

Emerging Form of Literature: Myth - not Mithya

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Abstract

Literature, the most creative and innovative stream of intellectuals has always been a glaring -glass for society. India, ever been a land of pluralism, has believed in diversification of views. This multiplication is publicized in literature in many forms - Poetry, Fiction, Drama, Short stories and many more. Fiction of today is highly realistic on one hand, and on other, is alluring towards roots. In search of roots, a new fragrance of mythological trend started to spread in the garden of literature. It created a great enthusiasm in writers as well as in readers. A new army of mythological pop stars - Amish Tripathi, Ashwin Sanghi, Ashok K. Banker, Chitra Banerjee and Devdutt Pattanaik is marching with their vivid imagination and gripping words. Myth is today not mithya, it's a logical study of facts in the light of archetypal criticism. It is a thriving cultural resource that people are actively re-engaging and re-involving with, in new ways it gives meaning to them and satisfy their rational mind. It is a culture conduct or an idea that represents the common understanding of masses. Myth is basically a conception or an ideology which emerges after centuries from the fight, flight, fright and substantial reactions of a community to establish a structure of perfection. So, this paper is an attempt to see myth from the third eye, from the perspective of Devdutt Pattanaik.

Keywords

Mythology, Archetypal criticism, Mithya, Folktales, Demythologization.

Introduction

Man, the most intellectual entity has always been curious of his existence. To pacify his thirst, on one hand he catches the hand of science and developed Darwin theory about origin of species but on the other when he encounters something extraordinary or supernatural phenomenon and quickly turns to God. Man with his rational mind always has a kasturi desire of searching his roots and digging out his base but at this juncture he finds himself sitting in front of myths. Myths - a cultural conduct, a mirror of old culture, a nick name for cultural studies and traditions likewise there are various interpretations of myths. Every genuine head of mythological studies interpreted it with a unique perspective. Every concept or phenomenon, ever flowing with ages gets different shape time to time. Myths first of all were studied in the form of traditional oral tales. It processed from one mouth to another and changed a little bit. Words changed but essence remained the same. Second evolution comes in the form of folk tales and rituals. According to region, different sub cultures took the same stories and revolutionized it into their own terms. Their local rituals were the real manifestations of it. But as time passed on, these rituals developed into stiffed superstitions and enchaind in prejudices. On the third stage, when awareness spread these age-old stories were demystified and studied under a new trend of archetypal criticism. This new trend of literature, Mythological reading allured the masses. Now myths are studied with various pros and cons.

Aim of study

Myth, since a long time, has been in veil of mist and is misinterpreted. In this mad running world of modernization, man is urgently feeling a need to connect himself to his roots and find some meaning in life. It is an emerging quest and a motif in literature. So, a clear meaning of myth can guide this search in right direction. The aim of present paper entitled as "Emerging Form of Literature: Myth- not mithya", is to dig out the real meaning of myth and differentiate it from mithya. It is an attempt to see it through the lens of various mythological writers and valid researches. Myth is basically not a concept of a day; it is the reaction of the

community after centuries of struggle. It stands as a defensive wall and gives a mental solace to the society. It is an effort here to research various pros and cons of myth and see it in a new light of rationality.

Review of Literature

Mythological reading has been a great attraction for masses. Researchers have been curious to dig out the real meaning of ancient myths and even tried hard to solve this ever-reverberating enigma. Shalini R. Sinha (2013) researches out the contemporary trend in mythological reading and emergence of legendary stories in "Resurgence of Myths and Legends in Contemporary Literature of Indian English in an Emergent India". Vibha Sharma (2013) in The Sunday Tribune gives a link of connectivity of man to his long-forgotten roots in "Despite growth in technology, we are no different from humans a thousand years ago" and reminds the great culture of India. Swati Sharma (2015) in "Reviving Ancient Symbols" brings forth a new interpretation of ancient mythological symbols and develops a new perspective. Vikram Singh, (2017) a scholar on myths, connects this trend with popular fiction and gives a new face to this trend in "Modern Retelling of Indian Myths: A Study of Rehasing Mythology through Popular Fiction." Nirmla Rani (2019) in paper entitled "Myth and Reality in Amish Tripathi's Novels" exposes the relation between myths and reality in the depiction of lord Shiva by Amish Tripathi. Sneha Tripathi and Tejal Jani (2020) give a complete change of meaning to myths and links it with the language heard and language seen concept of Pattanaik in "Devdutt Pattanaik's Exploration on Myth". Mythological reading is not an untouched field now. Various writers equipped with their solid research are madly researching and trying to find out the real meaning behind myth and eliminating the mithya notion.

Main Text

Ancient India is prime interest of people and Hindu mythology is chief attraction of literary genius. Present writers of mythology are called charioteers of the Gods. They are armed with solid research, vivid imagination and gripping writing style. Marching with powerful tales as their weapons they are the pioneer of mythological writing. In India it became the lime light of the day that army of writers are marching towards mythological research. They are absolutely called flag holders of myths. New writers studied myth in new perspective. Before emergence of this trend myth is considered as mithya. Mythology is demystified in myths but dumbed down in mithya. A concept that has no real basis, no roots, an idea near to lie, a quick or blink thought of mind is mithya. As Ramsetu was considered a mithya, a false or an imaginary concept. But today when literature has taken form of digital humanities, it became obvious that myths are studied rationally and in an elaborated sense. Today mythological writings are not based on mithya concept. They presented myth in different colors. Greek philosophers considered it mythos. Mythos were the concepts that gave drive, denotation and authentication to existence. First, it is necessary to have meaning of myth and its aura. Defining the notion of myth M. H. Abrams writes:

...a system of hereditary stories of ancient origin which were once believed to be true by a particular cultural group, and which served to explain why the world is as it is and things happen as they do to provide the rationale for social customs and observances, and to establish the solutions for the rules by which people conduct their lives (Abrams, 2009, p. 170).

From this definition of Abrams, it is very vibrant that the idea of myth is having a close relation with the concept of mythology, religion, culture and rituals. Rajgopalachari articulates, "Mythology is an integral part of religion. It is as necessary for religion and national culture as the skin and the skeleton that preserve a fruit with its juice and its taste. Form is no less than substance..." (Rajgopalachari, 2013, Preface). Myth is basically a notion which is significantly different from concepts of folktale, folklore, legends and rituals. Though it cannot be studied separately from these notions but it has its different impression. Myth is considered the literary expression of rituals which represent the functional form of truth or values that are endorsed by general belief. There is specific but minute differences exist among these concepts and it can be studied under myth criticism. So, mythology is always well knit with legend, myth and folktale to make a beautiful design of culture and so it is not easy to differentiate them and establish word to word. But it has become quite easy to differentiate myth from ancient mithya concepts. Mythological stories are frequently accessible for the

masses and presented for them; it necessitates a deep mind and fantasy for the visual interpretation and requires a visual medium. Hence the best apt way for artists is to paint or sculpt these stories. As in Indian art and history, the early evidences of Indian mythological tales appeared in various art forms. Archaeologists and anthropologists claimed that these early manifestations are basically the starting point of man belief in some supernatural power and forming of common beliefs. Later these beliefs form the basis of religion and culture. These beliefs are embellished with stories which later on became the basis for mythological tales and enriched it. In fact, these Mythical stories have a firm root in historical accounts and differentiated well from mithya concepts on the basis of these testimonies.

In the field of myth and archetypal criticism, Northrop Frye holds a distinguished position and articulated the notion of myth well. In his definition of myth Frye is quite close to Abrams but it's required to mention here that he permits authors of mythology a certain level of independence while exercising mythical pattern in their literary creations related to mythological fields. However, myths face a challenge on the ground of its origin, utility and authenticity. There was a time when scientists disregarded this form of rituals and related myths as waste and illogical and required to throw into debris. Carl Jung, a Swiss psychoanalyst preoccupied with psychological aspect of myth and proclaimed that myths are basically expression of the "...collective unconscious, and, as the bases of its symbolical products, I postulate the existence of primordial images, the archetypes" (Jung, 1992, p. 384). Man had certain form of images in his mind which are called archetypes of the collective unconsciousness. But Hatab describes it rationally and diminishes mithya and support the real and genuine meaning of myth as quoted by Dr. Ashish:

The shift from mythical disclosure to rational and scientific thinking cannot be seen as a correction of myth because it was a shift to a new intention... To see a myth as an error is an anachronistic misunderstanding of the function of myth. Myth presents more than natural things alone; it presents the arrival/withdrawal of sacred meaning within the world (Gupta, 2020, p.15).

All mithya concepts or notions which flows, with passage of time lose its strength and diminishes but myths remained so, though they changed their clothes and presented a different view of the same picture. Pattanaik clears it, "Mithya was truth seen through a frame of reference... Mithya gave a limited, distorted view of reality; sat a limitless, correct view of things. Mithya was delusion, open to correction... Myth is essentially a cultural construct, a common understanding..." (Pattanaik, 2006, Introduction). Shashi Tharoor quoted in *The Great Indian Novel* that Mahabharata, the great Indian epic has lost its significance now. A work of art is sacred if it has some relevance in present otherwise its dead. So, myth can be defined as a popular belief that is supplemented by tradition and history. They are abstract constructs that are evolved with time and sustained to loom large in society as an indispensable part of its culture, history and traditions. Myths carry a deeper meaning and become the bearer of cultural and religious conscience that have entered the collective experience of a specific community and continue to persist as an indispensable part of their everyday reality rituals. Rudolf Bultmann, a German theologian and New Testament scholar's spectacle is somewhat different here:

The real purpose of myth is not to present an objective picture of the world as it is, but to express man's understanding of himself in the world in which he lives. Myth should be interpreted not cosmologically, but anthropologically, or better still existentially (Bultmann, 1984, p.10).

Myths, as history of mythology show, do not remain static, however their meaning and significance altered in accordance with changes in surroundings and environment. They circulated and survived in changed forms in narratives. It is the beauty and nature of myths that they flowed with current and every time enjoyed new look.

India, a land of pluralism has given a wide scope to myths to flourish and advance

multiple variety of interpretations and possibilities. Universality of myth has attracted and allured more and more thinkers to engage and explore new dimensions. The soul of every myth is a story that is embedded in it. Cotterel points out that myths directly communicate to the unconscious and travel across different culture. There are some common myths that get its relevance in various cultures as myth of mother link with fertility, God and man born son Hercules and Karna. There are so many more examples that exemplify the observation that myths trekked across time and generations and survived its spirit only on the principal of universality and continuity. Myths of heroism and chivalry survived through certain genres, faced generic division and empowered their continuity and mobility.

It is evident that literature and myth carry forward a timeless connectivity. The interchangeability of myth and literature is highlighted by Laurence Coupe in his book *Myth*. He has enlisted various myths according to their areas as Egyptian fertility myth of Isis and king Osiris, in ancient Israel deliverance myth in Yahweh, Marduk myth of creation in Babylon, in ancient Greece myth of hero in Perseus and the most captivated is the literary myth in a popular Shakespearean play *The Tempest*. In this play, variety of mythical and supernatural figures showed their presence in form of Caliban, Ariel, Sycorax, Iris, Ceres and Juno. Myths are always used in literature in abundance to show an insight of correlative significance of life and livings. In this process of evolution of myth, though some myths are modified and mixed well with fantasy to provide a new interpretation and significance to the routed stories as Frye tongued, "In literature, what entertains is prior to what instructs, or, as we may say, the reality-principle is subordinate to the pleasure principle" (Frye, 2020, p. 75). Through the medium of myths writers try to elaborate the facts which are otherwise not easy to comprehend. Mythical stories cover a wide variety of subjects and areas like Gods, devils, immortal creatures and abstract virtues but they implicitly present the joy, sorrow, conflicts, resolution, revelation and all reflections of human existence. In Sir James Frazer *The Golden Bough* a variety of myths are interpreted in terms of rituals, as in reference of human sacrifice, slaying of man-god in primitive societies is explicated well.

In India, a blend of divergent cultures and religions has unceasingly predisposed Indian mythology. Mythology unveils an astounding plethora of mythical stories which are the most intriguing and world's most interesting. It carries prosperity and complexity of early Indus Valley civilization of Harappa and Mohenjo-Daro that were recognized around 2400 BC. The people have constant confidence in the multitude of gods and goddesses of the Hindu pantheon. In the heart of the matter, India divulges a kaleidoscope of various cultures and religions with considerable influence on the early writings of Hindu religion. Indian mythological writing seems to start from four essential and basic scriptures of Hindus: four Vedas - Rigveda, Samaveda, Yajurveda, Atharvaveda. The complete conception of universe revolves around great grand trinity- Brahma the creator, Vishnu the preserver, Mahesh the destroyer. Puranas, the second-hand explanation of Vedas came into presence later on. The classical period of literature gave birth to the most astonishing epics in the history of the world, the Ramayana and the Mahabharata. These great works were compiled into their present form during this time, but their origins go back at least to Vedic times. The Puranas were also composed at that time. However, the age of Buddhism and Jainism placed Hinduism at deteriorated place and led to the composition of the Upanishads. India, a productive land of rich, speckled and infinite mythologies has paved way for myths and it became the part and parcel of Indian way of life. Religious mythologies of great kings, warriors, saints, donors, Rishis etc. are spread everywhere and these alluring and mysterious stories form the backbone of Indian mythology.

Naturally, storytelling is considered the best intermediate for transmission of even powerful messages. These mythical stories actually fluctuate from maxim enriched tales of Panchtantra and Jatak-tales to subtle life archetype defining stories of the Bhagavad-Gita, the Ramayana, and the Mahabharata. Hindu mythology is more than mythology and aptly called a living religion. It is essentially a religion of variety and worship from blood thirsty Kali to nurturing Durga, therefore, each variety is right in its own distinction. Most of the Vedic

deities undertook a complete transformation in the Puranas and epics of later age. Indra, the most significant deity of the Vedic pantheon, is reprobated into a second-rate otherworldly profligate, in the epics. Thus, this emerged transition of Hindu mythology from Vedic Gods to Puranic Gods who took more substantial form and have been adored in various forms ever since. Devdutt Pattanaik discloses a tendency in human nature about attributing of 'historicity to mythical narrative' and comments well on the blurred relation between a legend and a myth:

The Epics Ramayana and Mahabharata are traditionally considered history, or itihasa. This is established by making the writers of the epics participate in the plot, turning them into reporters, not authors of the story. Valmiki, who wrote the Ramayana, gives refuge to Sita in the forest. Vyasa, who wrote the Mahabharata, is the biological grandfather of the protagonists, the Pandavas... Thus, history becomes sacred when placed within a divine plot (Pattanaik, 2003, p. 16).

Fluidity of myths and legends is highlighted in the observations of Northrop Frye and how they turn into 'plots of more or less realistic fiction' and became an inseparable part of the 'literary form' with the occurrence of the productive principles of story-telling' dormant in them. He declares: "Myths of gods merge into legends of heroes; legends of heroes merge into plots of tragedies and comedies; plots of tragedies and comedies merge into plots of more or less realistic fiction" (Frye, 2020, p. 51). From Vedic time to present day world, Myths are the undying source of motivation for the creative writers. Legends turn into mythical tales. Hanuman, a character from the Ramayana, is a potent example of cultural phenomenon where he took different form in various sub cultures and local folktales and transcended from being legendary to mythical. Draupadi, the root character of the Mahabharata is also worshipped as one of the many manifestations of the Shakti by some communities, (the Vannivars Konars and the Velala Mutaliyars) in South India. In those communities, Draupadi is not seen as a submissive, helpless woman as portrayed in the epic; rather bold and fighter. C. B. Divakaruni portrayal of Draupadi is also appealing and distinguished in *Palace of Illusion*. Alleyn Diesel admits that she is taken as another powerful goddess of the 'Shiva Tradition' and revered as 'village goddesses of South India'. Thus, Draupadi attains a divine status in the religious discourses and no longer remains a legend from the pages of an epic.

It is quite obvious that novels in its early stages of development depended upon myths; the myths provided the fables and characters to early writers. Even with advancement of time and techniques, novel gets its shape through myths, legends, historical events and happening. In Indian context, Natyashastra, the first ever Indian treatise on dramaturgy by Bharata Muni pronounced the proximity to myths. From Rabindranath Tagore, Sri Aurobindo to Amish Tripathi, Ashwin Sanghi, Ashok K. Banker, Chitra Banerjee, Devdutt Pattanaik and many more writers of mythological field are advancing and holding the flag of myths which are related to Indian culture. Devdutt Pattanaik, a lead head of mythology gives a fresh minted version of Indian mythology in his grand book *Myth = Mithya: Decoding Hindu Mythology*. His *Indian Mythology: Tales Symbols and Rituals* is a key book of ancient myths and symbols originated in Hinduism. Why is Hindu mythology in present scenario going so popular? In response to this curious question Sharmila Chand quoted comments of A.S. Chitrak who in a lyrical style recreated myth and depicted narrative in pictorial way, "I feel that Indian mythology is not confined to the old rituals that are blindly being followed or the flights of imagination of the grandmother tales...It is deep philosophical thinking and interpretation of a universal science" (Chand, 2000). Dan Brown - an American author, William Dalrymple- a Scottish historian, Alain Daniélou-a French historian, Wolf-Dieter Storl- a professional anthropologist, Francisco Bujan- a top pro-life coach, Sanjeev Sanyal- an economist, R.K. Murthy, Dr. B.R. Kishore and Mahasweta Devi are the iron pillars of mythological temple and from east to west this new trend of mythological reading is alluring the masses. Ashok K. Banker reinvents Sita, Ram and Ravan in his books of *Ramayana series*, while more recently Devdutt Pattanaik settled himself as first pop mythologist of India. He explains well in an interview, "Indian mythology aims to evoke thoughts that are already present in our mind. The stories, symbols and rituals are like the rays of

the sun that seeks to help the lotus of mind bloom” (Sharma, 2013). His *Jaya*, a retelling of Mahabharata is a perfect display of wisdom and enchantment. Author of heart gripping books - *The Rozabal Line*, *Chanakya's Chant* and *The Krishna Key* –Ashwin Sanghi feels a change of taste and aroused interest of common man in Indian mythology. He favors the retelling tradition by saying, “The retelling has led to the blurring of lines between mythology and history” (Chaudhuri, 2012, p. 12-13). Manreet Sodhi Someshwar's *The Taj Conspiracy* though a bit cynical yet has been a big hit at this time, in the field of mythological reading. Shashi Deshpande also applied hand along with Namita Gokhale in this trend and wrote short stories related to Mahabharata characters Draupadi, Kunti and Duryodhana's perspective. N. Gokhale re-opens a debate on Sita in her *In Search of Sita: Revisiting Mythology* and explores her life in a new angle along with a fresh interpretation of this enigmatic figure.

It is quite required today to completely make over the classical concept in modern way and it is definitely creating a great wonder in literary scenario. As Banker claims, “retelling mythology requires a life style change and a completely new way of thinking and living” (Chaini, 2014). On the other hand, Devdutt Pattanaik claims in an interview that despite so much growth in technology generation of present era are not different from human of thousand years ago. Amish Tripathi is also mad on myths. From the time of Kalidas to the present era of Devdutt and Amish, myths has been the luminous field for writing. People are spell bound by the representation of Shiva by Amish as Tibetan protagonist who immigrates to distant land and by his own decisions and karma attains divinity. Thus, all these writers interpreted and reinterpreted myths and tried hard to bring out the varied facets of myths which are far away from mithya. Myths have a serious underlying purpose in multiple layers juxtaposed with cultural traditions. There is actually a thin thread between myth and mithya which is evident in words of Pattanaik: “Everybody lives in myth. This idea disturbs most people. For, conventionally, myth means falsehood... Myth is truth that is subjective, intuitive, cultural and grounded in faith” (as cited in Tripathi & Tejal, 2020, p. 263) but demarcation is clear.

It is the need of the hour that myths also to transform its form according to time and interest of people. Vikram Singh (2017), a scholar of literature, in his paper on myth mentioned it, “The mythical stories across cultures are viewed as an embodiment of beliefs, values and philosophies that serves the nation interest of the people” (p. 171). The circle of tradition keeps on rotating but never make the process suffocating. Somerset Maugham in *The Summing Up* (1938) also says that tradition is a guide and not a jailer, is worth mentioning here. This displacement of tradition to modernity is a natural phenomenon which gives a wide space to multiple layered myth. Pattanaik words here crystal clear the scenario: “Myth conditions thoughts and feelings. Mythology influences behavior and communication. Myth and mythology thus have a profound influence on culture. Likewise, culture has a profound influence on myth and mythology” (Pattanaik, 2006, Introduction, p. xv). In real sense, myth and mythology are one of the precursors of tradition. As Pattanaik observes “From myth come beliefs, from mythology customs” (Pattanaik, 2006) and establishes notion of myth as the breath and fine spirit of literature and culture.

Conclusion

In a brief conclusion, it can be specified that myth is really a way of life and it best presents Indian tradition in tales of past which has some historical or regional truth; this is the very thing which makes it differentiated from mithya. These are not false stories, or ill conception that flourish in air only, nothing sort of illusion is neither included in it, nor it goes away from the local psyche. Amish believes, “Myths are nothing but jumbled memories of a true past. A past buried under mounds of earth and ignorance” (as cited in Gupta, 2017). It has a firm base which is so elastic that gets modified in various forms according to changeability of time but Magnificence of the character of lord Ram remains the same in time travels. Though Ram of Ashok K. Banker, Amish Tripathi and Devdutt Pattanaik are strangers to each other; like twins from different environment, they present an amazingly diverse point of view. But still the roots remain the same, such is the beauty of myth and mythological writings. So, it's here justified to conclude in tongue of Devdutt Pattanaik, “Myth is all about communication; it is a special kind

of communication that establishes a relationship between the macrocosm (universe), mesocosm (society), and microcosm (human)" (Pattanaik, 2003, p.14). In addition, myths may be seen as the vocabulary of a religion and paradigm, the mutual belief that binds people. Every myth gives a better understanding of human life and carries behind a truth: 'a truth about life and death, about nature and culture, about perfection and possibility, about hierarchies and horizons.' Pattanaik also accepts this eternal truth about myth in almost every book by saying,

"Within infinite myths lies the eternal truth,
who sees it all?

Varuna has but a thousand eyes,
Indra has a hundred,
You and I, only two" (Pattanaik, 1997, p. ix).

So, the field of mythological reading is quite alluring and it promises a deep quest and long journey of man in future.

Acknowledgement Everything in nature is compiled in circle, whatever goes back unquestionably comes forward. In search for self, man is tempted towards his roots in mythology. Myths are the literary representation of man's quest and this paper is an effort to dust off and demystify myths. Being the keen bystander of local myths, I felt it the need of the hour to distinguish myth from mithya. Real beauty of myths is discovered for readers in this paper by reviewing it rationally in locale perspective. I got the initial draft of this concept from Mr. Sidharth, my better half and it was such an astounding thing that I kept on searching and researching. I just want to persuade readers to view myths from a curious eye and distinguish it from mythia. For further correspondence mail at bhartiseemavats@gmail.com.

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Single Machine Scheduling Problem With Variation In Due Dates and Processing Time

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Abstract

Single machine programming problem with variation in due dates under fuzzy Environment, is closely to the situation faced by manufacturer, to perform work 'just in time'. In the present paper, we have to plan a sequence for job-work such as the production completes the job on time or in due dates with optimize cost. Senthikumar et al. introduce a survey of literature for single machine scheduling problems in three category- Offline scheduling, Online scheduling, Miscellaneous Scheduling. Baker et al. develop sequences with earliness and tardiness penalties under just-in-time production Recently many researchers have proposed different models for distinct situations Biskup et al., Weerdt et al., CJ Liao.et al. , Tzung , Jinwei Gu,Manzhan and others.

Keywords

Job Scheduling, Single Machine, Multi-Objective LPP, Earliness, Tardiness.

Introduction

There are many literature and research papers that deals with the single machine scheduling problems. The proposed paper proposes a single machine multi-objective scheduling problem. This problem has two objectives the first one is, to schedule the system which deliver the output with minimum difference between due dates and actual processing time, and second one is to optimize the profit or loss for the machine.

Scheduling models concerns with the determination of an optimize time. A set of services perform on a single machine is a tedious job to operate. Every job has its due dates and lateness penalty/loss variation. We have to manage jobs for minimizing loss and consider due date delivery. In the present chapter we have considered multi-objective scheduling problem with fuzzy parameters. We know that practically completion time for a job is not fixed or certain. There is always a variation or uncertainty in time management. In the present problem we have considered due date time and processing time in the form of triangular fuzzy number. Although, many ranking methods have been proposed and described by researchers, however there is yet no technique that can always give satisfactory result for every situation. For overcome these problems in the present work we have used ranking method proposed by Ching at al. and to comparison fuzzy numbers we have used algorithm developed by Tzung-Pei Hong, which was used by many researchers and justify this ranking technique by giving better results.

Aim of study

The objective of this study is to plan a sequence of jobs work such as the production systematically complete the jobs on time or on due dates with optimize cost.

Review of Literature

There are many literature and research papers that deals with the single machine scheduling problems. The proposed paper proposes a single machine multi-objective scheduling problem. This problem has two objectives the first one is, to schedule the system which deliver the output with minimum difference between due dates and actual processing time, and second one is to optimize the profit or loss for the machine. Senthikumar et al. introduce a survey of literature for single machine scheduling problems in three category- Offline scheduling, Online scheduling, Miscellaneous Scheduling. Baker et al. develop sequences with earliness and tardiness penalties under just-in-time production Recently many researchers have proposed different models for distinct situations Biskup et al., Weerdt et al., Xin Li, , SE Jayanthi et al, CJ Liao.et al. , Tzung , Jinwei Gu,Manzhan and others.

Main Text

Problem Formulation

In this problem we have proposed a model to solve single machine multi-objective scheduling problem under uncertainty, which has been described by triangular fuzzy numbers.

Suppose there are n -jobs available at time 0 and these jobs are to be processed on a single machine. Denote by a constant the time needed to process job if no breakdown occurs during its processing. Due to the breakdowns, the actual time needed to process job may be more than , and the time may vary in different processing orders. It is assumed that the machine could process one and only one job at a time, and once a job begins to be processed on the machine, it could not be pre-empted by other jobs (except by machine breakdowns) until its completion. There are a lot of real life problems that are similar to single machine scheduling problem. A real time example is the laundry services where orders from customers arrive early in the morning, and due dates are determined at the pick-up times, and pick-ups are made by customer itself. Whenever the due date or pick-up time has missed, a special delivery services can be required by the laundry operator, the cost of which is totally bear by laundry management i.e the tardiness of job.

In the present problem we have taken due dates in fuzzy time duration for the flexibility. Since there are many factors that job not completed in time. Therefore for a limited flexibility customer and service provider shall be relaxed. The processing time for the job on machine also taken in flexible manner in the form of fuzzy number. So the problem is to find the optimize order or schedule in which n -job have to be processed with minimum mode of difference of earliness and tardiness time or cost.

So the present single machine problem with common due date can be formulated as follows:-

1. We have n -jobs that have to be processed on single machine.
2. The processing time of job i shall be t_i , for $i=1,2,3,\dots,n$. and the t_i , is given in the form of triangular fuzzy number.

$$t_i = (t_i^a, t_i^b, t_i^c)$$

3. We assumed that all jobs are available in time and ready to process at time zero.
4. One job will be process on the machine, at a time.
5. Each job has its due time D_i and C_i be the completion time of the job i .

$$D_i = (D_i^a, D_i^b, D_i^c) \text{ and } C_i = (C_i^a, C_i^b, C_i^c)$$

6. If a job i is completed before the due time then its earliness E_i can be formulize as $E_i = D_i - C_i$.
7. If a job i is completed after due time then its tardiness time T_i is given by $E_i = C_i - D_i$.
8. There is a reward and penalty for each job depends on its completion time.
9. Reward for job i is r with unit time and penalty for job i is p with unit time.

10. All the arithmetic calculation with fuzzy number are done on standard operations (Max-Min) defined by TP Hong such as addition, subtraction or difference and comparison on triangular fuzzy numbers.

11. We have supposed that due time is less than the total processing time of all n-jobs.

The problem can be formulated mathematically as:

Example:

Let we have three jobs $\{J_1, J_2, J_3\}$ with fuzzy processing time on a single machine $\{t_1, t_2, t_3\}$ and due dates for these jobs be $\{D_1, D_2, D_3\}$ and the common due date will be $D = D_1 + D_2 + D_3$.

J_i	J_1	J_2	J_3
t_i	(2, 4, 5)	(4, 5, 7)	(7,7,9)
D_i	(7, 9, 11)	(9, 11, 14)	(8, 9,10)

Reward for job i is $r=1$ with unit time and penalty for job i is $p=2$ with unit time

For the three jobs we have all possible schedule $3!$ Or 6.

Let $S = \{S_1, S_2, S_3, S_4, S_5, S_6\}$

where $S_1 = \{J_1, J_2, J_3\}$, $S_2 = \{J_1, J_3, J_2\}$, $S_3 = \{J_2, J_1, J_3\}$, $S_4 = \{J_2, J_3, J_1\}$, $S_5 = \{J_3, J_1, J_2\}$, $S_6 = \{J_3, J_2, J_1\}$

For Schedule $S_1 = \{J_1, J_2, J_3\}$			
J_i	J_1	J_2	J_3
t_i	(2, 4, 5)	(4, 5, 7)	(7,7,9)
D_i	(7, 9, 11)	(9, 11, 14)	(8, 9,10)
C_i	(2, 4, 5)	(6, 9, 12)	(13, 16, 21)
$D_i - C_i$	(2, 5, 9)	(-3, 2 8)	-(3, 7, 13)
De-fuzzified value ($D_i - C_i$)	8.163	6.7155	-11.775
F_1	-8.163		

For Schedule $S_2 = \{J_1, J_3, J_2\}$			
J_i	J_1	J_3	J_2

t_i	(2, 4, 5)	(7,7,9)	(4, 5, 7)
D_i	(7, 9, 11)	(8, 9, 10)	(9, 11, 14)
C_i	(2, 4, 5)	(9, 11, 14)	(13, 16, 21)
$D_i - C_i$	(2, 5, 9)	(-1, 2, 6)	(-1, 5, 12)
De-fuzzified value ($D_i - C_i$)	8.163	-5.163	-10.491
F_1	-23.145		

For Schedule $S_3 = \{ J_2, J_1, J_3 \}$			
J_i	J_2	J_1	J_3
t_i	(4, 5, 7)	(2, 4, 5)	(7,7,9)
D_i	(9, 11, 14)	(7, 9, 11)	(8, 9, 10)
C_i	(4, 5, 7)	(6, 9, 12)	(13, 16, 21)
$D_i - C_i$	(2, 6, 10)	(-5, 0, 5)	(3, 7, 13)
De-fuzzified value ($D_i - C_i$)	9.105	3.882	-11.775
F_1	-10.563		

For Schedule $S_4 = \{ J_2, J_3, J_1 \}$			
J_i	J_2	J_3	J_1
t_i	(4, 5, 7)	(7,7,9)	(2, 4, 5)
D_i	(9, 11, 14)	(8, 9, 10)	(7, 9, 11)
C_i	(4, 5, 7)	(11, 12, 16)	(13, 16, 21)
$D_i - C_i$	(2, 6, 10)	(1, 3, 8)	(2, 7, 14)
De-fuzzified value ($D_i - C_i$)	9.105	-7.065	-12.551
F_1	-30.127		

For Schedule $S_5 = \{J_3, J_1, J_2\}$			
J_i	J_3	J_1	J_2
t_i	(7,7,9)	(2, 4, 5)	(4, 5, 7)
D_i	(8, 9, 10)	(7, 9, 11)	(9, 11, 14)
C_i	(7, 7, 9)	(9, 11, 14)	(13, 16, 21)
$D_i - C_i$	(-1, 2, 3)	(-2, 2, 7)	(-1, 5, 12)
De-fuzzified value ($D_i - C_i$)	2.684	-5.939	-10.492
F_1	-30.178		

For Schedule $S_6 = \{J_3, J_2, J_1\}$			
J_i	J_3	J_2	J_1
t_i	(7,7,9)	(4, 5, 7)	(2, 4, 5)
D_i	(8, 9, 10)	(9, 11, 14)	(7, 9, 11)
C_i	(7, 7, 9)	(11, 12, 16)	(13, 16, 21)
$D_i - C_i$	(-1, 2, 3)	(-3, 1, 7)	(2, 7, 14)
De-fuzzified value ($D_i - C_i$)	2.684	-5.775	-12.551
F_1	-33.968		

So the value of F for the schedule $\{S_1, S_2, S_3, S_4, S_5, S_6\}$ is $\{-8.163, -23.145, -10.563, -30.127, -30.178, -33.968\}$. The minimum value of F is on -8.163 for the schedule $S_1 = \{J_1, J_2, J_3\}$. Hence the optimum schedule and completion time is as follows:

For Schedule $S_1 = \{J_1, J_2, J_3\}$			
J_i	J_1	J_2	J_3
t_i	(2, 4, 5)	(4, 5, 7)	(7,7,9)

D_i	(7, 9, 11)	(9, 11, 14)	(8, 9, 10)
C_i	(2, 4, 5)	(6, 9, 12)	(13, 16, 21)
$D_i - C_i$	(2, 5, 9)	(-3, 2, 8)	(-3, 7, 13)
Profit/Loss	8.163	6.7155	-11.775
F_1	-8.163		

Hence the Completion time for the schedule S_1 is (13, 16, 21) and due time loss is 8.163 unit. Since job has been completed after due date therefore service provider faces a loss.

From the example we have observed that –

1. The optimal schedule appears depends on t_i, D_i, C_i, r_i & p_i .
2. There are $n!$ schedule option for n-jobs. So, if we consider 10 job schedule problem then we have all over $10! = 3628800$ possible schedules, which are not feasible to calculate manually.

Proposed Algorithm:

Problem Statement: We have n-jobs to be processed on a single machine. The processing time of these jobs J_i ($i = 1, 2, 3, \dots, n$) with processing time t_i ($i = 1, 2, 3, \dots, n$). It is pre-assumed that all the jobs are ready to processed at initial time zero with due dates D_i (deadline), after this deadline a reward r_i or penalty p_i be applied on unit time. The problem is to search an optimal schedule as to minimize sum of earliness and tardiness costs (profit and loss).

Step 1: Sort the n-jobs in non-decreasing order of processing time t_i such that $t_1 \leq t_2 \leq t_3 \leq t_4 \leq t_5 \dots \leq t_n$ corresponding jobs $J_1, J_2, J_3, \dots, J_n$.

Then evaluate

$$. T = t_1 + t_2 + t_3 + t_4 + t_5 \dots + t_n \text{ \& } D = D_1 + D_2 + D_3 + \dots + D_n$$

$$\text{Initiate } T_0 = t_1 \text{ \& } E_0 = D_1$$

Introduce non empty set of schedule job $S^{E_0} = f, S^{T_0} = f$

. Step 2: Consider job J_1 with minimum processing time t_1 .

$$. \text{ Set } T_1 = T_0 = t_1 \text{ \& } E_1 = E_0 = D_1$$

. Check weather $T_1 < E_1$ if so then set $S^{E_1} = S^{E_0} \dot{-} \{ J_1 \}$ and $S^{T_1} = S^{T_0}$

. Check weather $T_1 > E_1$ if so then set $S^{T_1} = S^{T_0} \dot{-} \{ J_1 \}$ and $S^{E_1} = S^{E_0}$

Step 3: Consider job J_i with minimum processing time t_i . such that neither $J_i \dot{-} S^{T_{i-1}}$ nor $J_i \dot{-} S^{E_{i-1}}$ and $J_{i-1} \dot{-} S^{T_{i-1}}$ or $J_{i-1} \dot{-} S^{E_{i-1}}$.

. Set $T_i = T_1 + T_2 + \dots + T_{i-1}$ & $E_i = E_1 + E_2 + \dots + E_{i-1}$

. Check whether $T_i < E_i$ if so then set $S^{E_i} = S^{E_{i-1}} \dot{\cup} \{J_i\}$ and $S^{T_i} = S^{T_{i-1}}$

. Check whether $T_i > E_i$ if so then set $S^{T_i} = S^{T_{i-1}} \dot{\cup} \{J_i\}$ and $S^{E_i} = S^{E_{i-1}}$

The above process will continue till all the jobs set $\{J_1, J_2, J_3, \dots, J_n\} \setminus S^{E_n} \dot{\cup} S^{T_n}$.

So, we have seen that the above proposed algorithm involves only n-iteration as compared to $n!$ possible schedule calculations.

Methodology Fuzzy Scheduling.

Tools Used MATLAB

Analysis

Based on Algorithm proposed

Result and Discussion

Reduced number of iteration.

Conclusion

In the present chapter we have introduced a simple algorithm to minimize a single machine fuzzy scheduling of n-jobs with earliness, tardiness and due date problem. The algorithm involves n-iterations only so it is economically less time-consuming algorithm or we can say that this algorithm gives feasible and optimal solution of small problems. Thus, for large problems we have to establish an algorithm that can be solved with the help of computer software. So, in future this problem is open for researchers to solve very large problems having many jobs with the help of software like MATLAB, SCILAB, PYTHON etc.

Suggestions for the future Study

Can be try for more objective problems.

Limitation of the Study

Only finite number of iteration.

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Bio-efficacy of Argemone Maxicana Leaf extracts against Bemisia tabaci (whitefly)(Aleyrodidae: Hemiptera) on Luffa acutangula.

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Abstract Research investigations were carried out to work out environment friendly management of Bemisia tabaci (white fly), by using acetonic and alcoholic leaf extract of Argemone maxicana, popularly known as Ghamoya. The bioefficacy of both leaf extracts was evaluated by the dry flim technique against Bemisia tabaci's nymph and adults. However, it was shown that the acetonic leaf extract of Argemone maxicana reported to be more effective for the integrated pest management approach then compare to the alcoholic leaf extract of Argemone maxicana. The acetonic leaf extract of Argemone maxicana is found more effective biopesticide for the pest (Bemisia tabaci) management of Luffa acutangula.

Keywords Bio-efficacy, Argemone maxicana, Luffa acutangula, Biopesticide, Bemisia Tabaci, Leaf Extract.

Introduction Insects are one of the important agents for destruction in our standing crops, owing their high rate of reproduction and short life cycle most insects have ability to multiply up to amazing numbers. It is important to know before pest management strategy about distribution, extent of damage, systematic position, range of host plant seasonal history, life cycle of target insect pests, this practice should made good plant management strategy Tripathi (2000) In 1957 FAO expound name pest regarding plants, animal life and pathogenic factors, deleterious to plant and its products Arya (20002). UNCED (United Nations Conference on Environment and Development) in 1992 Rio de Janeiro set a agenda for increase use of integrated pest diseases crop management techniques to eliminate overcome the dependence of agrochemicals, thereby encouraging eco-friendly agricultural practices and suggested biological control agents and integrated pest management as viable alternative.

Aim of study Comparative evaluation the efficacy of acetone and alcoholic leaf extract (biopesticide) of Argemone maxicana against Bemisia tabaci (whitefly).

Review of Literature Pest control by pesticides originated from petroleum product reported excessive used endorse resistant of pest, inoffensive species conversion into pest by destruction of natural enemy Marini Beltolo (1977); Singh et al. (2005); Saxena and Sukumaran (2008). Many cases of pests tolerant to pesticides have been noted which lead to double and triple applied rates Satinder et al. (2006) while many impact such as health issues,toxicological impact on environment, side effects in organism are very common impact of serial use of synthetic/chemical pesticide Nas (2004). It may lead to interest in botanical pesticides for cultivated crop protection. Several works now in progressing phase for protection by indigenous plant material from insect pest damage Roy et al. (2005) use of local available pesticidal property bearing plants for control of insect pest, it is world wide enceinte technology due to their non selective property they encounters broad range of insect pests. Plants biochemicals could be used as a trap, the secondary metabolites/toxic constituents present in plant play role in primary physiological process lead to synthesize Chakraborty (2011).Recently, biopesticides in focus due to their distintadvantages:- (a) Biopesticides can be renewable and cheap. (b) Components of biopesticides have existence in nature without any adverse impact on ecosystem. (c) Many plants have more than one biochemical as an active constituent for biocontrol properties.

This biochemical having one specific biocontrol effect or divert effects. The conversion initiating rapid resistance to disparate biochemical are greatly unlike Ahmad et al. (2007). Therefore, alternative choice may be to use biopesticide that are easily biodegradable and selective their toxicity. The main aim of this investigation is to overview the role of biopesticides (plant extracts) and in insect pests control in crop of *Luffa acutangula*. Also, the bioefficacy of biopesticides (plant extracts) against insect pests management. Plant based Biological active ingredients is safer and non-hazardous for mammals and non-target organisms; therefore, interest is over them for IPM. Its availability is economic and cheaper, easily prepare crude extract even by farmers make them compatible. Gayi et al. (2016) studied the efficacy of bio and synthetic pesticides against the American boll worm and their natural enemies on standing crop of cotton and reported that synthetic pesticide cost ratio was financially viable and their use has given the yield of cotton seed significantly than the use of biopesticides thus synthetic pesticides were adoptable by the cotton farmers. In contrast biopesticide treatment had minimum side effects on the natural enemy's populations. Chandio et al. (2017) studied the effect of bio and synthetic pesticides against *Bemisia tabaci* on standing crop of ladyfinger and reported that synthetic pesticide Confidor which belong Imidacloprid group was found to be most effective which is constitutently a disorder of nervous system while biopesticide (neem oil) also has given good result for control of *Bemisia tabaci*. Ahmad et al. (2007) have given a new light for control of pest from agroproduct as during experiment they used Synergistic (Neem oil) White Oil biopesticide and Bifenthrin synthetic pesticide has been proofed as a safest control agent as it is non-toxic and biodegradable. Kumar and Patel (2017) used five biopesticides in the form of leaf for observation of pesticidal property against larvae of *Spodopetera litura* and *Athalia lugens* and reported more than 90% of mortality in 5% concentration of *Solanum nigrum*. During experiments they observed that rate of mortality related not only with the concentration of biopesticidal extract but also depends on exposure periods. Sahito et al. (2017) have worked to control *Amrascabiguttula* (a Hemipteron insect) insect pest which is serious pest of standing cotton crop. They have selected five pesticides (Mospilan, Admriil, Polo, Safate and Nitenpyram). Nitenpyram which belong to Neonicotionid group and has neurotoxin property, provided better reduction against the cotton jassids under field condition. Jahel et al. (2017) have selected two synthetic pesticides as well as one biopesticide of Ascomycota group fungus to control a very serious pest *Bemisia tabaci* of Hemiptera group of insect to the standing crop of *Solanum lycopersicum* which is a rich source of vitamin C result obtained that synthetic pesticide Sulfoxaflor is more effective against nymphs and adults of *Bemisia tabaci* (100% reduction recorded) while the biopesticide of Ascomycota group of fungus (*Beauveria bassiana*) is also more effective successful biopesticide which is not toxic for environment as well as other organisms. Chauhan and Sukla (2018) used certain extracts of plant as biopesticides against *Raphidopalpafoveicollis* in the field of *Cucurbita maxima* because synthetic pesticide causes some inappropriate because synthetic pesticides caused some adverse effects like pollution, resistivity in insect pests, lethal effect non target organisms they reported that *Azadirachtaindica* which contain Azadirachtin is best biopesticide for control *Raphidopalpafoveicollis* so it is the best alternative for sustainable management of *Raphidopalpafoveicollis* on cucurbita which less impact on the naturally occurring predatory arthropods. Rehman et al. (2018) evaluate three biopesticides against *Bactroceracucurbitae* and reported that the combination of Spinosad and *Lecanicillium muscarium* has been most effective result as the reduction of percent fruit infestation, increasing the fruit yield and decreasing the infested fruit yield reported but synergistic of other biopesticide was not success. Heibatian et al. (2018) during laboratory experiment they used biorational pesticides and chemical pesticides in different group of experimental cases against *Agrotis segetum* and resulted that biorational pesticide Neem azal was significant ovipositional deterrent for female moth of *Agrotis segetum*, so it is most useful pesticide for reduction of pest population. The synthetic pesticide deltamethrin has given more effective result but use of biopesticide have not change the sugar content of sugar beet. Kunbhar et al. (2018) have succeeded to control sucking pest especially *Bemisia tabaci* of Brinjal. During experiment they feel pleasure as *Azadirachtaindica* more successfully reduced pest populations while Coccinellid predators remain saved. The reduction of insect population observed by using Abbot's formula. Siddique et al. (2019) have used six Botanical pesticides in acetone solvent and have given significant results as these were repellent and ovipositional deterrent of *Bactroceracucurbitae*, out of them Tabaco leaf extract in acetone solvent has given

better result as repellancy and ovipositional deterrent activity was increase with the increase of the doses of the leaf extract. Efficacy of 2 crude polyherbal preparations against *Nephotettix virescens*, the Green Leafhopper (GLH), and *Sogatella furcifera*, the White-backed Planthopper (WBPH), two significant sucking insect pests of rice, was tested in a farmer's field in Gandhinagar, Gujarat during Kharif in 2018. Chemical, botanical, and untreated controls were compared to the aqueous and oil-based crude formulations at two different concentrations each. Both basic formulations were successful in controlling green leafhoppers and white-backed plant hoppers in a dose-dependent manner, although the aqueous formulation was more effective than the oil-based formulation. These herbal formulations are an environmentally friendly, cost-effective, and safe alternative to chemical control techniques for the management of paddy pests, and may be easily implemented into IPM programmes for the control of sucking pests in paddy Hardev Choudhary et al 2020. Sugarcane is a long-term crop that takes 10-12 months to mature, making it vulnerable to insect infestations. The goal of this study was to determine the ovicidal, oviposition, and larvicidal properties of two therapeutic native herbs. The bioefficacy of *Nerium indicum* Mill. and *Murraya koenigii* L. spreng leaf extracts against the sugarcane stalk borer *Chilo auricilius* D. was investigated. Plant extracts were made utilising a sequential extraction procedure using several solvents such as petroleum, chloroform, methanol, distilled water, and acetone at various concentrations. The hatching percentage of the eggs and the ovipositional behaviour of adult moths were recorded using the choice technique for each portion of the plant extract. When compared to other extracts, the chloroform extract of *N. indicum* 2.66 percent eggs/female and the chloroform/petroleum ether extract of *M. koenigii* 9.33 percent eggs/female were shown to be efficient and reduced oviposition. After 24, 48, and 72 hours of exposure, petroleum ether and distilled water extracts of *N. indicum* 52.00 and petroleum ether extract of *M. koenigii* correspondingly produced the lowest larval survival (74.00, 72.00, and 70.00 percent). However, survival of three-day-old eggs with petroleum ether extract of *N. indicum* at 8, 10, and 20% concentrations was 60, 58, and 56 percent, respectively, but survival of three-day-old eggs with petroleum ether extract of *M. koenigii* at identical concentrations was 77, 47, and 72 percent. Rashid Mumtaz et al. 2021. The experiment was conducted in the Insectary of the Department of Entomology, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, during the rabi season of 2018-19. The diverse treatments Spinosad 45 SC (0.015 percent), neem, and bakain were most effective against the primary insect pests of tomato variety Type-6, according to the results of this study. Spinosad 45 SC (0.015 percent), followed by neem and bakain, was shown to be the most effective, yielding 90.46 percent, 87.06 percent, and 84.00 percent healthy tomato fruits, respectively, and 9.53 percent, 12.10 percent, and 16.0 percent tomato fruit infestation on a number basis. Considered to be the most effective therapies against *H. armigera*. Neem and bakain were the most effective treatments against aphids, *A. gossypii*, and thrips, *Scirtothrips dorsalis*, and fruit borer, *H. armigera*, respectively. Spinosad 45 SC (0.015 percent) had the maximum fruit production of 251.10 q/ha, followed by neem and bakain, which produced 241.11 and 225.55 q/ha, respectively A P Singh et al. 2021.

Methodology Dry film method has been used for Lethal concentration (LC50) investigation in experimental models.

Sampling

Bioactivity of Plants (extract) of different Families to various Insects

(Prveen. (2021)“Comparative Efficacy of Selected Synthetic and Biopesticides against certain Phytophagous Insect Pests of *Luffa acutangula*” (Doctoral thesis). Department of Zoology, Agra College, Agra (Affiliated to Dr. Bhim Rao Ambedkar University, Agra UP), India.)

Family and plant	Extract	Bioactivity against
Acanthaceae		
Adhatoda vesica	Ethanol, Acetone, Ether	Attevafabriciella (Ailanthus web.)

	(Leaf)	
Agavaceae		
Agava americana	Plant	Aedes fluviatilis (L.)
	Methanol	Nilaparvatalugens
Alliaceae		
Allium sativum	Volatiles	Dysdercuskoenigii, Eariasvittella, Helicoverpa armigera (Noctuidae)
Alliaceae		
Allium sativum	Allitin	Aphis gossypil
Zephyramthusp.	Bulb	Amsactamoorei (Butler)
Anacardiaceae		
Mangifera indica	Ethanol	Myzuspersicae
Annonaceae		
Annona reticulate	Aqueous	Spodoptera litura
A. squamosa	Methanol	Spilosomaobliqua(Wk)
Apocynaceae		
Coronaria	Leaf	Dysdercuskoenigii
Araceae		
Acorus calamus		
	Rhizome	Callosobruchuschinensis (Linn.)
	Alcohol (Rhizome)	Trogoderma granarium (Khapra beetle)
Asclepiadaceae		
CabtopisCigantea	Aqueous	
		Papiliodemoleus
C. procera		
	Dry leaf powder	Triboliumcastaneum

Asteraceae (Compositae)		
Ageratum Conzoides	Leaf	Raphidopalpafoveicollis
	Ether and Chloroform	Lipaphiserysimi
	Aerial part	Pieris brassicaeL.
Arternisia abrotanum	Plant	Tinea dubiella
A. monosperma	Essential oil	Drosophila melanogaster

Analysis

Identification

The Bemisia tabaci are small generally 0.9mm in size, light yellow insect (plate- 5). Female are diploid and emerge from fertilize eggs while male are haploid emerge from unfertilized eggs.

Life history

They appear in month of March and April on Luffa plant and among them females are more in number than male. Female lay eggs 50- 400 under part of leaf. Eggs are 0.11 x 0.25 mm in size. Egg laid in group which are whitish in clour but before hatching they become btown. After a week Nymphshatch out which have four instar stages true pupal stage is absent which may called as intermediate stage.

Crop and Nature of damage

Cabbage, cucumber, Luffa etc. Pupa (nymph) and fully grown adult suck the structure from tender portion of flora. Hundred and thousand of nymphs may be seen on tender shoot. In mild case, the shoot bilts and in severe case it completely gets billed. A kind of black moulds develops which interferes the photosynthetic mechanism of plant.



(*Bemisia tabaci*: Nymph and Adult)

***Argemone maxicana*- (Family: Papaveraceae)**

A genus of prickly herbs including about 12 species native of tropical America and hence it has been introduced into other tropical countries. *Argemone maxicana* is the only species found in India and referred to as "kateli ka phool". An annual with prickly leaf, bright yellow flowers and brittle capsules containing many seeds resembling black mustard seeds (*Brassica nigra*). It is an American plant which has run wild in India and now a troublesome weed.



(*Argemone maxicana*)

Processing and Extraction of Plant Material

The leaf of the selected plant species i.e; *Argemone maxicana* were collected and brought to the laboratory. The leaves were spread on papersheets and dried under shade at room temperature. The dried leaves were pulverized with electrical grinder and sieved out through 1mm mesh and kept in plastic bags and stored at laboratory conditions for further experimentation. The powdered plant materials dissolved in different solvents in 1: 4 (H/V) and kept for 24 hours and filtered through the double layered muslin cloth.

The extract was rotated at 5000rpm in centrifugation apparatus for 10 min and above part the

supernatant was used for assessing the bioactivity. From the supernatant, the polar solvent (cold and hot water) was lyophilized while non- polar solvent (acetone and alcohol); it was kept at room temperature till complete evaporation. The residue was kept in refrigerator for further experimentation.

Preparations of Test Solvents

The residue was dissolved in different solvent (acetone, alcohol and hot water) in a ratio of 1: 1 (W/V) and considered as mother extract.

Preparation of Dry Flim

The dry flims were prepared in the sterilized petriplates (9 cm diameter) by spreading 1 ml of test solution all over the plate and allowed the plate to dry for 30 – 60 min under electrical fan to remove the solvent. Five replications were maintained for both control and treatment.

Result and Discussion

LC₅₀ determination of *Bemisia tabaci* after treatment with Acetone and Alcoholic leaf extract of *Argemone maxicana*

In order to estimate the LC₅₀ value of acetone and alcoholic leaf extract of *Argemone maxicana*. The nymph and adult of *Bemisia tabaci* have been exposed with various concentrations of above plant extract. The concentrations of *Argemone maxicana* acetone and alcoholic leaf extract viz: 200, 500, 1000, 2000 and 3000 ppm have been selected.

The survival number and percentage of larva of each concentration has been noted after 24 hours.

From the survival number the mortality percentage is calculated (Table 1 and 2). It is clear from the Table 1 and 2 that mortality increases (in both acetone and alcoholic extracts) in number with the proliferation in concentration of leaf extracts of *Argemone maxicana*.

Table 1 and 2 also indicate that the mortality percentage of *Bemisia tabaci* is higher in 200, 500 and 1000 ppm concentrations of alcoholic leaf extract as compare to acetone extract. However, it is lesser in 2000 and 3000 ppm in alcoholic leaf extract as compare to acetone extract.

By calculating the regression equation of both acetone ($Y = -146.281 + 65.502 x$) and alcoholic ($Y = -145.193 + 64.275 x$) leaf extract of *Argemone maxicana* against *Bemisia tabaci*, the value of LC₅₀ have been calculated. Also, it is clear from the observed value, the LC₅₀ is higher in alcoholic leaf extract (1088.54 ppm) as compare to acetone leaf extract (992.08 ppm) against *Bemisia tabaci*.

Table 1 : Percent mortality of *Bemisia tabaci* by Acetone extract of *Argemone maxicana*

S.No.	Conc.	Mortality (%)	Log	Expected
	X	Y	X	(Y)
1	200	9.6	2.30103	4.44
2	500	27.5	2.69897	30.51
3	1000	43.8	3.00000	50.23
4	2000	66.2	3.30103	69.44

5	3000	89.5	3.4771213	81.48
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Illustration of Percent mortality of *Bemisia tabaci* by Acetone extract of *Argemone maxicana*

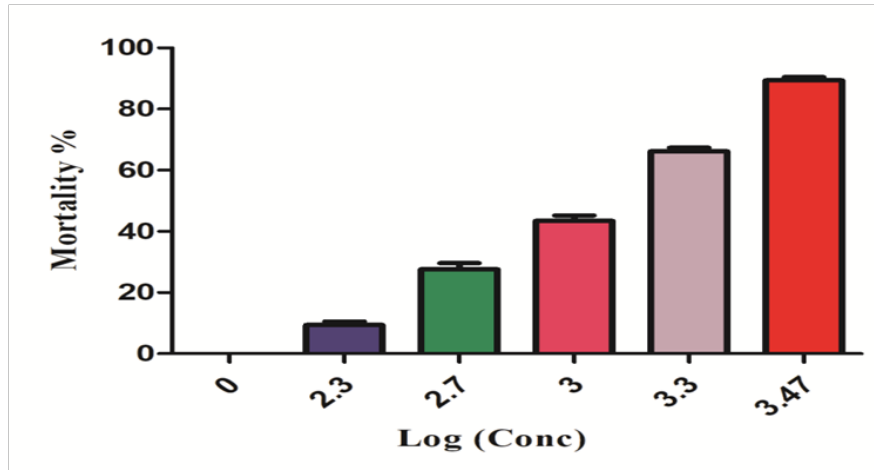
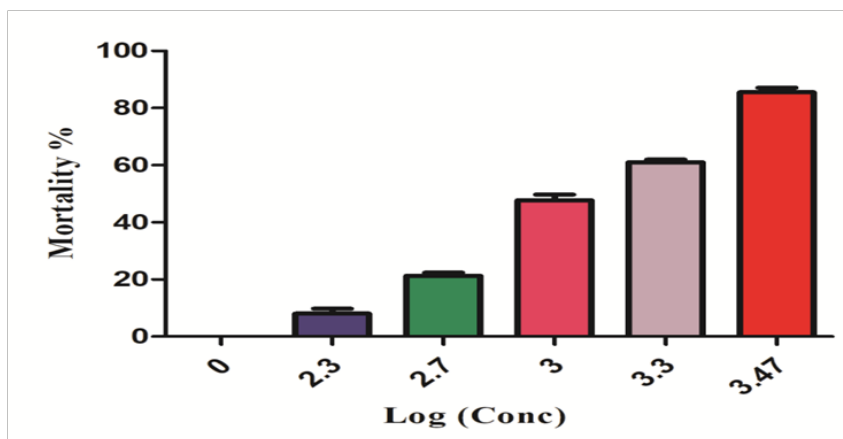


Table 2: Percent mortality of *Bemisia tabaci* by Alcoholic extract of *Argemone maxicana*

S.No.	Conc.	Mortality (%)	Log	Expected
	X	Y	X	(Y)
	00	0.0	0.00	0.00
1	200	8.2	2.30103	2.70
2	500	21.3	2.69897	28.28
3	1000	47.5	3.00000	47.63
4	2000	61.5	3.30103	66.98
5	3000	85.4	3.4771213	78.29

Illustration of Percent mortality of *Bemisia tabaci* by Alcoholic extract of *Argemone maxicana*



Relative toxicity of leaf extracts of *Argemone maxicana* to *Bemisia tabaci*

It is obvious from Table 1 and 2 that on the base of LC₅₀ value, the declining order of the toxicity of both plant extracts to *Bemisia tabaci* are *Argemone maxicana* (acetone extract), *Argemone maxicana* (alcoholic extract) out of these *Argemone maxicana* (acetone extract) are found to be more toxic.

Table3 : Relative toxicity of different plant leaf extracts on *Bemisia tabaci*

S.No.	Treatment	Regression Eq.	LC ₅₀	Relative Toxicity
1.	<i>Argemone maxicana</i>			
	(a)Acetone leaf extract	Y = -146.281+65.502x	992.06	0.64
	(b)Alcoholic leaf extract	Y = -145.193+64.275x	1088.54	0.58

Therefore, on the basis of present investigation it may concluded that *Bemisia tabaci*, can be lead to the belief that acetonic leaf extracts of plant (*Argemone maxicana*) could be used as substitute due to potential, it's cheaper cost and safe approach for beneficial insect pests. The crop protection or management by biopesticides (leaf extracts) provides mass productivity and safety of natural enemies and therefore, indicated their acceptability for taking in IPM.

Discussion

Evaluation of LC₅₀ of the biocidal compound is one of the pre-requisites for the toxicological studies. The LC₅₀ (median lethal conc.) represents the amount of toxicant needed to kill 50% of animal population.

Table: 4 Bio-Efficacy of *Argemone maxicana* plant (leaf) extracts against *Bemisia tabaci*

S.No.	Treatment	LC ₅₀ value – ppm	Order of Toxicity	Relative resistance	Evaluation
1.	<i>Argemone maxicana</i>				

A	Acetone extract	992.06	1	1.674
B	Alcoholic extract	1088.54	2	0.988

of *Argemone maxicana* plants extract

According to present investigation, for the determination of LC₅₀ values of alcoholic and acetone leaf extract of *Argemone maxicana*, different concentration of these plant extracts had been treated against the nymph and adult of *Bemisia tabaci*. The different concentrations of acetone and alcoholic leaf extract of *Argemone maxicana* plants were taken as 200, 500, 1000, 2000, 3000ppm.

It is clear from Table- 4 that on the base of LC₅₀ value, the relative resistance of *Bemisia tabaci* insect pest investigation against leaf extracts of *Argemone maxicana*, and found that LC₅₀ 992.06 and relative resistance 1.674 in acetonetic leaf extract which showed higher bioefficacy as compare to alcoholic leaf extract of same plant respectively .

Findings

In the last two decades many reports materialized on the growth inhibitory, virulent and hormonal effect of plant on insect pests Williams, (1970); Schmutterer, (1995;1990;1992); Grainage et. al, (1985); Prakash et. al (2008); Ahmed et al. (2002). This has been feasible due to the plant domain vast diversified chemicals which have stored in them Aziza et. al (2009) therefore, a positive result and ecofriendly insect pest management order can be developed, these biochemicals are recognised and used as insect pest control agents.

Conclusion

Noel González-Valdivia et. al (2017) Habanero chilli pest management (*Capsicum chinense* Jacq., Solanaceae) whitefly of the sweetpotato *Bemisia tabaci* Genn. (Hemiptera: Aleyrodidae) is a major plague vector capable of generating significant economic loss. Imidacloprid, a neonicotinoids chemical, is used to control them. Imidacloprid resistance has now been found in *B. tabaci*. Some plant extracts, such as allspice [*Pimenta dioica* (L.) Merrill, (Myrtaceae)], sweet basil [*Ocimum basilicum* L. (Lamiaceae)], and wild feverfew [*Parthenium hysterophorus* L. (Asteraceae)], have been suggested in the literature to have insect repellent effects against whiteflies. The repellent activity of crude aqueous extracts in a 1:1 ratio based on mass weight leaf moisture was evaluated for each of the above-mentioned plants against whitefly nymphs and eggs in a preliminary screening under controlled settings. The results suggest that basil and fever few extracts are both efficient in reducing adult whitefly oviposition on habanero chilli leaves, with allspice having the least impact. In this approach, field research must be conducted.

Angel Cruz-Estrada et. al (2012) have studied the growth inhibitory effect of some plants for *Bemisia tabaci*. According to them, addition of various function of *Callistemon citrinus* Petiveriaaceae and *Trichilarborea*, *Azadirachta indica*, Yacatan peninsula showed various biological activities. Ethyle acetate and ethyle alcohol fractions of Neem showed the presence of chemicals which could bring about complete mortality of *Bemisia tabaci* on eight and ten days after feeding. However addition of hot water extracts in the diet did not cause sufficient adverse as 70% adults emergence could be recorded on these diets revealed the higher degree of growth inhibitory effect in diets compounded with extract of ethyl alcohol, ethyl acetate and plant residue.

Similarly, the insecticidal properties of *Callistemon citrinus* have been studied by Palani kumar et al.(2017) and Shrestha et al. (2015). Accordingly, to their observations, it clearly shows that *Callistemon citrinus* contains a variety of chemicals which may interfere with growth and development of insect, resulting in resistance of this plant to insect attack. Also, the allomonic properties of *Callistemon citrinus* in protecting this plant against insect attack has been discussed by Olaitan and Abiodun (2011).

Callistemon citrinus as well as Papaveraceae plant extracts have feeding deterrent

property and also show oral toxicity to insects. At 100ppm was found to be antifeedent for cotton pink ballworm, Tephritid fruit flies, jassid, whitefly and Leucinodes orbonalis. In addition to this leaf extract of this plant also show insecticidal properties for some insect pest Peter et al. (2001), Angel Cruz- Estrada et al. (2012).

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An Access To Institutional Finance For The Tribals: A Special Reference To Santal Tribe of Keonjhar District of Odisha

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Abstract Keonjhar is one of the backward and underdeveloped tribal dominated districts of Odisha, although the district is full of natural resources. Even after seven decades of planning, it continues to reel under the heavy weight of abysmal poverty and large number of unemployment. The heavy concentration of rural and tribal population in the district and the poor per capita income of the tribals are breakdowns to its rapid economic growth. In order to mainstreaming them into the society, the Central, State Government & NGOs have implemented various tribal developmental programmes and projects from time to time. The study is mainly focus on to know the different institutional credit access structures in the tribal areas and critically examining the Santal people's participation into different development programmes and the obstacles which affects the implementations of various developmental programmes & policies in Keonjhar district of Odisha. The data is collected from both primary and secondary sources. The studies conclude with, though development is a continuous process the role of Education, tribals participation & Inclusion into the different financial schemes and the ethical role of the financial institution towards lending still the major essentials for their upliftment.

Keywords Institutional Finance, Tribals, Economic Development, Poverty, Upliftments, Financial Inclusions.

Introduction Keonjhar is one of the thirty districts that the state of Odisha consists of. This landlocked district is bounded by districts of Balasore, Bhadrak, Jajpur, Dhenkanal and Sundergarh and the state of Jharkhand . It is one of the backward and tribal dominated districts of Odisha. The principal tribes that inhabit this district are Santal, Juanga Bhuyan, Bathudi, Bhumija, Gond, Ho, Kolha, Sabara, Saunti etc. The total tribal population of the district was 818878 (as per 2011 census) which was nearly 46% of total population of the district. These tribes still adopt the slash and burn method of agriculture, which leads to very low level of productivity. Moreover, they are not trained with modern technology of agriculture. This has resulted in poor living standards & earning lower per capita income. The panacea for the up-liftment of their livelihood parameter is to supply adequate funding and train them in the methods of modern agricultural technology and promotion of MSMEs. In the above challenging situations, Keonjhar district is put under the scanner.

The Santal tribe is one of the oldest tribes in the country and found in different parts of the states. In the Keonjhar district near about 28740 no of peoples, speak Santali mother tongue, which is more than 3% of their total population. Most of these tribals normally live in deep woods and high hills away from the glitter and glamour of modern society till yet. The forest supplies them with food, clothing, shelter, and medicines. Their economy is seems to be simple and characterized by food gathering, hunting, and shifting cultivation and blind beliefs. Their standards of living is very low and miserably poor in comparison to the non-tribal peoples. As Santal tribals constitute a sizeable portion of the total population and occupy a significant proportion of land area of the district, so the economic development of the districts is very much linked with their development. Therefore, the development of tribal communities and the entry of these tribals into the national mainstream has become the most challenging objectives of the State Government in recent times. Economic development of Santal tribals is

concerned with the achievement of a better standard of living, better education, better health and expanded opportunities in their employment. In order to achieve this goal, the Central and State Governments & NGOs have implemented various tribal development programmes and projects from time to time. Most of the development programmes and projects are credit linked as the tribals have little owned funds to invest. This calls for initiative and energetic involvement on the part of the financial institutions particularly banks in providing opportunities for adequate investment through the mechanism of finance and credit in the district in general and in the tribal areas in particular.

Traditionally, banks in India were both in theory and in practice, passive agents in the development process. Like all private economic institutions under capitalism, the banks were also motivated by profit. Consequently, credit policy of these banks followed maximum profit, minimum risk and security of advances without remote financing. In view of this lopsided, banking sector (Commercial banks, RRBs, Co-operative banks) development, attempts have been made by the Government of India to regulate the activities and operations of banks by adopting various organizational, institutional and regulatory measures. The introduction of social control over banks, and the subsequent nationalization of major scheduled commercial banks and launching of Regional Rural Banks had the main objective of ensuring that banks do play a dynamic role in the development process of the backward areas. Banks are liberalized its access, so that it will uplift the poor tribals and underprivileged sections of the society by channelizing its flow of credit in accordance with the socio-economic objectives of the nation. Thus, the role- of banks has been changing in response to the socio-economic needs. They have been called upon to contribute to the development process by slowly switching over from traditional concept of commercial banking to development banking which is called banking for all.

In the process of acceleration, financial institutions particularly commercial banks, co-operative banks & RRBs have been playing pivotal role in financing the tribal development programmes through the mechanism of credit with a view to providing expanded opportunities in employment and bringing about a rapid rise in the living standard of tribals. At present, the banks involve themselves in a co-operative manner with the District Rural Development Agencies (DRDAs) in identifying the tribal beneficiaries and their needs. Banks also formulate viable projects, which will contribute to their success and ensure profitable investment of funds.

Despite all such developmental efforts and massive credit from banks, there is a general feeling that results have fallen far short of expectations as only a nominal benefit has reached the tribals. How far the banks have succeeded in their efforts in promoting tribal development has become a vital concern to the researchers in recent times and that is why it is put into the scanner.

The outcomes of various studies and research work on tribal development reveal that the development programmes have done immense harm to the tribals instead of raising them above the poverty line. In the name of modernization and development, tribals have lost their right and liberty over land and forest, which they had been enjoying from time immemorial. The introduction of money economy has left them to the tender mercies of moneylenders leading to their chronic indebtedness. However, these broad generalizations may not be applicable to all the tribes of a vast country like India. Therefore, a study relating to access of institutional finance on the economic development of tribals at a micro level, confined to a district, seem to be most appropriate. The micro study can point out areas of success as well as failure and point out the deficiencies in the formulation of policy and in the implementation of the programme. The present study attempts to find out whether the credit access from financial institutions under various tribal development programmes has contributed to the economic development of Santal tribals of the Keonjhar district in Odisha. During the course of the study, attempts have also been made to probe into the problems of the Tribals and to make certain suggestions for further achievement of the contemplated requirements.

Aim of study Taking into consideration the aim of the research and its problems the study has the following objectives

1. To know the institutional credit access structure in the tribal areas.
2. To know the Santal tribe participation into the various economic development programmes,
3. To examine the various obstacles which affects the implementation of different developmental programmes on the tribal economy.

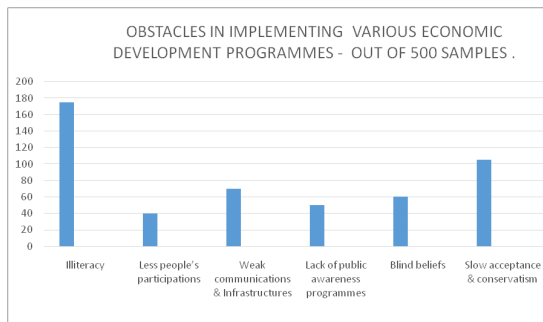
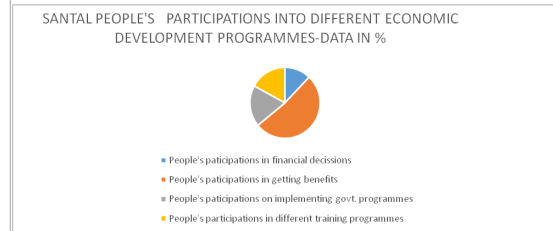
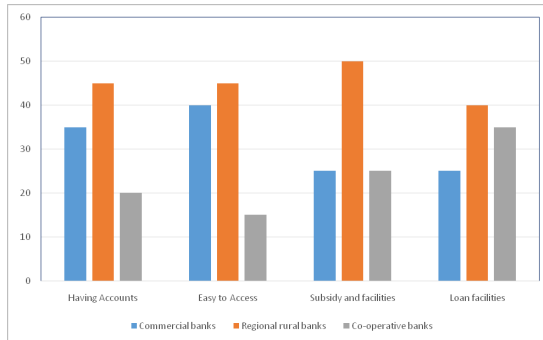
Review of Literature

The recent problems of tribal development have compelled increased attention of many research scholars and interested in engaged in the field of research. Among the rapidly expanding corpus of literature, a few important works are being reviewed in the context of the present study. Sanjeeta Kumari Devi & Nibedita Dhal(2020) in their study "Socio-economic Initiative of the Government and its efficacy on Tribal Women" try to explore that due to non-awareness, procedural delays, legal obligations etc. the tribal are still dependent on private sources to borrow money, which often leads to their exploitation to the extreme of getting deprived from their land assets. Violation of all major acts is observed to different extent with respect to mortgaging of immovable properties to private moneylenders, bonded labour related acts, acts related to prevention of moneylenders' exploitations, forest related acts and policies among others. Debasish S.S & Mallick N.(2018) in their study "A case study of financial and non-financial decision making role of Paudi Bhuyan and Juanga janajati Women in Keonjhar district of Odisha "try to explore due to low literacy and unemployment their community participation and autonomy in decision making is very less. Mohapatra (2011) "The author discussed the issue of tribes from the point of view of both social inclusion and exclusion in Odisha. The author mentioned that culture and the society are dynamic in nature and it keeps on changing over a period. However, there must be some determinant factors, which play a pivotal role for these kinds of changes. Tribals being the most affected lots because of these cultural and societal changes have shown drastic movement from one place another. Most of the time, this has led to more acute social exclusions. There is lot of argument over the present day development paradigm of tribal development. Sahoo Laxman (2010)in his study on "Socio-Economic Profile of Tribal Populations in Mayurbhanj and Keonjhar Districts" it has been found out that though both districts are rich in mineral resources but it goes to the pocket of a few people.

Methodology A field study is conducted in the five blocks of Keonjhar districts of Odisha namely Ghatagaon, Telkoi, Harichandanpur, Banspal, and Saharpada to get first-hand information on various aspects of the objectives of the study. Since the purpose of the study is to make a micro analysis which is only for Santal tribe, primary data is collected from the sample respondents belonging to various groups through a structured questionnaire especially designed for the evaluation of the impact of bank access & credit on their economic life. The sample size of 500 peoples covering 100 respondents from each five blocks of the Keonjhar districts are collected mainly from Marginal farmers, Small farmers, Small business persons and retail traders, rural artisans & Household belonging from Santal tribes. The questionnaires were canvassed through interview of selected beneficiaries individually. Data available from published research thesis, journals and standard literature is extensively used to enlighten the more information.

Tools Used Percentage distributions of data derived from different observations are used to support the analysis. For comparative analysis figures, Charts, and Diagrams are used in the study. Use of computer applications for calculations and data presentations are extensively used.

**Statistics
Used in the
Study**



Analysis

The sample survey of 500 respondents from the five different blocks of Keonjhar district reveals that 35% of tribal peoples access the Commercial banks facilities. Their first preferences are RRBs, that is 45% and last preferences are Co-operative banks, which is only 20%. Regarding easy access of financial services, they prefer RRBs due to convenience and reach. The subsidy and other Govt. & Non-govt. facilities, Santal people prefer RRBs because of localness. In the loan facilities point of view RRBs and Co-operative banks playing more proactive rolls than that of the Commercial banks. The studies says that Santal peoples participations in taking their financial decisions is very negligible .Due to illiterate and poorness they couldn't take proper financial decisions at right time and only 12% people come across with it. The people's participation regarding sharing Govt. and Non-govt. benefits issome extent satisfactory, which is 52% .It, suggested that around 260 peoples are aware andgetting different types of benefits available to them. The Santal peoples participations towards attaining different types of training programmes and their invelopments in implementing the Govt. policies is very less 17% and 19% respectively. There are lower degree of correlations between the different training programmes available for their economic growth and their financial decision in regards with that. As per the data compiled from the feedbacks of the respondents; lack of awareness programmes, their ignorance and poor standard of living are the major causes of their lower level of participations. : The principal obstacle for implementing the various developmental activities in Santal communities is lack of literacy. Out of 500 sample respondent 175 peoples are illiterate or very little educated. Their slow acceptance to the process of development and prudence behaviors is second largest issue of financial exclusions, which is around 105 respondents. Other obstacles on the way of implementing the development programmes are difficulties in proper communications, less no. of peoples participations, their blind beliefs and lack of public awareness programs stands barriers of their economic growth.

Findings

The Santal tribe mainly depending upon the RRBs for their finical access. The role of Commercial banks are below par of their expectations. Co-operative banks helped them some extent regarding sanctions of loan facilities but other finical benefits; it short falls as for their requirements. Regarding the participations of Santal tribe into different economic development, programmes are not satisfactory. They just try to participate some benefit sharing scheme, apart from that their participations into training programmes, financial decision etc still the matter of concern & headache. The major obstacles for implementations of these programmes are they low literacy, slow acceptance, blind belief, weak communications, lack of awareness programmes.

Conclusion The scheduled tribes constitute a very significant portion, which is more than 22.85% of the total populations of the state and more than 45% of Keonjhar district populations. The high percentage of tribal population faces problems like living below the poverty line, the economic exploitation, social isolation and physical oppression than their non-tribal counterparts. The gradual abridgement of the rights of the tribals and the dispossession of tribals from their own land factually demonstrate that tribal economy is characterized by poverty and exploitation. A sound financial infrastructure has always been regarded not only as a necessary adjunct but also as a stimulant to economic development and the lifelines of upliftment into modern exposure. RRBs are playing more vital role to linking them into the mainstream of the society than commercial banks. Though Commercial banks are the important financial institutions, it is expected that it will provide a necessary financial infrastructure through its large networks & huge branches and flow of adequate credit at reasonable terms to the neglected sectors and sections of the society. The study says that around 40% of Santal tribe prefer to access RRBs than Commercial banks, so Government should focus to expand bank branches to the remote tribal area for their multiple benefits. Tribals participations into various activities like Govt. trainings and awareness programmes, financial requirement decisions, implementations of the different Govt&non-govt programmes are very less. More financial awareness and financial literacy programmes must conduct for them, which enable them to choose better & proper financial decisions. The study reveals that major obstacles for implementation of various economic developmental programmes are illiteracy, slow acceptance, barriers in communications, blind beliefs. Govt. should focus mass tribal literacy, better communications & infrastructure facilities for these tribes, so that their participations level will increase which results into smooth implementations of developmental programmes for them towards their upliftments.

Limitation of the Study Though the study aims at to enlighten the various angle of the tribal economic developments, it has certain limitations. The study limited to the five blocks of Keonjhar districts of Odisha only namely Ghatagaon, Telkoi, Harichandanpur, Banspal, and Saharpada. General backwardness and unreached area, migratory character of the tribals & their abysmally low literacy and solo efforts to the researcher may be limiting factor of the study. Data constraint is also one of the reason for which the study is limited to 3 years only from 2018 to 2021. The conclusions drawn from the study is confined to Keonjhar district alone and therefore it cannot be generalized. The result may not be valid for over a longer period due to fast changing socio-economic setting in this study area.

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Capacity Building of the SHG members under National Urban Livelihoods Mission (NULM) Programme- An Evidence from West Bengal

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Abstract Poverty has been a serious issue over the years not only in India but across the globe. The effect of poverty is more prominent in developing and under-developed countries as compared to developed countries. In India this problem persists over the years. To combat this chronic ailment various poverty eradication programmes have been undertaken at rural and urban level. Among them, Swarna Jayanti Shahari Rozgar Yojana (SJSRY) was the largest programme aimed at urban poverty eradication. But this programme failed to fulfill the desired mission. Subsequently Government of India, decided to launch one mission mode approach programme for urban poverty reduction and National Urban Livelihoods Mission (NULM) has been launched in 2013 subsuming the SJSRY programme. NULM targets to eradicate urban poverty from grass root level. NULM sets to achieve the target by means of social mobilisation by formation of SHGs, providing skill training and other support. The present study is an attempt to assess the progress of NULM in capacity building of SHG members in a select district of West Bengal. The study reveals a positive note in the progress of NULM in capacity building of SHG members.

Keywords Poverty, SJSRY, SHGs, Social Mobilisation, NULM.

Introduction Existence and persistence of inequality in developing countries is not something new. India is no exception to this. The main causes of disparity in India as identified are mainly due to poverty, gender, religion and cast. Low income level which constitutes a huge section of the population is due to unemployment and underemployment and low rate of labor productivity.

The problem of inequality persists across the world economy. This problem is more prominent in developing economies as compared to developed economies. The informal sector constitutes a large part of the developing as well as developed countries economy. Informal sector implies absence of proper rule, absence of regulations, and professional code of conduct in employment sector. The huge growth of informal sector is primarily due to poverty, hunger low literacy rate.

Poverty is such a chronic problem which is a constraint in the process of economic development of a country. The issue of poverty persists in every country across the globe in different extent. India being the world second largest in terms of population is suffering from the chronic ailment named poverty. In 1938 as per recommendation of National Congress, eradication of poverty was prioritized as an agenda in Indian Five year plans since then. Since then, poverty eradication programmes have been undertaken over the years. Swarna Jayanti Shahari Rozgar Yojana was one such programme which targeted at urban poverty reduction. Swarna Jayanti Shahari Rozgar Yojana (SJSRY) was the largest ground breaking, launched in 1997 by Ministry of Housing & Urban Poverty alleviation (MHUPA), Government of India, with an objective of providing employment urban poor and generation of self employment. But unfortunately due to certain reason this programme couldn't achieve the desired outcome. Subsequently realizing the need of launching a mission mode approach National Urban Livelihoods Mission (NULM) programme has been launched in 2013, by Government of India subsuming the earlier programme Swarna Jayanti Shahari Rozgar Yojana.

Aim of study The objectives of the study are as follows-

1. To give an overview of the NULM programme targeted at eliminating urban poverty.
2. To assess the progress of NULM in capacity building of SHG members in Kolkata district, West Bengal.

Review of Literature

Plenty of literatures are available in the area of rural poverty eradication but few on urban poverty eradication. Srinath & Sridhar (2012) in their study mentioned about the SJSRY scheme and the causes of failure of the programme in achieving the target. NULM (2014) mission document lays down the details of NULM- its mission, vision, strategy and the targeted cities and population to be covered under this approach. NULM draft mission document (2014) also discussed about the different components of NULM approach- about skill training, wage and self employment. Zhang and Fan (2016) discussed about poverty in India, causes of poverty and its effect. They also opined, exclusion of vast section of the population from basic amenities of life is an injustice and despite growth and development of the country the problem of poverty still persists. Laxmi (2014) in his study discussed about urbanization, concept of urban poverty, its various aspects and the slums in India. Slums breeds poverty and the increasing number of slums is a serious problem in India. Yesudian (2007) discussed the different poverty alleviation programmes in India. He provided a detailed overview of the different programmes of poverty in the post economic era and made an attempt to judge the success of these programmes in eradicating poverty. Various literatures are available on different aspects of poverty but very few on urban poverty eradication. Kumari (2013) discussed the national policies, plans and programmes adopted to eradicate poverty in India. Poverty is essential to ensure economic development of a country. Barman and Saloi (2020) in their study discussed about the progress of NULM- the mission mode approach of Government of India for alleviating urban poverty with reference Guwahati city in Assam. Hani & Jyothi (2021) examined the influence of two factors namely education and family size on the effectiveness of NULM programme in Mysore city. They concluded that more SHG women members should be encouraged to participate in awareness programme of urban development.

Main Text

1. From Swarna Jayanti Shahari Rozgar Yojana (SJSRY) to National Urban Livelihoods Mission (NULM) –An Overview

SJSRY programme failed in different aspects. Some of them were

2. obstacles in the implementation process,
3. disparity in formation of SHGs found mostly southern states of India,
4. lack of co-ordination between SJSRY and programmes of other ministries,
5. constraints in respect of institutional aspects and human resource aspects in the process of co-ordination with other programmes,
6. faulty method of selection of BPL households as target group,
7. skill training to incapable candidates in some states,
8. lack of capacity building and training due to inadequate infrastructural facilities, resource persons, financial constraint for self-employment component,
9. little attention on employment of unskilled workers and
10. Insufficient fund allocation.
11. To overcome these failures NULM was launched.

NULM is a mission mode approach focusing on urban poverty elimination at grass

root level by organising urban poor households in SHGs, building sustainable livelihood options by means of access to gainful self-employment and skilled wage employment opportunities.

Focus

NULM focuses on poverty eradication.

Target Group

The target group of NULM is the urban BPL households.

Mission

Generation of self-employment and skilled employment resulting in the improvement of their livelihoods on a sustainable basis, through building strong institution of the poor i.e. generation of sustainable livelihood options and providing basic amenities like food, shelter to all urban poor

Principles

1. Poor have entrepreneurial skill and are potential enough; they have strong desire to come out of poverty
2. Strong institutional platforms and strong social mobilizations process is of utmost importance for unleashing their potentials.
3. Access to better livelihood options would help to improve their standard of living.
4. Inclusion of all urban poor throughout the country in skill development training programme and access to credit facilities.
5. Support to urban street vendors.
6. Shelter for urban homeless.
7. **Values**
8. Involving all urban poor households in the process.
9. Transparency in programme designing and implementation in phases.
10. Accountability of government functionaries and community.
11. Partnership with different industries as per requirement.
12. Development of community network.
13. **Components of NULM**
14. Social Mobilisation & Institution Development
15. Capacity Building & Training
16. Employment through skill training & placement
17. Self-Employment component

18. Support to urban street vendors
19. Shelter for urban homeless

Social Mobilisation & Institution Development (SMID) component of NULM focuses on the formation of SHGs and federations. SHGs will be formed with female members from urban poor households. Area level federations will be formed with 10 to 20 SHGs of same ward or locality. ALF at city level will be represented at City level. This component includes universal financial inclusion also. The SHGs will get a Revolving Fund support of Rs10,000 as per the NULM guidelines by Government of India. Credit Guarantee support for setting up micro-enterprise to take up self-employment for livelihoods on a sustainable basis. City livelihoods Center will be established to act as a one stop shop for providing information relating to employment and skills training opportunities, and also to promote the services and products of urban poor.

Capacity Building & Training component includes providing technical support at state, district, national level, livelihood centers at city level, training & other capacity building support, employment through skill training. Training should be provided to SHG members so that they can take up self employment or wage employment for sustainable livelihoods. State Mission Management Unit at state level will monitor the training programmes rendered by urban local Bodies.

Employment through skill training & placement (ESTP) focuses on skill training for setting up micro enterprise, wage employment, for upgradation of skill of the vulnerable group and taking up innovative & special project. Skill training will help to take up self employment by means of entrepreneurship or wage employment by grabbing the existing market opportunities. Skill training will cover training on wide range of activities and will also include financial literacy, computer literacy training etc.

Self employment programme (SEP) - which includes setting up individual enterprise, group enterprise, credit card for enterprise development and technology and marketing support. Setting up of both individual and group micro enterprises will be supported under this component. The project cost ceiling will be Rs. 2 lakh for individual enterprises and Rs. 10 Lakh for group enterprises. Individual and groups may be provided loan with interest subsidy from the banks and the application for such loans be preferably recommended by the SHGs

Support to urban street vendors (SUSV) - Cites by periodic survey will register street vendors and will provide them with identity card. Street vendors will be provided with all sort of assistance. Poor and street vendors in urban areas can access skill training under the EST&P component of NULM and micro-enterprise development support under the SEP component of NULM

Shelter for urban homeless (SUH) – the objective is to provide permanent shelter to poorest of the poor urban segment.

The present study will focus on the second component of NULM i.e Capacity Building of SHG members under this mission programme.

Hypothesis

Hypothesis-1

H0 (Null Hypothesis) = There is no relation between impact of training received after joining SHG and training received after joining SHG

H1 (Alternative Hypothesis) = There is relation between impact of training received after joining SHG and training received after joining SHG

Hypothesis-2

H0 = There is no significant relation between year of formation of SHGs (association with SHGs) SHG and increase in decision making ability.

H1 = There is significant relation between year of formation of SHGs (association with SHGs) and increase in decision making ability.

Hypothesis 3:

H0 = There is no significant relation between year of formation of SHGs (association with SHGs) SHG and thinking of self-employment after joining SHGs

H1== There is significant relation between year of formation of SHGs (association with SHGs) SHG and thinking of self-employment after joining SHGs

Methodology The study is based on primary data collected by a structured questionnaire. Kolkata Municipal Corporation from Kolkata district has been selected for the purpose of the study based on non-probabilistic convenient sampling method. 17 questions have been framed to collect the responses. Data collection time period was 2020-21. 51 respondents have been selected at random from the SHGs under the select KMC ward (under West Bengal State Urban Livelihoods Mission) responded to this survey. Secondary data sources that include newsletter, books, journals, magazines, articles, web resources have been used for exploratory part of the study. For analysis simple frequency, crosstabs, tables have been given. A set of hypotheses have been formulated to assess the progress in capacity building of SHG members under NULM. Chi-square test has been performed to assess the progress of NULM in capacity building of SHG members under NULM programme.

Result and Discussion

NULM has been launched by Government of India in the year 2013, and to be implemented in the urban metro cities and district head quarter towns based on population. The respective Urban Local Bodies i.e the Municipality or Municipal Corporation is entrusted with the task of implementing the programme with assistance from the respective State Urban Livelihoods Mission. In West Bengal it is the West Bengal State Urban Livelihoods Mission (WBSULM). In this study Kolkata Municipal Corporation has been selected from Kolkata district on the basis of non-probabilistic convenient sampling method. 51 members of SHGs were selected at random and they responded to the survey. Their responses have been analysed.

Progress of NULM in capacity building of SHG members

§ **Demographic Profile of the Respondents**

Members of SHGs

Table – 1 Member of SHGs

Members of SHGs	Frequency	Percent	Cumulative Percent
Female	51	100.0	100.0

(Source: Compiled by author)

It is found from the survey that 100% of the respondents are female.

Age of the Respondents

Table -2 Age of the Respondents

Age	Frequency	Percent	Cumulative Percent
18-25	3	5.9	5.9
26-35	16	31.4	31.4
36-45	14	27.5	27.5

46-60	18	35.3	35.3
Total	51	100.0	100.0

(Source: Compiled by author)

1. 5.9% of respondents are from 18-25 age group, 31.4% are from 26-35 age group, 27.5% from 36-45 and 35.3% within 46-60 age group.

Religion of the Respondents

Table – 3 Religion of the Respondents

Religion of the Respondents	Frequency	Percent	Cumulative Percent
Christian	0	0	0
Hindu	47	92.2	92.2
Muslim	4	7.8	100.0
Others	0	7.8	100.0
Total		100.0	

(Source: Compiled by author)

92.2% are Hindu, 7.8% are Muslim. Majority are Hindu.

Literacy Level of the Respondents

Table- 4 Literacy Level of the Respondents

(Source: Compiled by author)

Literacy Level	Frequency	Percent	Cumulative Percent
upto 5	2	3.9	3.9
5-10	16	31.4	35.3
10-12	24	47.1	82.4
Graduate	9	17.6	100.0
Total	51	100.0	

For literacy level, only 3.9% of the respondents have read upto class 5, 31.4% have read upto class 5 to 10, 47.1% from class 10-12, 17.6% have completed graduation.

Marital Status of the Respondents

Table -5 Marital Status of the Respondents

Marital Status of the Respondents	Frequency	Percent	Cumulative Percent
Married	42	82.4	82.4
Unmarried	2	3.9	86.3
Widow/widower	7	13.7	100.0
Divorced	0	0.0	100.0
Total	51	100.0	

(Source: Compiled by author)

1. 82.4% of the respondents are married, 3.9% are unmarried, 13.7% is widow and no one is divorced.

Caste of the Respondents

Table- 6 Caste of the Respondents

Caste	Frequency	Percent	Cumulative Percent
Reserve	4	7.8	7.8
Unreserved	47	92.2	100.0
Total	51	100.0	

(Source: Compiled by author)

7.8% of the respondents belong to reserve category i.e SC, ST, OBC and other minority category and 92.2% are from unreserved or general category.

Capacity Building of SHG Members

Have you attended training before joining SHG, if any

Table-7 Have you attended training before joining SHG, if any

Have you attended training before joining SHG	Frequency	Percent	Cumulative Percent
Strongly Disagree	0	0	0
Disagree	33	64.7	64.7
Neutral	0	0	64.7

Agree	18	33.5	100.0
Strongly Agree	0	0	100.0
Total	51		

(Source: Compiled by author)

64.7% of the respondents said that they have not attended any training before joining SHG under SULM, 33.5% agreed, they said they have attended training on sewing course, handicraft making courses etc.

Is there any impact of training?

Table-8 Is there any Impact of training

Impact of training	Frequency	Percent	Cumulative Percent
Strongly Disagree	0	0	0
Disagree	9	17.6	17.6
Neutral	2	3.9	21.5
Agree	28	54.9	76.4
Strongly Agree	12	23.6	100.0
Total	51	100.0	

(Source: Compiled by author)

Only 17.6% respondent said that there is no impact of training i.e disagreed, 54.9% said that yes i.e agreed there is an impact of training which they attended, 23.6% strongly agreed and 3.9% preferred to be neutral. They mainly talked about the basic training conducted by the Urban Local Bodies after joining SHGs.

Have you attended Training after joining SHG under NULM

Table-9 Have you attended Training after joining SHG under NULM

Have you attended training after joining SHG under NULM	Frequency	Percent	Cumulative Percent
Strongly Disagree	0	0	0
Disagree	3	5.9	5.9
Neutral	8	15.7	21.6
Agree	32	62.7	84.3

Strongly Agree	8	15.7	100.0
Total	51	100.0	

(Source: Compiled by author)

1. 5.9% said no i.e disagreed, no one strongly disagreed, 15.7% neither agreed nor disagreed, 62.7% agreed and 15.7% strongly agreed. The urban local bodies of the respective SHGs has organised training for SHG members and they are basic trainings regarding maintenance of books of accounts, activities of SHGs.

Trainer Institution

Table-10 Trainer Institution

Trainer Institution	Frequency	Percent	Cumulative Percent
Management Mission Unit	0	0	0
Resource Organisations	51	100.0	100.0
Total	51	100.0	

(Source: Compiled by author)

100% of the respondents said, resource organizations provided the training

Skill Training

Table-11 Skill Training

Skill Training	Frequency	Percent	Cumulative Percent
Disagree	32	62.7	62.7
Agree	19	37.3	100.0
Total	51	100.0	

(Source: Compiled by author)

1. 62.7% said no regarding skill training, 37.3% said yes they know about skill training

Area of training

Table-12 Area of training

Area of training	Frequency	Percent	Cumulative Percent
Basic level	33	64.7	64.7
Health care services	10	19.6	84.3
Others	8	15.7	100.0
Total	51	100.0	

(Source: Compiled by author)

1. 64.7% said they have attended the basic training after joining the SHG regarding maintenance of accounts, benefits of joining SHG, health and hygiene awareness.
2. 19.6% includes physiotherapy, earlier before joining SHG under SULM or may be after being member of SHG since 2000. 15.7% others like beautician training course, sewing, handmade jewelleryes etc.

Year of Formation of SHGs under NULM

Table-13 Year of formation of SHGs

Year of formation of SHG	Frequency	Percent	Cumulative Percent
2000-2003	20	39.2	39.2
2004-2007	1	2.0	2.0
2008-2011	3	5.9	5.9
2012-2015	3	5.9	5.9
2016-2019	24	47.1	47.1
Total	51	100.0	100.0

(Source: Compiled by author)

1. It is observed that 47.1% of SHGs under SULM have been formed during the year 2016-2019 i.e they are recently formed and about 39.2% there were already some existing SHGs under the earlier SJSRY programme.

Increase in decision making ability

Table-14 Increase in decision making ability

Increase in decision	Frequency	Percent	Cumulative Percent
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making ability			
Strongly Disagree	1	2.0	2.0
Disagree	4	7.8	9.8
Neutral	8	15.7	25.5
Agree	33	64.7	90.2
Strongly Agree	5	9.8	100.0
Total	51	100.0	

(Source: Compiled by author)

1. 64.7% respondents agreed that there is an increase in their decision making ability after joining SHG, 7.8% disagreed, 15.7% preferred to be neutral, 9.8% strongly agreed. Majority agreed that their decision making capability improved than before after joining SHG. Only 2% strongly disagreed.

Thinking of Self-employment before joining SHGs

Table-15 Thinking of Self-employment before joining SHGs

Thinking of Self-employment before joining SHGs	Frequency	Percent	Cumulative Percent
No	21	41.2	41.2
Yes	30	58.8	100.0
Total	51	100.0	

(Source: Compiled by author)

1. 21.2% said yes they have thought about taking up self-employment, 78.8% said no, they were not thinking of taking up self-employment before joining SHG.

A set of hypotheses have been formulated to understand the relation between capacity building of SHG members after joining SHGS under NULM.

Hypothesis-1

H_0 = There is no relation between impact of training received after joining SHG and training received after joining SHG

H_1 = There is relation between impact of training received after joining SHG and training received after joining SHG

Table –16 Cross tabulation of Impact of training and Training after joining SHG under SULM

			Training after joining SHG				Total
			Agree	Disagree	Neutral	Strongly Agree	
Impact of training	Agree	Count	18	0	7	3	28
		% of Total	35.3%	.0%	13.7%	5.9%	54.9%
	Disagree	Count	2	3	1	3	9
		% of Total	3.9%	5.9%	2.0%	5.9%	17.6%
	Neutral	Count	1	0	0	1	2
		% of Total	2.0%	.0%	.0%	2.0%	3.9%
	Strongly Agree	Count	11	0	0	1	12
		% of Total	21.6%	.0%	.0%	2.0%	23.5%
Total		Count	32	3	8	8	51
		% of Total	62.7%	5.9%	15.7%	15.7%	100.0%

Chi-Square Tests				
		Value	df	Asymp. Sig. (2-sided)
Pearson	Chi-Square	26.025 ^a	9	.002
Likelihood Ratio		24.139	9	.004
N of Valid Cases		51		
a. 13 cells (81.3%) have expected count less than 5. The minimum expected count is .12.				

(Source: Compiled by author)

Chi-Square Tests

The Chi-square value or P value at 5% level of significance is .002 which is less than .05, so we reject the Null Hypothesis and accept the alternative hypothesis. So, it can be concluded that there is impact of training received after joining SHG

Hypothesis-2

H₀ = There is no significant relation between year of formation of SHGs (association with SHGs) SHG and increase in decision making ability.

H₁ = There is significant relation between year of formation of SHGs (association with SHGs) and increase in decision making ability.

Table- 17 Cross tabulation of participation in decision making process after joining SHG and year of formation of the SHGs under NULM

			Increase In Decision Making Ability					Total
			Agree	Disagree	Strongly Disagree	Neutral	Strongly Agree	
Year	2000-2003	Count	15	0	0	1	4	20
		% of Total	29.4%	.0%	.0%	2.0%	7.8%	39.2%
	2004-2007	Count	0	0	0	0	1	1
		% of Total	.0%	.0%	.0%	.0%	2.0%	2.0%
	2008-2011	Count	3	0	0	0	0	3
		% of Total	5.9%	.0%	.0%	.0%	.0%	5.9%
	2012-2015	Count	2	1	0	0	0	3
		% of Total	3.9%	2.0%	.0%	.0%	.0%	5.9%
	2016-2019	Count	13	3	1	7	0	24
		% of Total	25.5%	5.9%	2.0%	13.7%	.0%	47.1%
Total		Count	33	4	1	8	5	51
		% of Total	64.7%	7.8%	2.0%	15.7%	9.8%	100.0%

Fisher's exact test value				
	Value	df	Asymp. Sig. (2-sided)	
Pearson Chi-Square	26.817 ^a	16	.044	
Likelihood Ratio	26.481	16	.048	
N of Valid Cases	51			

a. 23 cells (92.0%) have expected count less than 5. The minimum expected count is .02.

(Source: Compiled by author)

Fisher's exact test value

The Fisher's Exact Test value or P value at 5% level of significance is .044 which is less than .05, so we reject the Null Hypothesis and accept the alternative hypothesis. So, it can be concluded that there is a relation between association with SHG and increase in decision making ability.

Hypothesis 3

H₀ = There is no significant relation between year of formation of SHGs (association with SHGs) SHG and thinking of self-employment after joining SHGs

H₁== There is significant relation between year of formation of SHGs (association with SHGs) SHG and thinking of self-employment after joining SHGs

Table- 18 Cross tabulation of Thinking of Self-employment before joining SHGs and after joining SHGs

			Thinking of Self- -Employment		Total	
			No	Yes		
Year	2000-2003	Count	14	6	20	
		% of Total	27.5%	11.8%	39.2%	
	2004-2007	Count	1	0	1	
		% of Total	2.0%	.0%	2.0%	
	2008-2011	Count	3	0	3	
		% of Total	5.9%	.0%	5.9%	
	2012-2015	Count	0	3	3	
		% of Total	.0%	5.9%	5.9%	
	2016-2019	Count	3	21	24	
		% of Total	5.9%	41.2%	47.1%	
	Total		Count	21	30	51
			% of Total	41.2%	58.8%	100.0%

Fisher's exact test				
		Value	df	Asymp. Sig. (2-sided)
Pearson	Chi-Square	22.823 ^a	4	.000
Likelihood	Ratio	26.585	4	.000
N of Valid	Cases	51		
a. 6 cells (60.0%) have expected count less than 5. The minimum expected count is .41.				

(Source: Compiled by author)

Fisher's exact test

The Fisher's Exact Test value or P value at 5% level of significance is .044 which is less than .05, so we reject the Null Hypothesis and accept the alternative hypothesis. So, it can be concluded that there is relation between thinking of Self-employment before joining SHGs and after joining SHGs

From the above analysis it is apparent that there is a progress in capacity building of SHG members in Kolkata district under NULM.

Overview of the overall progress in India

Table 19: Overall Progress of NULM in India

	2014-15 to 30 th June, 2020	2014-15 to 15 th August, 2020	2014-15 to 15 th Septemb er, 2020	2014-15 to 30 th Novemb er, 2020	2014-15 to 31 st Decembe r, 2020	2014-15 to 15 th March, 2021	2014-15 to April 30,2021	2014-15 to May 15 th , 2021	2014-15 to 15 th June, 2021	2014-15 to 15 th July 2021	2014-15 to 15 th Aug. 2021
SHGs formed	459670	467517	474571	501916	516465	540313	552105	553441	555503	557687	573604
Candidates skill trained	1061050	985639	987450	998158	1003760	1039018	1069892	1060494	1062509	1065947	10785344
Livelihoods created	1432885	1868559	1903109	2034662	2092109	2186473	2243446	2248834	2258642	2280294	2332737
Shelter for urban homeless	105218	109714	110810	111220	113082	113066	113462	113706	114107	113180	113263
Street vendors issued ID cards	940514	975626	1123956	2155449	2217963	2245754	2291801	2291809	2304510	2475970	2475970
Certificate of vending issued				1931582	1963103	2203336	2239506	2241087	2242409	2247701	2268961

Source: NULM_Newsletter

The above figures reveals an increasing trend in the number of SHGs formed over months and years from 2014-2015 to 30th June,2020 to 15th August,2021 and also increase in number of candidates provided skill training and subsequently an increase in livelihoods created. There has been an increase in number of shelters for urban homeless and in number of street vendors issued ID cards and number of vending certificated issued.

Conclusion

NULM the mission mode approach towards urban poverty eradication from grass root level has started its journey in 2013, replacing the earlier programme of SJSRY. Since then till date, NULM has successfully being able to form SHGs, provide skill training to the SHG members for taking up self-employment and wage employment. It has also provided shelter to urban homeless in different states across India. NULM has created livelihoods for urban BPL households. Economic growth and urbanization are closely linked hence to ensure economic growth urban poverty alleviation is an important pre requisite. For SHGs in Kolkata Municipal Corporation, Kolkata district it is revealed that some SHGS already existed under the earlier programme of SJSRY and some have been newly formed under NULM. Those already existing have been bought under the new NULM programme. Majority of the members agreed that yes there has been an improvement in their decision making ability, they are thinking about taking up self-employment on their own and those who are since SJSRY

programme are already doing some business and yes there is an impact of the training they have received after joining SHGs under NULM.

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The Nature of The World in Monism's Concept of Mahabharata: A Philosophical Study

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Abstract

Mahavarata says everything in the world is impermanent. Whoever has creation has destruction. Nothing in this world is eternal. This world is impermanent so it is not proper to mourn for it. The ignorant person always thinks of impermanence due to ignorance. That is why ignorant people mourn. But scholars are aware of the true nature of the world, so they do not grieve. In the Mahabharata, five Mahabhutas are recognized, which are elements of the world. Earth, water, fire, air and ether are five elements (panchabhuta). These five elements are impermanent. Mahavarata also accepted the five senses organ, the five-motor organ and the mind, these eleven organs. The doctrines mentioned in the Mahabharata concerning the functioning of the senses are not contradictory to logical conclusions, but are consistent with them. Each demon has been characterized here according to its deeds. The Mahabharata states that the earth has these five qualities of sound, touch, rupa, taste and smell. Water contains sound, touch, rupa and rasa. In fire has sound, touches and rupa or sharp. Sound and touch quality from the air. There is only one quality in the ether - the sound. All those smells are earthly. There are ten types of gandha, six types of rasas, twelve types of colour, eleven types of touch, ten types of sounds. In the Mahabharata, the soul or Parameswar is acknowledged as the only eternal. Because it is against the Veda to accept any eternal thing other than the soul. Therefore, in the Mahabharata, are not accepted eternal substance like Vaisesika Philosophy. Twenty-six theories have been accepted in the review of the world in the Mahabharata Samkhya philosophy. At the highest level is Parameswar or Brahma. Second place is Purusha or self. Then the place of Prakriti. This world is impermanent, come from Prakriti. This Prakriti is called pradhan. There is no causal relationship between these three theories. Mahat is first product of by Prakriti. Ahankar is second product of Mahat. Ahankara has four kind- mind, five sense organ, five motor organ and five tanmantra or mahavuta. In the Mahabharata, the world is called impermanent. This world originates from the Eternal Parabrahma or Parameswar.

Keywords

World, Impermanent, Brahma or Parameswar, Maya, Mahabhuta.

Introduction

In the discussion of Indian philosophy, several doctrines can be observed centering on the world and life. The major doctrines among them are monotheism, dualism, special dualism, dualism etc. Among all these doctrines, monotheism has been discussed with special importance. Advaita means recognition of an entity. The creation or emergence of many from one entity. In the ancient Vedic literature of India, Puranas, Upanishads, Mahabharata, Ramayana, etc., the essence has been deeply discussed. Overall, the importance of monotheism in India as a spiritual country is immense. Unity in diversity can be seen in Indian culture. Discussions about this entity occupy a very important place in the Indian philosophical community. The manifestation of Advaita thought can be seen in Advaita Vedanta. Gaurpada was the first to explicitly develop the seeds of monotheism in the Upanishads. That is why Gaurpada is the first proponent of Advaitaism in Vedanta philosophy. He was the guru of Shankaracharya's guru Govinda. The Vedas praise polytheism, so the Vedas are called polytheists. But a feature is present in Vedic thought. In the Rik Veda it is said - 'Ekang sat bipra bahudha badanti agning yamang matrishvanam ahuh'-1/164/48 – that is, even though the entity is one, the scholars describe it in various ways. She is called Agni, Yam and Matrishva. All the

gods are different manifestations of the same entity. In the Rikveda Purushasukta, the Vedic sages have described the unity that exists in the entire universe. Here it is said- 'Sahasrasirsa Purush: Sahasraksha Sahasrapat. Sa bhuming bisvato vrtvahatyatisthaddasangulam: '- that is, a thousand shirya sahasraksha men are surrounded everywhere and ten fingers the size of the world. The main statement of monotheism is found in the Mandukyakarika of Gaurpada. Many people think that this Karika is the basis of Shankaracharya's monotheism. Shankaracharya's Brahmasutra commentary reveals the deep thought of this Advaita. In fact, the influence of the philosophy of Shankaracharya and his followers is so profound that Vedanta philosophy refers to Shankaracharya's monotheism. The essence of his Advaitabad is - "Brahma Satya Jagat Mithya Jibo Brahmaibanapar:" - meaning Brahma is true, Jagat is false, Jiva is nothing but Brahman.

Aim of study

Mahabharata is an epic that introduces the literature, history, philosophy, theology, politics, ethics, sociology, etc. of the then India. The Mahabharata is one of the greatest ancient epics. This is the second epic of India. The first epic Ramayana is a linear context. But the Mahabharata, on the other hand, is a multi-linear context. Here, from beginning to end, different doctrines, different philosophies, gatherings of many characters and descriptions of their diverse origins are found. The poet writes about the Mahabharata in his essay 'History of India' - "He unified all the rumors spread in the Aryan society. He stood up in one place. He named it Mahabharata. It is not the history written by any individual; it is the self-written natural history of a nation." Monotheism is one of the most widely accepted doctrines of existence. According to monotheism, the entity is one and unique. Here the second entity is denied. Attempts are made to explain everything by acknowledging an entity. The concept of monotheism is discussed in spite of the predominance of dualism in the second largest epic of India. In the Mahabharata, Brahma is acknowledged as eternal, Jagat as impermanent, Jiva and Brahma as one and the same.

Review of Literature

The English word world comes from the Old English weorold (-uld), weorold, worold (-uld, -eld), a compound of wer 'man' and eld 'age', which thus means roughly 'Age of Man.' (Orel, Vladimir (2003) A Handbook of Germanic Etymology Leiden: Brill. p. 462 ISBN 90-04-12875-1) The Old English is a reflex of the Common Germanic wira-aldiz, also reflected in Old Saxon werold, Old Dutch werilt, Old High German weralt, Old Frisian world and Old Norse verǫld (whence the Icelandic veröld).(Lewis, David (1986). On the Plurality of Worlds. Wiley-Blackwell.) The corresponding word in Latin is mundus, literally 'clean, elegant', itself a loan translation of Greek kosmos 'orderly arrangement'. While the Germanic word thus reflects a mythological notion of a "domain of Man" (compare Midgard), presumably as opposed to the divine sphere on the one hand and the chthonic sphere of the underworld on the other, the Greco-Latin term expresses a notion of creation as an act of establishing order out of chaos. Different fields often work with quite different conceptions of the essential features associated with the term "world". Some conceptions see the world as unique: there can be no more than one world. Others talk of a "plurality of worlds". Some see worlds as complex things composed of many substances as their parts while others hold that worlds are simple in the sense that there is only one substance: the world as a whole. Some characterize worlds in terms of objective spacetime while others define them relative to the horizon present in each experience. These different characterizations are not always exclusive: it may be possible to combine some without leading to a contradiction. Most of them agree that worlds are unified totalities. What is Monism? Monism is a thesis about oneness: that only one thing exists in a certain sense. The denial of monism is pluralism, the thesis that, in a certain sense, more than one thing exists. There are many forms of monism and pluralism, but in relation to the world as a whole, two are of special interest: existence monism/pluralism and priority monism/pluralism. Existence monism states that the world is the only concrete object there is. This means that all the concrete "objects" we encounter in our daily lives, including apples, cars and ourselves, are not truly objects in a strict sense. Instead, they are just dependent aspects of the world-object. Such a world-object is simple in the sense that it does not have any genuine parts. For this reason, it has also been referred to as "bobject" since it lacks an internal structure

just like a blob. Priority monism allows that there are other concrete objects besides the world. But it holds that these objects do not have the most fundamental form of existence, that they somehow depend on the existence of the world. The corresponding forms of pluralism, on the other hand, state that the world is complex in the sense that it is made up of concrete, independent objects.(Schaffer, Jonathan (2007). "From Nihilism to Monism". Australasian Journal of Philosophy. 85 (2): 175 191. doi:10.1080/00048400701343150. S2CID 7788506.) Scientific cosmology can be defined as the science of the universe as a whole. In it, the terms "universe" and "cosmos" are usually used as synonyms for the term "world".One common definition of the world/universe found in this field is as "The totality of all space and time; all that is, has been, and will be". (Schreuder, Duco A. (3 December 2014). Vision and Visual Perception. Archway Publishing. p. 135. ISBN 978-1-4808-1294-9) Some definitions emphasize that there are two other aspects to the universe besides spacetime: forms of energy or matter, like stars and particles, and laws of nature. Different world-conceptions in this field differ both concerning their notion of spacetime and of the contents of spacetime. The theory of relativity plays a central role in modern cosmology and its conception of space and time. An important difference from its predecessors is that it conceives space and time not as distinct dimensions but as a single four-dimensional manifold called spacetime. This can be seen in special relativity in relation to the Minkowski metric, which includes both spatial and temporal components in its definition of distance. General relativity goes one step further by integrating the concept of mass into the concept of spacetime as its curvature. Quantum cosmology, on the other hand, uses a classical notion of spacetime and conceives the whole world as one big wave function expressing the probability of finding particles in a given location. (Parent, Ted. "Modal Metaphysics". Internet Encyclopedia of Philosophy. Retrieved 9 April 2021.) World concept in present, A worldview is a comprehensive representation of the world and our place in it.(Bunge, Mario (2010). "1. Philosophy as Worldview". Matter and Mind: A Philosophical Inquiry. Springer Verlag.) As a representation, it is a subjective perspective of the world and thereby different from the world it represents. (De Mijolla-Mellor, Sophie. "Weltanschauung". International Dictionary of Psychoanalysis.) All higher animals need to represent their environment in some way in order to navigate it. But it has been argued that only humans possess a representation encompassing enough to merit the term "worldview". Philosophers of worldviews commonly hold that the understanding of any object depends on a worldview constituting the background on which this understanding can take place. This may affect not just our intellectual understanding of the object in question but the experience of it in general. It is therefore impossible to assess one's worldview from a neutral perspective since this assessment already presupposes the worldview as its background. Some hold that each worldview is based on a single hypothesis that promises to solve all the problems of our existence we may encounter. On this interpretation, the term is closely associated to the worldviews given by different religions. Worldviews offer orientation not just in theoretical matters but also in practical matters. For this reason, they usually include answers to the question of the meaning of life and other evaluative components about what matters and how we should act. ("The Old World-New World Debate and the Columbian Exchange". Wondrium Daily. 31 January 2021. Retrieved 10 April 2022.) A worldview can be unique to one individual but worldviews are usually shared by many people within a certain culture or religion.

Methodology Analytical research use in this article, the facts that have been confirmed already to form the basis for the research and critical evaluation of the material is carried out in this method.

Result and Discussion When Kauravagan was killed in the battle of Kurukshetra, Dhritarashtra became very tired of Putrasha. Then Mahamati Bidur went to give them peace and described the true nature of the living world.Bidur says everything in the world is impermanent. Whoever has creation has destruction. Nothing in this world is eternal. This world is impermanent so it is not proper to mourn for it. The ignorant person always thinks of impermanence due to ignorance. That is why ignorant people mourn. But scholars are aware of the true nature of the world, so they do not grieve.Mahamati Bidur tries to explain the impermanence of the world through a number of anecdotes. - Once a Brahmin entered a deep forest while traveling. Lions, tigers, elephants and nocturnal animals lived there. They were very violent and terrible. The Brahmin entered such a deep and terrible forest and became frightened. Then he began to look around, wondering who he would seek refuge in. He tried to escape but he could not get out of the deep forest. At last, he saw a

five-faced snake circling around the world. There was a well-covered with herbs. He inadvertently hangs there on the herbs later. There were other dangers. In that well was a snake with six months and twelve legs. There were also some bees on the branches of the tree, from which endless honey was falling. But even in that crisis the Brahmins started drinking honey without any hesitation. As he was not satisfied with it, greed continued to grow. The Brahmin made no effort to get out of the forest in spite of the danger. After hearing this anecdote of Bidur, Maharaja said to Dhritarashtra - The deep forest is the world of the universe. All the living creatures in it are diseased, the well is the human body. The snake in the well is Mahakala, its six faces and twelve legs are the six seasons and twelve months of this world, the bee is Kam. Madhu kamaras, which is addicted to human intentions. Only scholars think of the world as impermanent, so they are not bound by it. Ordinary people do not know the impermanence of the world, so they are bound to the world again and again. Only a prudent man can know the impermanence of the world. He is the one who travels in search of liberation. 3 All material things in the world have been collected only for worldly needs. All these worldly things have no essence. These only serve the practical needs of the world. There is no utility in the world of extra material needs.

In the Mahabharata, five Mahabhutas are recognized, which are elements of the world. The literal meaning of ghost here is occurring, incidental, secondly past, circle, thirdly true, fourthly born, fifthly connected, fair, sixthly incarnate, seventhly panchabhuta i.e., earthly panchabhuta. Here the last meaning has been adopted.⁴ These five great beings are impermanent. Also recognized are the five senses, the five senses and the mind, these eleven senses. Now let us come to the description of the five great beings. Here Akash is the first Mahabhuta, Shrotra Adhyatma, Shabda Adhibhuta, Dikka Adhidaivata. Air is the second universe, the skin is spiritual, the visible is dominated, the electricity is supernatural. Tejah or Jyoti is the third Mahabhuta, the eye is spiritual, the form is sublime, the Sun is supernatural. Water is the fourth mahabhuta, the tongue is spiritual, the juice is adhibhuta, soma is supernatural. The earth is the fifth mahabhuta, the olfactory abyss, the odor abhyavata, the air adhivaibata. Note that these technical names are not found in the philosophy of justice. Even the word metaphysicalism is not accepted in philosophy. The doctrines mentioned in the Mahabharata concerning the functioning of the senses are not contradictory to logical conclusions, but are consistent with them. Each demon has been characterized here according to its deeds. The Mahabharata states that the earth has these five qualities of sound, touch, form, taste and smell. Water contains sound, touch, form and juice. Words, touches and forms are sharp. Sound and touch quality from the air. There is only one quality in the sky - the word. All those smells are earthly. There are ten types of scent - sweet, sour, sweet, sour, bitter, nitty-gritty, concentrated, smooth, rough and detailed. There are six types of juice - sweet, sour, bitter, bitter, astringent and salty. Form Bar Types- White, Black, Blood, Blue, Yellow, Arun, Short, Long, Thin, Thick, Quadrupe and Circular. Eleven types of touch - rough, cold, warm, smooth, elaborate, hard, smooth, smooth, slippery, fine and soft. There are ten types of words - Shadj, Rishabh, Gandhab, Madhyam, Pancham, Nishad, Dhaivat, Ishta, Anishta and Sanhat. Although such divisions are not recognized in jurisprudential philosophy, they are not against them.

The seven specially recognized substances are not accepted in the Mahabharata. There is no recognition here other than the Panchamaha Bhoot. All other worlds, except the one soul, belong to the Panchamaha ghost. Knowledge of time is gained through the use of material past, present and future, such as antiquity, novelty, etc. It is useless to accept a separate substance called direction. Because the east, west, etc. directions are used to indicate the position of the bright sun in the sky. That is, the imaginary part of the sky where the sun rises are marked as east and the imaginary part where it sets is marked as west. Thus, the imaginary part is marked as a direction depending on the position of the sun. Even the mind was not recognized as a separate product. The mind is a sense, so the quality that the mind will receive will be the refuge of that quality.

In the Mahabharata, the soul is acknowledged as the only eternal. Because it is against the myth to accept any eternal thing other than the soul. Therefore, in the Mahabharata, special and co-operatives are not recognized as a specially recognized eternal substance. Even deficiency has not been recognized as a separate substance

Twenty-six theories have been accepted in the review of the world in the

Mahabharata Samkhya philosophy. There are men in the next level. Then the place of nature. This world is impermanent, the consequence of nature. This nature is called radical nature or chief. 10 There is no causal relationship between these three theories. Some of them are not the work of some and some are not the cause of others. The remaining eight substances are nature and sixteen substances are distortions. The unspoken, the sublime, the arrogant, the earth, the air, the sky, the light and the light are known as these eight natures. The original nature and the mahadadi nature-distortion is only called nature. The equilibrium of these three qualities is called nature or unexpressed. These three qualities are not the religion of nature, but they are identical with nature. If we know the nature of those qualities, then the nature becomes known. Origin of greatness originates from nature or unexpressed, arrogance from greatness, ghost quality from arrogance, creation of mind, origin of five ghosts from mind. Sound, touch, form, taste and smell originate from ghost shots respectively. Sutras, skin, eyes, tongue and smell originate from the mind.

In the Mahabharata, the world is called impermanent. This world originates from the Eternal Parabrahma - this statement is found in the Python-Prahlad news. There, in response to a question from the eldest Pandava Yudhishthira, his grandfather Bhishma recited to him the anecdote of the dragon Prahlad. He said that one day Danbaraj Prahlak saw a Brahmin wandering around the world with a fixed mind and asked him that he (Brahmin) was acting like a boy with no desire, no arrogance, no mercy, no sense of truth, no talent, no talent and no wisdom. He has no desire for anything. He does not mourn for loss. Do not disrespect any object. All the other tenants, like the common man, are moving towards the unfavorable currents of the world society, but he has also shown indifference to the righteous deeds, like the ever-satisfied one, who is different from the other. He is disrespectful to all the sensible things like form, juice etc. If there is no obstacle, how is he living his life with such calm, slow and steady wisdom?

Then in answer to this question of Prahlad, the Brahmin informed Danbaraja that the origin, decrease, increase and destruction of this demonic community is from the only eternal Parabrahm. So he did not worry about it. Instinct has been instilled from the whole nature. Apart from nature, the tenants have no other refuge. For this, even if he gets the wealth of Brahmlok, he is not satisfied. Connection is subject to all subtraction and destruction to the savings community, for this reason he does not concentrate on any object. Whatever is created from the demonic beings is destroyed or destroyed. Knowing this fact, no human being takes part in any worldly activities. In the ocean, everything from small to large is destroyed. In this world, all the creatures that are subject to the movable and immovable ghosts, from small to large, are destroyed. Even in space, all kinds of astronomical stages, from small to large, are gradually destroyed. Seeing that all the ghosts are being subjected to death or destruction in this form, he is living a life of absolute happiness with equal vision for all. He sometimes eats as much as he wants and may even go hungry. Sometimes he lives in a palace and sometimes he sleeps on the ground floor. Sometimes he wears expensive clothes and sometimes he wears very ordinary clothes. So, he can be calm, stable and free from lust.

Findings This world is impermanent, come from Prakriti. This Prakriti is called pradhan. There is no causal relationship between these three theories. Mahat is first product of by Prakriti. Ahankar is second product of Mahat. Ahankara has four kind- mind, five sense organ, five motor organ and five tanmantra or mahavuta. In the Mahabharata, the world is called impermanent. This world originates from the Eternal Parabrahma or Parameswar.

Conclusion The nature spoken of in the Mahabharata is only conducive to the creation of Brahman, although the distinction of nature is not acknowledged here. That is why Srivagavan says- 'I am creating everything. I am the creator of my own nature and I am creating again and again.' It is not only the goal of man or living being to know the nature of the Trigunatmika nature, but also the ultimate goal of man is the knowledge of Purushottam or the union of Brahman and man. From the above discussion it is understood that without the use of technical terms like nature, man, greatness, arrogance etc., there would be no difference between Samkhya and Advaita Vedanta. Mahabharata is one of the scriptures, which states that everything

in the world is impermanent. Hence, anything created in this world is subjected to destruction. Moreover, it states that nothing in this world is eternal, so it is not proper to mourn for it. The worldly human beings always think about state of permanence due to act of ignorance and that is the reason why ignorant people mourn, but learned scholars are aware of the true nature of this materialistic world, so they do not grieve. In the Mahabharata, five Mahabhutas are recognized, which are elements of the world viz. earth, water, fire, air and ether are five elements and are referred to as Panchabhuta. These five elements are impermanent according to Mahabharata and it also accepted the five senses organ, the five-motor organ and the mind, these eleven organs. The doctrines mentioned in Mahabharata concerning about the functioning of senses are not contradictory to logical conclusions, but are consistent with them. It is important to note that in Mahabharata each demon has been characterized according to its deeds. The Mahabharata states that earth has these five qualities of sound, touch, rupa, taste and smell. In this context, Water contains sound, touch, rupa and rasa; Fire has sound, touches and rupa or sharp; Sound and touch quality from the air. Interestingly, there is only one quality in the ether - the sound. All those smells are earthly. There are ten types of gandhas, six types of rasas, twelve types of colours, eleven types of touches and ten types of sounds. In Mahabharata, Soul or Parameswar is acknowledged as the only eternal, because it is against the Veda to accept any eternal substance as mentioned in Vaisesika Philosophy. Furthermore, twenty-six theories have been accepted in review of the world in Mahabharata Samkhya philosophy, which mentions the highest level is Parameswar or Brahma followed by second level is Purusha or Self and third is Prakriti. Also, mentions this world is impermanent and comes from Prakriti, wherein this Prakriti is called Pradhan. Moreover, there is no causal relationship between some of these theories. The understanding is that 'Mahat' is the first product of Prakriti and Ahankar is second product of Mahat. The Ahankara has four kinds of minds, five sense organs, five motor organs and five tanmantras or mahavutas. The present study has attempted a philosophical overview on Mahabharata. The observation is Mahabharata states the impermanence of this world and also exhibits that it originates from the eternal Parabrahma or Parameswar.

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Attitude of Teachers towards Inclusive Education on the basis of Gender

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Abstract The purpose of present research paper was to compare attitude of teachers towards inclusive education w.r.t Teacher, Teaching Learning Process, Administrator, Psychological Aspect, Social Aspect, and Evaluation on the basis of gender. Out of 23 districts of Punjab 03 districts (Amritsar, Gurdaspur and Tarn Taran) were selected. From each district 25 elementary schools were selected and from each school 03 to 04 teachers were selected. Data were collected by using the scale to measure attitude towards inclusive education for elementary school teachers. The result of one way ANOVA followed by t test revealed that male teachers had more favorable attitude towards inclusive education on dimension 'Administrator' than female teachers. This study further revealed that there was no significant difference in the dimensions 'Teacher', 'Teaching Learning Process', 'Psychological Aspect', 'Social Aspect' and 'Evaluation' of teachers towards inclusive education on the basis of gender.

Keywords Inclusive Education, Attitude, Teaching Learning Process, Elementary School Teachers, Gender, Social Aspect.

Introduction We live in the world of diversities and individual differences. Such diversities and differences are part and parcel of our life. Inclusive education refers to a model wherein students with special needs spend most or all of their time with non-special (general education) needs students. Inclusion is a concept that sees children with diverse abilities as full time participants in and as members of their neighbourhood schools and communities (Hanees, Jazeel, and Saravanakumar, 2013). Inclusive Education is a milestone in the path of redesigning the national school curriculum (Jazeel, 2018). It is an important issue for establishing equity and equality in education and is a kind of 'zero rejection' policy where no one student is refused or neglected by the school at any ground (Jana & Tarini Halder, 2018). Inclusive education means that all students attend and are welcomed by their neighbourhood schools in age-appropriate, regular classes and are supported to learn, contribute and participate in all aspects of school life. It is about how we develop and design our schools, classrooms, programs and activities so that all students learn and participate together. Neighbourhood schools are the heart of communities and culture (Jazeel, 2017). Advani and Chadha (2002) states that, "Inclusive education aims to provide a favourable setting for achieving equal opportunity and full participation for all thus bringing children with special needs well within the purview of mainstream education. Success of Inclusive education depends on various factors, in which teacher is the most significant factor. In this context, teachers can play big role in implementing inclusion in education in schools. The attitudes of teachers are important to find out how they can work for inclusion as a new approach in education. Positive role and attitude of the teachers is essential to reach this realistic goal. For becoming a competent and successful inclusive teacher, it is necessary to have required knowledge, skills and positive attitude. Attitude is concerned to know the feelings and reactions of the teachers towards of inclusive education and its different aspects.

Aim of study To compare attitude of teachers towards inclusive education on the basis of gender w.r.t. Teacher, Teaching Learning Process, Administrator, Psychological Aspect, Society or Social Aspect, and Evaluation.

Review of
Literature

Singh et al. (2020) discovered teachers' attitudes towards inclusive education among their different demographic variables i.e. Mode of service, Gender, Locality and revealed that attitude of teachers towards inclusive education was moderate to a favourable level. Pre-service and urban teachers had a more positive/favourable attitude towards inclusive education than the attitude of In-service and rural teachers, respectively. In contrast, there was no significant difference between the attitude of male and female teachers towards inclusive education. Gandhi et al. (2020) examined the attitude of primary school teachers towards inclusive education from government and private schools on the basis gender and locale of schools. The study was conducted on a sample of 100 primary school teachers from the district Fatehabad of the state Haryana. The statistical analysis was done by making use of the mean, S.D. and t-test and revealed that there was significant difference between private and government primary school teachers' attitude towards inclusive education. Private teachers' attitude towards inclusive education was more positive as compared to their government primary teachers. No significant difference was found in the attitudes of primary school teachers towards inclusive education for both the schools with respect to gender and locale of schools. Sharma, (2019) conducted study on attitude of teachers towards inclusive education by their age, gender, qualifications, training, disability and teaching experience. Teachers are found generally positive towards inclusive education. In a Likert scale ranging from 1 to 5 (highly positive), the overall attitude of teachers is 3.32. Looking attitude by gender, male teachers are found slightly positive towards inclusive education than female ones. Similarly, younger teachers are found positive than older teachers. Trained and experienced teachers are also found positive than untrained and inexperienced ones. In addition, teachers with some disability are found to have more positive attitude than other group of teachers. Khan & Basak, (2018) investigated the attitude of teachers towards inclusive education on the basis of their gender, stream, category, qualification, teaching experience and their residential area. 118 high school teachers as sample were randomly selected from 10 high schools in Purba Bardhaman district, West Bengal, India. The result revealed that there were no difference in attitude of teachers towards inclusive education on the basis of gender, stream, category, educational qualification, teaching experience and their residential area. Jazeel, (2018) Conducted study is to find out the attitude of teachers towards Inclusive Education in Akkaraipattu Education Zone and revealed that most teachers have favourable attitude towards inclusive education. There are significant differences in the attitude teachers towards inclusive education based on gender, locale of the school and type of school. Galaterou & Antoniou, (2017) investigated teachers' attitudes towards inclusive education in relation to demographics (gender and age) and their occupational stress levels. The research involved 208 primary and secondary school teachers, working in urban and suburban areas of five prefectures of Greece. Teachers' gender, age and occupational stress served as independent variables. Teachers demonstrated marginally positive attitudes towards inclusion, which were correlated with their age. Specifically, younger teachers expressed more positive attitudes than their older colleagues. However, no differences were detected between men and women. Furthermore, relatively high levels of stress were observed, while the specific stressors were detected. Finally, teachers' attitudes were partly correlated to occupational stress, as less positive attitudes towards inclusive education were associated with increased levels of stress. Jana & Tarini Halder, (2018) conducted study to find out the level of attitude of secondary school teachers towards inclusive education and to compare in terms of gender, and teaching experience. For finding the attitude towards inclusive education a survey based descriptive research were conducted on conveniently selected 242 secondary teachers from 26 randomly selected schools under WBBSE and WBCHSE in the geographical area of Paschim Medinipur district of West Bengal. The researcher finds out that there is a lacuna in favorable attitude towards inclusive education and teachers with <10 years of teaching experiences have greater favorable attitude than the teachers with ≥10 years of teaching experiences. So, teaching experience is not an influencing factor for making favorable attitude towards inclusion. The researcher also finds out that female and male secondary teachers don't differ in their attitude towards inclusion. Chavhan, (2013) studied student teachers attitude towards inclusive education and to compare their attitude on the basis gender, caste and locality and researcher found that there is significant difference in Attitude towards Inclusive Education. The female student teachers have favorable

attitude towards inclusive education than male student teachers. The student teachers' caste and locality does not have any influence on attitude towards inclusive education. Mohanty, (2017) conducted study to study the attitudinal dispositions of elementary school teachers towards inclusive education with reference to gender, teaching experience and locality. The data was collected from the 120 elementary school teachers of Choudwar block and Cuttack city of Odisha. The sample was selected through stratified random sampling technique. A self-developed five-point attitude scale was used for collection of data. The findings of the study revealed that, gender, teaching experience and locality were the factors for developing differential attitudes among the teachers as there were significant differences in the mean attitude scores of elementary school teachers towards various aspects of inclusive education with reference to gender, teaching experience and locality.

Methodology Descriptive Research Method was used.

Sampling

Population in the present study is teacher's teaching in elementary school of three districts i.e. Amritsar, Gurdaspur and Tarn Taran of Punjab state affiliated to Punjab School Education Board, Mohali. In these three districts there were 8 to 11 educational blocks existing (8 in Tarn Taran, 9 in Amritsar and 11 in Gurdaspur). From each block 3 to 5 elementary schools were randomly selected keeping in mind representation of all types of communities existing in the districts. Total 75 schools were selected at second stage of sampling process. On an average, from each school three teachers were selected purposefully.

Table 1: Sample Structure of Schools and Teachers

	Amritsar	Gurdaspur	Tarn Taran	Total
School	25	25	25	75
Teachers	79	64	59	202

Tools Used Scale to measure attitude towards inclusive education for elementary school teachers developed by Gursewak Singh Bhullar and Dr. Tirath Singh (2018) was used to collect the data. Dimensions of scale are Teacher, Teaching Learning Process, Administrator, Psychological Aspect, Social Aspect, and Evaluation.

Analysis

Data Analysis and Interpretation

Table 2: Dimension Wise Comparison of The Attitude of Teachers towards Inclusive Education on the Basis of Gender

Dimension	Gender	N	Mean	SD	SEM	SED	t
Teacher	Male	84	36.44	6.216	.678	.817	1.49 NS
	Female	118	37.66	5.350	.492	.838	
Teaching Learning Process	Male	84	26.23	4.621	.504	.668	.88 NS
	Female	118	25.64	4.721	.435	.666	
Administrator	Male	84	26.95	3.318	.362	.519	3.74**
	Female	118	25.01	3.849	.354	.507	
Psychological	Male	84	31.79	3.803	.415	.507	1.66

Aspects							NS
	Female	118	32.63	3.358	.309	.517	
Society and Social Aspects	Male	84	46.05	4.618	.504	.670	.22 NS
	Female	118	46.19	4.747	.437	.667	
Evaluation	Male	84	17.86	2.542	.277	.357	1.35 NS
	Female	118	17.37	2.477	.228	.359	
Attitude towards Inclusive education	Male	84	185.38	14.057	1.534	2.138	.47NS
	Female	118	184.37	15.597	1.436	2.101	

** $p \leq 0.01$, NS= Not Significant at 0.05 level.

Table 2 shows that t- value for gender is 1.49 which is not significant at.05 level. It means that male and female teachers do not differ on dimension 'Teacher' of attitude towards inclusive education. On basis of this null hypothesis "There is no significant difference in the attitude of teachers towards inclusive education on the basis of gender" is accepted. It may be concluded that there was no significant difference in the dimension 'Teacher' of attitude of teachers towards inclusive education on the basis of gender.

Table 2 shows that t- value for gender is.88 which is not significant at.05 level. It means that male and female teachers do not differ on dimension 'Teaching Learning Process' of attitude towards inclusive education. On basis of this null hypothesis "There is no significant difference in the attitude of teachers towards inclusive education on the basis of gender" is accepted. It may be concluded that there was no significant difference in the dimension 'Teaching Learning Process' of attitude of teachers towards inclusive education on the basis of gender.

Table 2 shows that t- value for gender is 3.743 which is significant at.01 level. It means that male and female teachers differ on dimension 'Administrator' of attitude towards inclusive education. On basis of this null hypothesis "There is no significant difference in the attitude of teachers towards inclusive education on the basis of gender" is rejected. Further the mean score of males is higher than mean score of females. It may be concluded that male teachers had more favorable attitude towards dimension 'Administrator' of inclusive education than female teachers.

Table 2 shows that t- value for gender is 1.66 which is not significant at.05 level. It means that male and female teachers do not differ on dimension 'Psychological Aspects' of attitude towards inclusive education. On basis of this null hypothesis "There is no significant difference in the attitude of teachers towards inclusive education on the basis of gender" is accepted. It may be concluded that there was no significant difference in the dimension 'Psychological Aspects' of attitude of teachers towards inclusive education on the basis of gender.

Table 2 shows that t- value for gender is.22 which is not significant at.05 level. It means that male and female teachers do not differ on dimension 'Society and Social Aspects' of attitude towards inclusive education. On basis of this null hypothesis "There is no significant difference in the attitude of teachers towards inclusive education on the basis of gender" is accepted. It may be concluded that there was no significant difference in the dimension 'Society and Social Aspects' of attitude of teachers towards inclusive education on the basis of gender.

Table 2 shows that t- value for gender is 1.355 which is not significant at.05 level. It means that male and female teachers do not differ on dimension 'Evaluation' of attitude towards inclusive education. On basis of this is the null hypothesis "There is no significant difference in the attitude of teachers towards inclusive education on the basis of gender" is accepted. It may be concluded that there was no significant difference in the dimension 'Evaluation' of attitude of teachers towards inclusive education on the basis of gender.

Table 2 shows that t- value for gender is.47 which is not significant at.05 level. It means that male and female teachers do not differ on Attitude towards inclusive education. On basis of this is the null hypothesis "There is no significant difference in the attitude of teachers towards inclusive education on the basis of gender" is accepted. It may be concluded that there was no significant difference in attitude of teachers towards inclusive education on the basis of gender.

Result and Discussion

The next finding of the present research was that there was no significant difference in the dimension teacher and teaching learning process of attitude of teachers towards inclusive education on the basis of gender. On the other hand Male teachers had more favourable attitude towards dimension administrator of inclusive education than female teachers. Further, there was no significant difference in the dimension psychological aspects, society and social aspects, evaluation of attitude of teachers towards inclusive education on the basis of gender. There was no significant difference in attitude of teachers towards inclusive education on the basis of gender. Smitha and Sujatha (2010) found that the teachers have unfavourable attitude towards Inclusive Education for them. The male teachers possessed more unfavourable attitude than the female teachers towards Inclusive Education for the disabled. The male teachers have more favourable attitude than the female teachers towards the curricular aspect of Inclusive Education for the disabled. It is hoped that that teachers will acquire knowledge and develop favourable attitude for the disabled in the future. Dhull and Chaudhary (2011) conducted study on two groups of visually challenged male and female adolescents from Haryana and Delhi. Significant difference was not found in the adjustment level of partially visually challenged male and female adolescents. Chavhan (2013) found that the female student teachers have Favourable attitude towards inclusive education than male student teachers. The student teachers caste and locality does not have any influence on attitude towards inclusive education. Syed and Surieyah (2020) found that male and female primary school teachers don't differ significantly in their attitude towards inclusive education. Syed and Surieyah (2020) revealed teachers from both genders believe that inclusive education provide students with opportunities for mutual communication which makes them to understand and accept individual diversity. Sarris et al. (2018) showed that school teachers generally are in favour of including students with disabilities or special needs, although their perceptions differ significantly based on some demographic factors.

The gender of a teacher and their attitudes to inclusion was identified in research as being a significant factor contributing to how teachers perceive inclusion (Alquraini; 2012; Priyadarshini & Thangarajathi, 2016; Sandhu, 2017; Vaz, et al., 2015). Male teachers were mostly more negative towards inclusion than female teachers, yet research does not indicate whether these results reflect the attitudes towards the concept of inclusion or the actual reality of inclusive practice (Priyadarshini & Thangarajathi, 2016; Sandhu, 2017; Vaz, et al., 2015). Vaz et al (2015) reported that females hold more positive attitudes towards inclusion due to their greater tolerance and conative attitude, yet also indicated the research did not differentiate between male and female teacher attitudes towards the practice of inclusion compared to contemplating the idea of inclusion. Analysis and comparison between differing perceptions related to the theoretical and practical application of inclusion and how these individually contribute to teacher attitudes should be investigated further.

Research revealed cultural circumstances influence how gender correlates with teacher attitudes towards inclusion, as seen in the research conducted by Alquraini (2012). Alquraini (2012) examined both male and female general classroom and special education teacher's perspectives towards inclusion of students with severe intellectual disabilities. From the 161 male and 139 female participants, male teachers were more positive towards inclusion. This data is contradictory to other research (Monsen, Ewing & Kwoka, 2015; Priyadarshini & Thangarajathi, 2016; Sandhu, 2017; Vaz, et al., 2015), yet Alquraini (2012) theorised the results reflect the differences between cultural and religious contexts as this data is consistent with other studies conducted in Saudi Arabia (Al-Ahmadi, 2009, as cited in Alquraini, 2012). However, there is no indication of the ratio between female special education and regular classroom teachers in this study, and as females in Saudi Arabia receive their education separate from males and in specific subjects either

relating to perceived wifely duties or certain occupations available to women, perhaps very few female participatory teachers received training in inclusive practices, therefore influencing the overall results.

Findings

1. There was no significant difference in the dimension 'Teacher' of attitude of teachers towards inclusive education on the basis of gender.
2. There was no significant difference in the dimension 'Teaching Learning Process' of attitude of teachers towards inclusive education on the basis of gender.
3. There is significant difference in the dimension 'Administrator' of teachers towards inclusive education on the basis of gender. Further the mean score of males is higher than mean score of females. It may be concluded that male teachers had more favourable attitude towards dimension Administrator of inclusive education than female teachers.
4. There was no significant difference in the dimension 'Psychological Aspects' of attitude of teachers towards inclusive education on the basis of gender.
5. There was no significant difference in the dimension 'Society and Social Aspects' of attitude of teachers towards inclusive education on the basis of gender.
6. There was no significant difference in the dimension 'Evaluation' of attitude of teachers towards inclusive education on the basis of gender.
7. Overall there was no significant difference in attitude of teachers towards inclusive education on the basis of gender.

Conclusion

Male teachers had more favorable attitude towards inclusive education on dimension 'Administrator' than female teachers. This study further revealed that there was no significant difference in the dimensions 'Teacher', 'Teaching Learning Process', 'Psychological Aspect', 'Social Aspect' and 'Evaluation' of teachers towards inclusive education on the basis of gender.

Suggestions for the future Study

The findings suggest that various in-service programmers and courses on inclusive education should be introduced to the general school teachers. Inclusive education should be included in the curriculum of teacher education program on a compulsory basis. Inclusive education should be incorporated in both pre- service and in-service teacher education programme on compulsory basis. In every school one special teacher should be allotted.

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Antimutagenic Effect of Vitamin-E on the Nitrate Reductase Activity in Calli Raised from Diethyl Sulphate Treated Seeds of *Trigonella foenum-graecum* L

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Abstract Antimutagenicity of vitamin-E has been determined in calli raised from diethyl sulphate (DES; pH 7.41) treated seeds of *Trigonella foenum-graecum* L. The nitrate reductase activity (NRA) in h/250mg/fw has been taken as the criterion. DES-treated series (0.25%= 0.315±0.80 (h/250mg/fw); 0.50%= 0.170±0.29 (h/250mg/fw); 0.75%= 0.156±0.45 (h/250mg/fw)) produced a negative effect in all concentration levels in calli raised from DES treated seeds of *T. foenum-graecum* L. when compared with the control or untreated (0.308±0.35 (h/250mg/fw)) except in 0.25% DES treated series where a positive effect on the nitrate reductase activity was recorded. However, post-treatment of DES treated *T. foenum-graecum* L. seeds with two concentration levels of vitamin-E (0.25% and 0.50%) showed promotary effects on the nitrate reductase activity which it was recorded 0.175±0.36 (h/250mg/fw) and 0.172±0.38 (h/250mg/fw) for the two concentration levels of vitamin-E, respectively.

Keywords Antimutagenicity, Vitamin-E, *Trigonella Foenum-graecum* L., Diethyl Sulphate, Nitrate Reductase Activity.

Introduction Nitrate ions are very important ions in plants because they are essential for the synthesis of chlorophylls, cytochromes, nitrogen bases (purines and pyrimidines), proteins, anthocyanins, nicotinamide adenine dinucleotide (NAD), nicotinamide adenine dinucleotide phosphate (NADP), flavin mononucleotide (FMN) and flavin adenine dinucleotide (FAD) in plants for healthy growth. Despite this, nitrate ions cannot be used by the plants directly. It is first converted into ammonia before being incorporated into organic compounds by a process of nitrate assimilation. It is a reverse process of nitrification. Nitrate assimilation process is completed in two steps. In the first step, the nitrate ion is reduced to nitrite ion by an enzyme called nitrate reductase. This enzyme is a flavoprotein and contains molybdenum. It takes place in the cytoplasm of plants. In the second step, nitrite ions are then reduced to ammonia by an enzyme which is called nitrite reductase. Therefore, nitrate reductase is one of the most important enzymes in the assimilation of exogenous nitrate, the predominant form of nitrogen available to green plants growing in soil. Activity of this enzyme in plants gives a good estimate of the nitrogen status of the plant and is very often correlated with growth and yield. (Srivastava, 1980).

The term 'antimutagen' was used originally to describe those agents which reduce the frequency or rate of spontaneous or induced mutation independent of the mechanism involved (Novick and Szilard, 1952). Studies on antimutagenic factors (about 200 compounds) were initially carried out in the 1950s in the field of microbial genetics (Clarke and Shankel, 1975). In the present study, antimutagenicity of vitamin-E on the nitrate reductase activity have been determined against in calli raised from diethyl sulphate treated seeds of *Trigonella foenum-graecum* L.

Aim of study Due to the rapid increase in level of many types of toxic chemicals as a result of industrialization and urbanization, the biochemical activities of living plants are decreasing day by day. These toxic chemicals act as mutagens that cause mutations which reduce or destroy the activity of enzymes. One of them is the activity of nitrate reductase that has been involved in the study.

The aim of this study is to determine the activity of nitrate reductase enzyme by treating the seeds of *T. foenum-graecum* L. with mutagen and antimutagen. When

seeds are post-treated with antimutagen, the activity of the enzyme becomes normal again, so vitamin-E acts as an antimutagen.

Review of Literature

The testing of antimutagen (vitamin-E) in in vitro plant culture using enzymatic activity (Nitrate reductase activity) as parameters was investigated for the first time. Nevertheless, testing of mutagens and antimutagens in *T. foenum-graecum* L. have been investigated by few researchers (Rawat and Mahna 2001, Rawat and Bhati, 2013, Rawat, 2019 and Rawat, 2021). According to Stavric (1994) antimutagenic compounds can act at cellular level by enhancing the activities of enzymes involved in detoxification of mutagens, inhibiting the activities of enzymes involved in formation of mutagens metabolites, trapping of electrophiles, scavenging reactive oxygen species, inhibiting metabolic activation and protecting nucleophilic sites of DNA. Sharma et al., (2016) reported that in vitro antimutagenic effect on aqueous extract/fraction of *Parkinsonia aculeata* L. (Fabaceae) against 4-Nitro-o-phenylenediamine, sodium azide (direct acting mutagens) and 2-Aminofluorene (indirect acting mutagen) in TA98 and TA100 strains of *Salmonella typhimurium* by employing Ames assay and DNA nicking assay. Leaves of *P. aculeata* L. exhibited significant DNA protecting property against FR and antimutagenic activity against promutagen and direct acting mutagens in TA98 and TA100 strains of *S. typhimurium* in a dose dependent manner.

Main Text

Table-1. Nitrate reductase activity of calli raised from seeds treated in DES alone treatments and combinations (post-treatments) with vitamin-E: -

DES concentrations (%)	Nitrate reductase activity (h/250mg/fw) Mean±SE
Control	0.308±0.35
0.25	0.315±0.80
0.50	0.170±0.29
0.75	0.156±0.45
r Value	-0.902
DES (%) +Vitamin-E (in %)	Nitrate reductase activity (h/250mg/fw) Mean±SE
0.50+No Vitamin-E	0.170±0.29
0.50+0.25	0.175±0.36
0.50+0.50	0.172±0.38
r Value	0.397*

Tabulated 'r' for 3 d.f. at p=0.05 is 0.878

Tabulated 'r' for 2 d.f. at p=0.05 is 0.950

Reported values are mean \pm SE of 3 replicates

* Non-Significant

r= Karl Pearson's coefficient of correlation.

Methodology Dry pure line viable seeds of *T. foenum-graecum* L. were surface sterilized with 0.1% (w/v) mercuric chloride (HgCl₂) solution for 3 min. The seeds were thoroughly washed with sterilized distilled water so as to remove the traces of mercuric chloride and were pre-soaked in distilled water for 4 h at 25 \pm 10C. The experiments were designed to have the following three sets- 1. Control or Untreated- In this set, some of the pre-soaked seeds were kept in distilled water for 8 h at 25 \pm 10C. 2. Treated with diethyl sulphate (DES; pH 7.41) alone- In this set, some of seeds from control (untreated) were treated with freshly prepared three concentrations of DES (0.25%, 0.50% and 0.75%), prepared in water, for a period of 8 h at 25 \pm 10C. 3. Post-treated with vitamin-E- In this set, some of the DES treated seeds (with 0.50% concentration level of DES) were post-treated with freshly prepared two alcoholic concentrations of vitamin-E (0.25% and 0.50%) separately, for a period of 8 h at 25 \pm 10C. For each set, 30 seeds were used and were replicated thrice. Seeds of all the experimental sets were transferred to the flask containing 30 ml of MS plant tissue culture media (Murashige and Skoog, 1962) for raising the calli and were allowed to grow for four weeks under in vitro conditions. After four weeks, brown and dark tissues were removed from the explants and calli were sub-cultured on freshly prepared MS media and analysis the antimutagenic effects of vitamin-E on nitrate reductase activity in calli raised from DES mutagenized seeds of *T. foenum-graecum* L. Nitrate reductase activity was estimated by using the method of Scholl et al., 1974.

Result and Discussion The values presented in the Table-1, revealed that DES treatment series (0.25%=0.315; 0.50%=0.170; 0.75%=0.156) produced a negative effect in all concentration levels as compared to the control (0.308). With the except in 0.25% DES treated series where a positive effect was recorded. In present study, one concentration level of DES, i.e., 0.50% alone was used for the treatment of *T. foenum-graecum* L. seeds which resulted in 0.170 \pm 0.29 (h/250mg/fw) nitrate reductase activity as compared to 0.308 \pm 0.35 (h/250mg/fw) in the untreated used as a control. Marked elevation in nitrate reductase activity were observed in combination with vitamin-E post-treated series, but the improvement was not gradual. Post-treatment of DES treated *T. foenum-graecum* L. seeds with two concentration levels of vitamin-E (0.25% and 0.50%) showed promotary effects on the nitrate reductase activity which it was recorded 0.175 \pm 0.36 (h/250mg/fw) and 0.172 \pm 0.38 (h/250mg/fw) for the two concentration levels of vitamin-E, respectively. Maximum activity in the nitrate reductase activity (0.175 \pm 0.36 (h/250mg/fw) was observed in 0.50% DES+0.25% vitamin-E post-treated series and minimum activity in the nitrate reductase activity (0.172 \pm 0.38 (h/250mg/fw) was observed in 0.50% DES+0.50% vitamin-E post-treated series as compared to 0.308 \pm 0.35 (h/250mg/fw) in the untreated used as a control.

Findings The calculated values of Karl Pearson's coefficient of correlation (r) at a significance level p=0.05 depicted in Table- 1, were comparable with the tabulated 'r' values for 3 and 2 degrees of freedom, hence indicating a very strong negative and very less correlation between the used concentrations of DES (mutagen) or vitamin-E and effects on the nitrate reductase activity, respectively.

Conclusion In the present study, the marked elevation in nitrate reductase activity were observed in combination with vitamin-E post-treated series, but the improvement was not gradual. The maximum activity in the nitrate reductase (0.175 \pm 0.36 (h/250mg/fw) was observed in 0.50% DES+0.25% vitamin-E post-treated series and minimum activity in the nitrate reductase (0.172 \pm 0.38 (h/250mg/fw) was observed in 0.50% DES+0.50% vitamin-E post-treated series as compared to 0.308 \pm 0.35 (h/250mg/fw) in the untreated used as a control. Thus, it could be concluded that vitamin-E has the potentiality to stimulate the nitrate reductase activity caused due to the mutagen (DES).

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Emotional Maturity and Self –Confidence Among Early Age Adolescents.

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Abstract

Emotional maturity and self-confidence deleterious the ability of an individual's adaptation. An emotion indispensable in the life of an individual to have higher emotional ability in order to lead an effective life. This study aimed to know emotional maturity and self –confidence among early age adolescents. One hundred fifty early age adolescents (75 male and 76 female senior secondary school students) from various school of Haryana and NCR were randomly drawn to participate in the present study. All the subjects were administered Emotional Maturity Scale Dr. Yashvir Singh and Dr. Mahesh Bhargava (Agra) and manual for Self-Confidence Inventory by Dr. D.D.Pandey (PSCI) and interpretation of data statistical techniques of Karl Pearson's Product Moment, Mean, Standard Deviation, Standard Error and Critical Ratio to find Mean, Correlation and difference between Emotional Maturity and Self-Confidence was used. Measure of emotional maturity of early age adolescents in both (male and female) was found unstable. There was a no significant difference between measures of emotional maturity. But there was a significant mean and correlation difference between male and female school students with respect to emotional maturity and self-confidence. It was empirically proved that there was a significant mean and correlation difference between male and female early age adolescents with respect to emotional maturity and self-confidence. Early age female adolescents have significantly high on self-confidence rather than their counterparts.

Keywords

Emotional Maturity, Self-Confidence.

Introduction

Swami Vivekananda an Indian savant aptly pronounce, "Youth is not useless but are used less". Consequently, proper guidance at this decisive stage of youth's life is at the leading edge to intensify their pragmatic self- concept, enriching their cognition and ability to artifice in decision making, argumentation and to accept and control a difficult emotional situation or management of emotions to lead normal life. Although in this period of adolescent scattering exigency are triumphant and some of them have to trade-offs. Adolescents sustain an equilibrium uniting their necessities and surrounding to fine-tune with in the community. This accomplishment of an individual to revamp is an appraise of persona. Transformation of persona represents stability. Schooling means to enhance persona. Schools and colleges inclined adolescents to existence. Both the emotional maturity and self confidence is necessary for all round development persona of adolescent. Emotional maturity and self confidence deleterious the ability of an individual's adaptation. An emotion indispensable in the life of an individual to have higher emotional ability in order to lead an effective life. The emotion is premium mobile of reflections, regulations and anticipation in daily life activity. Emotions play a crucial role to regulate wellness and area of adjustment i.e. physical and mental health and socializing persona in reconciliation.

- Aim of study**
1. To study the emotional maturity among early age adolescents.
 2. To study self confidence among early age adolescents.
 3. To study the relationship between emotional maturity and self-confidence among early age female adolescents.
 4. To study the relationship between emotional maturity and self-confidence among early age male adolescents.
 5. To study the relationship between emotional maturity and self-confidence among early age adolescents.
 6. To compare the emotional maturity of both male and female early age adolescents.
 7. To compare the self-confidence of both male and female early age adolescents.

Review of Literature

The Oxford Dictionaries designate emotions "A powerful sentiment urging from one's occurrences, temper, or association with others."(Lexico Dictionaries) Emotions are reactions to symbolic inward and outward occurrences (Schacter, D.L., Gilbert, D.T., Wegner, D.M., & Hood, B.M. (2011). Emotional maturity is a course of action of one's power to act to create positivity and enthusiasm. Emotions are our specific reflections to distinct appearance; they bridge between our thoughts and actions. Whereas fatalistic emotions nurture us diffused and unfocused, we attain best outcome instantly take action with confidence, and gratify when working with others. The emotional maturity development through intra-curricular, co-curricular, and extra-curricular activities as well as guidance and counseling (BK) service program at formal educational institutions from elementary to higher levels (Muhammad M., Noor A. , Ahmad U.(2021).Academic achievement may be influenced by emotional intelligence and emotional maturity of the pupil (Rai D. Kisore Y. K.,(2017). A person can be called emotionally mature if he is able to express his emotions in significant degree with responsible control (Kapri and Rani, 2014). Generally Self-Confidence is used as collectedness in one's logistic assessment, capability, and power, etc. One's self confidence increases from experiences of having satisfactorily completed particular activities. It is a positive belief that in the future one can generally accomplish what one wishes to do. When individuals with low self-confidence receive feedback from others, they are averse to receiving information about their relative ability and negative informative feedback, and not averse to receiving positive feedback (Mobius,M.M et.al.2011). An individual's self-confidence can vary in different environments, such as at home or in school, and with respect to different types of relationships and situations (Reis, H., T., (2008.)). Furthermore, People with high self-confidence can easily impress others, as others perceive them as more knowledgeable and more likely to make correct judgments, (Price, P. C.; Stone, E. R. (2004), despite the fact that often a negative correlation is sometimes found between the level of their self-confidence and accuracy of their claims,(Slovenko, R. (1999).

- Hypothesis**
1. There is no significant relationship between emotional maturity and self –confidence among early age adolescents.
 2. There is no significant relationship between emotional maturity confidences among early age male adolescents.
 3. There is no significant relationship between emotional maturity and self-confidence among early age female adolescents.
 4. There is no significant difference between emotional maturity of male and female early age adolescents.
 5. There is no significant difference between self-confidence of male and female early age adolescents.

Methodology

1. Self –Confidence (Independent Variable)
2. Emotional Maturity (Dependent Variable)

Sampling

The sample (N=150, 75 male and 75 female) for the present study was drawn from of various schools of Haryana and NCR. Only early age adolescents (12th class students) were included in this study and they were administered with the tests of emotional maturity scale and self–confidence inventory. The selected institutions cater to the educational needs of middle income group early age adolescent of the area. The sample was restricted to early age adolescents (12th class students) only.

Tools Used

All participants were tested individually on Emotional Maturity Scale Dr. Yashvir Singh and Dr. Mahesh Bhargava (Agra) and Manual for Self-Confidence Inventory by Dr. D.D.Pandey (PSCI). Emotional Maturity Scale is self-reporting Five Point Scale and has a total 48 items under the 5 categories. Items of the scale are in question from demanding information for each in any of the five options. Much undecided probably never the items are so stated that if the answer is very positive Very Much, a score of five is given; for Much is given four; for undecided is given 3; for probably is given 2 and for negative answer of never is a score of 1 is to be awarded the emotional immaturity and vice-versa.

Manual for Self-Confidence Inventory measures various aspect of self-confidence. In total 110 items were preliminary prepared, the responses of which were either in "Yes" or in "No" direction. There is no fix time limit; however it takes merely half an hour to complete it. In this all the positive items answered positively and negative answered negatively received a zero score. All the positive items answered negatively and negative items answered positively are given one point each. The sum of all the item scores yielded an overall self-confidence score for the subject. The items are keyed in such a way that the lower the score, the higher is the self-confidence.

Statistics Used in the Study

For the analysis and interpretation of data Descriptive statistical techniques were used. To find out Mean, Standard Deviation, Standard Error and Critical Ratio Karl Pearson's Product Moment method was used to differentiate Emotional Maturity and Self-Confidence among early age adolescents.

Result and Discussion

The following statistical results were obtained for the present study:

Table- 1

Descriptive statistics for Emotional Maturity of Early Age Adolescents

Variable	No. of students	Mean (\bar{X})	SD	SEM
Emotional Maturity	150	102.15	19.31	1.58

The Table 1 depicts Descriptive Statistics - Mean (\bar{X}) & Standard Deviation (SD) for emotional maturity among early age adolescents.

The above table depicts that the Mean and SD of emotional maturity are 102.15 and 19.3 respectively. The Mean value lies in the interpretation table 1 range 89-106, which indicate that the level of emotional maturity of early age adolescents is unstable. The standard error of mean (SEM) is 1.58. There are only 5 chances out of 100 that the population mean will lie beyond the limit 99.02 – 105.28 at 0.05 level of significance and there is only 1 chance out of 100 that the population mean will lay beyond the limit 98.03-106.27 at 0.01 level of significance.

Table-1.1

Descriptive statistics for Self- Confidence among early age adolescents

Variable	No. of students	Mean (\bar{X})	SD	SEM
Self-Confidence	150	23.05	4.15	0.34

The Table 1.1 depicts Descriptive Statistics - Mean (\bar{X}) & Standard Deviation (SD) for Self - Confidence among early age adolescents.

The above table reveals that the mean (\bar{X}) and Standard Deviation (SD) of self-confidence are 23.05 and 4.15 respectively. The mean value exist in the range 12-23, that indicate the level of Self-Confidence among early age adolescents, which is high Self-confidence. Only 5 chances out of 100 that the population mean will lay beyond the limit 22.37-23.73 at 0.05 level of significance and there is only 1 chance out of 100 that the population mean will lay beyond the limit 22.37-23.73 at 0.01 level of significance.

Correlation between emotional maturity and self-confidence among early age adolescents

The hypothesis is framed to achieve the objective “the relationship between emotional maturity and self-confidence among early age adolescents” is there is no significant correlation between emotional maturity and self-confidence of early age adolescents. In pursuance of the objective stated above the co-efficient correlation is computed by using Pearson’s product moment method. Results shown in below given table 1.2

Table-1.2

Correlation between emotional maturity and self -confidence

S.No.	Variables	No. of Students	Means(\bar{X}) Scores	Correlation ('r')	Interpretation
1.	Emotional Maturity	150	102.15	0.16	Slightly and almost negligible positive relationship
2.	Self-Confidence	150	23.05		

(Significant at 0.05 levels, df-148)

It is observed from the table 1.2 that the computed value of co-efficient of correlation between emotional maturity and self-confidence is 0.16 which is positive in nature that indicates positive correlation. The computed correlation ('r') value is 0.15 > 0.05 and 0.20 < 0.01. The value required to reach 5 % and 1 % level of significance. Hence the null hypothesis of no significant correlation between emotional maturity and self-confidence among early age adolescents is rejected at 0.05 and retained at 0.01 level of significance. Now, it can be interpreted that emotional maturity and self- confidence have slightly and almost negligible relationship with each other.

Correlation between Emotional Maturity and Self-Confidence among early age male adolescents

The hypothesis framed to achieve the objective ‘the relationship between emotional maturity and self-confidence among early age male adolescents’ is that there is no significant correlation between emotional maturity and self-confidence of early age male adolescents. The results given in table no. 1.3. It is observed from the table no 1.3 that the computed value of co-efficient correlation (r) between emotional maturity and self –confidence among early age male adolescents is 0.64 which indicate positive in nature and having positive correlation. The computed correlation

(r) value $0.22 > 0.05$ and $0.28 < 0.01$. The values required to reach 5% level of significance. Hence, the null hypothesis of no significant correlation between emotional maturity and self-confidence of early age male adolescents is rejected. Now, it can be interpreted that emotional maturity and self-confidence have moderate correlation, substantial but small relationship.

Table-1.3

Correlation between Emotional Maturity and Self-Confidence of Early Age Male Adolescents

S.No.	Variables	No. of Students (Boys)	Means (\bar{X}) Scores	Correlation (r)	Interpretation
1.	Emotional Maturity	75	107.8	0.64	Moderate correlation, Substantial but small relationship
2.	Self-Confidence	75	25.3		

(Significant at 0.05 levels, df-73)

Correlation between Emotional Maturity and Self –Confidence Among Early Age Female Adolescents

To achieve the objective 'the relationship between Emotional Maturity and Self –Confidence among Early Age Female Adolescents' the hypothesis framed is that there is no significant correlation between emotional maturity and self-confidence among early age female adolescents. The below result table 1.5 shows the significant difference:-

TABLE-1.4

Correlation between Emotional Maturity and Self –Confidence among Early Age Female Adolescents

Sr. No	Variables	No. of Students (Girls)	Means (\bar{X}) Scores	Correlation (r)	Inter-Correlation
1.	Emotional Maturity	75	96.5	0.90	High Correlation, Marked Relationship
2	Self-Confidence	75	21.2		

(Significant at 0.01,df-73)

The above result table 1.4 depicts that the computed value of co-efficient of correlation between emotional maturity and self-confidence among early age female adolescents is 0.90 which is positive in nature that indicates positive correlation. The computed correlation (r) value is 0.22 > 0.0 and 0.28 < 0.01 level of significance. The values required to reach 5% and 1% at level of significance. Hence, the null hypothesis of no significant correlation between emotional maturity and self-confidence among early age female adolescents is rejected. Now, it can be interpreted that emotional maturity and self-confidence have high correlation, marked relationship.

Mean, Standard Deviation and ‘t’-ratio of Emotional Maturity among early age male and female adolescents:-

In order to investigate the significance of Mean Difference between emotional maturity level among early age male and female adolescents with respect to Emotional Maturity level the ‘t’-statistics was computed through SPSS . The Table 1.6 reflects that there is no significant mean difference (‘t’ = 1.98 > 0.05 and 2.61; p > .01) between Male and Female early age adolescents at 0.01 level of confidence. The Mean value of Emotional maturity among Male adolescents (=107.8, SD = 17.23) is not significantly more in comparison to the Mean value among early age female adolescents (= 96.5, SD = 21.4). Thus hypothesis (H) framed to achieve the objective ‘to compare the emotional maturity among school going male and female students’ is that there is no significant difference between emotional maturities of both genders stands rejected with respect to emotional maturity level among early age male and female adolescents . A Comparative analysis of mean scores (\bar{X}) of emotional maturity among Early Age Male and Female Adolescents is given in table no.1.5.

TABLE-1.5

Mean (\bar{X}), Standard Deviation and ‘t’-ratio of Emotional Maturity among Early Age Male and Female Adolescents

Groups	No. of Students	Mean (\bar{X})	Standard Deviation (S.D.)	‘t’ Ratio	Level of Significance
Male	75	107.8	17.23	1.4	Not Significant
Female	75	96.5	21.4		

(Df-148)

Mean, Standard Deviation and ‘t’-ratio of Self-Confidence among early age Male and Female Adolescents:-

In order to investigate the significance of Mean Difference between Self

–confidence level among Early Age Male and Female Adolescents with respect to Self-confidence. The ‘t’-statistics was computed through SPSS . A Comparative

analysis of mean scores (\bar{X}) of Self-Confidence among Early Age Male and Female Adolescents is given in table no.1.6.

Table-1.6

Mean, Standard Deviation and ‘t’-ratio of Self-Confidence among Early Age Male and Female Adolescents

Groups	No. of Students	Mean (\bar{X})	Standard Deviation (S.D)	‘t’ ratio	Level of Significance
Male	75	25.3	4.1	2.2	S(0.05)*
Female	75	21.2	4.2		

(Df-148)

Findings The result table 1.6 reflects that there is significant mean difference (‘t’ = 2.2; p > .05) between early age Male and Female adolescents at 0.05 level of confidence.

Conclusion The Mean value of self –confidence among early age male adolescents (=25.3, SD = 4.1) is not significantly more in comparison to the Mean value among early age female adolescents (= 21.2, SD = 4.2). Thus hypothesis (H) framed to achieve the objective ‘to compare the self- confidence among early age male and female adolescents is that there is no significant difference between self- confidence among both genders stands rejected with respect to self-confidence level among early age male and female adolescents.

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Study of Educational Interest of Xth Class Students

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Abstract Education in the present day content is perhaps the single most important means for individuals to improve personal endowments, and build available set of opportunities and choices for sustained improvement in well-being. It is not only a means to enhance human capital, producing and, hence the compensation to labour, but it is equally important for enabling the process of acquisition, assimilation, and communication of information and knowledge, all of which arguments of a person's quality of life. Education is important not merely as means to other ends, but it is an attribute that is valued in itself, by most individuals. The process of education and attainment thereof has an impact on all aspects of life. It captures the capability of acquiring knowledge, communication, and participation in community life. According to Oxford Dictionary (1972), Education is the process of receiving or giving systematic instruction, especially at school or university.

Keywords Interest, Counselling, Educational, Career, Counselling.

Introduction Interest means to make a difference; it describes why the organism tends to favour some situations and thus comes to react to them in very selective manners. The intelligence and aptitude are unable to predict educational and vocational success without considering the individuals interests which is one of the key factors among the non- intellectual factors. An interest is a tendency to make consistent choices in a certain direction without external pressure and in the face of alternatives i.e. it selects certain others. It means teachers; educational administrators and guidance workers should have a close watch on the student's interest from the beginning of the life of the individual.

Educational Interest-

Educational interest is intimately related to child's acquisition of knowledge, understanding, and skills which actually forms the basis for his educational choice. Educational interest plays a very significant role in educational guidance. A faculty or staff member has a legitimate educational interest in accessing or reviewing a student's educational record. If the faculty or staff member is performing a task that is specified in his/her position description or contract, performing a service or benefit related to the student or student's family.

In educational psychology, the concept of educational interest is interpreted as a content specific motivational variable that can be investigated and theoretically constructed. An important analysis lies in the manifold interrelations between educational interest, learning, and human development. There are many students who pass the examination, yet they fail to achieve as much as they could have in terms of their ability. Many parents and teachers have the concept that the failing students lack intelligence but the fact is that failing students have sufficient intelligence but they are unable to reach the desired level of success due to certain non-cognitive factors such as educational interest, self-concept, family climate, personality makeup and adjustment.

DIMENSIONS OF EDUCATIONAL INTEREST

a) Agriculture : The agriculture interest area includes the subjects and activities like-reforms in villages, study of Manures, Animal Husbandry, Farming, Fruit Preservation, Dairying, Agriculture Extension, Veterinary Sciences, Rural Sociology Agriculture Botany etc.

b) Commerce : Commerce area has been covered through elements of Commerce, Transport Principles, Typing, Commercial Mathematics, Business Correspondence, Short Hand, Accountancy, Banking, Shop-Management, Insurance and Foreign Trade

etc.

c) Fine Arts: Fine Arts area of interest is represented by the subjects/activities like sculptures, Music, Songs, Toy making, Woodcraft, Art, Drawing and Painting, Art of Decoration, Dance, etc.

d) Home Science: Home Science area is covered through the subjects of General Home Science, Preparation of Home Budget, Hygiene, Cooking, Home Management, Home Decoration, Sewing, Embroidery, Knitting, Child Care and Musical Dances, etc.

e) Humanities: Humanities area of interest is represented by the subjects like Hindi, Logic, History, Geography, Economics, English Literature, Anthropology, Philosophy, Sociology, Education, Psychology and Civics, etc.

f) Science: Science area includes the subjects like Chemistry, Physics, Zoology, Botany, Geology, Meteorology, Science of Atoms, Mathematics, Surgery, Science of Health, Physiology, General Science, etc.

g) Technology: Technology field of interest is represented by the subjects/activities like Fitters job, Electrical, Mechanical and Civil Engineering, Welding, Engineering-Drawing, Radio/TV Engineering, Applied Mathematics, Indian Technology, General Technology, Science of Maths etc.

MEANING OF COUNSELLING

Counselling is a specialized service of guidance and it is an enabling process designed to help through learning to take responsibility and to make decision for himself/herself. 'Counselling' denotes, "Giving of advice"

Current Scenarios of Career Counselling in Schools

Today, India has significantly one of the largest student populations in the world. The approximate figures of students might reach up to a massive mark of 300 million. There are abundant career opportunities present today that need a specific set of skills and dedication. However, many Indian parents or students find it hard to choose anything else but the conventional career paths like engineering and medicine. It deprives the potential candidates of having the opportunity to establish a brilliant career in some other field, where they would have been an excellent fit.

The fact that many engineers go unemployed and the medical field has too many poor professionals, isn't a secret anymore. It is because tons of low-quality students are graduating in these fields. Who knows, if they could have done way better in a different course? This mainly happens due to the lack of professional guidance. The students need to realize their capabilities and make decisions accordingly. That is where career counselling is important.

How Career Counselling is Helpful for School Students

Every school student needs career counselling irrespective of their school name or location. There was a time when people opted for career counselling only before getting into a professional world. However, as time has changed, people can realize how counselling at an early stage can be helpful and suggest better ways to plan career growth.

Career counselling is vital for school students especially for the ones of higher grades who are on the verge of choosing a new stream or specialization. It helps them choose the stream based on their interest and capability. Surveys state, there are many instances where lack of correct guidance has demotivated the student causing them to leave their streams halfway. It is nothing but a complete waste of time. Let us explore how useful is career counselling for school students and how it helps them in significant ways:

1. Making a Firm Decision: Career counselling sessions take the students through different topics, explaining the pros and cons of different streams and subjects. The students will get to understand how things can turn out for them in the future. For example, an aspirant might be very good in science and wants to pursue a career in architecture. He might feel being an exceptional science student is everything and there's very little to do withdrawing. However, this is certainly a misconception. Career counselling aids various such misunderstandings among the students, giving them a prompt reality picture. Henceforth, they can make firm decisions.

2. Ensuring Job Satisfaction: Choosing the path of your choice and investing time in your favourite job is satisfying. If you are engaged with something that you hardly

enjoy, you can't have a fulfilling career, I'm afraid. That's why career counselling for school students is crucial as it helps them figure out their capabilities and move forward accordingly.

3. Making the Right Use of Your Abilities: Career counselling will help you analyze your core strengths and utilize the talent in the right place. Like for a person, who has supreme command over English, teaching might not be the only fit for him. There will be various other opportunities too, that he can explore.

How to Find a Career Counsellor for School Students?

A career counsellor is someone who will take the student through a series of events and explanations that will help him understand his capabilities and interest. Eventually, he will be able to make a firm career decision. Now, comes an interesting question. How to find quality counsellors who will help you or your children to understand the self-capabilities and get ahead accordingly. Before looking for a career counsellor or coach, make sure to note a few things.

1. Always do a proper background check of the counsellor you are choosing. By no way do I mean to demean anyone here, but the fact is the scam rate has increased considerably over the last few years in every sector. Therefore make sure you do a thorough background check before fixing an appointment with the person concerned.

2. You must be sure of the timing as to when taking the counselling session will be helpful. Career counselling for school students is usually recommended for higher grades since they have the upcoming thing of selecting a particular stream. A session right on time will be significant as it helps the candidate choose their respective specializations accordingly.

3. Whether you are the student or the parent, one thing is mandatory while undergoing a counselling session. Its patience. Yes! Yielding fruitful results takes time and you have to be very patient throughout the procedure. A little deviation from the track or slight miss concentration might be responsible for ruining the entire thing.

Now comes the question of finding career counsellors for school students. There is a list of common ways that you can try out to reach a qualified professional. However, cross-checking every piece of information is mandatory, as discussed in the points above.

4. Reach out to Friends or Acquaintances: A popular method of getting in touch with qualified counsellors is through common connections. You can reach out to a friend, relative, or acquaintance who has sought these services before and get the name of the counsellor.

5. Social Media: In this digital world, the best way to collect information or track anything is through social media. You can browse over several names from popular sites like LinkedIn, Face book or Instagram and get references for many eminent professionals.

Students spend their maximum time in schools. Yes, the post-pandemic scenario has been different due to the emergence of e-learning classes. But there's no denying the fact that students spend a considerable time in association with their school through online classes. Therefore counselling in schools isn't a luxury, a need rather. It is the perfect way to shape the future world, helping the candidates to move ahead with ambition. Career Counselling is nothing but assisting the students in 'self-realization' and 'self-discovery' that aid them in choosing a life filled with purpose.

Aim of study From the various studies it is clear that both boys and girls develop their educational interests between 13-15 years of age i.e. their adolescent period of tentative choices. After getting through 10th standard, tentative choices of the adolescents step on the first ring of the higher educational ladder. In modern society when the excess of occupations confuse the young minds, the need for educational guidance is keenly needed. Year by year, his choices ascends the ladder which finally reach him/her to the last ring, that being his/her ultimate goal. How far he/she will be successful is based on several factors such as his academic performance, interest, potential, educational aspiration and parental qualification. More effective of all the factors is economic condition of family whether it has the capacity or not, to meet essential needs of the educational courses. The present study is a devoted to find out whether educational interests of adolescents have any sound base or not. The study will be

helpful in making suggestions regarding the educational implications of the investigation. The study is also important as it will help to diagnose and guide the subjects with respect to the measures already desired.

Review of Literature

Bhatheja and Kaur (2012) in their study found that there is no significant difference between high parental involvement and low parental involvement as far as educational interests of 11th class students is concerned. Yadav and Yadav (2012) found no significant difference in educational interest record in the field of agriculture, commerce, home science, and science as pertains to boys v/s girls. They found a significant difference in educational interest records in the field of fine arts, humanities, and technology in boys v/s girls. Mohta (2013) studied the educational interest trend among youngsters and she found that youngsters show the highest interest in technology than commerce, fine arts, science, humanities, and home science and the least interest in agriculture. Narang and Narang (2015) investigated the study of educational interests of Xth class students and the results revealed that there is no significant difference in the educational interest of adolescence in relation to their gender as well as locale. Caroline and Brinda (2021) this research present the relationship between educational interest and academic achievement of the secondary school students in East Khasi Hills District, Meghalaya, India. The standardised tool used for the study is the Educational Interest Record by Kulshrestha (2016). In order to assess the academic achievement, the final year examination results of students were collected. The sample of the study comprised of 300 secondary school students drawn from fifteen secondary schools under Meghalaya Board of School Education. The findings of the study revealed a negative relationship between educational and academic achievement. There is a significant difference in the educational interest in terms of gender, but no significant difference was found between locales of the secondary school students.

Hypothesis H 1 : There exists no significant difference in educational interests of boys and girls students of Xth Class.
H 2 : There exists no significant difference in educational interests of rural and urban students of Xth Class.

Methodology Descriptive survey method was used for the present study.

Sampling

For the present study, a sample of 100 students was selected randomly from different schools of Tehsil Jalalabad only.

Total Sample (100 Students)

50 Boys	50 Girls
25 Ruler	25 Ruler
25 Urban	25 Urban

Tools Used Educational Interest Record by Dr. S.P.Kulshrestha (2007) was used for the present study.

Statistics Used in the Study Descriptive and inferential statistical techniques were used to analyze data.

Analysis

Analysis of data means studying the tabulated material in order to determine the inherent fact and meanings.

It involves breaking up complex facts into similar parts and putting them into new arrangements for the purpose of interpretation. After the data has been collected it must be analyzed. So that scholars and investigators can know about the problems and their solutions. Therefore, the data have taken analyzed and interpreted carefully otherwise it serves no useful purpose.

The data in the present study was collected with the help of the Educational Interest Record by Dr. S.P.Kulshrestha. The analysis and interpretation of the data obtained with the help of the tool are given as under.

Testing of Hypothesis

The results have been discussed in the light of hypothesis of the study.

Hypothesis-H1

“There exists no significant difference in educational interests of boys and girls students of Xth Class.”

Table 4.1 given below provides the summary of statistical calculation for obtaining the t-ratio with regards to the comparison of educational interest of Xth Class students in relation to their gender.

Sr.No.	Group	N	Mean	SD	SED	df	t – ratio	Level of significance at 0.05 & 0.01
1.	Boys	50	53.20	12.09	2.82	98	2.63	Significant
2.	Girls	50	60.62	15.90				

Table 4.1: T- Ratio of Educational Interests of Xth Class Students in Relation to their Gender

Table 4.1 indicates that calculated t-ratio (2.82) is significant at both 0.05(1.96) and 0.01(2.56) level of significance. Therefore, from the table it may be concluded that there is significant difference in educational interest of Xth class school students in relation to their gender. Hence, our first hypothesis that there exists no significant difference in educational interests of boys and girls students of Xth class is not accepted.

Hypothesis-H2

“There exists no significant difference in educational interests of rural and urban students of Xth Class.”

Table 4.2 given below provides the summary of statistical calculation for obtaining t- ratio with regards to comparison of educational interest of Xth Class students in relation to their location.

Table 4.2 : t- ratio of educational interests of Xth Class students in relation to their locality

Sr.No	Group	N	Mean	SD	SED	df	t-ratio	Level of significance at 0.05 & 0.01
1.	Rural	50	55.94	14.36	2.91	98	0.666	Not Significant
2.	Urban	50	57.88	14.79				

Table 4.2 indicates that calculated t-ratio (0.666) is not significant at both 0.05(1.96) and 0.01(2.56) level of significance.

Therefore, from the table it may be concluded that there is no significant difference in educational interest of Xth class school students in relation to their locality.

Hence, our second hypothesis that there exists no significant difference in educational interests of rural and urban students of Xth class is accepted.

Findings

Finding an investigation is the most essential and vital aspect of the entire investigation process. The investigator has found some major findings which are given below:-

1. Significant difference in the educational interest of Xth class school students in relation to their gender was found.
2. No significant difference in the educational interest of Xth class school students in

relation to their locality was found.

- Conclusion**
1. Significant difference was found in educational interest of Xth class school students in relation to their gender.
 2. No significant difference was found in educational interest of Xth class school students in relation to their local.

Suggestions for the future Study There is a wide scope to conduct further research in this important area. The following suggestions are made for further research:

1. The present study has been conducted on Xth class students. A study may be replicated on students at other level.
2. In the present study, sample of 100 students have been taken. Similar study can be conducted with a large sample and wide area.

- Limitation of the Study**
1. Sample was delimited to 100 students of Xth class only.
 2. The study was delimited to schools of Tehsil Jalalabad only.

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Lockdown Research: Implications for Sportswomen in India

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Abstract

The years 2020 and 2021 have been stumbling blocks for nations worldwide, causing umpteen distress to global populations. In India, the nationwide lockdown in March, 2020 to contain the spread of novel corona virus cast a debilitating effect on the condition of women across the country and had irreversible impact on sportswomen in particular.

This research* has been motivated in response to the indifference observed in catering to the female sports fraternity during the pandemic, and the unintentional errors in policy making in this regard due to the gaps left by inadequate research on the experience of sportswomen under the lockdown.

The research brings forth the lockdown-driven grievances and issues relating to health, financial and career-related uncertainty, effects on mental equilibrium of Indian sportswomen of various walks, ranging from beginners, professionals, elites, specially-abled, etc.

The research methodology includes information gathered through primary and secondary sources including online surveys, telephonic interviews, blogs and social media accounts of sportswomen, national coaches, guidelines of national sports organizations, reports by the Ministry of Sports, technological assistance (fitness apps, etc). and views of dieticians, gynecologists and obstetricians. Pictorial and graphical representation of data shall be accompanied by case studies to authenticate the arguments.

Keywords

Sportswomen, Lockdown, Pandemic, Implications, Mental Health.

Introduction

Indian women have been living examples of grit, perseverance and strength, with stories of their achievements having prefigured for a long time within the developmental discourses of the nation. It is Indian women's achievements in sports that have been the center of limelight presently. Needless to say, Indian sportswomen are achieving a noteworthy niche for themselves in what was hitherto a male-dominated affair. Achieving a historic feat, India fielded a whopping 56 female athletes in what was the highest female contingent being sported by India at the Olympics so far. In this regard, it is pertinent to mention the splendid performance of the Indian Women's Hockey team at the Tokyo Olympics and their subsequent clinching of FIH (Fédération Internationale de Hockey) Star Awards in all categories. Mirabai Chanu, Mary Kom, PV Sindhu, Geeta Phogat, Mithali Raj, Dipa Karmakar, Manu Bhaker, Lovlina Borgohain are just a few of the scores of extraordinary Indian sportswomen whose consistent efforts in their respective fields have been outstanding.

However, their journeys have not been the easiest, to say the least- having won long and protracted battles, emotional turmoil, patriarchal challenges and financial woes- Indian sportswomen have undeniably had to bear a disproportionate brunt in making their way through these challenges. Thus, the idea was to conduct a vivid, comprehensive and broad-based research on the travails of sportswomen in lockdown was conceptualized by Policy Center and Gender Lab, Miranda House in May 2020, in the backdrop of an unprecedented nationwide lockdown.

Confined within the small spaces of our households, as the shocking news of tragedies being faced by various communities made headlines, a pertinent realization dawned upon the researchers. This realization had to do with the

situation of sportswomen, hemmed within their houses due to the lockdown, as their professions and lives came to a standstill. What caught our attention, for the most part, was the fact that, sportspersons, and more so, sportswomen, were not portrayed as so much significant a community as others by the media, in its coverage of the effects of lockdown on the various communities constituting our society. This realization drove us to review the findings of schools of researchers, branches of the media, and civil society organizations into the lives of those sportswomen. Sports Women - whose lives had been battered under the diabolic effects of an untimely lockdown, their fears aggravated by the spread of a deadly contagion, their mental health deteriorating and a constant enigma of uncertain profession-related future prospects lurking over their minds. On a surprising note, however, the researchers encountered very limited pieces of research articles on the concerned section, among a plethora of literature available for other equally important categories of affected sections.

Aim of study

The stigma associated with sports as a profession, that has much to do with the unpredictability of its future prospects, looms large in society even today. The fact that it is stigmatized to an even greater extent with respect to girls is not surprising. This leads to a very skewed number of sample sizes available for gauging a broad picture on how far the concerned community has been affected. Added to this, sportswomen, as a domain of research, separately constitute various individual categories of women - beginners, professionals, trainees, old women, students, etc. Such complexities further sabotage the efficient coverage of various intricacies of research work in the said field. It was to overcome these concerns of inadequate research that the researchers examined the tribulations being undergone by the community of sportswomen at large, under the wake of a sudden lockdown.

Review of Literature

There has been relative negligence in terms of catering to the apprehensions and issues plaguing the female sports fraternity in the backdrop of the pandemic, and inadvertent errors and flip-flops in policy making that have somehow been indifferent to the exigencies of their situation. These concerns are well established by A Bowes (2020) meta-analysis, who concluded that COVID-19 pandemic impacted elite level sports where the sports women were more affected than the sportsmen. However, the challenges faced by the elite sports players may not be generalizable to the semi-professional and amateur sportswomen. In the light of this, the researchers went beyond the 'professional-level' of sports players and delved into specific aspects, such as CS Czymara's (2020) analysis, which focuses on the financial hardships during lockdown for the sportspeople. Pertinent to note, however, that these researches have been quite unequitable in their analysis of the issue. Much of the research, for instance, has been put into a specific country - M Guicciardi (2020) delved into the impact of lockdown on male and female sportspeople in Italy where there were negative impacts on self-efficacy (especially in the outdoor games) and on mental wellness; JM Buldú (2020) focuses on competition faced by sportsmen and women post lockdown. Most of these studies are limited to western countries. The Indian, or even 'developing country,' aspect to the study is highly absent. One study, N Mathew (2020), analyses the impact of lockdown on women but it generalizes the concerns of women from different social stratas. Sports, already being stigmatised as a career path in Indian society, make it even more disadvantageous for women to take part. The challenges faced by Indian sportswomen can be a varied experience with the interplay of gender norms and poverty along with other factors. While drawing upon certain autobiographies and biographies of Indian Sports Women, the limitations of sports as a full-fledged career choice are undeniably visible. For instance, in her autobiography 'Unbreakable', Mary Kom talks about the hardship and the amount of hardwork and challenges a sports woman has to face after being married and having children and at the; same time facing the hardships of poverty. Mary Kom, in her book, says 'Even when I went for the Nationals, my shoes were tattered – not that I let it bother me.', "In spite of our penury and deprivation, we did not ever lose faith in God.", "Not only does this rule inconvenience players, it creates a highly avoidable rift among the coaches. Groupism and favoritism are the inevitable consequences of it.". Her experiences

clearly talk about the obstacles faced by her during the course of her career. Other books like 'Playing to win' by Saina Nehwal bring out the inevitable interplay of a multiplicity of roles that a woman shoulders— a daughter, sister, a student. She also talks about her rigorous training, diet, sacrifices and so on. A Different Spirit – Malathi Krishnamurthy Holla, who is a wheelchair bound athlete chronicles her struggles and her dedication in not giving up despite the hurdles she faced in life. She started the Mathru foundation to take care of differently abled children from poor backgrounds. 'Free hit' by Surpita Das is the story of evolution of women's cricket in India. Its focus lies majorly on the negligent attitude of cricketing officials with regards women's sports in India, sponsorship-related challenges and pay disparity based on gender that proliferates quite easily within the domain of sports in India. "Junior cricket for girls needs to be entrusted in very strong hands, just like it's been done for the boys – they have Rahul Dravid in charge. The BCCI has no accurate database of the number of women players, or the performance of batsmen, bowlers, all-rounders and keepers from different states.", "Playing for Hyderabad Senior, she should have got the best grounds to play and practice in. However, in reality, the Hyderabad U-19 boys team got better grounds to play in. Some of the boys, even senior ones, weren't serious about the game; yet they were paid at least Rs 25,000 a match – more than what More made in an entire year! The women also had to make do with their rations: two pairs of clothes for a whole year, even though they trained every day, and two idlis per day as food throughout the year. 'Yahi kha lo [Make do with this],' they would be told, as if they were being done a favour.", "About 200 spectators, college boys mostly, were in attendance to watch women – some of them in white bell-bottomed trousers, the rest in white skirts – play cricket. It would be safe to say that the crowd had turned up to watch women play in skirts.", ". So when her neighbours saw her playing cricket in shorts with boys, they didn't miss a single opportunity to taunt her parents: 'Aap ki beti ka yeh awaarapanti kitne din chalega? [How long will this nonsense of your daughter go on for?]" and numerous other examples from her book clearly explain the level of gender-based discrimination a woman has to face in 'male-dominated' sports. Thus, it certainly brings out the importance of inclusion of research related to Indian sportswomen for better hold on the various challenges faced by them. Hence, the impact of lockdown on Indian and other developing countries sportswomen must have a different experience given their stature, profitability of sports and affirmative actions by the government to promote sports, especially amongst Indian women. Nonetheless, there has been a lack of robust studies on Indian sportswomen and their challenges in various aspects owing to the COVID-19 Lockdown. This is primarily and foremostly, what led the authors of this paper to brew within the contours of their research, a wide array of aspects related to sportswomen and the fallouts of an ill-conceived lockdown on their personal and professional lives.

Methodology

Research methodology is important in determining the validity and reliability of the study undertaken. Authors of this research initiated the study with an aim to explore an under-researched topic – the disruption caused by the Pandemic and its effects in the lives of Sportswomen – and to establish a cause-and-effect relationship. The research methodology adopted by the authors combined information gathered through primary and secondary sources of data collection including both qualitative and quantitative data. The researchers identified and collected contacts of pan-India sportswomen from across colleges and schools through the circulation of Google form. To seek primary data, a carefully-structured questionnaire was circulated amongst a pool of respondents. The questionnaire drew vastly upon subjective and objective questions covering a plethora of issues related to sportswomen, which might have undergone variations and overhauls in the midst of the lockdown period. Questionnaires along with the consent form were emailed to all the identified contacts. Thus, the study draws primarily upon interaction with most of the identified sports women on telephone, in-person interviews and surveys conducted in liaison with technology driven survey apps, telephonic interviews, blogs and social media accounts of sportswomen and already conducted interviews of national coaches. Furthermore the anonymity and confidentiality of respondents has been maintained by using changed names while analyzing the research findings. For secondary data collection researchers depended on guidelines of national sports organizations, reports by the Ministry of Sports and reports of national newspapers. Authors also

lead further research on some aspects of existing research by conducting a detailed literature review. To cite one such source is the research undertaken by Ali Bowes, Lucy Lomax and Jessica Piasecki on the topic – ‘The impact of the COVID-19 lockdown on elite sportswomen’. Thus, information gained from all the sources was classified and represented pictorially and graphically to provide the reader with a visual understanding of the data acquired. Arguments and conclusion of the research is based on critical data analysis and has been substantiated with case studies for an optimal understanding of the issue at hand.

Tools Used

The research paper seeks to analyse the impact of lockdown on sportswomen and come out with possible solutions. It has been observed that a majority of the female sportspeople (most of whom are national level players) experienced a negative impact on their lifestyle. While at the same time, they found cost effective means to access fitness trainers and wellness practitioners during the lockdown. Thus, they explored new possibilities to pander to their fitness needs in the times of lockdown.

Authors surveyed a wide range of female sportspersons under the sample size of 100+ to understand their challenges in various areas and the kind of alternatives they have looked forward to overcome the difficulties.

The survey was conducted through Google Forms which were circulated through emails and social media platforms, prominently WhatsApp.

It is to be noted that certain assessments and measures were taken into account while recording the responses of female sportspeople.

1. Email IDs and phone numbers were recorded for the purpose of an official authentication of the respondent and their responses.

2. A consent form was generated for an informed collection of data. The form evinced basic details of the research to the prospective respondents; informed them the purpose of the research, process and duration of data collection; stated the official wherewithal that might be required from them in the future (audio recordings of phone calls, quoted texts of their responses, etc.) and gained their voluntary consent to be the formal respondents of the survey undertaken.

3. Extensive rechecking was done to avoid any discrepancy and possibilities of transcription errors.

4. The survey questionnaire was a mix of objective and subjective type questions spanning a range of different aspects that might have undergone diametrically diverse impacts under the lockdown.

5. Even in the case of objective questions, it was ensured that comments can be added, in case the respondent wants to give opinions which do not coincide with options provided for the questions asked.

The form was structured into 5 parts-

Part I- Demographic details of the sportswomen and their areas of interest in sports.

Part II- Status of their sports career before the lockdown

Part III- Mental and physical health status of the female sportspersons

Part IV- Respondents' comments on their sports career status during 'stay-at-home' orders

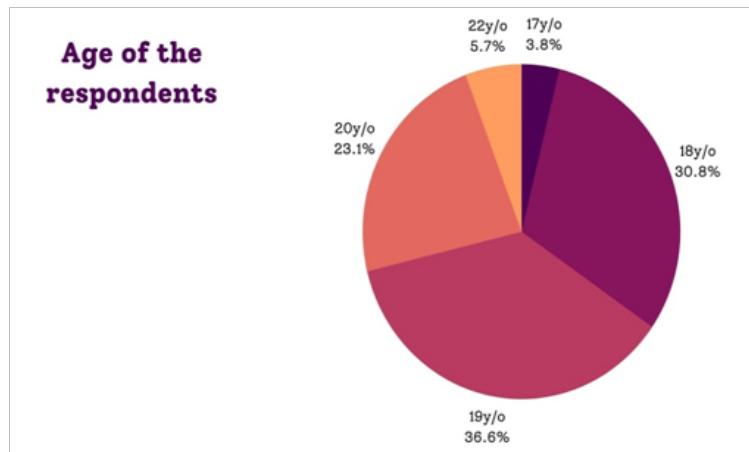
Part V- Sportswomen's future prospects

Analysis

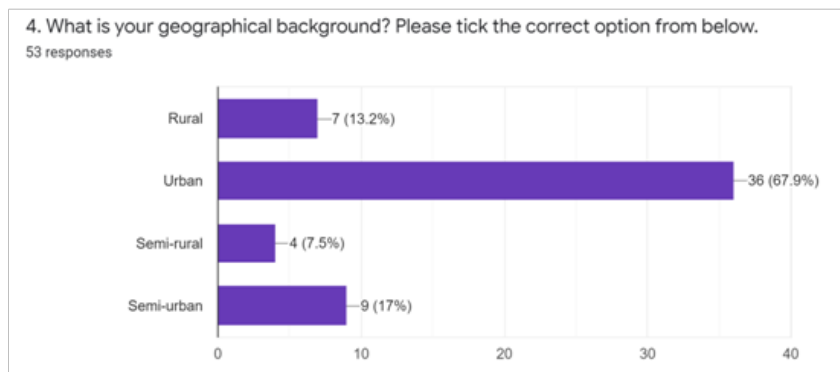
Part 1

The survey collected the demographic details of the respondents, and the professional sport pursued by them. The observations are as follows:

1. 69.8% of sports-women were equal to or below the age of 19 years whereas 30.2% of sports-women were above the age of 19 years.

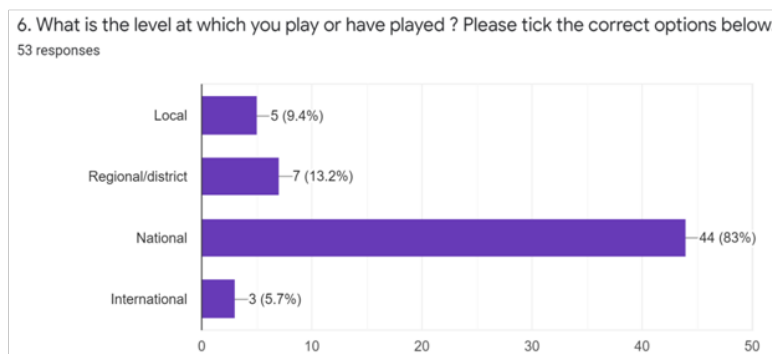


2. 67.9% of the respondents belonged to an urban background and 33.1% belonged to semi-rural/urban or rural background.



3. The respondents play sports such as Basketball, Table Tennis, Lawn Tennis, shooting, Javelin throw, Twaekwondo, archery, athletics, horse riding, handball, Net ball, swimming, badminton, skating and Karate.

4.83% of the players were national level players and 5.7% of them were international level. The rest of them (22.6%) were district and regional/district level players.



Part II

The next part of the survey inquired the respondents about the status of their sports profession before the lockdown was proclaimed.

Majority of the respondents stated that they followed intense workout schedules, practiced regularly, and actively took part in competitions. Pre-lockdown many responding sports-women were at the peak of their careers. Due to the pandemic, many tournaments and events were

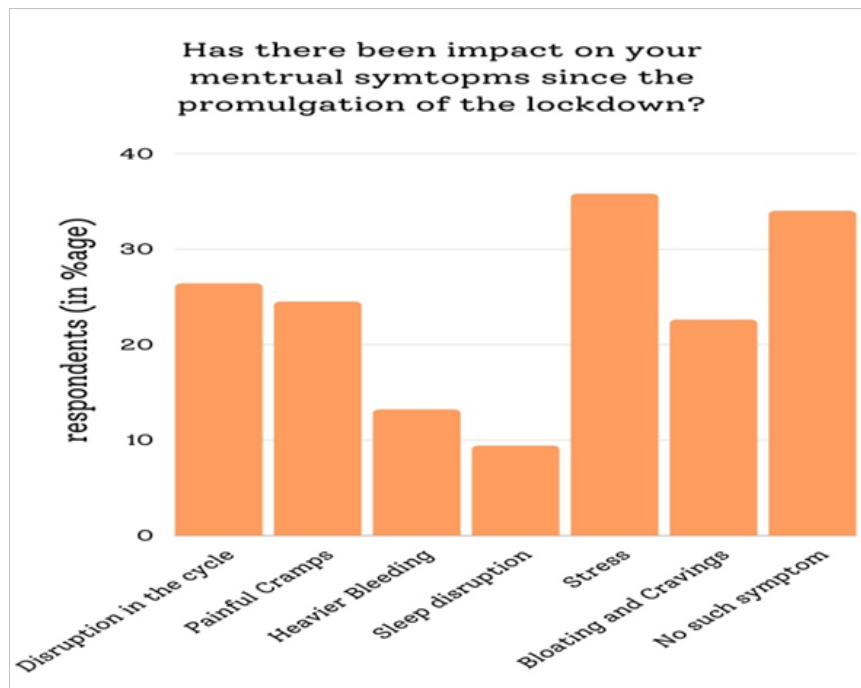
canceled for instance, as stated by (Kajal) Ojwaswini Kotwal, a national-level air pistol shooting player- *“I was doing pretty well. I had an upcoming shooting tournament which got delayed and when the pandemic hit, it got canceled”*. Hence, *“most of them were”*, as said by Shruti Rathi- a national level Lawn Tennis player, *“giving their best physically as well as mentally and were able to perform well in tournaments”*. (Priya) Aggarwal, a national level Taekwondo player stated, *“It [sports] was regular .Suddenly there was a huge break in the training session and everything got disturbed.”* (Nancy) Aggarwal, another national level athlete had this to say: *“The practice flow was really good and the progress was consistent. Competitions made me keep a check on my progress every now and then. But since the lockdown started, the performance is completely lost. It feels like, i [I] need to start everything again from scratch.”* It is thus observed that life for sportswomen under the pandemic has been riddled with multiple absurdities and uncertainties. This is what (Namita) Sharma, another respondent reiterated, *“It [situation] was still better before as compared to now, as i (I) was able to play better as we all know that in order to play any sport we need basic human contact but after COVID sport is one of the industries that has been severely affected.”*

Part III

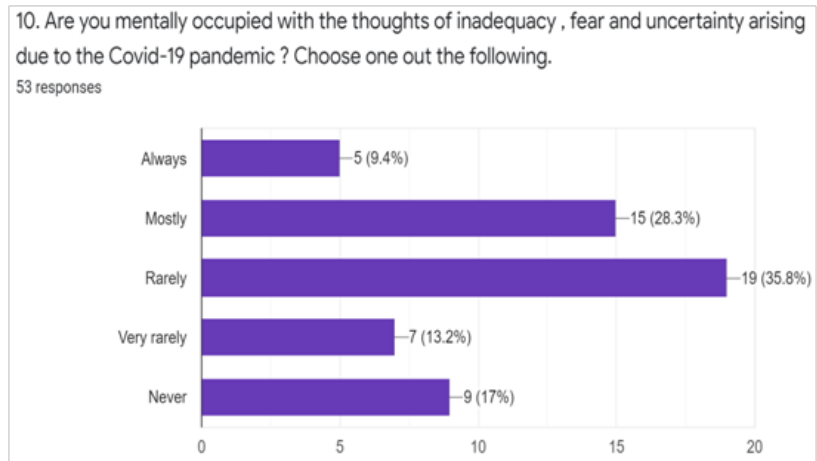
This part of the survey delved into the issues faced by sports women in the sphere of health (both-mental and physical) during the lockdown.

1. When asked about their general health status, the majority of them (92.45%) responded that they have experienced a sweeping deterioration in their physical health. The leading reasons stated were “lack of endurance or strength, weight gain, drop in body metabolism and irregular menstrual cycle”. Other health issues included “lower lung function, loss of muscle strength and memory, and infection due to COVID-19.” Only 2 out of 53 respondents (3.77%) opined that their health underwent no disastrous changes under the lockdown.

2. The respondents were also worrisome about their menstrual health, 66% of the respondents complained about their stress, irregular menstrual cycle, painful cramps, bloating and cravings, heavier bleeding and sleep disruption. While 34% of the respondents did not have such complaints.



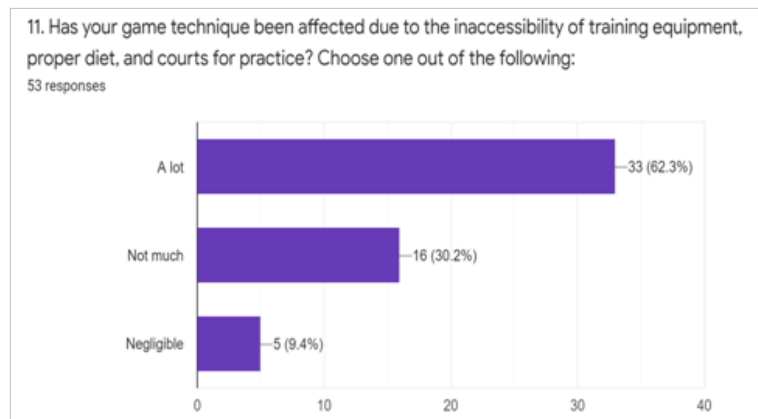
3. In the question related to their mental health, a mixed response was recorded 35 out of 53 (66.3%) respondents were not very much occupied with fears, inadequacy or uncertainty of the pandemic. 25/53 (47.16%) of respondents were concerned about the uncertainty due to pandemic.



Part IV

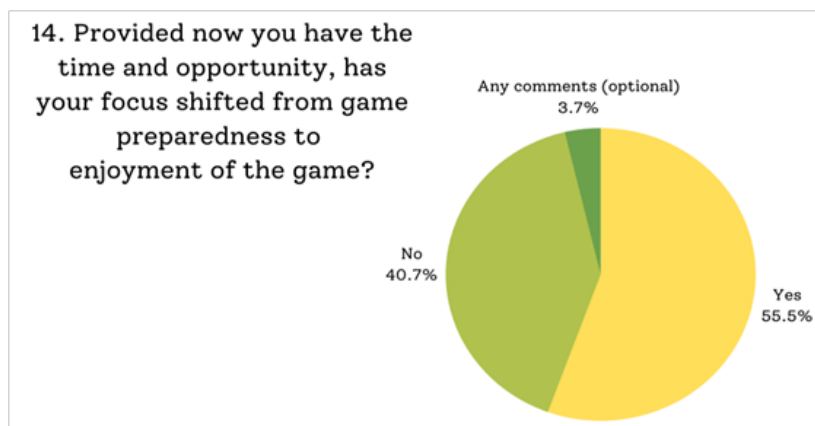
This part sought to unveil the general outlook on the sports the respondents play during the pandemic.

1. The majority of the respondents (62.3%) agreed that unavailability of training equipment, proper diet, and courts for practice has negatively impacted their practice and techniques.



2. The survey asked whether the respondents were able to follow a routine that was similar to the one they followed before the pandemic. It was observed that 71.7% of them were out of schedule or a routine. Very few gave a mixed response on getting back to their schedule.

3. The respondents were also asked whether the availability of time shifted their focus from preparedness to enjoyment of the game. Respondents had a mixed outlook towards this. While 30 respondents (56.6%) responded in the affirmative, 22 respondents (41.5%) had the opposite response. It was observed that they have shifted to a positive outlook towards their sports.



Part V

The last and concluding portion of the survey wanted to know about the future prospects of the respondents in their sports career. These were subjective questions.

1. 54.7% of sports women were looking forward to tournaments. The respondents mentioned names of tournaments they want to participate in like ITUSA, South Asian Games and some intercollege and inter-club competitions.

2. The respondents were inquired about their new goals after the new normal that COVID-19 has brought. Most of them are focusing on themselves, working out, practicing, watching online videos for new techniques, switching to Yoga, recovering from their surgeries and injuries if any, and finding alternatives like cycling, swimming, and so on. With much headway being made in opening up spaces, some respondents are now able to access the courts with adequate COVID-19 safety precautions.

3. Many were optimistic about their fitness regime to become more professional and intense than before. However, some anticipate that practice will not be the same as they will be cautious about the infection and avoid overcrowded space. (Mansi), a national level Basketball player notes, "[The situation will be] *Very different definitely. Since basketball is a contact sports it is going to be difficult to bring it back to normal.*" (Richa) Shukla, a national level Shooter and Swimmer had this to say "*It's tough to have all equipment available thus my practices have taken a hit. However, I [will] try to maintain my fitness levels as much as possible.*" (Mahima), associating herself with Javelin Throw, notes, "*After the lock down. I am not expecting my performance (or fitness) to be as good as it was before lock down while I was regularly showing up at the field. But also it is not affected very badly because I've been working out at home.*" (Janki) Asapu, national level Tennis player, stated "*It's tough to go back to the old normal days and resume everything as usual but I and my coaching team are trying our best to stay on track.*"

4. When asked about their experience during the lockdown, we got a mixed bag of responses. Many respondents struggled financially and for opportunities along with reduced fitness levels. "*Financial crisis was one such cause that affected everyone regardless if [of whether] they play [a] sport or not. I would really want to see our government make certain policies in India's Sports Sector to help those sportspersons who are facing financial issues due to COVID 19 Pandemic.*", said (Namita) Sharma. It was difficult to connect with the coaches and teammates also. One of them pointed out the discrimination between men and women in the case of accessibility of the playing ground in small areas. She said that men were given the upperhand in the accessibility of play-grounds. Many found the pandemic to be "unmotivating, mentally exhausting and depressing" as well. However, quite a few respondents had a positive experience as they were able to spend time with their families, bringing alternatives like Yoga and online tutorials for workouts into practice. (Kajal) Kotwal, an Air Pistol shooter responded, "*Corona has affected my social ability to go out with family and friends and has made staying inside and spending more time with myself an easy task.*"

Findings

The survey has unveiled some crucial dimensions and issues faced by the sportswomen during lockdown. The respondents were mostly young (18-25 years old), majorly national level players and majority of them belonged to an urban background. It was observed that they had an active life, and a consistent and

rigorous schedule. However, with the imposition of COVID-19 lockdown, the lives of the respondents changed drastically in terms of their physical health. They were concerned about the lack of professional facilities for better practice of techniques also. Notably, many of the respondents were not occupied with negative thoughts of uncertainty due to lockdown. While considering the availability of opportunities post lockdown, the respondents were particularly optimistic. Quite a few explored the alternative to live in the 'new normal'.

Conclusion

The survey has unveiled some crucial dimensions and issues faced by the sportswomen during lockdown. The respondents were mostly young (18-25 years old), majorly national level players and majority of them belonged to an urban background. It was observed that they had an active life, and a consistent and rigorous schedule. However, with the imposition of COVID-19 lockdown, the lives of the respondents changed drastically in terms of their physical health. They were concerned about the lack of professional facilities for better practice of techniques also. Notably, many of the respondents were not occupied with negative thoughts of uncertainty due to lockdown. While considering the availability of opportunities post lockdown, the respondents were particularly optimistic. Quite a few explored the alternative to live in the 'new normal'.

Acknowledgement

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Looking Back to the Destruction of Ancient Educational Institutions in Asia with Special Reference to the Nalanda University

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Abstract The practice of destroying and looting educational institutions has had a long history and has spared no continent. Nalanda University, an ancient centre of higher learning was India's second oldest university after Takshila. Spread over an area of 14 hectares, it was a principal seat of learning from the mid-fifth century till the Turkish invasion in 1193. Nalanda was a famous centre of Buddhist learning like Vikramshila and Odantapuri. Here, the students were taught Buddhist philosophy and practice. The university attracted students from many countries in the world, particularly China, Tibet, Korea and Japan and the rest of Asia, but a few also from as far in the west as Turkey. It made unique contributions to the evolution, expansion and refinement of Indian culture. Nalanda, the unique symbol of Indian philosophy, arts and civilization after a glorious career of around 800 years fell prey to the barbarism of the Muslim invaders under Bakhtiyar Khilji towards the end of the 12th century. The buildings of the university were burnt and destroyed and the whole of the innocent monks and students were ruthlessly massacred. The monumental library was brutally burnt.

Keywords University, Monastery, Monks, Theology, Demolition.

Introduction Since time immemorial, India has witnessed a rich tradition of learning and education. These were further handed over from generations to generations either through oral or written medium. An important characteristic of ancient Indian civilization is that it has been moulded and shaped in the course of its history more by religious than by political or economic influences. There were three types of institutions viz., Gurukulas, Parishads (Academies) and Sammelans (Conferences). Excepting these regular schools of instructions, there were special institutions for the promotion of advance study and research. Students approached the learned teachers for the acquisition of knowledge. Parents also encouraged it and sent their wards to the institutions. With the increase of the student's strength, these institutions began to grow gradually. With the passage of time, these institutions turned into Universities and were maintained with the gift of the public and the state. In this way, various centres of higher learning came into existence, of which Takshila, Nalanda, Vikramshila, Ballabhi and Odantapuri were prominent. Nalanda rose as a centre of learning by about 450 A.D. owing to the patronage of a number of Gupta emperors. Though the Gupta emperors were themselves orthodox Hindus, they contributed a lion's share to the development, equipment and endowment of the greatest Buddhist university. Sakraditya, who was probably Kumaragupta I (414 A.D.-454 A.D.), laid the foundation of the greatness of Nalanda by founding and endowing a monastery there. The splendid Buddha temple in this monastery was for centuries the central place of worship for the congregation.[1]

Aim of study Nalanda was reputed to be the greatest seat of learning or university in medieval times in the whole of the East. The present paper aims to deplore the fact that how Nalanda furthered the cause of Buddhism. The paper further tries to ascertain the genuine causes for the destruction of Nalanda. As there is no clear evidence that the Muslims under the leadership of Bakhtiyar Khilji destroyed it. As the buildings there were constructed mainly by using bricks and wood, accidental fires might have led to its destruction.

**Review of
Literature**

There is no dearth of scholarly revelations regarding this topic. C. Mani's edited book (2008). 'The Heritage of Nalanda', explains how Nalanda emerged from a monastic institution into the greatest academic and spiritual centre in the Asian continent in the early medieval period. The book stands as a good contribution to the field of Buddhist studies and is valuable for a general interest among the readers as well as academicians. 'The Last Disciple of Nalanda'(2015) written by Suresh Nair is an account of a disciple of the university named Ermen who belonged to the Oirat tribe of the Russian Mongol steppes in late twelfth century. He was very famous for his erudite answers to the questions thrown to him by the gate-keeper of the University. The book also contains the event of his establishing some roving monasteries and his efforts for preaching and practising Buddhism. Sahana Singh's book 'The Educational Heritage of Ancient India' (2017) describes the status of Nalanda University as a multi-disciplinary centre of learning and its contribution to ignite the knowledge revolution around the world. It has given a little space for the history of Muslim invasion over this monumental university. Shivani Singh's 'Nalanda' (2021) explains the royal investigation of a suspicious death in the campus of Nalanda University, where a young Buddhist monk named Siddhartha, is asked to aid the investigation during the period of Mahipala, the king of Magadha. Despite the presence of such books, several other articles and writings, we lack a comprehensive account responsible for the decay and decline of the Nalanda University and this article is a very genuine effort in that direction.

Main Text

Nalanda was a Buddhist foundation and its central focus consisted of the studies of Buddhist philosophy and practice. The nature of the philosophy of Buddha was a basic epistemic and ethical curiosity in the tradition of intellectual Buddhism that sought knowledge in many different fields. The main hypothesis of the paper is to recollect the pursuit of science in ancient Nalanda which will inspire and guide the government's long run efforts in new Nalanda. Secondly, Nalanda is the only non-Chinese institution in which any Chinese scholar was educated in the history of ancient China. The paper further speculates that the same situation would arise in India particularly in newly established Nalanda University where the Chinese scholar would be educated in the history of ancient China.

Hypothesis

Nalanda was a Buddhist foundation and its central focus consisted of the studies of Buddhist philosophy and practice. The nature of the philosophy of Buddha was a basic epistemic and ethical curiosity in the tradition of intellectual Buddhism that sought knowledge in many different fields. Some of the fields were directly related to Buddhist commitments, such as medicine and healthcare; others went with the development and dissemination of Buddhist culture, such as architecture and sculpture; and still others linked Buddhist intellectual queries with interest in analytical discipline. The main hypothesis of the paper is to recollect the pursuit of science in ancient Nalanda which will inspire and guide the government's long run efforts in new Nalanda. Secondly, Nalanda is the only non-Chinese institution in which any Chinese scholar was educated in the history of ancient China. The paper further speculates that the same situation would arise in India particularly in newly established Nalanda University where the Chinese scholar would be educated in the history of ancient China.

Methodology

The present study is primarily based on primary and secondary sources. Primary sources consisting of historical documents, archives and manuscript materials, photographs etc. have been consulted for framing the article. Secondary sources in the form of books, journals, articles from magazines, journals and newspapers, literature reviews, book reviews etc. have been collected from different sources such as national and district libraries, government offices etc. for writing the article.

Analysis

The following pages describe the destruction of educational institutions as well as cultural centres in the Asian continent either deliberately, accidentally or by a natural disaster. To be noted here that the deliberate and systematic destruction of educational and cultural places is regarded as a form of cultural genocide.

China

Historical Famen Temple witnessed demolition and destruction on several occasions. Erected first during the Eastern Han dynasty (25 A.D. - 220 A.D.), it was first destroyed during the years

of the Northern Zhou dynasty (557 A.D.-581 A.D.). The An Lushan Rebellion (755 A.D.-763A.D.), which lasted for around seven years, devastated the city of Chang'an, a historical capital of several ancient Chinese empires. The city was sacked and occupied several times by the rebels who looted and demolished the buildings, whose materials were reused to build the subsequent capital city of Luoyang. During the systematic persecution of Buddhists in 845 A.D. by the Taoist emperor Wuzong of Tang, more than 4,600 Buddhist temples were destroyed empire wide. In 955 A.D., Emperor Shizong of the later Zhou ordered the systematic destruction of Buddha statues due to the need of the copper to mint coins. The ordinance led to the destruction of 3,336 of China's 6,030 Buddhist temples.

Syria

The Royal Library of Antioch was established by Antiochus, the Great of the Seleucid Empire around 221 B.C. in ancient Syria and opened it to the scholars. The Roman (Christian) emperor, Jovian destroyed the Royal Library of Antioch and burnt the books which sufficed enough to annoy the citizens of the city.

India- Nalanda University

Nalanda is one of the most famous places in the history of Buddhism as the greatest seat of learning of the medieval times. The early canonical texts of both the Jains and Buddhists refer to it as a 'suburb' or as a hamlet or village situated in the outskirts of ancient Rajagriha (or modern Rajgir). The Pali texts of Buddhist contain numerous references to it under the various names of Nala, Nalaka, Nalakagrama, Nalanda and generally take it to be the birth place of Sariputra, one of the most famous disciples of the Buddha. It is, however, curious that the place, under the namesakes of Nalanda, is not to be found mentioned in early Hindu literary works, such as the epics and the Puranas; though Rajgir figures quite often in the Mahabharata. The historians opine that Nalanda was most probably established in the mid-5th century A.D. by Kumargupta I (415 A.D.-455 A.D.). Harshavardhana of the Pushyabhuti dynasty of Kanauj (606 A.D.-647 A.D.) was perhaps the most benevolent of all the royal patrons of Nalanda.[2] From the eighth to twelfth centuries, the Pala emperors ruled over Bihar and Bengal as most of them were devout Buddhists, Nalanda continued to receive the benefits of royal patronage for a considerable length of time to come. Of these Pala rulers, Devapala (9th century), Gopala II and Mahipala I, figure more prominently as patrons of Nalanda. The reign of Devapala was particularly eventful for the institutions of Nalanda which now attracted royal patronage from a king even of the far off countries like Suvaranadvipa and Yavadvipa (i.e. Sumatra and Java respectively), who himself built a monastery here and made a liberal endowment of five villages for its future maintenance and preservation. His interest in the Nalanda monastery and deep devotion to the Buddhist faith are also known from the Ghoshraja inscription (No.8). It records that Indragupta, a Brahman of Nagarahara (Jelalabad) and a learned Buddhist priest, received ovation from Devapala and was appointed the head of the Nalanda monastery.[3]

The ruins of the ancient Buddhist establishments of Nalanda lie close to the village of Bargaon, about 55 miles of south-east of Patna and seven miles north of Rajgir, the ancient Rajagriha. The ruins are situated at a distance of about two miles from the Nalanda station on the Bukhtiarpur-Bihar Light Railway.4 Excavations have shown that Nalanda university covered an area at least one mile long and half a mile broad. The university offered free lodging and boarding to its lay students- who were usually Hindus- in view of its having received so many endowments from Hindu patrons. When I-tsing was living at Nalanda (675 A.D.), there were more than 3,000 monks residing in the establishment. The biographer of Yuan Chwang states that in the second quarter of the seventh century, the number of the residents of Nalanda would always reach 10,000. Nalanda, however, was not a mere monastery; it had obtained so wide a fame primarily because it was a very famous center of learning. There was a great rush for admission to the Nalanda University. Students from all parts of India and also from distant foreign countries like China, Korea, Tibet and Tokhara were anxious to get the benefit of its instructions. The university maintained a splendid library to meet the needs of the hundreds of teachers and thousands of students that were engaged in the study of different sciences. Significantly enough, the library quarter was known as *Dharma-ganja*, Mart of Religion. It was located in three splendid buildings appropriately called *Ratna-sagara*, *Ratnodadhi* and *Ratnaranjaka*. The curriculum at Nalanda was very comprehensive and catholic. The establishment belonged to the Mahayana school of Buddhism, but the works of the rival school, the Hinayana one, were also taught. At the head of the general administration was the abbot-principal, who used to be assisted by two councils, one academic and the other administrative.[5] When Hiuen Tsang arrived at Nalandain 637 A.D., Silabhadra was the chief of the monastery. Silbhadra mastered the principles of Buddhism and attained high efficacy in explaining the subtleties of the Shastras.[6] Nalanda was a repository of learning for the central India, a centre from which learning spread over the whole of the country. Medicine appears to have made great progress in the Buddhist age, when hospitals were established over the country. But it was in Astronomy that the most brilliant results were achieved in the Buddhist age.[7]

Causes of Decay

Several causes have contributed to the decay of the Nalanda University. Its buildings must have become old and dilapidated owing to the lapse of ages and secondly, it must have been cast into the shade by the growing splendors of the rival university of Vikramsila to which the attention of the kings was directed and which necessarily led to the withdrawal of royal patronage.[8] The third and most destructive attack came when the university was destroyed by the Muslim army led by the Turkish leader, Bakhtiyar Khilji in 1193.

Let us discuss the age related problems for its decay. Since stone was not readily available at Nalanda, the most common building materials used are bricks for the walls as found in almost all the buildings. Stone ruins are scarcely to be seen except in the loose stone images and bases of pillars used obviously for constructional reasons. It is further observed that for the pillars in the *verandahs* of almost all the monasteries and for the roofs of most of them, wood was the material used. Traces of *chulhas* in the *verandahs* of some of the monasteries are also noticed. Ovens in the open courtyard are also visible. It has been suggested that cooking was done inside the monasteries which involved storage of fuel, consisting obviously of wood and other combustible material, within the premises, as is commonly seen in Indian villages. The monks may have also used naked lamps, if not torches, during nights. Accidental fires in such circumstances are quite common in India even now in the countryside. It is, therefore, most likely that the damages were more common and frequent from such accidental fires and it is quite probable that, because of this pasty experience, the builders used stone pillars in the later monastery. While excavating the sites, the excavators are frequently seen commenting that the particular monastery was probably destroyed by fire; but they do not state the probable causes of such fires.[9]

The second possible reason for its decay was the establishment of the new University of Vikramshila (Bhagalpur) by Pala king, Dharmapala (783 A.D to 820 A.D.). Atisha, the renowned scholar is sometimes listed as a notable abbot. From the 11th century onwards, the new university of Vikramshila began to receive a greater share of the royal patronage. Taranath informs us that the professors of Vikramshila were often appointed to watch over the affairs of Nalanda by the Pala rulers.[10] These circumstances may have led to the decline of Nalanda during the 11th and 12th centuries. Evidence from the Tibetan sources shows that by this time, Tantracism had acquired a hold over the Buddhist mind and it may have perhaps affected the progress of serious studies. But, we, have, no definite evidence on the point.[11]

The third possible cause of the decay of the Nalanda University was the Muslim raids. It was destroyed by the forces of Muhammad bin Bakhtiyar Khilji around 1193 CE.[12] The buildings were burnt or destroyed and the whole of the monk population was put to the sword. Bakhtiyar Khilji was in the service of a commander in Awadh who wanted to make a name for himself. He was assigned two villages on the border of Bihar which had become a political no man's land. Encouraged by the support of his superiors, Bakhtiyar decided to attack a fort in Bihar and was able to successfully capture it, looting it of a great booty. Minhaj-i-Siraj wrote of this attack:

“ Fearless Muhammad-i-Bakht-yar not only captured the fortress but also acquired great booty. He also damaged a great number of books and killed the Brahmans present there. On becoming acquainted with the content of those books, it was found that the whole of that fortress and city was a college, and in the Hindi tongue, they call a college Bihar (Vihara)”.[13]

While many historians believe that this monastery which was mistaken for a fort was Odantpura, some are of the opinion that it was Nalanda itself. Nevertheless, both became the victims of demolition and destruction. It is, however, most striking that no Muhammedan Makhdum, Pir or saint of great repute happened to grace the tops of the Nalanda mounds with their tombs or mosques. This is a feature, which, it should be noted, is commonly to be observed all over Bihar at sites of celebrated and important living sanctuaries, which had invariably attracted the attention of the Musalman invaders for the erection of such monuments. Though we can see some Muslim monuments at Bihar Sharif even today, but its absence at Nalanda at a very short distance surprises us. Again, had Nalanda been a living institution of great repute or importance at the time of the invasion of Bakhtiyar Khilji, we should expect the Muslim Chronicles of the event to have known and mentioned the name of Nalanda. As is known, one of the Pala rulers had established a monastery at Odantapuri or Bihar Sharif itself which may have affected adversely the fortunes of Nalanda. All these circumstances would indicate that, quite before Bakhtiyar Khilji's invasion, Nalanda had perhaps fallen to decay or ruins already; but how and when actually this happened is still a mystery to be unravelled.[14]

Result and Discussion

The accounts of Chinese and Indian scholars firmly confirm that an aspect of the intellectual and rational life had emerged powerfully at the Nalanda University. So, the demand of the day is that the rational culture in Indian intellectual history must be pushed forward. Again, the Nalanda University stood for the passion of propagating knowledge and understanding. Modern day educational institutions in India should pursue the same path to spread enlightenment among people of all lands.

Conclusion

Nalanda University is a UNESCO World Heritage Site. The Government of Bihar and the Union Government of India have been trying their level best to revive it as a modern centre for Pali and Buddhism in the spirit of the ancient institution. Since 2014, the first academic year of a modern Nalanda University in nearby Rajgir has commenced. It has become a popular tourist destination in the state attracting a number of Indian and overseas visitors. The question of the various causes of the decline including the Muslim raid is of very little relevance today. Rather, the revival of the lost glory of the Nalanda University must be given utmost weightage.

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Study of Nutrient Release Potentials of Some Macrophytes of Ajmer and Their Relevance in Trophic Assessment of a Shallow Waterbody

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- Abstract** Nutrient release potentials of dominant macrophytes in trophic evaluation of Lake Anasagar, an urban wetland of Ajmer, was assessed. It was observed that besides anthropogenic activities, macrophyte species i.e. *Azolla pinnata*, *Trapa bispinosa* as floating and *Potamogeton crispus*, *Vallisneria spiralis* as submerged, release nutrients (N, P, Ca and Mg) in Lake waters and form a natural culture medium for phytoplanktons. It was estimated that comparatively more amount of nitrogen and phosphorus added to the nutrient pool is released by *Azolla* and *Trapa* respectively. Floating species contribute much to the nutrient - enrichment then submerged macrophytes. It has been emphasised that along with algal diversity and characteristic vegetation dynamics, values of decomposition constants (k), nutrient losses and biomass may be utilised for trophic evaluations of shallow urban wetlands in semi - arid regions.
- Keywords** Macrophytes, Trophic evaluation, Nutrients, Decomposition, Biomass.
- Introduction** The fresh waterbodies of tropical and sub-tropical regions like India are characterised by large seasonal fluctuations in water level which has been recognised as a component of the normal environment for the vegetation adapted to such habitats (Gopal, 1986). Numerous small and large, natural, and man-made water bodies experience both hydrosere and xerosere operating in the same area at different times of the year (Misra, 1946). However, in waterbodies of arid and semi-arid regions of Rajasthan, such a dynamic series in communal units is clearly demarcated due to very low precipitation largely confined to rainy season and extremely high temperatures. These waterbodies are characterised by low water level during peak summers and excessive phytoplankton and macrophyte production throughout the year.
- Aim of study** The objectives of this study were to determine the decay rates and nutrient release potential of dominant macrophytes of the Lake Anasagar, a shallow urban fresh waterbody of Ajmer, Rajasthan.
- Review of Literature** Water level drawdown followed by rewetting in reservoirs/lakes can shift macrophytes from a nutrient sink to a source, thus changing nutrient dynamics and causing water quality problems (Lu et al. 2018). Therefore, rates of weight loss and nutrient release potentials of dominant macrophytes provide valuable information pertaining to the trophic state and cycles which involve complex interactions between phytoplankton, macrophytes and nutrients (Melzer, 1981; Wiegleb, 1984). Nutrient release by decomposition of macrophytes constitute a specific natural medium which also dictates a 'type' of algal diversity. Therefore, a comparative study of dominant macrophyte species has significance in determining the vegetation and nutrient dynamics of an aquatic ecosystem. Various aspects of macrophytes have been worked out for inland waterbodies of Indian subcontinent (Gopal, 1990), however, no report is available on aquatic plant species of Aravalli region of Ajmer.
- Methodology** Total 15 bags for each macrophyte were suspended in a concrete-cement tank (75x45x60 cm) filled 3/4th with lake water. Three bags were retrieved at each interval of 5, 10, 20, 40 and 60 days and remaining material was dried at 80oC in oven for the estimation of loss in weight. Decomposition constant (k) and time

required for 50% and 95% decay were calculated with the help of exponential equation given by Olson (1963). $X/X_0 = e^{-kt}$ (X = weight of remaining at time t , X_0 = initial weight, e = base of natural logarithms and k = decomposition constant). In initial and remaining material of each interval, nutrients were determined: ash content by ashing the remaining in muffle furnace at 5500C; nitrogen by micro-Kjeldahl method, phosphorus by colorimetry using ammonium molybdate, and calcium and magnesium by EDTA titration method. The amount of each nutrient in remaining (as a percentage of the initial amount) was calculated as described by Kok et al. (1990). For the computation of total nutrient release, biomass of each species was also estimated by taking twenty 1 x1 m quadrats during the period of occurrence in the Lake Anasagar and mean annual values were estimated.

Result and Discussion

Data on percentage remaining dry weight show rapid loss in dry weight within 5-10 days of decomposition (Table 1). On the 10th day, the weight loss was less than 50% except for *Azolla pinnata* in which it was about 60%. Further loss in dry weight continued at a slower rate in *Azolla pinnata* and at a rapid rate in *Potamogeton crispus* and *Trapa bispinosa*. Most rapid loss was observed for *Vallisneria spiralis* in which it remained only about 2% on 60th day as compared to about 11% in *Potamogeton* and *Trapa* and about 48% in *Azolla*. Slow rate in weight loss of *Azolla* and rapid rate of *Potamogeton* and *Trapa* followed by *Vallisneria* is clear from decomposition constant (k) and values of time required for 50% and 95% decay of these macrophyte species.

Table 1: Changes in dry weight during leaching (% remaining), decomposition constant (k) and days required for 50% and 95% decay of various macrophyte

Species	% Remaining dry weight					k	Days required	
	5	10	20	40	60		50%	95%
<i>A. pinnata</i>	71.7	60.2	53.7	50.4	48.6	0.005	133	576
<i>P. crispus</i>	53.2	27.6	22.0	13.3	11.6	0.015	44	193
<i>T. bispinosa</i>	60.6	47.4	31.2	17.5	11.3	0.015	44	191
<i>V. spiralis</i>	44.5	19.4	11.8	2.3	2.2	0.027	25	108

Analysis of remaining at different stages of decay showed that significant amounts of nitrogen and phosphorus were lost during decomposition. A rapid loss of P occurred within the first five days where more than of initial P amount was lost from all the species. On 10th and 20th day P was greater in *Azolla* and *Trapa* while on 60th day it was 15% in *Azolla* followed by 5-6% in *Potamogeton* and *Trapa*, and only 1% in *Vallisneria*.

Table 2: Calcium and magnesium (as a percentage of the initial amount) in leached litter after five, twenty, and sixty days.

Species	Calcium			Magnesium		
	5 days	20 days	60 days	5 days	20 days	60 days
<i>A. pinnata</i>	61.9	43.9	39.7	21.7	25.4	35.5

<i>P. crispus</i>	63.8	29.0	13.7	67.6	41.9	28.1
<i>T. bispinosa</i>	4	22.6	7.9	55.5	31.7	13.4
<i>V. spiralis</i>	60.0	-	-	77.7	-	-

A rapid loss of N was observed from *Potamogeton* and *Vallisneria* where about 80% nitrogen was lost within first ten days. %N was found to be increased from the initial content in *Azolla* and *Trapa* within first five days and the same was lost at a slow rate in *Azolla* and at a rapid rate in *Trapa*. Analysis of remaining at 60th day showed that more than N loss occurred from *Azolla* while it was more than 90% from other three species.

About 40-50% calcium loss occurred on the 5th day with gradual increase at subsequent intervals (Table 2). A maximum loss was noticed in *Trapa* (92%) followed by *Potamogeton* (87%) and *Azolla* (60%) at 60th day where remaining of *Vallisneria* was almost negligible. Magnesium loss occurred on the 5th day was significantly high in *Azolla* followed by *Trapa* as compared with two submerged species i.e., *Potamogeton* and *Vallisneria*. Magnesium content in the remaining at subsequent intervals increased in *Azolla* while it was decreased in other species.

The total biomass production and its nutrient content computed for different macrophyte species are presented in Table 3. Based on total annual biomass production per ha and total content of N, P, Ca, and Mg in individual macrophyte, floating species i.e., *Trapa* and *Azolla* contribute much to the nutrient-enrichment than *Potamogeton* and *Vallisneria* (submerged species). Total nutrient output (if plant material is completely decomposed) from floating species is about 6-10 times more than submerged plants. Among the macrophytes studied, greater amount of nitrogen and phosphorus are released from decay of *Azolla* and *Trapa* respectively.

Table 3: Computed values of biomass and nutrients (kg ha⁻¹ yr⁻¹) of various macrophytes

Species	Biomass	N	P	Ca	Mg	Total
<i>A. pinnata</i>	2970	136.65	3.80	52.28	85.26	277.99
<i>P. crispus</i>	338	21.64	0.69	5.41	3.61	31.35
<i>T. bispinosa</i>	3390	88.15	5.45	108.50	97.31	299.41
<i>V. spiralis</i>	812	30.89	1.30	13.00	10.64	55.83

Findings

Nutrient release through macrophyte decay is an important parameter to evaluate trophic status of wetlands characterised by low depth. A large amount of total nutrients are added either by leakage from macrophyte shoots (Wetzel and Manny, 1972; Twilley et al., 1977) or released through decomposition of dead parts (Godshalk and Wetzel, 1978; Carpenter, 1980). In the shallow waterbodies of Aravalli region, the total biomass production during the peak growing period is converted into dead matter due to exposed sediment of peripheral zone during the summers. van der Velde (1979) has emphasised that in initial decomposition can be of a physiological nature controlled by external factors. However, the decomposition is more a physical in case of Lake Anasagar due to drying off of major area of wetland suddenly during peak summer period. Decay of dead matter (litter) starts immediately and continued till moisture is available. A greater amount of nutrients are released during this initial decomposition. In extreme dry period (May-June) decomposition is postponed till water is available in the preceding rainy months

(July-August). Later part of decomposition is initiated in the rainy season and continued throughout the year even for longer time in species like *Azolla* where it requires comparatively longer time for complete decomposition (576 d for 95% decay). Through water surface-flow during rains or due to increased water level partially decomposed matter is added to total nutrient and DOM pool of the water body (Gopal, 1988).

Conclusion Therefore, besides biomass production, nutrient concentration, and 'Intermittent' decay rates of individual macrophyte species, seasonality of water level and morphometrics of the waterbody are also to be taken as important parameters for evaluation of trophic status of a waterbody. Gopal (1986) has explained the characteristic vegetation dynamics of such temporary and shallow water habitats. Among macrophytes, *Azolla* contributes more to the nutrient-enrichment of water as compared to other macrophytes in Lake Anasagar. Contribution by *Trapa* is even more than *Azolla* but confined to zones where it is being cultivated by farmers.

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Impact of Gender Difference on Mathematical Attitude of School Going Adolescents of District Shamli (Uttar Pradesh): A Comparative Study

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Abstract The impact of mathematics is visible everywhere. It influences every aspects of our life whether it is cultural, social psychological and vocational. It trains the mind of people, creates very good habits and develops increasing awareness about them. This study explored the effects of gender on mathematical attitude of secondary level adolescents of district Shamli in Uttar Pradesh. A sample of 400 students (200 males and 200 females) from 10 schools of district Shamli in Uttar Pradesh was used for the study. The result of analysis showed that there was significant difference between mathematical attitude of adolescent boys and girls. Gender difference was found to have effect on mathematical attitude of school going adolescents.

Keywords Mathematical Attitude, Adolescent, Gender Difference.

Introduction The impact of mathematics is visible everywhere. It influences every aspects of our life whether it is cultural, social psychological and vocational. It trains the mind of people, creates very good habits and develops increasing awareness about them. Mathematics learning must be compulsory every event happening around us demand some knowledge of simple mathematical facts or principles, without this knowledge we will be at loss. Learning of mathematics in school not only gives the students adequate mathematical knowledge and requisite skills to solve their daily life obstacles but also train them in proper mathematical methods of investigation of problems and creates a mathematical attitude in them. A mathematical attitude was linked with "an ardent curiosity, fertile imagination and tone of experimental inquiry". Mathematics is the science that deals with the logic of shape, quantity and arrangement. Math is all around us, in everything we do. It is the building block for everything in our daily lives, including mobile devices, architecture (ancient and modern), art, money, engineering, and even sports. Haskell Curry defined mathematics simply as "the science of formal systems" Mathematics is the mental activity which consists in carrying out constructs one after the other. The German mathematician Carl Friedrich Gauss referred to mathematics as "the Queen of the Sciences". More recently, Marcus du Sautoy has called mathematics "the Queen of Science- the main driving force behind scientific discovery". The philosopher Karl Popper observed that "most mathematical theories are, like those of physics and biology, hypothetico-deductive". Pure mathematics therefore turns out to be much closer to the natural sciences whose hypotheses are conjectures, than it seemed even recently. Popper also noted that "I shall certainly admit a system as empirical or scientific only if it is capable of being tested by experience".

Aim of study Following were the objectives of the study.

1. To study the mathematical attitude of school going adolescents boys.
2. To study the mathematical attitude of school going adolescents girls.
3. To study the significant difference of school going adolescent boys and girls in relation to their attitude towards mathematics.

Review of Literature

In view of the above the following studies relevant to the present investigation have been reviewed. Kolhe (1985) compared boys and girls urban and rural population on attitude towards mathematics and indicated significant differences between the attitude of rural and urban students towards mathematics irrespective of sex. Pal (1989) has

considered the dependence of achievement in mathematics on four variables of the effective dimension. They were self-concept, anxiety, attitude and academic motivation. He formulated 56 hypothesis relating to these variables and classification of students into urban, semi-urban and rural students and male and female students. Marchis, I. (2011) showed that the most important factor for attitude towards learning mathematics is the teacher. Also pupils' beliefs on the utility of mathematics in their everyday life or the real life influence their attitude towards studying mathematics. Another two factors that influence pupils' attitude are self-efficacy and self-judgment. Chaudhary, Q.A. et al (2019) determined that majority of the students have a tendency of negative attitude towards mathematics. Though there are many students who have positive attitude towards mathematics, but they are less in number. Sharma M. and Rabha M. (2021) found that the achievement of the students in Mathematics at higher secondary level depends on the school environment. The achievement level of the students in private schools is better than the Government schools. The male students show more positive attitude towards learning Mathematics than the female students.

Hypothesis There is no significant difference between school going adolescent boys and girls in relation to their attitude towards mathematics.

Methodology A sample of 400 students (200 males and 200 females) from 10 schools of district Shamli in Uttar Pradesh was used for the study. The mathematics attitude scale questionnaire was used for data collection, while t-test was used for statistical analysis.

Sampling

Tools Used For the present investigation, questionnaire developed by Dr. Ali Imam (Associate Professor and Head, Faculty of Education, Integral University, Kursi Road, Lucknow) and Dr. Tahira Khatoon (Associate Professor, Department of Education, Aligarh Muslim University, Aligarh) was used as a tool. It contained 22 items. There were 11 negative items and 11 positive items.

Analysis

To investigate the significance of difference between the means, if any, of the mathematical attitude of school going adolescent boys and girls, the variables were assessed in terms of their scores in the Mathematical Attitude Scale Test and the t-test was employed. The analysis of data is presented given below.

Significance of the difference between the mean scores of MAS among rural adolescent boys and rural adolescent girls

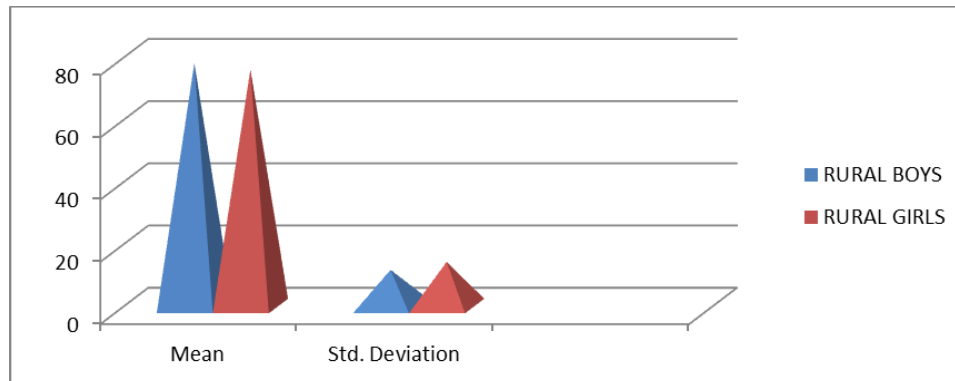
The table showing the Significance of the difference between the mean scores of MAS among rural adolescent boys and rural adolescent girls is given below. Table 1 and figure 1 revealed that the mean scores of Mathematics Attitude Scale test among rural adolescent boys and rural adolescent girls were 78.1430 and 76.0700 and their standard deviation values were 11.64630 and 14.20361 respectively. The calculated value of t-value for the above set of data was 2.535 while the table value for the same data at 0.05 level of significance were 1.98 and at 0.01 level of significance were 2.63.

Table 1: Table showing the difference of mean scores of Mathematics Attitude Scale Test and their standard deviation among rural adolescent boys and rural adolescent girls

Groups	N	M	Std. Deviation	Mean Difference M_1-M_2	SEd	t-value
RURAL BOYS	100	78.1430	11.64630	2.0730	0.8178	2.535
RURAL GIRLS	100	76.0700	14.20361			

This showed that the t-value was significant at 0.05 level of significance and not significant at 0.01 level of significance. It revealed that significant difference exists between mean scores of Mathematics Attitude Scale test among rural adolescent boys and rural adolescent girls. Hence the null hypothesis that "There is no significant difference between school going rural and urban adolescents in relation to their attitude towards mathematics" was rejected at 0.05 level of significance.

Figure 1: Graph showing the difference of mean scores of Mathematics Attitude Scale Test and their standard deviation among rural adolescent boys and rural adolescent girls



Significance of the difference between the mean scores of MAS among urban adolescent boys and urban adolescent girls

The table showing the Significance of the difference between the mean scores of MAS among urban adolescent boys and urban adolescent girls is given below. Table 2 and figure 2 revealed that the mean scores of Mathematics Attitude Scale test among urban adolescent boys and urban adolescent girls were 81.9680 and 77.6900 and their standard deviation values were 16.70615 and 14.91166 respectively.

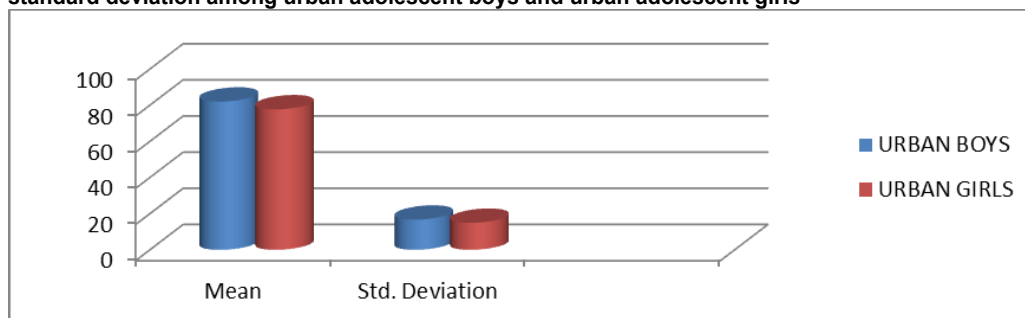
Table 2: Table showing the difference of mean scores of Mathematics Attitude Scale Test and their standard deviation among urban adolescent boys and urban adolescent girls

Groups	N	M	Std. Deviation	Mean Difference M_1-M_2	SEd	t-value
URBAN BOYS	100	81.9680	16.70615	4.2780	1.2115	3.532
URBAN GIRLS	100	77.6900	14.91166			

URBAN BOYS	100	81.9680	16.70615	4.278	0.7532	5.679
URBAN GIRLS	100	77.6900	14.91166			

The calculated value of t-value for the above set of data was 5.679 while the table value for the same data at 0.05 level of significance was 1.98 and at 0.01 level of significance was 2.63. This showed that the t-value is significant at 0.05 level of significance as well as at 0.01 level of significance. It revealed that significant difference exists between mean scores of Mathematics Attitude Scale test among urban adolescent boys and urban adolescent girls. Hence the null hypothesis that "There is no significant difference between school going rural and urban adolescents in relation to their attitude towards mathematics" was rejected.

Figure 2: Graph showing the difference of mean scores of Mathematics Attitude Scale Test and their standard deviation among urban adolescent boys and urban adolescent girls



Significance of the difference between the mean scores of MAS among adolescent boys and girls

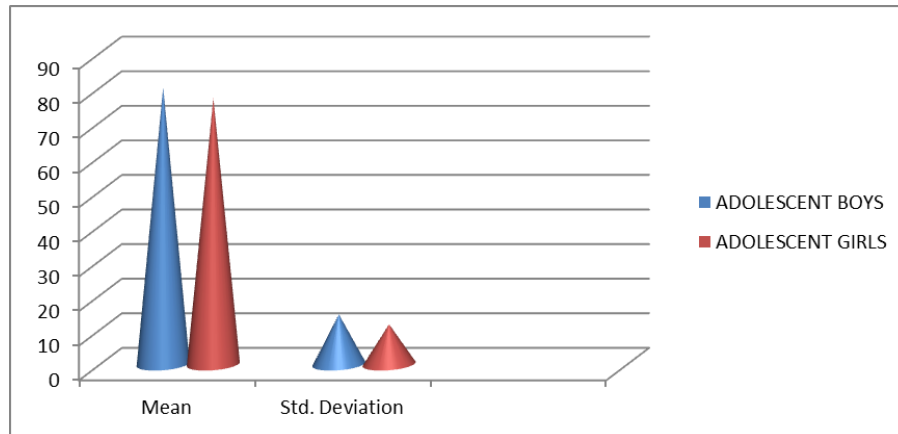
The table showing the Significance of the difference between the mean scores of MAS among adolescent boys and adolescent girls is given below. Table 3 and figure 3 revealed that the mean scores of Mathematics Attitude Scale test among adolescent boys and adolescent girls were 80.0555 and 76.8800 and their standard deviation values were 14.37967 and 11.53857 respectively.

Table 3: Table showing the difference of mean scores of Scientific Attitude Scale Test and their standard deviation among adolescent boys and adolescent girls

Groups	N	M	Std. Deviation	Mean Difference M_1-M_2	SEd	t-value
ADOLESCENT BOYS	200	80.0555	14.37967	3.1755	0.6067	5.234
ADOLESCENT GIRLS	200	76.8800	11.53857			

The calculated value of t-value for the above set of data was 5.234 while the table value for the same data at 0.05 level of significance was 1.97 and at 0.01 level of significance was 2.60. This showed that the t-value is significant at 0.05 level of significance as well as at 0.01 level of significance. It revealed that significant difference exists between mean scores of Mathematics Attitude Scale test among adolescent boys and adolescent girls. Hence the null hypothesis that "There is no significant difference between school going rural and urban adolescents in relation to their attitude towards mathematics" was rejected.

Figure 3: Graph showing the difference of mean scores of Scientific Attitude Scale Test and their standard deviation among adolescent boys and adolescent girls



Findings After applying the statistical methods on collected data, the major findings of the study were as under.

1. The rural adolescent boys were found to have better mathematical attitude than rural adolescent girls. The rural adolescent boys were found to have a positive mathematical attitude than rural adolescent girls.
2. The urban adolescent boys were found to have better mathematical attitude than urban adolescent girls. The urban adolescent boys were found to have a positive mathematical attitude than urban adolescent girls.
3. The mean scores of adolescent boys were higher than adolescent girls. The adolescent boys were found to have a positive mathematical attitude than adolescent girls.

Conclusion The study in hand was conducted to find out the difference in mathematical attitude of school going adolescent boys and girls. The present study showed that there is significant difference between the mathematical attitude of adolescent boys and girls. The urban boys were found to have higher mathematical attitude to that of urban girls. Similarly the rural boys were found to have higher mathematical attitude to that of rural girls. This shows that significant difference in mathematical attitude exist between boys and girls.

Limitation of the Study Following were the delimitations of the study

1. The study was delimited to rural and urban areas of only one district i.e. Shamli(U.P.).
2. The study was delimited to 400 school going adolescents.
3. The students were selected from various rural schools and urban schools of Shamli district of Uttar Pradesh.
4. The study was restricted to only one variable i.e. attitude towards mathematics.

References

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