implementation of the ideas initially hypothesized and transferred to the prepared materials of the experiment. The main thing here is to ensure the purity of the pedagogical experiment, to ensure that the obtained information is sufficiently reliable.

At this stage, the model of media culture development of students of the higher educational institution will be implemented. The technology of practical implementation of the model is described below.

The third stage - determination - represents a set of all works aimed at determining the quantitative and qualitative characteristics of the results, obtaining accessible and reliable values, and appropriate processing to obtain information that clearly demonstrates the essence of the established law.

The fourth stage - interpretation - collected facts are classified according to various bases, statistical laws are determined, development trends, stability zones, jump times in the formation of certain qualities in the object of experimental research are determined. As a result of using inductive and deductive methods, real material is summarized, its scientific significance is determined. Evidence interpretation of experimental data allows to offer methodical recommendations on development of media culture of students, which can be used in the practice of higher educational institutions.

It is known that according to the goals, the experiences of detection, formation and control differ. The purpose of the detection experiment is to measure the current level of the phenomenon under study. Here, the initial material for understanding and organizing the formative experiment is obtained [1, 45-b].

The formative (transformative, student) experiment is aimed not only at telling the level of formation of certain activities, the level of development of certain skills of students, but also at actively forming or educating them. Here it is necessary to create a special experimental situation [2, 105-b].

Control experiment (supervisor) - with its help, after a certain time has passed from the forming (teaching) experiment, the level of knowledge and skills of students, the development of any personal quality is determined based on the materials of the formed experiment.

The development process in our study is aimed at achieving a high level of development of students' media culture. We follow the point of view of VAMijherikov, the author of the pedagogic dictionary, who considers development to be a process of action that changes whole systems [3, p. 240]. The most characteristic features of development are: the emergence of a qualitatively new object (or its state), the direction, irreversibility, regularity, unity of quantitative and qualitative changes, interdependence of progress and regression, inconsistency of form (cyclicity), fairness. In our work, it is about the development process, because we perceive a certain level of media culture in students.

In preparation the main goal is to form an attitude of value towards media culture, media technologies, different forms and forms, for this we have organized and conducted interviews, seminars and trainings with students considered by us in the implementation of the entire program of the course, as well as , we conducted a survey that formed an idea about the media preferences of the student audience, the level of its media competence.

The main directions of our work were as follows: formation of a positive attitude towards independent professional self-improvement; formation of knowledge and skills to work in this direction; actualization of the needs of professional self-improvement in the field of media education.

In modern conditions, the role of predicting the content of education is significantly increasing, as a result of which it is necessary to build curricula and programs, develop certain areas of knowledge, the nature and objects of work, possible prospects for their rapid change. need to get advanced information about.

Predicting the development of the educational content, striving to adapt the curriculum as much as possible to the requirements of modern conditions, in our work, we adapt the



educational content to the interests and needs of the student, taking into account the individual characteristics, motivations and values of each student. We came from the necessity of adaptation and adaptation. This task goes beyond the actual content of education, and its successful solution is possible only in the educational process itself, in the system of interpersonal relations.

The purpose of the course: development of media culture of students. The main tasks arising from this goal: to familiarize students with the basic concepts related to the field of media competence, development of media education; to show students the genesis of the historical development of media education in the world and in Uzbekistan; development of the student's media culture in the process of media education; to analyze the development of media education from the point of view of its application in the educational process of the holistic pedagogical process of education.

As a result of mastering this course, students should know the following: basic concepts of the course ("media competence", "media education", "media literacy", "media pedagogy", etc.); the main stages of the historical development of media education in the world and Uzbekistan; the main characteristics of the stages of historical development of media education in different socio-cultural conditions and in different periods in certain countries; the current state of media education development; opportunities for media education in terms of developing a person's media culture; typology of media perception; basics of media education methodology.

RESULT AND DISCUSSION

The practical importance of this course is that as a result of mastering the seminar, students should not only have knowledge reserves on the theory and methods of media education, but also apply this knowledge in pedagogical activities.

The purpose of conducting pedagogical experiments is to determine the level of development of students' media culture.

According to the developed indicators and criteria, we determined three levels (low, medium, high) of the formed media culture of the student.

The level of formed media culture of students and its components were determined using the developed diagnostics.

The identification experiment was conducted in order to determine the level of formation of students' media culture.

With the help of questionnaires, interviews, and the method of expert assessment, the state of formation of the components of motivational value, process and media competence was determined.

According to the developed evaluation criteria, the degree of formation of each component of media culture in the studied groups was determined.

CONCLUSION

On the basis of the results of the identification experiment, a formative experiment conducted in the same groups as the identification experiment was organized.

The results of the experimental tests were analyzed by mathematical and statistical methods. Mathematical-statistical

formulas of the Student method were used to process the results of the experiment.

14.6% higher efficiency of experimental results was proved by mathematical and statistical methods.

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THE INFLUENCE OF GOOD CORPORATE GOVERNANCE, PROFITABILITY, LEVERAGE AND AUDIT QUALITY ON PROFIT MANAGEMENT IMPLEMENTATION (Study empirical on the company manufacture listed on IDX 2015 – 2019)

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ABSTRACT

This study examines and presents models of the Influence of Good Corporate Governance, Profitability, Leverage and Audit Quality on the Implementation of Earnings Management in Manufacturing Companies Listed on the IDX for the 2015 – 2019 period. The purpose of this study is to determine the partial and simultaneous effect of variables Good Corporate Governance, Profitability, Leverage and Audit Quality on the implementation of earnings management in manufacturing companies listed on the IDX for the 2015-2019 period. The novelty of this study is the simultaneous influence of the four independent variables namely Good Corporate Governance, Profitability, Leverage and Audit Quality on the implementation of earnings management in manufacturing companies listed on the IDX for the 2015-2019 period.

The type of research used is descriptive quantitative using multiple regression analysis as a technique for analyzing the research sample data. The results of this study are that there is a partial and simultaneous influence between the Good Corporate Governance, Profitability, Leverage and Audit Quality variables on the implementation of earnings management in manufacturing companies listed on the IDX for the 2015-2019 period.

KEYWORDS: *Good Corporate Governance, Profitability, Leverage, Audit Quality, Earnings Management*

INTRODUCTION

In the era of globalization this, especially in the industrial era 4.0, development technology and flow information develop rapidly demand company must can serve useful information _ for the user like investors and stakeholders. Information the form report finance which is source information for used in evaluate performance or level health company (Arlita dkk, 2019). Report finance is report responsible answer about what has been done _ management on source trusted power _ to him. Report finance company is reflection management who holds not quite enough answer main on fairness presentation and disclosure information (Himawan, 2019).

The more development company business the There is in Indonesia, then competition will the more free and open so that raise encouragement the strong for management company For featuring performance best from company that led , p that will to be trigger for management company For do management profit to report finance the There is in his company in order to get influence investors For instill the investment on company , that's Why manager company more know information internal company compared to with holder stock (Asyati and Farida 2020).

Factor – factor the influence report finance i.e management profit in which consists of factor leverage and profitability (Amalia dkk., 2019). leverage used for know impact contract debt to management profit. Leverage that is total obligation compared to with with total assets. If level leverage on company increasingly big means mark debt owned company l will be _ the more high. Operation assets owned company __ For get profit to be A refuse measuring performance from an company. The greater profitability so use assets will more efficient so that got enlarges acquisition profit. p.l This will interesting for investors for embed capital in company them. The more tall profitability so productivity asset in obtain profit clean will the more ok (Muda dkk., 2018). Management profit at company is also influenced by good corporate governance as well as quality audit matter this expressed by Crowter in Amalia et al (Amalia dkk., 2019). According to life clean business _ This gave birth draft good corporate governance (GCG) where drafts this practice performance manager business, accountants and auditors in reach target in a manner global. GCG l direct affect decision



and activity managers, select, recruit and control external auditors and mechanisms control internal through audit committee. Results survey of 11 countries in Asia that has carry out GCG implementation that is Singapore, Hong Kong, Thailand, Japan, Malaysia, Taiwan, India, Korea, China, Philippines, Indonesia show 1 whole of Indonesia be in position last compared to countries - Asian countries other because own higher value weak in implementation, regulation less, value accounting and auditing, and culture not enough compared to countries other (Acga-asia.org 2015). Good GCG shown on the system testing and systems balance both internally and sure external company do accountability to all stakeholder's interest and be responsible in a manner social activities the business in form reports financial made by manager finance as well as own information the quality for influence mark company (Asyati and Farida 2020)

manager company as manager obligated give correct information to para user report finance. But in fact There is just behavior para manager do practice management profit order report finance seen both and meet criteria for investors. There are asymmetry information and trends from party external (investor) for more notice information profit as performance parameter company the push management do manipulation in show information profit called as management profit (earnings management). There is trend for notice profit company have underlying attitude manager for do management profit, because management profit is effort manager or maker report finance for do management information accounting specifically profit (earnings) by interest personal and/ or company.

For minimize asymmetry information This requires a qualified auditor To use convey report finance l has audited by the Office Public Accountant (KAP) before published to public according to with decision chairman of BAPEPAM No Kep. 17/PM /2002 (Haryuni 2020a). in operate his profession, the auditor is prosecuted For got behave independent in detect possibility behavior deviate or the cheating done by party management in composing report the finances. it is has arranged through Decree Minister of Finance no. 423 /KMK-06 /2002 arrange about rotation mandatory for auditor and Office Public Accountant No allowed give non-audit services in addition to audit services That myself Because got bother independence auditors.

one companies in Indonesia that use internal auditor services audit report finance is company industry manufacturing. quoted from Corporate Finance Institute in Fatmawati et al (Fatmawati 2018), manufacturing is a body business or company l produce goods So from material raw raw with use tools, equipment, machines production, and etc in scale production the l. Production results with value plus it Then sold to consumer through network distribution from wholesaler up to to level retail, up to to hand consumer. besides from material raw to be product so, company manufacturing covers industry that processes goods raw become goods half so, or goods half so become goods so.

Manufacturing company is one sector companies listed on l on in sector company manufacturing divided be 3 sector industry i.e sector industry base and chemistry; sector various industry; and sector industry goods consumption. Total issuer l registered in sector company industry manufacture until with 2018 total as many as 168 issuers. With see report reported finances in IDX page, community can evaluate condition A registered company (Haryuni 2020b).

Industrial company manufacture This donate state revenue and support economy national with give value plus biggest between nine sector economy other. Based on number product Domestic Gross (GDP) according to price constant 2010, at 2015 contribution sector industry manufacturing to economy reach 18.18 percent (Fig. 3.1). at 2016 contribution sector industry manufacturing to economy as big 18.21%, in 2017 it was 17.89 %, in l it was 17.62 %, and in year 2019 as big 17.58%. with condition like That looks that on period year 2015-2019 contribution industry processing always increase.

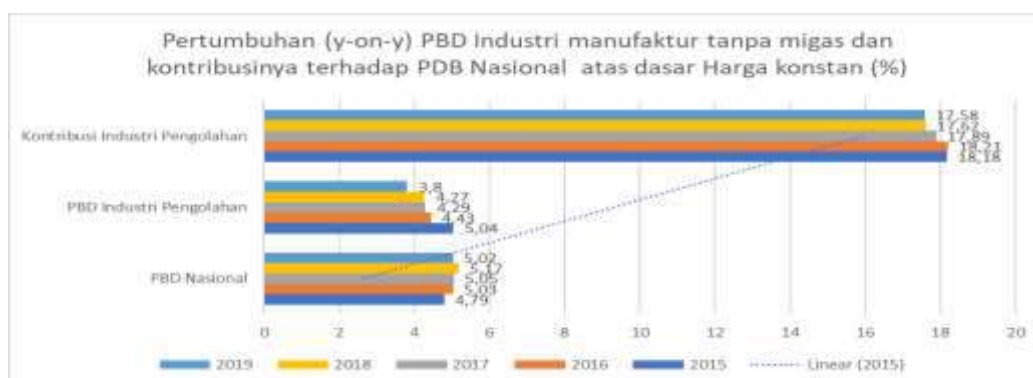


Figure 1.1 Growth Company Manufacture from 2015-2019 year

However behind increased growth from year year, there is different phenomenon about management reported profit by company industry manufacture to OJK and PPPK. A number of phenomenon management profit that occurs on one of One company manufacture namely PT. Garuda Indonesia, Garuda record profit clean that Wrong only sustained by cooperation between Garuda and PT Mahata Aero Technology. cooperation l value reached US\$ 239.94 million or around IDR



3.48 trillion. PPPK and OJK also Finally decided that there is wrong in dish report finance GIAA 2018. Company asked For serving repeat report finances and company got a fine of IDR 100 million Because existence difference of US\$ 180 million from which be delivered in report finance company year book 2018. In 2018 company report profit of US\$ 5 million or equivalent IDR 72.5 billion (Haryuni 2020b).

Matter similar experienced by PT. Insurance Jiwasraya (persero) did engineering report finance more from One decade then, in 2006 report finance show mark equity Jiwasraya negative IDR 3.29 trillion Because assets owned by Far more small compared to with obligation. And found results audit KAP of report financial in 2017 between other correct report finance interim I beginning record profit IDR 2.4 trillion to IDR 428 billion. Thus case with PT. Indofarma (TBK) at year 2004 From result research, Bapepam find proof - proof in among others, the value of Goods in Process rated more height from the value should be (overstated) in presentation value supply goods in process in year book 2001 of IDR 28.87 billion. As a result, price Tree Sale experience understated and profit clean experience overstated with the same value (Aulia Hendra and Nr 2020).

Based on background behind on top, then writer interested in do study with **Influence** thesis title **Good Corporate Governance, Profitability, Leverage and Audit Quality Against Implementation Management Profit on the Company Manufacturing Listed on IDX Period Year 2015 – 2019**. Renewal from study This is exists good corporate governance as variable independents who want researched by writer is variable partially and simultaneously __ influential to implementation management profit on the company manufactures listed on the IDX period 2015-2019 years, period This chosen by writer Because own report existing finances _ complete and appropriate with variable data requirements in research This If compared to period year afterwards.

THEORETICAL FRAMEWORK USED

Theory Signal

Theory Signal according to Brigham and Houston in Yulistina et al (Yulistina Silvia and Miftahul 2020) is an action I taken company For give instruction for investors about How management looked prospect company. signal This in the form of information regarding what Already done by management for realize desire owner (Puspitaningtyas 2019). information I issued by company considered important because own influence to decision investment party outside company. Theory signal related with decision I made by investors about How see prospect price share company affected by-I-by-I information that comes from from report finance company. If condition company in circumstances both and company can deliver report finances appropriate time, then price share will move up (Raymond Trilaksana and Fadjarenie 2021).

Theory Agency

theory agency is concept I explain relationship contractual between party principal with agent (A. Herlambang 2020). Party principal is party who gave mandate to party else, ie agent (management / manager. Agent in matter this is party management I get mandate for manage company. Jensen and Meckling (Jensen dkk., 2020) stated that there is two like form relationship agency, namely between manager and holder shares (shareholders and between manager and giver loans (bondholders). theory agency stated that if there is separation between owners as principal and manager as agent which runs company, will appear problem agency because each party try for reach the prosperity that he wanted (Asyati and Farida 2020)

Management Profit

Management profit is one of factor the can reduce credibility report finance, and add bias in report finance as well as bother user report finance who trusts number profit results engineering the as number profit without engineering (Hidah and Sedana 2021). According to Schipper in Fatmawati et al (Fatmawati 2018), management profit is an intervention with objective and Meaning certain in process drafting report finance external For get advantages personal for party certain. Whereas according to Healy and Wallen in Astuti et al (Astutik dkk., 2018) management profit too interpreted as drafting transaction report finance with change report finance use judgment so that got misleading stakeholders in see performance economy company (Muda dkk., 2018). Management profit is intentional action _ For engineer report finance by agent for show to holder interest that company in condition ok (Sartika and Pagalung 2016).

Profitability

Profitability is ability company for produce profit and measure level efficiency operational in use the assets (H. Yao dkk., 2018). According to Sucuahi & Cambarihan say, profitability is image and performance management in manage company. Profitability is wrong One factors that affect mark company (Sukmawardini and Ardiansari 2018). Size profitability used _ in research This is ratio return on equity (ROE) because ratio this tight relation with capital structure used company, neither of which influenced by proportion debt period length as well as capital Alone (Aryati and Purwanto 2019).

leverage

leverage intended as complementary size simple and transparent and strengthen based capital requirements risk for objective stability financial and market (Baldo dkk., 2018) discipline. leverage prevent company for disdain and no report risk on the balance sheet



company as well as related with off-balance-sheet exposure, took more Lots risk during increase cycle, and from strengthen decline cycle with de-leveraging which is not regular as well as increase stability system financial and encouraging Genre credit towards _ economy (Hendra dkk., 2018).

Audit Quality

According to De Angelo in Augustine et al (Haeridistia and Agustin 2019) state that quality audit can defined as possibility that (a) auditor will report violation (b) If the auditor is not independent, inclined No report deviation so that damage quality audits. According to the Audit Association Accountants (IAI), auditors are said quality, if fulfill standard auditing and standard control quality. Quality audits can help management and stakeholders' interest in taking right and accurate decisions. _ kindly auditing law is divided into two, "audit failure" or "audit success". Failure audit happen if auditors not Act I independent on in fact, or If auditor independent wrong emit report clean audit Because fail for collect proof sufficient audits _ in accordance with standard audit (Saeed dkk., 2022). Audit failure has consequence economy for auditors, clients and parties third. Successful audits happen when the auditor performs the audit accordingly with standard audit and issue appropriate audit opinion with condition report finance client level _ consistent with audit (Saleh and Syafitri 2022) risk.

Good Corporate Governance (GCG)

GCG is process and mechanism management business in accordance with applicable laws and regulations in ethics business and culture company (Suhadak dkk., 2020). GCG becomes something controlling and monitoring system _ something company, GCG has become a pillar that oversees, controls and delivers report to stakeholders' interest (Nardus dkk., 2021). GCG implementation can push and improve performance company as mark economy for investors and stakeholders interest as well as I competition healthy and climate more effort _ conducive (Tugiantoro dkk., 2022). GCG is something systems, processes, structures, and mechanisms that govern pattern relationship harmonization between company and stakeholders the importance for reach performance company maximum maybe with way -way the No harm stakeholders interests.

Measurement Variable

measurement scale in this research is the ratio scale. For details below is table operational variables:

Table 3.1 Operational Variables

No	Variable	indicator	Measurement Scale
1.	Management Profit	$M\text{-Score} = -4,84 + 0,92DSRI + 0,528GMI + 0,404AQI + 0,892SGI + 0,115DEPI - 0,172SGAI + 4,679TATA - 0,327LVGI$	Ratio
2	Profitability	$ROE = \frac{\text{Laba Bersih}}{\text{Total Ekuitas}} \times 100\%$	Ratio
3	leverage	$\text{Debt ratio}_{t-1} = \frac{\text{Total Liabilities}_{t-1}}{\text{Total Assets}_{t-1}}$	Ratio
4.	Audit Quality	$SI\ KAP = \frac{\text{Jumlah \& Perusa haan yang diaudit KAP yang sama pada sub sektor industri}}{\text{Jumlah \& perusa haan pada sub sektor industri}} \times 100\%$	Ratio
5.	GCG	$GCI = \frac{A + B + C + D}{\text{Total Item}} \times 100\%$	Ratio

Hypothesis Study

The influence of GCG (X₁) on Implementation Management Profit (Y)

The influence of GCG on Implementation management profit Once researched by Hemathilake et al (Dhu , 2019) with title study corporate Governance and Earnings Management: A Review with results research show that governance required _ company I effective For reduce management profit so that can prevent collapse the company concerned . While in the research conducted by Iskandar Muda et al (Young, 2018) with title study the Analysis of Effects of Good corporate Governance on Earnings



Management in Indonesia with Panel Data approach with results his research is that Tata manage Good company concurrently __ influence management profit . Testing partial show that variable Good Corporate Governance. Composition Commissioner no influential against management profit & Audit Committee Committee no influential against Management Profit.
 H_1 : There are influences that positive and significant between GCG (X_1) against implementation management profit (Y) on company manufacturing listed l on the period 2015 -2019

Influence Profitability (X_2) to Implementation Management Profit (Y)

Influence profitability against implementation management profit Once researched by Hapsari (Hapsari , 2017) with title his research that is Influence Profitability To Management Profit company consumer Goods Registered l On the Stock Effect Indonesia, destination research This is For analyze relationship between profitability against management profit with size company (Size) as variable control on company consumer Goods that listed on Stock Exchange Indonesia for in 2015 -2016. Results from research This is l profitability be measured with margins profit clean and return on investment have influence l significant against management profit. margins profit clean have effect positive but return on investment own effect negative on management profit. Size as variable control in research This no own significant effect _ to management profit.

H_2 : There is a l positive and effect between profitability (X_2) on implementation of earnings management (Y) in manufacturing companies l on IDX for the 2015-2019 period

Influence Leverage (X_3) against Implementation Management Profit (Y)

Influence leverage against management profit Once researched by Dewi (Dewi & Wirawati , 2019) with title Influence Leverage To Management Profit with corporate Governance As Variable Moderation , with objective research is for prove l empirical influence leverage against management profit with corporate governance as variable moderation . Results from study this is leverage influential _negative against management profit However corporate governance influence in a positive way can moderate between leverage and management profit, besides that , research about influence leverage against management profit also researched by Astuti et al (Astuti et al ., 2017) with title study Influence Size Company and Leverage To Management Profit with objective research is for prove l empirical influence size company and leverage to management profit with object research company banking listed l on the period year 2013- 2015.

H_3 : There is a positive significant leverage (X_3) on profit management (Y) in manufacturing companies listed on l - 2019 periods.

Influence Audit Quality (X_4) against Implementation Management Profit (Y)

Influence quality audits against GCG ever researched by Arniati et al (Arniati et al ., 2019) with title study the implementation of good corporate governance model and auditor independence in earnings 'quality improvement which results in conclusion that is partial , structure council commissioner , function audits internal , and activity control internal influential significant to quality profit . Independence auditors not moderate influence component corporate governance against quality profit.

H_4 : There is and significant effect between audit quality (X_4) of management implementation earnings (Y) in companies manufacturing l on IDX 2015-2019

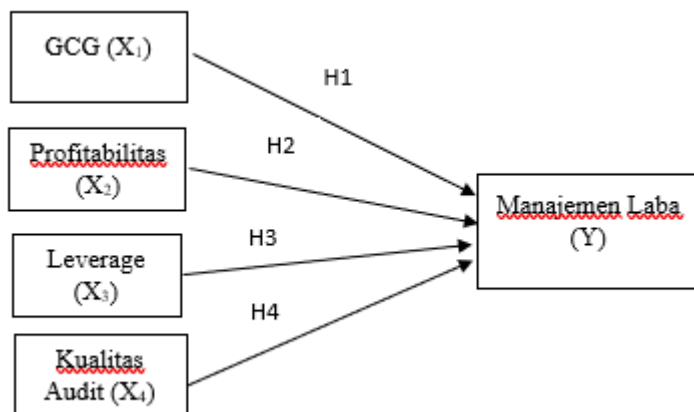


Figure 2.1 Framework Thinking Study



RESEARCH METHODS

Classification Sample

Research Sample

The determination of samples in study was based on purposive sampling method, where sample companies were selected based on criteria annual reports consecutively, using currency. The population of manufacturing companies during period 2015 -2019 and published financial reports in, so that could be used as samples in this research as many as 158 manufacturing companies.

Data collection technique

Data collection techniques aim to obtain the data needed in research. In study, data collection carried out in two. First, by studying through journals or studies and books related to the problem that studied. The stage is the collection of secondary data which has been by Indonesia Stock Exchange in 2019. This research uses software SPSS version 26 in processing.

Definition Operational variables

Good Corporate Governance (X₁)

GCG is series processes, customs, policies, rules, and institutional influence direction, management, and control an company or corporation. Tata manage company also includes relationship between stakeholders interests involved as well as purpose management company. Variable Good Corporate Governance (GCG) measured with using Corporate Governance Perception Index (CGPI). Calculation to determine total score GCG obtained company use formula following (Khasanah and Sucipto 2020)

Profitability

Profitability ratio used in study this is ratio return on equity (ROE) because ratio ROE tightly relation with structure capital used firm, both are influenced by the proportion of debt term long as well as own capital (Aryati and Purwanto 2019). The profitability ratio is used to assess whether business has managed to generate acceptable level of profit. The ratio of profitability in of this study uses ROE (Return on Equity).

Leverage (X₃)

on the rate macro, leverage ratio can be counted as the ratio of a country's total debt to its total assets (Y. Yao and Liu 2018) so that a ratio that shows a comparative calculation of the effectiveness of the company's management in managing its debts.

Audit Quality (X₄)

Quality of audit is seen as ability to improve quality of company financial reporting and also hoped that able to increase confidence. The quality of auditors in this study is proxied by specialization industry Public Accountants (KAP). Specialization KAP industry demonstrates expertise and experience auditors in auditing financial reports in industry.

Analysis Tools

Assumption Test Classic

Before do testing regression especially formerly done testing assumption classic. Analysis regression linear double done for avoid deviation assumption classic order No arise problem in use analysis them. Assumption classic the used includes normality test, test multicollinearity, test heteroscedasticity, and test autocorrelation.

1. Data Normality

Test normality aims for test is in model regression independent variable and dependent variable or both normally distributed or don't. Model good regression is have distribution of data normal or approach normal. Tool test used is with analysis chart histogram and normal chart probability plot and test statistics with Kolmogorov-Smirnov Z (1 - sample K S).

2. Data Multicollinearity

Test multicollinearities aim for test is in model regression found exists correlation between independent variable or no. good models should No happen high correlation among independent variables. For drip There is or nope multicollinearity inside model regression can is known from mark tolerance and value variances inflation factor (VIF). tolerance measure variability selected independent variables that are not can explained by other independent variables. So, value low tolerance equals high VIF value (because $VIF=1/\text{tolerance}$) and shows exists high collinearity. Mark common cut-off worn for show exists multicollinearity is mark tolerance ≤ 0.10 or equal to VIF value ≥ 10 .



3. Auto Test

Test autocorrelation is correlation between member observation compiled according to time and place. Model good regression is that which is free from autocorrelation. The way you can used for detecting There is or nope autocorrelation is with Durbin Watson test (DW test) (Sugiyono 2020).

Table 3.2 Criteria Durbin-Watson autocorrelation

DW value	Interpretation
$-2 \leq DW \leq 2$	No happens autocorrelation
$DW < -2$	happened autocorrelation positive
$DW > 2$	happened autocorrelation negative

4. Heteroscedasticity Test

Heteroscedasticity is variance residual not the same on all observation in model regression. Regression 1 Good should No happened heteroscedasticity. this can done with using method graph (scatter plots).

Analysis Multiple Regression

Analysis This used for now direction relationship between variable independent with variable dependent what each -each variable independent related positive or negative for predict value from variable dependent if mark independent experience increases or decrease. As for variable independent the there is in study this between others GCG (X_1), profitability (X_2), leverage (X_3) and audit quality (X_4) tested influence to variable dependent that is implementation management profit (Y). So obtained formula equality multiple linear regression as following:

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_1 X_2 X_3 X_4 + e$$

Description :

Y = implementation management profit

a = Constant

b_1, b_2, b_3, b_4, b_5 = coefficients regression

X_1 = GCG variable

X_2 = variable profitability

X_3 = variable leverage

X_4 = variable quality audits

$X_1 X_2 X_3 X_4$ = interaction between variables X_1, X_2, X_3 and X_4

e = error items (level error estimator

DISCUSSION

On research This population used is company manufacture the registered in stock listing Effect Indonesia in period 2015-2019. Meanwhile sample used as much as 158 company.

Descriptive Data Analysis

Analysis descriptive data is preparation of and presentation of data collected in something research. The goal for get picture or describe data set results observation so that easy understood, read, and used as information. In research this datal descriptive the served is data variable which contains in sample study i.e variable GCG, profitability, leverage and audit quality l company manufacturing listed l on IDX period year 2015-2019 with using SPSS software version 27 as following :

Table 4.1 Statistical Data Variable Study

No	Variable	Means	Standard Deviation
1.	GCG (X_1)	1.7893	0.70964
2.	Profitability (X_2)	0.6170	0.09699
3.	Leverage (X_3)	1.3503	0.23022
4.	Audit Quality (X_4)	0.9533	0.16344

Source: secondary data processed

Based on results analysis descriptive above, the GCG variable (X_1) has the mean value is 1.7893 > of standard the deviation namely 0.709. For Variable Profitability (X_2) has mean value 0.1609 > of standard the deviation that is 0.096. For Leverage variable (X_3) has mean value 1.350 > of standard the deviation that is 0.230. Whereas For variable audit quality (X_4) has mean value 0.9533 > from standard the deviation that is 0.163. The mean value each the independent variables bigger from mark standard the deviation



shows that variable data during the period study own homogeneous data properties. Research data characteristic homogeneous because the data is an outlier, namely the data has level very high value or very low resulting withdrawal conclusion of sample data No can represent the population.

Test normality aims For test is in model regression independent variable and dependent variable or both of them normally distributed or don't. Model good regression is have distribution of data normal or approach normal. Tool test used is with analysis chart histogram and normal chart probability plot and test statistics with Kolmogorov-Smirnov $Z(1 - \text{sample } K S)$ because sample data has amount more from 50 data sample.

for detect normality data can tested with Kolmogorov-Smirnov, with guidelines taking decision:

- The value of $\text{sig} < 0.05$, distribution of is not normal
- The value of $\text{sig} > 0.05$, the distribution is normal

Results normality test data on study this served on table following this:

Table 4.2 Sample Data Normality Test Study

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
X1	.325	158	.080	.838	158	.080
X2	.300	158	.120	.606	158	.120
X3	.115	158	.267*	.958	158	.267
X4	.512	158	.470	.327	158	.470
Y	.120	158	.406*	.965	158	.406

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Source : secondary data processed

Based on normality test calculations, from 158 samples of company data manufacturing researched during period study show that variable GCG (X_1) has value significant for $0.080 > 0, 05$, variable profitability (X_2) has mark significant $0.120 > 0, 05$, variable leverage (X_3) has mark significant as big $0.267 > 0.05$, variable quality audit (X_4) has mark significant as big $0.470 > 0.05$ and variable management profit (Y) has value significant of $0.406 > 0, 05$. From the data -the data can say all independent variable and dependent variable distribution in a manner normal so that calculation analysis got next to stage next.

Data Multicollinearity Test

Multicollinearity test aim for test did in model regression found exists correlation between variable free or no. good models should no happen high correlation among variable free. For detect There is or nope multicollinearity in model regression can know from value tolerance and mark variance inflation factor (VIF). Second size this show every independent variable which one explained by independent variable other. tolerance measure variability independent variable that is selected that is not can explain by other independent variables. So, the value of the tolerance low as with high VIF value (because $VIF = 1/\text{tolerance}$) and shows exists collinearity the high. Mark cut-off the general used For show exists multicollinearity is value tolerance ≤ 0.10 or equals VIF value ≥ 10 .

model multicollinearity independent regression is the have value tolerance in above 0.1 or VIF in lower 10. If tolerance variance in lower 0.1 or VIF above above 10, then happened multicollinearity. If it turns out in model regression there is multicollinearity, then must remove variable independent l have correlation tall from model regression.

Results test multicollinearity in research this served on table following:

Table 4.3 Multicollinearity Test of Sample Data Study

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	std. Error	Betas			tolerance	VIF
1	(Constant)	1,450	.440		5,244	.000		
	X1	.230	.067	.277	1,464	.156	.827	1,209
	X2	.898	.452	.350	2007	.056	.974	1,026
	X3	.677	.198	.381	2.108	.045	.905	1.105
	X4	.548	.281	.031	.171	.866	.891	1.122

a. Dependent Variable: Y

Source: secondary data processed



Based on table data such, all variable independent and dependent No happened symptom multicollinearity with shown mark collinearity tolerance all variable is above _number 0.1 or mark VIF under 10, so model regression the will produce free from symptom multicollinearity in equation regression double so data they got used.

4.4.3 Auto Correlation Test

Test autocorrelation is correlation between member observation compiled _ according to time and place. Model good regression _ is that is independent of autocorrelation. Howl can _ used for detect their or no autocorrelation is with test Durbin Watson (DW test (Sugiyono 2020)). Is there autocorrelation got seen from provision following in table 4.8.

Table 4.4 Criteria Durbin-Watson autocorrelation

DW value	Interpretation
$-2 \leq DW \leq 2$	No happen autocorrelation
$DW < -2$	happened autocorrelation positive
$DW > 2$	happened autocorrelation negative

Results calculation test autocorrelation in research This shown in table following:

Table 4.5 Sample Data Auto Correlation Test Study

Summary Model ^b					
Model	R	R Square	Adjusted R Square	std. Error of the Estimate	Durbin-Watson
1	.681 ^a	.461	.189	.23315	.825

a. Predictors: (Constant), X4, X2, X3, X1

b. Dependent Variable: Y

Source: secondary data processed

Based on results calculation that, the value of Durbin Watson on the variable study own number 0.825 or is at between Durbin Watson criteria $-2 \leq DW \leq 2$ so can stated that No happen autocorrelation between variable so statistical data calculation can proceed with the calculations next.

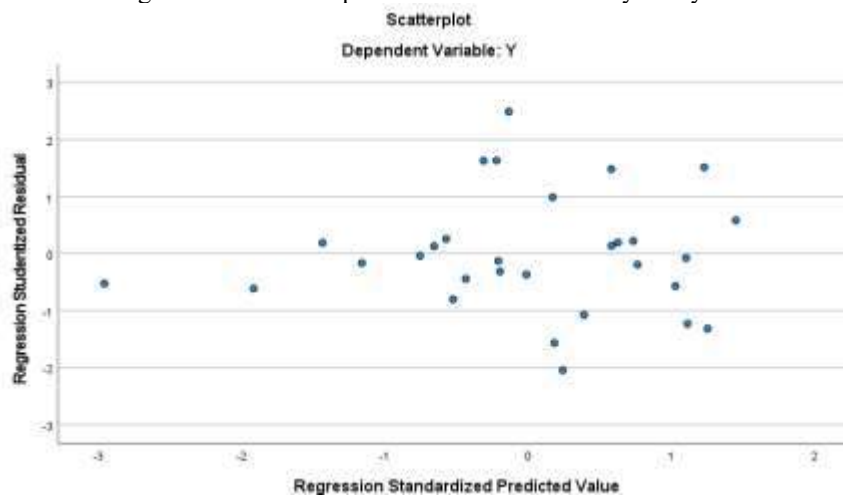
4.4.4 Heteroscedasticity Test

Heteroscedasticity is variance residual not the same on all observation in in model regression. Good regression _ should no happen heteroscedasticity. Test this can done with using method graph (scatter plot . Analysis on scatter images plot l state regression No there is heteroscedasticity if:

- a. Point – data point spread on above and below or in around number.
- b. Point – data point No collect on top of or in lower only.
- c. Spread l data points preferably _ No patterned.

Results calculation Test Heteroscedasticity in research This presented following figure:

Figure 4.11 Test Sample Data Heteroscedasticity Study



Source : secondary data processed



on the picture the state that dot, dot, dot spread around number zero, no collect above _ nor below _ course and deployment point No patterned. this _ show that no happen symptom heteroscedasticity in the equation regression so that equality the resulting regression can used.

Analysis Regression Double

Analysis This used for now direction relationship between variable independent with variable dependent what each -each variable independent related positive or negative for predict value from variable dependent if mark independent experience increases or decrease. As for variable independent the there is in study this between others GCG (X_1), profitability (X_2), leverage (X_3) and audit quality (X_4) tested influence against variable dependent that is implementation management profit (Y). Then obtained formula equality multiple linear regression as following:

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + e$$

Description :

Y = implementation management profit

a = Constant

b_1, b_2, b_3, b_4, b_5 = coefficients regression

X_1 = GCG variable

X_2 = variable profitability

X_3 = leverage variable

X_4 = variable audit quality

e = error items (level error estimator)

As for equality regression on research This based on results SPSS 27 calculations are :

Table 4.6 Analysis Regression Double

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	std. Error	Betas			tolerance	VIF
1	(Constant)	1,450	.440		5,244	.000		
	X1	.230	.067	.277	1,464	.156	.827	1,209
	X2	.898	.452	.350	2,007	.056	.974	1,026
	X3	.677	.198	.381	2,108	.045	.905	1,105
	X4	.548	.281	.031	.171	.866	.891	1,122

a. Dependent Variable: Y

Source : secondary data processed

on the table The coefficients a can formed equality regression as following:

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + e$$

$$Y = 1.450 + 0.230X_1 + 0.898X_2 + 0.677X_3 + 0.548X_4 + e$$

From the equation the can concluded that If happen an increase of 1 variant in the GCG variable (X_1) then mark GCG variable (X_1) is 0.230, if happen increase of 1 variant on the variable profitability (X_2) then mark variable profitability (X_2) is 0.898, if happen an increase of 1 variant in the leverage variable (X_3) then leverage value (X_3) is 0.677 and if happen increase of 1 variant on the variable audit quality (X_4) then mark variable audit quality (X_4) is 0.548 .

4.5.1 Coefficients Determination (R^2)

The coefficient of determination (R^2) is a concept in that measures how a regression line fits with the data or measures the percentage of the total variation in Y that is explained lines . The coefficient of determination describes the relationship between dependent variable variable in a model.

Results calculation coefficient determination on research This presented in the table following :

Table 4.7 Coefficient Determination of (R^2) Sample Data Study

Summary Model^b

Model	R	R Square	Adjusted Square	R std. Error of the Estimate	Durbin-Watson
1	.681 ^a	.461	.189	.23315	.825

a. Predictors: (Constant), X4, X2, X3, X1

b. Dependent Variable: Y

Source : secondary data processed



Based on the value of R^2 (R square) listed in the table that is as big 0.461 or 46.1 %, that is influence variable independent to dependent variable of 46.1 % and the remaining as big 53.9% is factor else that is n't researched on study this.

4.5.2 Partial T test

Test Partial aim For now is the effect of each variable free to variable bound meaning or don't. Testing done with compare between t_{count} each variable free with value t_{total} with degrees error 5 % in meaning of ($\alpha = 0.05$). When mark $t_{count} \geq t_{table}$, then variable free give influence meaning against variable bound.

Table 4.14 Partial T Test
Correlations

Control Variables:			X1	X2	X3	X4	Y
-none-	X1	Correlation	1.000	.128	.294	.306	.078
		Significance (2-tailed)		.500	.114	.100	.005
		df	0	158	158	158	158
	X2	Correlation	.128	1.000	.004	.048	.210
		Significance (2-tailed)	.500		.984	.800	.008
		df	158	0	158	158	158
	X3	Correlation	.294	.004	1.000	.175	.112
		Significance (2-tailed)	.114	.984		.356	.004
		df	158	158	0	158	158
	X4	Correlation	.306	.048	.175	1.000	.068
		Significance (2-tailed)	.100	.800	.356		.728
		df	158	158	158	0	158
	Y	Correlation	.078	.210	.112	.068	1.000
		Significance (2-tailed)	.496	.008	.113	.728	
		df	158	158	158	158	0

Source: secondary data processed

Discussion

As for the results analysis hypothesis on research This based on the results of the F Simultaneous and T test Partial is as following:

H 1 : there is influence the positive and significant between GCG (X_1) against implementation management profit (Y) on company manufacturing listed l on IDX period year 2015-2019

In the Partial T test results above, value correlation GCG variable (X_1) to variable management profit (Y) has positive influence with value 0.078 and value significant 0.005 < 0.05 so that hypothesis first can accepted .

Research results find that (1) amount directors, commissioners independent and percentage share influential direct against GCG, (2) amount directors, commissioners independent, percentage stocks and GCG influence direct to management profit , and (3) GCG can mediate audit committee , total directors , commissioners independent and percentage share against management profit (Mahrani and Soewarno 2018b)

H 2 : there is influence l positive and significant between Profitability (X_2) to implementation management profit (Y) in the company manufactures listed on the IDX period 2015-2019 year

On results Partial T test above, value correlation variable profitability (X_2) to variable management profit (Y) has influence positive with value 0.210 and value significant of 0.008 < 0.05 so hypothesis second can accepted .

Variable independent profitability (PROF) own mark significance smaller from alpha value ($\alpha = 0.05$) ie of 0.000 which indicates that profitability (PROF) effect in a manner significant to management profit (EM) and influential in a manner positive However No significant (T, Trisakti, and Kyai 2022)

H 3 : there is t influence the positive and significant between Leverage (X_3) against implementation management profit (Y) in the company manufactures listed on the IDX period 2015-2019 year

In the Partial T test results above mark correlation leverage variable (X_3) to variable management profit (Y) has influence positive with value 0.112 and value significant of 0.004 < 0.05 so hypothesis third can accepted , however results the bertolka later with results study previously Variable independent leverage (LEV) own mark significance more big from alpha that is of 0.107 which indicates that the leverage (LEV) has no influence _ significant to management profit (EM). With B value of 0.041379 which is show influence in a manner positive, however No significant (Tinggi, Trisakti, and Kyai 2022)

H 4 : There is influence the positive and significant between quality audit (X_4) against implementation management profit (Y) on company manufacture the registered in BEI period year 2015-2019

On the results of l T test above, value correlation variable audit quality (X_4) against variable management profit (Y) has influence positive of 0.728 however For mark significant of 0.066 > 0.05 so variable influential audit quality positive However No significant to implementation management profit . From the results the so hypothesis fourth No can accepted.



And results the in accordance with results research previously, GCG got mediate audit committee, total directors, commissioners independent and percentage share to management profit .(Hanifah, Dwi Astuti, and Kartika Sari 2018)

CONCLUSIONS AND SUGGESTIONS

Based on results calculation as well as analysis on the company manufacture can concluded as following:

1. Variable Good Corporate Governance (GCG) has an effect 1 positive and significant against variable Management Profit.
2. Variable Profitability influential _ positive and significant against variable Management Profit.
3. Variable leverage influential _ positive and significant against variable Management Profit
4. Variable Quality Audit has a positive However no significant against variable Management Profit.

Based on result producing research _ influence variable Good Corporate Governance (GCG), Profitability , Leverage and Quality Audit of Management Profit, for guard continuity activity business with level high profit _ so needed steps as following:

1. should company balancing mark Current Ratio for the company can pay off obligations period short and have good management _ on sources liquidity, however If mark Current Ratio too tall signify management companies that don't Healthy be marked with stagnant cash.
2. should every company increase mark Net Profit Margins Because Factor This determine tall low profit company. Increase NPM value can done with do promotion product.
3. For support acquisition high profits, company _ can increase contribution assets company in create profit Because increasingly tall result return assets means increasingly tall anyway amount profit generated and otherwise. _
4. For increase growth profit, got obtained with increase acquisition profit net planted _ in capital equity because the more height return above equity then the more height also amounts profit net that generated.
5. For study next, got expand sample research Not only covers company manufacturing, however can research on the company other with period different years.

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STUDYING THE ROLE AND NECESSITY OF VALUES TODAY

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ABSTRACT

Value is an essence of education and is the very need of the hour, while we watch society's morality gradually deteriorate. Programs for establishing principles in society must be developed. Education without ethics is like a flower without fragrance. Students need to recognise that character development is just as important as career development. Good character, morality and values in life are the most important factors that drive a person towards self-realization. This essay makes an attempt to examine the function and need of value in education, literature and art in society. Doing this, the paper goes into detail regarding the implications of developing value education.

KEYWORDS: Values, Values in Society, Morals, Literature for Morality, Need of Values

INTRODUCTION

In India, value-based education is actually in high demand right now. While we observe how society's morals are eroding day by day. It is essential to create programmes for instilling ideals in society (Ansary, Gorain & Saha, 2023). Due to the constant barrage of new technology, information explosion and violent news from the media, an individual is being affected vastly. Educational institutions must take the initiative to teach this new generation value-based spiritual knowledge in order to instil the value system in their bewildered brains and develop them into powerful leaders who uphold strong moral principles. Imbibing the virtues of excellent behaviour, self-confidence and high ideals would aid pupils in achieving a major position in society. Education without morals is similar to a flower without scent. Pupils need to understand that developing one's character is just as vital as developing one's career. The most significant factor that pushes a person towards self-realization is good character in life.

CONCEPT OF VALUES

The Latin word 'Valere,' which means 'to be robust and vigorous,' is the source of the English word 'value.' Being a value entails having a particular value, which is the capacity to be a certain item. The value of an object or idea determines its desirability or usefulness to us and might lead to an urgent need for or engagement in something we consider to be of great value. Life is about making decisions. In the course of human existence, some things are seen as admirable, respectable, and deserving of praise, while other things entertain and please us but may not be regarded in the same way.

The idea of values is given from many perspectives:

- A subject-object link is implied by the term 'value,' which connects the thing to man.
- Only labour and skill can give raw materials value, or utility.
- Malinowski considered the forging of a harmonic balance between personal and social ideals to be a crucial component of value production. Each person has a duty to pursue gain in a way that benefits both himself and his society because they are the ones who create value.
- Value is the complete amount of force that a material or spiritual thing utilises to help a subject achieve its goals as a means to an end. In general, there are four different categories of values: social, mental, moral, and intellectual. They are further divided into eight categories, including moral, national, professional, social, intellectual, and mental values. These principles have their roots in mythology, literature, the arts, culture, societal structure, educational ideas, and educational institutions.

ROLE OF MYTHOLOGY IN PROMOTING VALUE

According to academic studies, mythology is frequently defined as "deeply valued stories that explain a society's existence and world order: those narratives of a society's creation, the society's origins and foundations, their god(s), their original heroes, mankind's connection to the 'divine,' and their narratives of eschatology." For the many, fundamental, and sacred stories that share the same themes, the same idea becomes a highly popular outline. "Myth constructs a



worldview for people. It serves as a looking glass through which life comes to order" (Pattanaik, 2003, p.34). In order to uphold the ideals and morals of the society, mythology plays certain functions and makes use of its sacred myths, art and rituals. The entire subcontinent used this approach to create mythology-related books, and it resulted in its own Sanskrit-language literature. The renowned Sanskrit master Kalidas' *Abhijnanam Shakuntalam* is one such masterpiece. The elite, literate, scholars and other members of a very small class of people had access to literature that contained mythology, therefore a significant portion of the general public was uninformed of these incidents and virtues (Adhikari & Saha, 2021a). The widespread application of the Rasas in artistic mediums is also seen in how values are derived. Every kind of art can use rasa, which stirs the reader or audience's emotions and helps them leave the world of the mortal to enter the world of spiritual and moral consciousness (Adhikari & Saha, 2022a). Forms of art are nothing more than the concretion of human imagination into a shape and structure, which unquestionably must be connected to other forms of art, particularly literature, which aids in the discovery of truth, morality, and builds up to the blending of cultures (Adhikari & Saha, 2021b; Saha, 2023).

ROLE OF EDUCATIONALISTS IN PROMOTING VALUE

Society not only plays the role of directing towards different value system, it also helps in accumulation and integration of the values through different generations (Gorain, 2023; Adhikari, 2023; Ansary, 2023). According to him, culture is an exercise in perfection, an effort to improve things over their current state, driven by a moral and social zeal for doing right (Adhikari & Saha, 2021c). In light of this, educationalists and educational institutions have a critical role to perform. True knowledge, in Vivekananda's opinion, is crucial for every person. Without moral principles, true knowledge cannot be attained. Thus, the advancement of moral principles is crucial to the discovery of accurate knowledge (Roy & Saha, 2022). Although Tagore fought against social ills like untouchability, superstition, and poverty, he did not believe that the West was the root of all evil. He appreciated Western ideas of human value, freedom, and democracy as well as Western science (Mondal & Gayen, 2021).

Talking about morality and values as a changing force in society has long been a priority for female educators and social reformers. Despite the difficulty of their path, they possessed incredible willpower. Ladies like Savitribai Phule, Tarabai Modak, Durgabai Deshmukh, Anutai Wagh, Pandita Ramabai, and Nawab Begum Sultan Kaikhusrau Jahan (Gorain & Sen, 2021) were those of them who, in addition to advocating for equality, made admirable efforts to educate and elevate women (Adhikari & Saha, 2021d; Hossain & Saha, 2013). The Montessori Method supports independent study that fosters values, self-assurance, and independent thought and action while promoting intellectual and social-emotional development (Adhikari & Saha, 2021e, 2021f). Women are no more innately submissive than males, according to Mary Wollstonecraft, who also emphasises the importance of ideals. She also contends that neither men nor women respect freedom unless they have

fought for it (Adhikari & Saha, 2022b; 2022c; 2023). Nel Noddings, an American philosopher, developed one of the first thorough conceptions of care and contended that compassion is the basis of morality and values (Adhikari & Saha, 2021g). Women left their comfort zones in order to project themselves, their art, and the societal challenges that still disproportionately affect women.

LITERATURE AND VALUES

As literature provides an abundant and extraordinarily diverse body of written content that addresses ongoing human challenges, it has been playing a crucial role in society. With literature, students can imaginatively enter other worlds, both familiar and distant, and develop understanding of themselves and others in rich social, cultural, and historical settings (Gorain, Nayek & Saha, 2022). This is why literature is crucial for fostering morals and a sense of human values. A new set of principles that examine society through the prism of empathy for women has been introduced by feminist approaches to writing (Adhikari & Saha, 2021h; 2021i). Many female authors are discussing the breakdown of society and how empathy and ideals can bring it back (Adhikari & Saha, 2021j) engagement in the new field is crucial for women to combine the ideals of independence (Adhikari & Saha, 2021k).

NEED FOR VALUE

The fact that existing methods of school education significantly contribute to children's uneven development is one of the most crucial arguments in favour of reorienting education towards values. They demonstrate a separation between the mind and the heart by putting all of the emphasis on the cognitive realm and completely ignoring the affective domain. Pupils are taught to relate to aggressive rivalry, facts that are disconnected from contexts, and a culture of extreme competition from day one. The issue of deteriorating values is multifaceted and results from a confluence of powerful societal forces, including terrorism, globalisation, materialism, consumerism, and risks to humanity from climatic change and environmental degradation. They have brought in fears, individualistic lifestyles, the acceleration of demands, the misuse of science and technology, pessimism, a sense of isolation, and other undesirable outcomes. The world's microcosms are found in schools (Gorain, Adhikari, Saha & Sen, 2021; Gorain, Saha, Maji & Sen, 2021; Mahanti, Mondal & Saha, 2016). At schools, the chaos of the outside world manifests in numerous ways. The way children and young people grow up in our nation has changed and is changing even more quickly. To inform us of what our own eyes and hearing tell us, scientific surveys are not necessary. The number of unhappy families has increased. Youngsters engage in violence and crime both inside and outside of school. Our kids have been engulfed by mass media in a way that is difficult for them to understand or evaluate. While it's important to foster in kids a questioning mindset and a capacity for critical thought, we find that many kids treat instructors with contempt and ask them questions out of conceit or a desire to challenge their authority. A hurry-up culture frequently lacks a sense of brotherhood and togetherness. Peers have a significant impact on them.



The socio-cultural environment has undergone a significant transformation today. Globalization denotes a pervasive culture. Today, practically the entire world is included in our cultural perspective. Less and less of our societies are monocultural. As a result, our world has become more complicated and diverse, and various civilizations have evolved to the point where it is no longer viable to consider adaptation to a homogeneous environment. The issue is rather one of adapting to a multi-cultural and extremely complex setting. Globalization may result in ruthless rivalry and the rejection of one's own priceless customs and culture.

A pressing societal issue is educating youngsters about the environment and the need to protect it (Saha & Maji, 2013; Saha, 2012). Environmental degradation has been a result of the careless use of the environment, ozone layer depletion, global warming, industrial pollution, deforestation, soil erosion, nuclear fallout brought on by overpopulation, new technological advancements, and lifestyle choices, among other things, that have been observed over the past century (Haldar, Roy, Gorain, Adhikari & Saha, 2022; Saha, Maji & Saha, 2012). The values of respect for the physical environment and the natural world, responsible use of environmental resources, awareness of the connection of humans and the environment, and living in peace with nature must all be fostered (Saha, 2013). Without consideration for the protection and sustainability of the environment, people's health cannot be sustained.

It seems obvious that science and technology will continue to advance rapidly in the decades to come, even while humans struggle to keep up with their immediate problems. Both positive and negative unexpected effects result from it. Values determine how science and technology should be applied. It is a moral and ethical obligation to use science and technology in a more sensible and humane way. Based on the concepts of fairness, goodness, constructive criticism, and wisdom to distinguish between the benefits and drawbacks of scientific and technical breakthroughs, values and attitudes can serve as a guide for individual behaviour (Roy & Saha, 2021).

The value and importance of social responsibility and social consciousness among students must be promoted, and education must be seen as a catalyst for this. This entails learning about oneself as a member of a family, neighbourhood, village, town, city, community, nation, and global society, as well as a gradual expansion of consciousness from the self to the other. The knowledge of one's allegiance to each of the aforementioned parties grows with each step. Students need to be instilled with a sense of obligation and responsibility towards their families, communities, societies, nations, etc. from an early age. In order to prevent pupils from growing up with a fixation with rights and neglecting duties and responsibilities, it is crucial to place a high priority on teaching them how to fulfil their obligations as responsible citizens.

Most people agree that education must be the driving force behind fostering values. Yet, it is unclear how this will be accomplished in schools. While some organisations and

institutions prefer to preserve values as a distinct subject, others believe that values should be incorporated into everyday classroom activities. The emphasis also shifts. While some place a strong emphasis on religion education, yoga, and meditation, others place a stronger emphasis on democratic and national principles (Saha, 2021; Saha, Sen & Adhikari, 2021; Khatun, Ansary, Adhikari, 2022). Several opinions exist on the goals of value education and the best way to offer it.

CONCLUSION

This study has successfully illustrated the beneficial influence of moral values in human existence and how these values are transmitted through many social agents, with art, literature, culture, and education serving as a key tool in fostering a person's acquisition of moral values. Moral values are a kind of legislation that is established by culture, society, and other variables to instruct people on how to behave or not in daily life. The environment that cultures are exposed to influences how their moral standards develop. Every civilization should make an effort to safeguard moral principles. It is crucial for us to uphold morally sound principles in our daily lives, including honesty, righteousness, decency and even self-decency.

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REVISITING AND REFRAMING THE CONCEPT OF ‘DEVELOPMENT BY PEOPLE’

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ABSTRACT

Alterations of social patterns and changes in mechanisms of social action form a crucial part of social change in society. Development can be often referred to as a term that mainly incorporates progress, amelioration, and change. As an orderly procedure, it reflects a sequence of activities. However, we cannot observe a halting point when it comes to development as it is characterized by its continuity. The term often recalls the functioning of major organizations like the United Nations, World Bank, or Bretton Woods Conference. Professor Yogendra Singh posited that “Development is a strategy of planned social change which is considered desirable by the members of a society.”

Participation of people in a democracy is not just a sociological imperative but also an essential part of human development and growth. Promulgation of social development can be witnessed in every corner of today’s world but its implementation remains a blurred portrait.

Premised on secondary literature, the study elucidates the meaning of ‘Development by people’ and notes its significance. Central to the theme is ‘Participation’ in development process, hence the paper elaborates on the process through which the same can be achieved. Since the nature of the participatory population varies from place to place considering the diversity and other multifarious reasons, the study also takes into account the limitations of the same approach.

INTRODUCTION

The term Development has been interpreted by different academicians and theorists in myriad ways starting from Amartya Sen to John Rawls. Etymologically, the term refers to ‘unfolding’, namely the progressive unfolding of capacities. The developmental literature incorporates various types of development ranging from regional to economic to sustainable to urban and so on.

The emergence of the concept of Development dates back to the early 1950s. Initially, Development can be noted as a post- World War II concept that was popularized to denote positive changes and significant economic change throughout Asia, Africa, Latin America, and South Eastern Europe. This asserted that change in Economic Performance Models and National income accounts marked growth and development during that stipulated period. The declaration of the 1960s as the Development decade by the United Nations led to a burgeoning amount of literature redefining and reanalyzing the concept. Thus, the notion of Development was underpinned by modernity, and the focus primarily was restricted to the economic arena of development only. With the introduction and acceleration of massive reorganization programs by agencies like the World Bank, the International Monetary Fund (IMF), the United Nations, and the

Marshall Plan, the focal point was heavily on economic terms to achieve development as the first step. The aim was to help other nations for securing one’s own benefits like America helping Europe and Europe lending a hand towards the ‘Third World’ countries.

Four major policy and theoretical perspectives regarding development have been enlisted as (1) Modernization Theory (roughly 1940s-1950s) (2) Dependency Model (1960s-1970s) (3) World System (1980s-2000s) (4) Market Reform (1980s-2000s).

Envisage Development from the Sociological Perspective

The lexical meaning of sociology is ultimately connected to the idea of development. Previous definitions of development suffered from weaknesses as they often ignored the humanitarian aspects of development and the welfare of people by limiting its locus to the economic sphere. Since development cannot be only economic growth subtracting societal progress, it started incorporating other dimensions too. Thus, it is termed as a process for paradigmatic change through improvement in quality of life, health, and transformation of social structure for the overall benefit of society.

We find the shadow of the concept of Development, even though not that explicitly, in the exemplary works of sociologists namely



Auguste Comte's Law of Three Stages, Emile Durkheim's proposition on Mechanical and Organic Solidarity and Division of Labour, Herbert Spencer's ideas on evolution, Max Weber on work ethic, Protestant Ethic and Spirit of Capitalism and Karl Marx's historical materialism, series of the mode of production and societal progress.

The first Human Development Report (HDR) of The United Nations Development Programme (UNDP) in 1990 marked the beginning of a new era. Under Mahbub ul Haq three key positions were posited, namely, (1) Decent standard of living (2) Long healthy Life (3) Knowledge. Later on, the areas of political freedom, participation in decision-making, women's rights, environmental rights, and sustainable living were added.

Remapping the Concept of 'Development by People'

What is the Concept of Development by People?

Democracy in its lexical sense refers to as "rule of the people". Participation of people in a democracy is not just a dire necessity but also an essential part of Human Growth. This portrays that incorporating cooperation, creativity, self-help, self-confidence, responsibility is a dire necessity. Participation can thus be elucidated as a process where individuals take charge of their own lives and contribute to solving their societal problems.

'Participation' has been found as a dire necessity through which development strategies can be realized. This happens through active involvement, people's innovative ideas and appropriate organization at the grass root level and development agencies and policymakers need to reach them to know the 'community basic needs'. In simple terms, the participation of people implies 'taking part'. Therefore, participation of public in sociocultural, political and economic realms connected to their lives not only forms as an icon of empowerment but also lays down the foundation for democratic governance.

Thus it includes the following: (i) people oriented; (ii) right- and responsibility-based; (iii) right to development; (iv) right to participation; and (v) right to information.

Explicating the need for 'Development by People':

Development by people grew out of the 'gap' which existed between the development agents or experts and the people for whom the policies have been planned, implemented and executed. The divide between the two sets of actors was too large as policy makers were armed with good skills, intellectual capacities, resources and power while on the other side, the people tended to be dependent on those experts as they were powerless, voiceless, with little or no knowledge. This gap led to antagonism and hostility among the two sets of actors resulting in the failure of some developmental projects. Hence, to bridge this divide participation and development by the people is a conceptual solution. People participation thus takes on the role of being both a methodology as well as a strategic goal of development.

For instance, if we are working on a developmental project in a rural area in India, it's extremely important to figure out which sectors of the village community participates, how they wish to participate and envision development, how they reflect on their basic needs, whether the upcoming the development project satisfies them, or whether it does not, and what measures can be adopted to restructure the project focusing on that area's basic needs. Significantly, without active intervention, people in the lower rungs of the socioeconomic and political ladder will not be able to achieve progress. If agencies and political machinery turn a deaf ear to their needs and structure a developmental plan solely according to what the strategists think should be done in a particular area, then there may be chances of dismay and non-success.

1) Basic Needs Approach

Tracing the trajectory of the basic needs approach, we can recall the contribution of the Greek philosopher Aristotle, who mentioned different groups of needs. One of them refers to a group where good can be achieved and negative can be avoided. Basic needs vary from community to community based on region, socio-economic status, classes, castes and various other areas, yet at the same time, some fundamental needs can be marked as food, shelter and clothing. Thus, reflecting on the basic needs of a particular community is an essential component of the Development by People concept. For instance, a social worker along with an experienced team may anticipate the requirements of a region to be delivering basic education to female children and focus on implementing that. Subsequently that may be successful but also lead to dismay later. Instead, the real need may be good sanitation and drinking water facilities so that the people present there can first satisfy the most rudimentary needs. Eventually, after that, they will be able to think of elementary education or universal adult franchise. Development by People thus takes into account focusing on the *Basic Needs* of people during capacity building and the process whereby the people invest in the improvement of their livelihood.

2) People's Empowerment

Empowerment of the local people takes a crucial stance here as reaching the masses and generating active effort sums up the base of any development project or assignment. Often the minority or needy or poor or underprivileged are excluded due to a lack of communication or educational facilities. For instance, a sanitation project may only take into account the picture of women's privacy and health but it may have more underlying concerns which can only be expressed by the women of that area themselves. Thus, it can be suggested to communicate with locals and understand indigenous knowledge and needs first, for greater effectiveness of social development. However, in the development sector, people's participation differs greatly ranging from attending meetings or labour contributions to deciding on the already planned solutions by experts. Overall, the final goal can be asserted as self-organization and collective action in decision-



making in all those development projects that will affect their lives.

3) Role of Organizations

The Nation's role is pivotal when proceeding towards the bottom-up concept of Development by People. The Nation was at the core of the Indian developmental picture right from the Colonial regime. A great role of the state machinery was solicited to eradicate the gross inequalities and backwardness of people after independence. As a result, the "Mixed Economy" model was introduced by the country. Throughout the length and breadth of India, major framed policies and strategies of development failed to benefit the people as it was not decentralized and their basic needs were not heard of. Hence, the prime motive of state machinery may be focused on the people's necessities, demands and basic requirements. Thus, the quality of development is dependent on the efficiency and efficacy of political machinery. Neoclassical economists tend to prioritize the market and 'invisible hand' over the state or nation but in considering this concept of development by people, but here in this case, the leaders may take a decision to 'reach the people themselves and let them reflect on their community needs to vigorously ensure social progress.

The typology of Participation by individuals may include:

- Participating passively
- Communication with Policy Makers
- Problem Analysis by forming a People's Organization
- Cooperative Decision Making (by engaging directly)
- Collaborative Learning
- Self-Mobilization among people
- Participation in Information giving
- Interactive Participation

Currently, NGOs have taken a lead role in developing the missing link and going forward with people-centered development where the common people are given the privilege to participate and raise their views in the decision-making process of the development programs that directly affect them. The Swabalamban (self-reliance) program of Nepal, the Grameen Bank and Bangladesh Rural Advancement Committee (BRAC) of Bangladesh, and the Self Employed Women's Association (SEWA) of India are examples of such development where the concept of development by people was applied.

Drawbacks of implementing 'Development by People'

- Corruption and red-tapism may curb the process.
- The ones in power often restrict the common masses from engaging themselves or limit it to particular social groups, for example, women
- Participatory Development may put constraints in the process due to the scattered nature of masses and low

level of awareness. They may fail to realize even the importance of 'Participation'.

CONCLUSION

Nevertheless, the concept of Development by People is a necessary condition for equality, democracy, and the social upliftment of the masses. The development agent here equally plays the role of a catalyst or facilitator with basic needs as the prime focus. Good quality of life not only encompasses psychological and economic factors but also social and physical factors. Thus, 'development by people' is the framework where development is woven around people and by themselves. It ensures putting the capabilities of people to use for their social amelioration and lives.

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MANAGERIAL SKILLS THAT PRIMARY SCHOOL HEAD TEACHERS IN MARAKWET WEST SUB-COUNTY REQUIRED IN-SERVICE TRAINING BEFORE ENROLLING FOR THE KEMI DIPLOMA IN EDUCATIONAL MANAGEMENT COURSE

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ABSTRACT

Management, administrative and leadership competence is critical for the educational goals of primary education to be realized. Primary school head teachers are faced with enormous changing managerial environments which has sometimes rendered them ineffective in their widening roles. Provision of targeted in-service training, therefore, has never been crucial. This study investigated the managerial skills that primary school head teachers in Marakwet West Sub-county required in-service training before enrolling for the KEMI Diploma in Educational Management Course. Descriptive survey research design was used. 38 head teachers selected using stratified random sampling from 57 schools whose head teachers undertook the KEMI Diploma in Education Management, 42 teachers randomly sampled and 13 chairpersons of the Board of Management purposively sampled from the same schools formed the sample. Questionnaires and interview schedule were used to collect data. The data collected was summarized, analyzed and presented using descriptive statistics such as mean, and standard deviation and inferential statistics such as paired sample T-test and correlation. The analysis was done using Microsoft Excel and Statistical Package for Social Sciences (SPSS) version 19.0. The data was summarized and presented using frequency tables, graphs and percentages. The findings of the study indicated that there was a significant improvement in leadership, administrative and managerial competence of primary school head teachers after undertaking the KEMI diploma in educational management. Head teachers were motivated by the need to upgrade their skills, salary increment and promotion in job grade. The KEMI diploma was however inadequate in advancing head teacher skill in ICT, Infusion of Emerging Issues and Financial management apart from the challenges associated with open and distance learning programmes. The study recommended for the job evaluation of head teachers to take an audit of skill requirements, continuous short term refresher courses in areas studied, decentralization of training and recognition of the academic attainment by head teachers through promotion and salary increment to motivate teachers pursue useful professional development programmes. The study identified gaps between the course content and the actual management skills required by the school managers, this include ICT skills and book keeping in financial management. The study further recommended policy review on the selection, promotion and deployment of Primary school head teachers by the TSC.

INTRODUCTION

The problem of ineffective school leadership has been of great concern to policy makers (Budiharso & Tarman, 2020). The government's agenda to drive school improvement through implementation of education reforms coupled with increasing primary school enrolment as a result of Free Primary education (FPE) in 2003, urgently requires informed managers at the school level. It was perhaps with this realization that the GoK established the Kenya Education Staff Institute (KESI) in 1981 to serve as an instrument for the development of managerial staff of the Ministry of Education including head teachers of all schools. To address the problem of few effective school managers, KESI expanded its mandate for enhancing capacity for education. According to GoK (2011), it

was, therefore, deemed necessary to amend the institution's name from KESI to the Kenya Education Management Institute (KEMI) in 2011. KEMI liaises with various sub-sectors in the education sector to assess staff development needs and in-service training requirements. KEMI coordinates the preparation and publication of instructional materials for professional and administrative staff in the education sector (Ongori, 2021).

KEMI, through legal notice number 19 of 2010, was re-established as a corporate body with an expanded mandate this included conducting examination and awarding diplomas and certificates to successful candidates (Holmes, Parker & Gibson, 2019). The main role of the institute is to build the



capacity of education personnel to enable them deliver education services efficiently and effectively. It is now a premier educational capacity building institute that offers short courses and workshops for secondary school principals and primary school head teachers in curriculum supervision and implementation, accounting, office administration and record keeping. The institute also provides consultancy services and conducts research in education management, policy analysis and community development education.

Owiti (2010) identified lack of managerial and administrative skills among head teachers as a factor hindering effective implementation of Free Primary Education. He further recommended the need to in-service head teachers and other school managers through KESI. To underscore the importance of effective school management, the MoE through KESI (now KEMI), in collaboration with the United States Agency for International Development (USAID) rolled out a diploma in education management course via distance learning in 2011. This programme targeted secondary school principals and primary school head teachers together with their deputies.

Little is known about the managerial skills that primary school head teachers in Marakwet West Sub-county required in-service training before enrolling for the KEMI Diploma in Educational Management Course.

OBJECTIVE OF THE STUDY

The study was guided by the following specific objective:

- i. To identify managerial skills that primary school head teachers in Marakwet West Sub-county required in-service training before enrolling for the KEMI Diploma in Educational Management Course

METHODOLOGY

The research was descriptive in nature. The study's focus was on 57 public primary schools in Marakwet West Sub County whose principals had completed the KEMI diploma in Education Management program. The sub county of Marakwet West was broken up into seven educational zones; each with distinctive features. The Aror zone, for instance, could be classified as Arid and Semi-Arid Land (ASAL). The remaining six zones had a reasonable amount of economic

potential. There were 93 respondents, which included 38 head teachers, 42 teachers, and 13 chairpersons of the school board of management.

38 head teachers were chosen using proportionate sampling from each of the seven educational zones. The BoM's 42 teachers and 13 chairpersons were selected using simple random sampling, which ensured that each member of the defined population had an equal and independent chance of being included in the sample.

The questionnaires and interview schedules used in the study were used to collect data. Due to their literacy, questionnaires were developed for teachers and head teachers. The schedules of interviews were used to collect data from the BoM chairpersons.

GEOGRAPHICAL AREA

The study was carried out in Marakwet West Sub County which is in the Rift Valley region of Kenya.

RESULTS

Head teachers in Marakwet West sub County were asked to state training courses in education management attended prior to KEMI diploma in Educational Management. They were asked to rate their competence in handling leadership, management and administrative roles in their schools. Their responses were converted to frequencies and reported in percentages as discussed in the following sections.

Prior Training in Educational Management

Head teachers were asked to either YES if they had any previous training in educational management or NO if they had not attended any previous training in education management prior to the KEMI Diploma in Educational Management. Where prior training was implied, head teachers were asked to state the name of the sponsoring institution and the nature of training. From Table 1, 81% of respondents claimed to have had prior training in education management while close to 19% had no prior training in Education management. This implied that a high number of head teachers had some training relevant to their administrative, managerial and leadership roles.

Table 1: Prior Training in Educational Management

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	26	63.4	81.3	81.3
No	6	14.6	18.8	100.0
Total	32	78.0	100.0	

Source: Field Data

To determine the nature of training, head teachers were asked to state whether previous training was pre-service or in-service, short term or long term. Pre-service management training is part of the ordinary course undertaken during teacher training either at college or university. What constituted to prior education management training in the

study was the in-service teacher training courses exclusively for head teacher's capacity building. From Table 2, 26 head teachers who had prior training in education management were asked to state the training institution. 8% indicated KEMI, 64% indicated MOEST/DEO's office while 24% had college or university training.

**Table 2: Institutions Involved in Head Teacher Training**

Sponsoring Institution	Frequency	Percent	Valid Percent	Cumulative Percent
KEMI	2	4.9	8.0	8.0
MOEST/DEO's Office	16	39.0	64.0	72.0
College/University	6	14.6	24.0	96.0
Total	25	61.0	100.0	

Source: Field data

It is clarified that no primary school head teacher had trained with KEMI before. The 2 head teachers could have misunderstood the item since they were asked to state courses attended prior to the KEMI diploma. The six who indicated

having trained in college or university may have meant the ordinary units in education management taken during the teacher training programme.

Table 3: Nature of Training

	Frequency	Percent	Valid Percent	Cumulative Percent
Pre-Service Short Term	5	12.2	20.8	20.8
Pre-Service Long Term	3	7.3	12.5	33.3
In-Service Short Term	9	22.0	37.5	70.8
In-service Long Term	6	14.6	25.0	95.8
Missing	1	2.4	4.2	100.0
Total	24	58.5	100.0	

Source: Field data

College or university pre-service coursework does not amount to the specialized capacity building education management training exclusively for head teachers and aspiring ones such as the KEMI diploma in educational management. Therefore, the 16 head teachers with short term in-service MOEST/ DEO institutional training could be treated as having had prior training in educational management. Findings on the nature of training indicated that 21% was through pre-service short term, 13% through pre-service long term, 71% through in-service short term and 25% through in-service long term. Thus 80% of the training for head teachers with prior training in education management was through in-service short term. 50% of 32 head teachers, who responded to this questionnaire item, could be considered to have had prior management training. It appeared that the best delivery mode for capacity building tailored to enhance head teacher expertise, know-how and skills would be through short courses.

Level of Competence of Head Teachers before KEMI Training

The level of competence in carrying out managerial functions requires pre-requisite skills. Prior to training in the KEMI Diploma in education management, head teachers were carrying out their managerial duties. They were asked how competent they were when handling management, leadership and administrative roles. The rating was done on a four point Likert scale starting from 1 (Poor), 2 (Fair), 3 (Good) to 4 (Very Good). Table 4.6 is a summary of analyses carried out on their responses and expressed as a percentage of valid scores. The self-rating exercise was done to determine and control for previous training in evaluating the effectiveness of the KEMI diploma in educational management programme. From the self-evaluation exercise, a score of 3 (Good) and 4 (very good) cumulatively indicated a high competence in handling the administrative roles.

Table 4: Head Teachers' Level in Managerial Competence

Managerial, Administrative and Leadership Skill		Level of Competence					Statistic	
		Poor	Fair	Good	Very Good	Total Valid	Mean	Std. Dev.
Skills in Strategic Leadership	Frequency	6	21	9	2	38		
	Valid Percent	15.8	55.3	23.7	5.3	100.0	2.18	.77
Skills in curriculum supervision and implementation	Frequency	1	15	21	1	38		
	Valid percent	2.6	39.5	55.3	2.6	100.0	2.58	.60
Skills in Project Planning and Management	Frequency	11	14	12	1	38		
	Valid percent	26.8	36.8	31.6	2.6	100.0	2.08	.85
Skills in Conflict Resolution	Frequency	10	22	5	1	38		
	Valid percent	26.3	57.9	13.2	2.6	100.0	1.92	.71
Skills in Physical Resource Management	Frequency	1	18	16	3	38		
	Valid percent	2.6	47.4	42.1	7.9	100.0	2.55	.69
Skills in Integration of ICT in Educational management	Frequency	26	10	2	0	38		
	Valid percent	68.4	26.3	5.3	0.0	100.0	1.37	.59



Skills in Policy Formulation and Implementation	Frequency	8	22	5	3	38		
	Valid percent	21.1	57.9	13.2	7.9	100.0	2.08	.82
Skills in Fraud and credit Management	Frequency	4	17	14	1	36		
	Valid percent	11.1	47.2	38.9	2.6	100.0	2.33	.72
Skills in Infusion of Emerging Issues	Frequency	5	15	18	0	38		
	Valid percent	13.2	39.5	47.4	0.0	100.0	2.53	.80
Skills in Procurement and Stores Management	Frequency	3	18	17	0	38		
	Valid percent	7.9	47.4	44.7	0.0	100.0	2.37	.63
Skills in Results Based Management	Frequency	2	19	12	5	38		
	Valid percent	5.3	50.0	31.6	13.2	100.0	2.34	.71

Source: Field data

Findings of the study indicated that only 29% of head teachers had above average competence in strategic management, 58% had above average competence in curriculum supervision and implementation, 34% had above average competence in project planning and management, only 16% had above average competence in conflict resolution and management, 50% had above average competence in physical resource management, a paltry 5% had above average competence in integration of ICT in education management, 21% had above average competence in policy planning and management, 41% had above average competence in fraud management, 45% were effective in results based management while 47% were effective in infusion of emerging issues, procurement and stores management.

The overall rating was mainly in the 2nd level (fair). Thus continuous training was required in many areas of management. Especially weak areas included strategic management, project planning and management, conflict resolution and management, integration of ICT in education management and policy planning and management.

CONCLUSION

The following summary findings were made:

1. It was established that only 29% of head teachers had above average competence in strategic management. 16% scored below average competence.
2. In curriculum supervision and implementation, 58% had above average competence while only 3% were below average.
3. While 27% of the head teachers had below average competence in project planning and management, 34% scored above average.
4. Only 16% had above average competence in conflict resolution and management. However, 26% rated below average in the same.
5. While 50% had above average competence in physical resource management, a paltry 3% were below average.
6. A paltry 5% had above average competence in integration of ICT in education management, as a whopping 68% scored below average.
7. Policy planning and management had similar number of 21% rating above and below average competence
8. As 11% rated below average 41% had above average competence in fraud management,

9. 45% of the heads were effective in results based management with only 5% being below average.
10. While 47% were effective in infusion of emerging issues, procurement and stores management, 10% and 13% respectively rated poorly.
11. The overall rating was mainly in the 2nd level (fair).

RECOMMENDATIONS

Continuous training was required in many areas of management. Weak areas included strategic management, project planning and management, conflict resolution and policy planning and management. Since integration of ICT in education management is critical in the realization of e-learning in primary schools, deliberate efforts should be made to ensure that all head teachers are computer literate.

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PARATEXTUAL ANALYSIS OF FOLKLORE DISCOURSE

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ABSTRACT

This paradigm of analysis highlighted in this manuscript stresses the contextual significance of paratexts in addition to covering the text's linguistic and visual breadth. Graphic elements are various parts of written discourse that complement the original text's structure without altering its content. Although they do not completely describe the text's content, paratext elements provide readers a general indication of what they can expect to find and what is being told in the text. The prefix "para" in the word "paratext" implies "associated with, next to," and generally indicates "around the text" from an etymology perspective.

KEY WORDS: *folklore discourse, semiotic means, paratextual analysis, narrator, illustrations, aesthetic effect.*

In order to describe the semiotic devices found in the text, Pierre Ledin presented a rather helpful approach integrating multimodal paratext and format analysis of Swedish journals. Paratexts also help readers find information more easily, saving them time and allowing them to concentrate on particular aspects. Paratexts are additional referencing, organizational, and explanatory notes that are included in written texts. There are various kinds of paratexts, including:

- titles, dedications, summaries, epigraphs, and other linguistic paratext elements.

- paratexts also include prefaces, quotations, and notes on the involvement of outside parties in the development of works by those close to the author.

The element of dedication, which comes after the title, enables the author to acknowledge the people or organizations that contributed to the creation of the work. A short sentence indicating the text's meaning, an epigraph first appeared as a paratext communicative micro-element in the 16th century and was used before any written dialogue. It might also be a reference to the storyteller or a well-known author.

Preamble is an input-only paratext element. Its primary goal is to influence the reader and engage them in the written discourse before they ever see it.

- The table of contents enables the reader to view the discourse's many parts and sub-parts separately. Depending on the author's preferences, it may come after the introduction or at the end of the text.

Ledin categorizes paratexts according to their intrinsic components, including generality, scope, and function. An individualizing paratext refers to a particular text, whereas a

typifying paratext names stable texts, such as sectioned texts, in terms of generality (such as title). A paratext can be more or less global to other paratexts in terms of scope.

A paratext can be more or less global to other paratexts in terms of scope, which means it can perform a variety of hierarchically diverse tasks. Every paratext is meant to have a separate purpose, such explaining the topic of the text. Taxonomic discourse analysis covers both physical and semiotic content and is closely tied to format. A specific model of format analysis is offered as part of the multimedia analysis of paratext in Pierre Ledin's [3: 65] model of format analysis, which is particularly helpful. A benefit of the approach is that it stresses the contextual significance of texts, in addition to covering the linguistic and visual range of texts. A typifying paratext refers to a set group of texts (such as a section), but an individualizing paratext names a single text (eg, a title).

Each paratext may serve one of three purposes: It is used when the text's presence and position are indicated, as well as when the text's subject or title is indicated (link).

Contrarily, most readers begin reading written discourse at the beginning of the document [1: 24]. To some part, the background of the images is what draws readers to the discussion.

We can examine conversation along four dimensions if we add additional linguistic and multimodal elements to Ledin's conceptions of scope and functioning. A distinct semantic border, categorization rules, and visual symbols are represented by each paratext. The idea of an illustration as a visual addition to the text first came into being a very long time ago. Even in ancient Egypt, scribes embellished papyri



with extra images for the text's readability in addition to the hymns and incantations they contained. European books also had manuscripts that were typical of several illustration eras. Several groups of paintings showing hunting themes, military scenes, and daily life in Eastern nations including China, Japan, and Persia have been found in manuscripts from antiquity through the Middle Ages. It was written in black letters, as was customary during the European printing era in the 15th century, and beginning in the Middle Ages, drawings underwent a quick period of development. A key tool for enhancing the reader's comprehension of the material is illustration. The illustrations created by the masters in antiquity, which astounded everyone, embellished the writings of poets, narrators, authors, storytellers, and story writers.

The frontispiece is one of the primary forms of photographs. On the left page, the book's title page is arranged in a spread format. reflects the argument's major point or, in a sense, serves as the author's image. It appears at the start of a book or chapter. In this section of the work, the scene is often described.

2. Substation. It is utilized to highlight the key plot points by being spread across two pages of the text.

3. Polosnaya, it is used to highlight the key plot points by being placed on the spread (two pages) of the book.

4. Conclusion. It logically brings the book's many sections, chapters;

5. The first letter. The text's first letter is shown on the page in a vibrant pattern.

For younger children to analyze reality, images are more trustworthy and crisper than words. If the word is expressed with an image, the youngster may verify the truth in the illustration with his or her own eyes, making it more trustworthy.

Almost the first thing a youngster learns about visual arts is that children's books with vibrant illustrations can do more than just amuse and educate the younger generation; they can also carry a heavy aesthetic load. Children's literature essentially carries out a child's spiritual and creative upbringing, laying the groundwork for a future mature person. It should be highlighted that vivid images can serve a variety of functions, including entertainment, education of the younger generation, and aesthetic load. A child's spiritual and creative upbringing and the future basis of a mature person are both started through children's literature.

Folklore writings are a condensed representation of our complicated humanity; they reveal the truths of our innermost desires and anxieties; they give characters to our greatest and worst emotions; they liberate us from the uncertainties of the future; and they have the capacity to move us to action and inspire change. The charm, emotions, and narrative strength of the story are all enhanced by the individual interpretation of each artist. Because there are so many artists that translate folktales, there are frequently many different visual versions of the same story: the most bizarre, depressing, and literally the most colorful, exaggerated, or full of abstraction. For instance, the tragic fatalism contrasts sharply with the romantic pictorial portrayal of Disney fairy tales. It is hard to envision children's books without illustrations; they aid in

comprehension, foster imagination, and uphold aesthetic standards [2].

It is thought that the children's ages reflect the pictures. The exhibition of pictures for developmental phases is necessary [5]. This study suggests that illustrations for fairy tales should work as a teacher by illuminating the personalities and motivations of the characters.

The meaning that text in books conveys is clarified by images. It is also how the story is connected to the subject. With the use of this label, one can acquire ready knowledge and move forward in a way that expresses emotions. As a respite from reading the words, visuals might be sent to children while they are reading [Robinson, Wildersmith, 2016].

Nonetheless, studies suggest that pictures make it easier to comprehend a people's culture. The plot of folklore literature can allow for a lot; characters can assume the most bizarre positions, and even inanimate objects and animals can speak and behave as people who pull off various pranks. But, all of these hypothetical scenarios are merely required in order to highlight the true, distinctive characteristics of items. The education of national dignity and the traditions of reverence and respect for seniors are strengthened in the family, among the elders. Moreover, climate has an impact on cultural legacy and is expressed in written discourse illustration. Poor grade drawings were regarded as laconism in the use of expressive tools. Adults cannot understand these illustrations, yet toddlers can. Traditional patterns and vibrant frames are additional characteristics of illustrations for Central Asian folklore books. The main character is represented in the plot of extraordinary adventures, encounters with wild creatures, beautiful meadows, khan's palaces, and strange woodlands that astound with their luxury in his illustrations. Poor grade drawings were regarded as laconism in the use of expressive tools. Adults cannot understand these illustrations, yet toddlers can. Traditional patterns and vibrant frames are additional characteristics of illustrations for Central Asian folklore books.

As soon as the first children's book was released, the issue of how book illustrations affect children came into focus. When reading a children's book, parents should always pay attention to the text's specifics as well as any accompanying illustrations. The illustrations in the book can actually have a lasting impact on the child's memory and psychology because children frequently recall the visuals for the rest of their lives.

A modern illustrator uses all available means of artistic expression to produce a distinctive kind of visual art that affects adult and child viewers, molds the emotional perception of the world, fosters aesthetic sensitivity, and aids in the development of the artistic text.

The image must adhere to the aesthetic concept, meaning it must be a whole piece of art. The illustration should make sure that the analysis is feasible, which means that it should actually provide the reader a chance to consider the characters' emotions, experiences, conflicts, and points of view in relation to the scenario.

The illustration should be created for a scene or circumstance that stirs up strong feelings; when selecting an example, the reader should consider this.



The method of comparing images based on the episode aims to capture students' attention and aids in the growth of their creativity as well as the formation of the following skills:

- An analysis of the episode structure and character images;
- An understanding of the author's use of metaphorical and emotive language;
- A look at how the author conveys the characters' attitudes.

There is no established definition of the "artist-author" connection. Nonetheless, the cognitive, educational, supplemental, and content considerations should come first when establishing the role of the illustration.

There is no established definition of the "artist-author" connection. Nonetheless, the cognitive, educational, supplemental, and content considerations should come first when establishing the role of the illustration.

Helen Beatrix Potter, a well-known children's author, was the first British illustrator. Several well-known British illustrators can be mentioned as examples, including Angela Barrett, Peta Coyne, Kinuko Craft, Karria Hendrickson, Trina Hyman, Lauren Mills, Kiki Smith, Sarah Moon, Shelly Silver, Diane Stanley, Leonora Carrington, and Sulamit Wolfing.

Among the male illustrators of the day, Arthur Rackham and William Heath Robinson were well-known. The majority of women's portraits are painted in colored paints, therefore it is evident that they are in some ways more innocent and cheerful than men's. Also, the majority of the characters chosen for them are female, making it easy to discern between the images created by male and female illustrators in this regard based on the gender criterion. Younger readers may not be allowed to view masculine illustrators' storylines owing to veorism.

Even certain texts in folklore discourses have not been modified for younger readers, as many of them are truly intended for adults. In "Little Red Riding Hood" girls cover their hair with hats and caps, and in many cultures, girls who have reached a specific stage of puberty are expected to cover their curly hair with a hood to keep prying eyes away. This is due to the widespread belief that women's hair can effectively attract members of the opposite sex.

Red is a color associated with vitality and blood. In Charles Perot's original version of this fairy tale, which was written in the 17th century, decent women and girls were forbidden from donning red hats because of the negative connotations associated with the color red, because this color was considered a symbol of sin.

The historical significance of the fairy tale "Rapunzel" can be attributed to the fact that Rapunzel, the primary heroine, was actually an undersized girl who became pregnant by a stranger and had her hair chopped off as a punishment.

The Brothers Grimm did chronicle the fairy tale "White Snow," but it was based on actual occurrences. Margarita von Faldeck was a count's daughter who was born in 1533; her father passed away when she was just 4 years old. When she is 16 years old, she transforms into a stunning maid of honor and meets Philip II of Spain in the palace. Charles V, Philip's father, thought Maria I Tudor, who was somewhat older, would be a good wife for his son King Charles V was responsible for these events, which led to Margarita's untimely

death at the age of 24 in 1554 after eating an apple that had been dipped in arsenic. This story entered English folklore thanks to the English Tudors [6].

The story of Sleeping Beauty is etymologically derived from Italian stories in which a monarch comes across a sleeping girl in a forest, touches her, and the girl gives birth to twins in a clock.

In the fairy tale "Pocahontas," an English colony captures an 11-year-old girl and forces Pocahontas, the daughter of an Indian tribe chief, to wed John Rolfe at a very young age. At the age of 21, he was tortured to death [7].

The 18th century is when the fairy tale "The beauty and the beast" first appeared. Life was quite harsh during the French Revolution, and the average death age was 36.

From early 1997 to early 2001, the British BBC channel aired 365 episodes of "Teletubbies", a fascinating and illogical folkloric discourse. Children's education was not impacted by this series. The TV channel's management permitted the usage of narcotics by the staff during the teletubby operation. The major controversy surrounding this series in its early seasons was thought to be due to its promotion of homosexuality.

The Teletubby prototypes may have also been drawn from the youngsters who were being treated in Bulgaria's Lalaland Children's Psychiatric Hospital, according to a well-founded rumor. Children were maltreated, tortured, and even starved in the hospital. Leo Lyam was a patient with a disfigured face who appeared to smile constantly. Leo was held in isolation from other kids for five years, which rendered him fully comatose and caused his complexion to grow yellow from lack of sun exposure. After being abused and having his leg smashed because of his abnormality, he kept smiling. As a result, Lya-Lya, a Telepuzik prototype, was chosen.

Tom Hoste, a seven-year-old patient who was nearly mute and used noises to communicate, served as the second prototype. Because of his peculiar behavior and frequent head bumps into walls, he stood out and was frequently restrained by the staff in the yard. His limbs were frozen during the chilly days, and his skin turned blue and inky. As a result, Tinky-Winky Teletubby, a character, arose.

Subsequently, Don To, a six-year-old boy, was selected as the Dipsy Teletubby prototype. He wasn't trained to talk, so he was completely incapable of speaking. He was frail and had trouble moving because he was constantly ill and famished.

The final character is Polly, a three-year-old child with a disfigured face, who was given to this hospital by her parents with the intention that they would never see her again. He was unintentionally dropped into the flaming fireplace one day as he dozed off among the logs in front of it. The last Teletubby was picked because his skin went entirely crimson as a result [8].

The content analysis methodology is composed of a nominal (what is represented) and dynamic (effective activity inside the image) approach. The pictures discussed here are more descriptive than abstract, and the interactions between the things and people they portray convey both objective information and cultural values. For instance, the iconography of the Rapunzel fairy tale, which features towers, roses, beds,



prickly roses, and a kneeling prince, is simple to comprehend. It follows that those who view an illustration do so not just with their eyes but also with their mind and memories, which are influenced by the cultural setting in which they were raised.

Hence, according to scholars' theory, people who view illustrations do so within the context of an already-existing conceptual framework and create connections between perceptual and conceptual images. Perceptual shifts can take place as a result of the story's text and images, but any image must significantly support the text. The written text now supports the visual text. Hence it's crucial to either develop a single image that visually sums up the entire story in one time or numerous images that communicate a story as a complete.

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