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Editorial.....

It is heartening to note that our journal is able to sustain the enthusiasm and covering various facets of knowledge. It is our hope that IJMER would continue to live up to its fullest expectations savoring the thoughts of the intellectuals associated with its functioning. Our progress is steady and we are in a position now to receive evaluate and publish as many articles as we can. The response from the academicians and scholars is excellent and we are proud to acknowledge this stimulating aspect.

The writers with their rich research experience in the academic fields are contributing excellently and making IJMER march to progress as envisaged. The interdisciplinary topics bring in a spirit of immense participation enabling us to understand the relations in the growing competitive world. Our endeavour will be to keep IJMER as a perfect tool in making all its participants to work to unity with their thoughts and action.

The Editor thanks one and all for their input towards the growth of the **Knowledge Based Society**. All of us together are making continues efforts to make our predictions true in making IJMER, a Journal of Repute

Dr.K.Victor Babu
Editor-in-Chief

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- (1) The old 'UGC Approved List of Journals' has been replaced with the new UGC-CARE Reference List of Quality Journals' (UGC-CARE List) and with effect from 14th June, 2019 research publications only from the journals indexed in UGC-CARE List should be considered prospectively for any academic purpose.
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(P.K. Thakur)

Secretary(Officiating)



IMPACT OF IBC ON THE REAL ESTATE INDUSTRY

Dr.Binoy J. Kattadiyil

ICSI IIP, an IPA of IBBI, New Delhi

Introduction

Real estate industry is a key engine which helps to bring about tremendous change in nation's economy and infrastructure. It has been regarded as the most constructive pathway for investors in India. Over the past few years, the real estate industry sunk into a mess of incomplete and delayed deliveries. Investors were discouraged to invest in real estate due to delay in the completion of projects and proposals haemorrhaging their investments. The real estate industry was eminently uncontrolled and disintegrated. There was a lack of regulatory tool which had made real estate sector very delicate. IBC came into existence in 2016 and has been amended repeatedly since then. The Insolvency and Bankruptcy (Second Amendment) Act, 2018, had included 'real estate allottees' within the definition of financial creditors. This change had made delays in delivery of real estate projects literally 'unaffordable' for real estate companies. Hence, they challenged the said amendment, whose constitutionality was then upheld by the Supreme Court. In this article, we shall examine how IBC has impacted the real estate sector in these past few years.

Homebuyers as Creditors Under IBC

The IBC (Second Amendment) Act, 2018 had placed homebuyers within the definition of financial creditors. This amendment was challenged by the real estate companies, but the Supreme Court in the judgement of **Pioneer Urban Land and Infrastructure Limited and Anr. V. Union of India**¹ held the IBC (Second Amendment) Act to be constitutionally valid. Hence, homebuyers came within the ambit of financial creditors.

The IBC allows creditors, both operational and financial, to initiate insolvency proceedings against the corporate debtor. Financial creditors have the right to vote on a) resolution of the insolvency of the company b) In the absence, of a resolution plan, on the liquidation of the company. Homebuyers as financial creditors implied that even if a single homebuyer who was disillusioned by the

¹Writ Petition (Civil), 43 of 2019



delays being caused, gave an insolvency application and the same got accepted, the real estate company would have to undergo the entire insolvency process. The IBC (Second Amendment) Act, opened up floodgates of petitions by homebuyers. Between June, 2018 and November, 2019 more than 1800 cases were filed by homebuyers. An insolvency resolution application can be given for 'default' in the debt to be repaid. The courts repeatedly held that the delay in handing over the real estate project will amount to default under the IBC². In fact, in the decision of Emaar MGF, the court held that the developer will have to return the money of the homebuyer, if the former does not hand over the project within the agreed timeline.

This led to problems for both the real estate developers and to a certain extent for the homebuyers. The former had to deliver on their promises without delay, if they did not want an insolvency resolution process initiated against them. Whereas, the latter were acting individually and hence, even if one homebuyer initiated an insolvency petition, all the homebuyers got embroiled. This was not always a win-win situation as the timelines under IBC are not always strictly followed. Moreover, if a company is undergoing a resolution process then a moratorium is imposed, which means that all other cases or suits against the corporate debtor will be stayed. If the insolvency resolution process takes long, then, the homebuyers who were not involved in filing the said insolvency resolution application will get stuck without a remedy.

In order to iron out the aforementioned creases, the government came up with another amendment in 2019, the IBC (Second Amendment) Bill, 2019. This Bill has introduced additional requirements for homebuyers to trigger the insolvency resolution process. This Bill states that an insolvency resolution can be triggered by homebuyers only when either 10% of the homebuyers or 100 homebuyers, whichever is less, initiate an insolvency resolution process against the real estate company. This has come as a major relief to real estate companies and is also important from the point of view of deterring frivolous applications for insolvency resolution.

However, despite this change, IBC has had a great impact on the real estate sector. We shall now move on to examine this impact and examine the question that was it necessary to bring homebuyers under the ambit of IBC, given that RERA or Real Estate (Regulation and Development) Act, 2016, has already been enacted and it deals primarily with delays in real estate projects.

²Alka Agarwal Vs. Parsvanath landmark Developers Pvt. Ltd. (IB)-1229(PB)/2018 and Neeraj Gupta Vs. Emaar MGF Land Ltd. (IB) – 1403(PB)/2018

Impact of IBC on Real Estate Sector

IBC has paved a new pathway in the sector of Indian Real Estate. It provided remedy to the investors and home buyers who had not yet been able to resolve the issue of non-payable assets as well as other unclear dues. This was possible only after the initiation of IBC as they left no ambiguity among the investors and debtors that might cause delay in insolvency resolution mechanism.

CIRP Cases in Real Estate

Time Period	Closed	Ongoing	Total
Jul.-Sept. 2019	201	299	500
Apr.-Jun. 2019	164	257	421
Jan.-Mar. 2019	128	231	359
Oct.-Dec. 2018	87	148	235
Jul.-Sept. 2018	68	141	209

Source: IBB

According to this data provided by Insolvency and Bankruptcy Board of India, it can be seen from the table above that the insolvency resolution rate is increasing from past three years. Similarly, talking about the trends on real estate industry, the number of cases has increased from 209 (including both closed as well as ongoing cases) in Jul.-Sept. 2018 to 500 in 2019. This acknowledges that closed cases have been three times more than that of the last year. In 2018, total number of closed cases were 68 whereas in the period of 2019, the number of closed cases has raised to 201 out of 500 cases. From this, we can easily say that IBC has been the fastest mode for resolving the problems related to bankruptcy and insolvency in the real estate sector.

However, this brings us to another question, which is, is IBC required in the realm of real estate? RERA is the primary legislation which deals with delays in the real estate sector. It mandates real estate developers to obtain a compulsory registration and also envisages penalties, in the event of delay in delivering of projects. However, with homebuyers now being able to initiate insolvency proceedings under IBC, RERA may get sidelined. Having two legislations dealing with the same issue, may cause confusion. It may also encourage forum shopping and increase the burden of authorities under RERA as well as NCLT. IBC is for the purposes of resolving insolvent companies. If homebuyers keep filing cases for delay in deliverance, the real estate projects would get delayed further. Apart from the numerical threshold, a timeline for delay, the amount paid to the real estate developer etc. should also be considered. While, IBC has proved to be an effective tool in resolving real estate delays, it should not be



misused. With the existence of RERA, the government should think, if IBC is actually required by homebuyers or they can just approach the authorities under RERA.

Conclusion

Having said the aforementioned, it cannot be denied that IBC has had a major impact on the real estate sector. If the IBC (Second Amendment) Bill, 2019, is passed, then it will help in streamlining the availability of IBC as a tool in the hands of homebuyers.



FILM DIRECTION - A STUDY OF MODEL CURRICULUM FRAMEWORK FOR SKILL BASED SHORT TERM COURSE.

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Abstract

The objective of this study is to prepare base curriculum for Film Direction, framework for skill based short term course and practices in the perspective of best practices, national requirements and universal trends. The study outlines the thirteen provisional guiding principles that shape the model curriculum for Film Direction. The guiding provisional guiding principle offers a comprehensive coverage of themes and engagements with film direction with enhancing professional capacities.

Keywords – Film Making, Film Direction, Skill based programs, Curriculum Development, Short Term Programs.

Introduction

“The history of film education in India would either begin in 1947 when Sri. Jayachamarajendra Polytechnic in Mysore, set up by the Mysore Maharajas, taught cinematography as part of its vocational courses (V.K. Murthy, the legendary cinematographer studied there) or with the setting up of the iconic FTII in Pune around 1960” (The Hindu, August 10 2015, How relevant is film school education to the film industry?). The aim of this study was to understand how provisional guiding principles are designed in film direction programs to the skill developing short term programmes, uncovering common critical elements and influences on the decision making process that might be evidence of an emerging curriculum design. History of curriculum design. Stretching back to the trivium and the quadrivium in the late 1500s, Peter Ramus was the first to organize and methodize this knowledge, steering content delivery away from personal instruction toward a structured, sequential design; general objectives at the top flowing to the particular experiences (Doll, 2008; Triche & McKnight, 2004). MacDonald (2002) states, “without filmmakers there are no film scholars” (p. 204), and thus the understanding of film production education would provide more critical insight into more formal media literacy analysis. During the formative years of cinema, it could be argued that American cinema lapsed behind its European counterparts in both technology and technique. By the early 1920’s Russian filmmaker and theorist

Sergei Eisenstein had created his watershed film Battleship Potemkin. As with Griffith's work, Eisenstein had fashioned a new cinema aesthetic in montage editing (LoBrutto, 2005). Also aligned with Griffith, Eisenstein's films were politically charged; he wore his Communist/Bolshevik ideology clearly on his sleeve (Oatley, 2010).

Film Direction term refers to the applied study of motion picture process covering various phases of filmmaking including pre-production, production and post-production. The film industry is a complex machine. Each artisan uses their skills to serve the story, making their individual contributions to the art form as invisible as possible. The study has identified 13 elements of decision making within film production curriculum which I have developed into a theoretical frame for describing the relationship among categories within the current state of film production curriculum planning. From this frame, I have established recommendations for practice and recommendations for research.

Film Direction - Model Curriculum framework for Skill based Short Term Course

01	History of World Cinema
02	History of India Cinema
03	History of Regional Cinema
04	Mainstream and Art films of India
05	Cinema as medium of Social Communication and Culture
06	Elements of Cinema
07	Film Appreciation – Film Theories and Criticism
08	Film Production Process – From Concept to Screen
09	Documentary film movement – Indian and International Perspectives
10	Script Writing and Storyboarding
11	Film Business, Financing and budgeting
12	Technologies in film production
13	Film Distribution and Digital Media

The theoretical frame describes the interaction of elements in the current state of film production curriculum design. It is the first step in establishing the lay of the land; creating an initial map of the charted and uncharted territories of film production curriculum within the academy. While the theoretical perspective is important, of primary relevance are the implications for research and practice. The digital age has made the notion of

film somewhat redundant. Some of the production programs in the study have the designation of media production but refer to the same core skills and competencies

History of World Cinema - The history of world movies goes back to the end of the 1800's. It is now more than 200 years that the world of cinema has had the chance to develop through many experiments, innovations and Technology captured hearts of billions.

History of India Cinema - The Indian cinema industry dates back to the 19th century, more than a hundred years ago. The very first film to be shot was by Lumiere Brothers which was shown in Mumbai. The Lumiere Brothers, born in France, were the children of a couple who ran a photographic portrait studio in Besancon, France. On the 7th of July 1896 the Lumiere Brothers showcased six films at the Watson Hotel in Mumbai. This marked the birth of the now gigantic Indian cinema.

History of Regional Cinema - India is a large country where many languages are spoken. Many of the larger languages support their own film industry. Some of the popular regional film industries in India are Bengali, Tamil, Telugu, Kannada, Malayalam and Punjabi. The Hindi/Urdu film industry, based in Mumbai, formerly Bombay, is called Bollywood. Similar neologisms have been coined for the Tamil film industry Kollywood and the Telugu film industry. Tollygunge is metonym for the Bengali film industry, long centered in the Tollygunge district of Kolkata. The Bengali language industry is notable as having nurtured the director Satyajit Ray, an internationally renowned filmmaker and a winner of many awards.

Mainstream and Art films of India - India is well known for its commercial cinema, better known as Bollywood. In addition to commercial cinema, there is also Indian art cinema, known to film critics as "New Indian Cinema" or sometimes "the Indian New Wave"

Cinema as medium of Social Communication and Culture - Cinema is one of the most popular media of communication. Through cinema, the director communicates with the audience. Audience is equally important in this process of communication

Elements of Cinema – Cinema is easier to understand by defining specific elements that can be found in the majority of history's most revered films. Script, Character, Acting, Timing, Sound, Visuals. All of these elements are important in making a great film

Film Appreciation – Film Theories and Criticism - Film Appreciation is a set of scholarly approaches within the academic discipline of film or cinema. Film theory is not to be confused with general film criticism Film criticism is

the analysis and evaluation of films and the film medium. The concept is often used interchangeably with that of film reviews

Film Production Process – From Concept to Screen - Film Production is created in 5 phases: development, pre-production, production, post-production, and distribution. Each phase has a different purpose, with the overarching goal to get to the next one, and ultimately on to distribution.

Documentary film movement – Indian and International Perspectives - Documentaries are about something specific and factual and concern public matters rather than private ones. The people, places, and events in them are actual and usually contemporary

Script Writing and Storyboarding - The most important part of producing a cinema is the story. Scripts based on the brand's creative strategy, that speaks to their right target audience.

Film Business, Financing and budgeting - Film budgeting is an essential part of the filmmaking process. Anyone vaguely thinking of a career as a producer needs to know how to make a film budget.

Technologies in film production - Filmmaking technologies are becoming faster, and easier to use. These innovations will shape the future of the industry

Film Distribution and Digital Media - Distributing films is the final stage of film making which follows Pre-production, production & then post-production of the movie.

Conclusion

As the study of film direction in a skill development education setting, this research is beneficial to educators and administrators to inform future curriculum design or revision, resource planning, and aid in faculty and tenure decisions. The beginning of a formal provisional guiding principles in film direction is to provide students with a full range of technical and practical skills, to teach them to think critically about their chosen mediums, and to guide their artistic growth as they experiment with different forms of cinematic expression.

References

1. The Hindu, August 10 2015, How relevant is film school education to the film industry?
2. Gordon Leff . The trivium and the three philosophies, Publisher: Cambridge University Press, DOI: <https://doi.org/10.1017/CBO9780511599507.012>, pp 307-336



3. Triche, S. & McKnight, D. (2004) The quest for method: The legacy of Peter Ramus. *History of Education*, 33(1), 39-54.
 4. Doll, W.E. (2008). Complexity and culture of curriculum. *Educational Philosophy and Theory*, 40(1). 190-212.
 5. Dressell, P. L. (1980). Improving degree programs: A guide to curriculum development, administration and review. San Francisco, CA: Jossey-Bass.
 6. Hodge, C. (2009). Film collaboration and creative conflict. *Journal of Film and Video*, 61(1), 18-30.
 7. Jones, C., & DeFillippi, R. J. (1996). Back to the future in film: Combining industry and self-knowledge to meet the career challenges of the 21st century. *Academy of Management Executive*, 10(4), 89-103.
 8. Maimon, E. P. (1997). Teaching “across the curriculum”. In J. Gaff & J. Ratcliff (Eds.), *Handbook of the undergraduate curriculum: A comprehensive guide to purposes and structures, practices and changes*. (pp 377-392). San Francisco, CA
 9. Sabal, R. (2001). Teaching media. *Journal of Film and Video*, 53(1), 3.
 10. Tomasulo, F. P. (1997). Theory to practice: Integrating cinema theory and film production. *Cinema Journal*, 36(3), 113-117.
 11. Tomasulo, F. P. (2012). Teaching film studies within a production context. In L. Fischer & P. Petro (Eds), *Teaching film: Essays on cinematic pedagogy* (pp. 618-646). New York, NY: Modern Language Association
- Castells, M., Fernandez-Ardevol, M., Qiu, J., & Sey, A. (2004). The mobile communication society: a cross-cultural analysis of available evidence on the social use of wireless



DANIEL DENNETT ON EVOLUTION OF CONSCIOUSNESS

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1. Introduction

Daniel Dennett is one of the most influential philosophers of mind of the past thirty years. According to him there is no such thing as phenomenal consciousness as an extra property of the world. His philosophy of mind follows the naturalist tradition: according to which the mind can be explained by science without spiritual or metaphysical approaches. He rejects the idea that consciousness is the fundamental problem about the mind. His theory of consciousness involves a critique of qualia, phenomenal consciousness, possibility of zombies, knowledge argument, what it is like aspect of consciousness etc.

In this paper I would like to discuss Dennett's evolutionary perspective on development of consciousness which attempts to solve some of the problems raised in the contemporary theory of mind and consciousness. We will discuss the implications of these concepts in his theory of consciousness.

2. Evolution of Consciousness

According to Dennett, human mental states are derived from evolution by natural selection. Human brains are a type of computer and consciousness is a certain sort of software, a "virtual machine" in our brain. He proposes an evolutionary theory about what sort of program the machine can run. The evolutionary theory is about how the successive processes pile up on one another in an ascending order. The pyramid of processes constitutes an evolutionary trajectory. Dennett describes three qualitatively different levels of evolution - 1) Genetic evolution, 2) Phenotypic plasticity and 3) Memetic evolution

2.1 Genetic evolution:

According to Dennett, the first step in the evolution of consciousness is the emergence of reasons from a world of mere causes. "In the beginning, there were no reasons; there were only causes. Nothing had a purpose, nothing had so much as a function; there was no teleology in the world at all. The explanation for this is simple: There was nothing that had interests. But after millennia there

happened to emerge simple replicators"¹ Thus reasons replaced causes as consciousness took a normative turn.

The emergence of replication makes the crucial of teleology in the world for. These simple replicators want to continue to replicate, they should avoid the 'bad things' and seek the 'good things'. That is, the normative find of view enforces the distribution between good and bad, favourable and unfavourable etc. Self representation becomes the hallmark of the evolutionary selection of the good and bad and so on. According to Dennett, origin does not matter. Natural selection cannot tell how a system got the way it got. In contrast, the process of natural selection is famously lacking in goals. Since she doesn't foresee at all, she has no way of worrying about unforeseen side effects.²

Let us summarise the first level of evolution of consciousness:(1) There are reasons to recognize.(2) Where there are reasons, there are points of view from which to recognize or evaluate them.(3) Any agent must distinguish "here inside" from "the external world."(4) All recognition must ultimately be accomplished by myriad "blind, mechanical" routines.(5) Inside the defended boundary, there need not always be a higher executive or general headquarters.(6) In nature, handsome is as handsome does; origins don't matter.³

2.2 Phenotypic plasticity:

The primitive animals had very rudimentary nervous systems. Under pressure from natural selection, more sophisticated nervous systems are likely to evolve. Dennett argues that this ability leads to a capacity for vigilance. Such creatures have the capacity to store information about the environment for future use. He calls such creatures 'informavores', because of their constant hunger for information. These informavores are interested in information about regularities in the environment.

Individuals, whose brains are capable of learning the regularities about the environment lead to an enormous advantage. This leads to a selection for phenotypic plasticity: the capacity of an individual to adapt within its lifetime. According to Dennett, we expand and continue this ability. "We human beings have used our plasticity not just to learn, but to learn how to learn better, and then we've learned better how to learn better how to learn better, and so forth."⁴

2.3 Memetic evolution:

Biological evolution occurs when there is variation, heritability and differential reproductive success. Dennett mentions the following condition which exist certain evolution takes place. They are:(1) variation: the evolution of aims elements.(2) Heredity or replication: the elements have the capacity to create copies or replicas of themselves. (3) The replication of the elements evolved: depending on interactions between the features of the environment, the number of copies of an element that are created in a given time varies.⁵

According to Dennett, there are other kinds of replicators that have

recently emerged on this planet, i.e. memes. Memes are units of cultural ideas that pass from one generation to the next, while genes passed down through biological reproduction. Memes are replicators like genes.⁶

Dennett claims that it is the meme that separate human beings from the rest of the living world. It is the special capability that distinguishes the differences between human beings and the rest. According to him there are different types of memes like general memes, particular memes etc. Other memes are more controversial; we can see why they spread, and why, we should tolerate them: shopping malls, fast food, advertising on television etc.⁷

Genes are invisible. They are carried by organisms in which they tend to produce characteristics. Memes are also invisible, and are carried by meme vehicles - pictures, books, sayings (in particular languages, oral or written, on paper or magnetically encoded, etc.).⁸ One may ask here how is all of this related to the evolution of human consciousness? Perhaps the most important meme of all is the meme for human language. Many if not most memes are transmitted through language: whenever we talk to each other, memes are transmitted.⁹

Language becomes a way of controlling the flow of information within the brain. Once the habits of vocal autostimulation began to establish in the behaviour of human populations, we would expect them to be quickly refined, both in the learned behavioural habits of the population and in genetic predispositions and further enhancements of efficiency and effectiveness. Dennett speculates this innovation would have the further benefit, opportunistically endorsed, of achieving certain privacy for the practice of cognitive autostimulation.¹⁰ Meme evolution has the potential to contribute remarkable design-enhancements to the underlying machinery of the brain at great speed.

Let us sum up Dennett's idea of evolution of human consciousness: All three stages of evolution such as genetic evolution, phenotypic plasticity, and memetic evolution have contributed to the design of human consciousness. Compared with phenotypic plasticity, which has been around for millions of years, significant memetic evolution is an extremely recent phenomenon, which has become a powerful force only in the last hundred thousand years.¹¹

3. Qualia Disqualified

Qualia include the ways things look, sound and smell, the way it feels to have a pain, and more generally, what it's like to have experiential mental states. Qualia are experiential properties of sensations, feelings, perceptions, thoughts and desires. Frank Jackson defined qualia as "certain features of the bodily sensations especially, but also of certain perceptual experiences, which no amount of purely physical information includes."¹²

Dennett attempts to remove the qualia from a scientific account of

consciousness. He proposes that qualia, as most philosophers conceive of them, do not exist. Dennett identifies four properties that are commonly ascribed to qualia. These qualia are characterized in the following way:

1. Qualia are ineffable: No matter how eloquent one is and no matter how cooperative and imaginative one's audience is, one cannot say to another exactly what way one is currently sensing, tasting, smelling, and so forth.
2. Qualia are intrinsic: Qualia are somehow atomic and unanalyzable, and are supposed to be the intrinsic properties of our experiences.
3. Qualia are essentially private: Any objective, physiological, or merely behavioural test would of necessity miss the target, so all interpersonal comparisons of these ways of appearing are systematically impossible.
4. Qualia are immediately apprehensible in consciousness: They are essentially directly accessible to the consciousness of their experiencer, or immediately phenomenological qualities.

Dennett claims that there are no qualia. It's a confused notion and it's high time to get rid of it. Dennett comes to the conclusions that we can explain consciousness without appealing to qualia. In a series of thought experiments, which he calls "intuition pumps" Dennett points out some difficulties with the commonly accepted concept of qualia. The aims of the following intuition pumps are to show that qualia are not intrinsic properties.

The experienced beer drinker: Most people don't like beer when they first taste it, but equally most people do eventually come to like beer. Is this because of an increased appreciation of the taste of beer, or is that with more experience the taste actually changes to one that is more likeable? If the taste of beer somehow depends upon one's reactions to it, then the claim that qualia are intrinsic properties might be threatened.¹³ The claim is that "...if it is admitted that one's attitudes towards, or reactions to, experiences are in any way and in any degree constitutive of their experiential qualities, so that a change in reactivity amounts to or guarantees a change in the property, then those properties, those "qualitative or phenomenal features," cease to be "intrinsic" properties..."¹⁴

The guitar string: Through this interesting example, Dennett's aim is to show that qualia is a describable property. At first time a string sound is entirely novel and we are not able to identify which string is pressed. After some training, "The homogeneity and ineffability of the first experience is gone, replaced by a duality as "directly apprehensible" and clearly describable as that of any chord."¹⁵

On Dennett's view there are no ineffable, intrinsic, private, directly apprehensible properties of experience. According to him qualia are just those complexes of dispositions. There is an internal property detector responsible for each sensory property. These detectors can be refined through experience. This

allows us to identify or recognize a familiar property. But we do not have to know how we identify or re-identify or gain access to such internal response types in order to be able to identify them.

Dennett's attack on qualia is the first move in the demolition of phenomenal consciousness. According to him, an explanation of consciousness would require only an account of mental content and an explanation of why it appears as if there is phenomenal consciousness. His series of thought experiments show that facts about qualia dissolve into unverifiable pseudo-facts.

4. Criticisms and responses of evolutionary account of consciousness

David Chalmers, one of the main critics of Dennett, describes consciousness as being indefinable, something like the subjective quality of experience. A mental state is conscious if it has a qualitative feel. It is very hard to explain such a thing.

It is a complicated fact that the systems in the brain can process information, react to stimuli and even have learning, memory and language. There is nothing mysterious about them. These are 'easy problems' that science can solve. But, the 'hard problem' is why are these process accompanied by subjective experience? Where does conscious experience come from? And why do we have it?

Chalmers believes that consciousness cannot be reduced to physical processes in the brain. Consciousness, he says, is not logically entailed by brain structure. Even if we could explain the entire activity of the brain, every neuron and every connection, we would still not have understood consciousness. It is explained by something different, something more than just brain structure.

Any account of the physical processes supposed to bring about that consciousness will have the further question: why are these processes accompanied by a conscious experience? Chalmers claims that materialism is therefore false. There are features of the world over and above the physical features. However he still insists he is a naturalist, rather than a supernaturalist.

In Chalmer's view, consciousness cannot be reductively explained, but there can still be a theory of consciousness: which is a non-reductive one. That is, we need to give up trying to explain the existence of consciousness wholly in terms of something more basic, and instead admit it as fundamental, giving an account of how it relates to everything else in the world. Such a theory of consciousness will be similar in kind to the theories of matter, motion, or space and time. Its essence would be a set of psychophysical laws governing the relationship between consciousness and physical systems.

Dennett's arguments are the exact reverse of Chalmers' in many respects. Chalmers' view is that first-person methodology is the right method

for a scientific study of consciousness. According to Chalmers, the third-person method is like studying consciousness without consciousness. On the contrary, Dennett insists that the third-person perspective is the right method for studying consciousness. According to Dennett, the first-person science of consciousness is a discipline with no methods, no data, no results, no future. It will remain a fantasy.

Dennett's theory is based on 'multiple drafts model'. He states that all varieties of perception, thought or mental activity are accomplished in the brain by parallel, multi-track processes of interpretation of sensory inputs. According to him, human consciousness is a huge complex of processes in brain, best understood as the operation of a virtual machine implemented in the brain. It is a software programme. It is a virtual serial machine implemented on parallel hardware.

Another important critic of Dennett's philosophy is John Searle. Searle defends consciousness as a peculiarly biological phenomenon. He grants that it is physical and emergent out of the physical interaction of neurons and other physical parts of brains. But he denies that we can expect to understand anything about it through traditional, objective scientific methods because consciousness is inherently a first-person, not a third-person, phenomenon.

Searle provide first-person evidence that the phenomena of consciousness actually exist. Dennett, on the other hand, believes that the stories someone tells about their mental experience as data are to be accounted for by some physical and evolutionary explanation.

Another important disagreement between these two philosophers is in the case of developing a conscious robot. According to Dennett, there is no problem applying the physical explanation of human consciousness to a different information processing artefact such as a robot.

Colin McGinn is another important critique of Dennett's philosophy. McGinn states that naturalist theories cannot account for conscious intentionality, and only conscious intentionality is intrinsic to the mental states that have it. "There is an internality about the relation between an experience and its object that seems hard to replicate in terms of "external" causal or teleological relations. Presence to the subject of the object of his experience seems not exhaustively explicable in terms of such natural relations..... Naturalist theories fail to do justice to the uniqueness of conscious intentionality. Nothing we know about the brain, including its relations to the world, seems capable of rendering unmysterious the capacity of conscious states to "encompass" external states of affairs."¹⁶

One of the interesting criticisms made by McGinn is against the evolutionary account of consciousness. This is based his 'transcendental naturalistic perspective' about consciousness. The human cognitive system is

weak precisely where the problem of consciousness arises. The requisite theory does not come within the scope of our mental modules.

In response to his critics, Dennett admits that his explanation of consciousness is far from complete and it is just a beginning. It breaks the spell of the delighted circle of ideas that made explaining consciousness seem impossible. In any case, Dennett's is an important theory which tries to explain consciousness through a predominantly naturalistic and scientific method.

Notes and References:

1. Dennett, D. (2005) Sweet Dreams: Philosophical Obstacles to a Science of Consciousness. Cambridge MA: MIT Press. P.173
2. Ibid. pp. 174-175
3. Ibid. p. 176
4. Ibid. p. 197
5. Ibid. p. 200
6. Ibid. p. 202
7. Ibid. p. 203
8. Ibid. p. 204
9. Zawidzki, T. (2007) Dennett. Oxford: Oneworld Publications. p. 83
10. Dennett, D. (1991) Consciousness Explained. Boston: Little, Brown and Company. pp. 196-97
11. Ibid.
12. Jackson, F. (1982) "Epiphenomenal Qualia", Philosophical Quarterly, 32, 127-36.
13. Seager, W. (1999) Theories of Consciousness: An Introduction and Assessment New York: Routledge. P. 97
14. Dennett, D. (1997) "Quining Qualia." In Ned Block, Owen Flanagan and Guven Guzeldere (eds.), The Nature of Consciousness. Cambridge: MIT Press. p.630
15. Ibid. p. 39
16. McGinn, C (1997) "Consciousness and Content.", In Ned Block, Owen Flanagan and Guven Guzeldere (eds.), The Nature of Consciousness. Cambridge: MIT Press. p.303



KAMALA MARKANDAYA: AN EXCEPTIONAL FEMINIST

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Abstract

Kamala Markandaya's novels have always relied upon confrontation between opposing viewpoints to set the stage for action and thereby convey her ideological concerns. The clash of values, a distinctive characteristic of the Indo-English novel, often stems from a nostalgic idealization of tradition or a compulsive urge for modernity, but in Markandaya's novels it can be traced to generally opposing modes of thought and behavior attributed to the East and the West. Indeed, the East-West encounter as a recurrent theme in her novels is directly related to her experience as an expatriate who inherited Indian values by birth and acquired Western values by choosing to live in England. Like her, most of her characters find themselves in situations where they must confront values rooted in opposing cultural milieus, historical processes, economic systems, political ideologies, and philosophical traditions. Not all of them are able to resolve the tensions and inequities that threaten to disintegrate their own psyche and spirit. But even their defeat is redeemed by their heroic endeavor to overcome their innate weaknesses or the inexorable forces around them.

Key Words: ideological concern, Indo-English novel, cultural milieu, inexorable.

Kamala Markandaya's first novel, *Nectar in a Sieve* (1954), portrayed rural India struggling for survival.¹ The story is enfolded in a flashback by Rukmani, an impoverished peasant woman in a South-Indian village. Her marital life with Nathan, a landless peasant, is the chronicle of hardships of tenant-farmers caused by natural calamities and greedy landlords. The clash of values occurs in the novel at several levels, but the most crucial encounter remains between the ideas inculcated by cultural traditions of India and the forces of progress unleashed by Western science and technology. The latter is represented in the novel by the tannery (owned by an Englishman), but the ideology behind the Industrial Revolution that changed the lot of the Western world so dramatically is voiced by Kenny, the English social worker, whose anger at the passive acceptance and resignation of the people fed on the virtues of stoicism reveals the difference between the Eastern and the Western viewpoints. That Kamala Markandaya is not a slogan-raising social reformer or a preacher of a certain political-economical gospel is evident in *Some Inner Fury* (1955) where the

focus shifts from a clash of two economic systems—rural-agricultural versus industrial-commercial—to two systems of politics: British rule versus self-rule by Indians. Out of this clash is born the familiar theme of East-West confrontation. Set against the turbulent years of the Quit India Movement (1942), *Some Inner Fury* tells the story of two star-crossed lovers: Mira, the protagonist, and Richard, a friend of Mira's brother Kit at Oxford, who comes to India to join the civil service.

The East-West confrontation is limited in scope and depth mainly because the character of Richard is too idealized to bring out the clash between his inherited and adopted cultures. His closeness to Mira, the narrator, also hampers objectivity. Instead, the East-West encounter is dramatized in terms of the conception of the West that each character has. The racial disparity between Mira and Richard finds a parallel in the cultural disparity between Kit and his wife Premila. The latter symbolizes the ideals of Indian womanhood: kindness, compassion, and self-sacrifice. She signifies tradition just as Kit represents change. When her efforts to become a part of Kit's world fail, and Kit's affinity with the Government House—an obvious symbol of racial disparity—grows stronger than with his own house, the two become estranged. Their deaths in a freak accident suggests that each represented a viewpoint that lost validity. Only Mira's experience conveys the essential message of the novel: understanding gained through suffering is a pre-requisite for meeting of the contraries.

In *A Silence of Desire* (1960), Kamala Markandaya probes the world of spirit with the same zeal as she had explored the world of flesh and senses in her first novel.³ Here the clash between spiritual faith and scientific reason is intertwined with the archetypal conflict between tradition (East) and modernity (West). This conflict is dramatized through the interplay of central characters, Dandekar and Sarojini, who share the proverbial conjugal bliss without really having any interaction at other levels—for instance, intellectual and spiritual. Their family happiness is shattered when Dandekar suspects Sarojini of harboring a secret, probably an extramarital affair. Minor happenings confirm his suspicion leading to confrontation and accusation of infidelity. Hurt and insulted, Sarojini tells him the truth: she has been visiting a swami hoping to be healed of a malignant growth in her womb. Lacking belief in faith-healing, Dandekar wishes for his wife to seek medical help but he does not want to enforce his will on her in respect for her religious beliefs. Tormented by her suffering and his own helplessness, he goes through an emotional and psychological crisis. Dandekar's self-torment is heightened, in part, by his own divided psyche: his "part-western mind fought against alleviations which his part-eastern mind occasionally hinted might be wise" (p. 117). While belief in spiritual realities is presumed in the Indians, skepticism as a natural characteristic is attributed to the British. Such thinking is reflected by Sarojini

when she tells her husband: "I don't expect you to understand—you with your Western notions, your superior talk of ignorance and superstition when all it means is that you don't know what lies beyond reason and you prefer not to find out" (p. 87).

In her next novel, *Possession* (1963), Markandaya returns to the theme of East-West conflict in a simple narrative, marked by bitterness and cynicism. Unfolded by Anasuya, a young woman writer, who reminds one of Mira in *Some Inner Fury*, the story revolves around Valmiki, a rustic boy with an unusual talent for painting. Deserted by his impoverished family, the boy is sheltered by a swami who inspires him to paint Hindu gods and goddesses on rocks. By chance, Valmiki's talent is discovered by Lady Caroline Bell who "buys" him from his family and takes him to England for training as an artist. After years of travel on the Continent and painstaking training, Valmiki is established as an acclaimed artist. Caroline is now in full "possession" of Valmiki but only at the physical level, for spiritually he remains rooted in his Indian heritage. The swami's visit to England helps him realize that Caroline has simply turned him into an exotic object for exhibition. Kamala

Markandaya possesses a prominent place in the realm of Indian Novelists in English. Her contributions are very remarkable and significant. Her writings describe constant efforts of her protagonists (generally female) to upgrade the status of woman under the patriarchal domination. Her creation of woman character's frame work is one of the important things in her writings which often attract the attention of general readers. As S.K Arora rightly holds the view:

In Indian English Literature Kamala Markandaya, an outstanding novelist in the contemporary commonwealth literary scene and ranking with Mulk Raj Anand, R.K.Narayan and Raja Rao – has initiated the idea of women's transformation from "possession" through her writings. Although her women characters rebel, they make the society realize of their presence as 'persons' and not mere 'possession' The new women clinging to her basic values and changing circumstances goes ahead in the way seeking for her own identity with new depth and getting recognition.¹

Kamala Markandaya was born in 1924 in an orthodox Tamil Brahmin family of Mysore, in South India where from time immemorial her ancestors lived. Her father was a government servant working in railways. So, kamala Markandaya used to move from one place to another and in this way she acquired various experiences of different men and manners of different societies. She observes:

Though, it was quite wearisome, it proved to be a boon affording opportunities to learn more resulting in adding new dimensions in the vast stroke of her knowledge.²

The early training that Kamala Markandaya got from her father was really a boon for her academic and literary life in which she has presented a varied experiences of self and society. She holds the view:

My father was inveterate traveler and something of a rebel, leaving the traditional occupations of his family, he had joined the railways, so that not only was the whole of South India opened to me during childhood and adolescence, but also a good part of England and the continent. I think the role of observer which every traveler assumes is good braining for any writer.³

She was born and bred in India, and lived in a south Indian village for sometime before she took to writing. But she also travelled extensively through the west, married an Englishman, and is now finally settled in England, Hence, her presentation of the East- West cultural tensions and conflicts is characterized with a rare penetration, understanding and realism. In her novels, the west is presented through a number of characters playing different roles, representing different aspects of western culture, reacting in different ways to Indian culture, and to the Indians they come in contact with. Dr. Raghukul Tilak observes:

The 'conflict between the two is presented on different levels: on the individual level, on the group level, on the political level, on the cultural and artistic levels, and also as a conflict between industry and agriculture. The relationship of the East and the West- is on the whole love-hate relationship, and by and large, it may be said that Kamala advocates a synthesis of or a compromise between, the two ways of life, She certainly does not agree with Kipling's view that the, "twain can never meet."⁴

The Nowhere Man is a powerful novel by Kamala Markandaya which deals with the theme of east-west-encounter through individual relationship and experiences. Its central figures are nowhere man, i.e. Indian immigrants in England who belong neither to India nor to England. The novel, thus is also a psychological study in the problems of alienation and rootlessness.

Young Srinivas and his teenaged wife Vasantha came to England when India was still under British rule. Hence, the rootlessness and sense of alienation is vividly presented in the novel. V. Rangan makes the following observations:

The Nowhere Man, as the title itself indicates, is a novel about a displaced Indian (a South Indian Brahmin to be precise) Srinivas who settles down in England, but unfortunately not fully accepted by the English community. Srinivas becomes a rootless, restless individual,

dispossessed of India and disowned by England. Though, the predominant theme of the novel is displacement, alienation, and a search for identity in alien environment. It treats of larger human relations rendering the work and interesting psychological study of human relationship as well as of the essential human loneliness.⁵

Dr. N.K. Singh in his book *Society and Self in the Novels of R.P. Jhabuala and Kamala Markandaya* sums up the whole story in a very epigrammatic way:

“Srinivas was born in a South Indian Brahmin family. The family once possessed extensive forest wealth, but later shifted to the city where Srinivas’s grand- father built a large house. There was another family in the city with which this family was related. Srinivas’s father, Narayan, after completing his higher education, become a lecturer in a government college in the city. Srinivas was a brilliant student. After finishing school he entered the college in which his father was employed. At the Intermediate examination he stood first in the university. The college had British Principal and Deputy Principal and Many of the teachers were also Englishman. Srinivas’s father being an Indian was suppressed by the English teachers in promotions. But Narayan being un ambitious was unmindful of the suppressions.⁶

In the novels of Kamala Markandaya we find the portrayal of India’s social changes. She succeeds in arresting in fictional forms the Indian mind in its conflict between the old and the new; the traditional values and the wipe for westernized modernity and changing values. Shiv. K. Kumar has rightly observed:

Of all the contemporary Indian novelists writing in English, Kamala Markandaya is the most accomplished, both in respect for her sensitive handling of a foreign medium and her authentic portrayal of the Indian scene. What distinguishes her most incisively from other Indian novelists is her acute awareness of a gradual shift in values that has been taking place in this sub-continent during the past two decades or so.⁷

Thus, the brief survey of life, mind and vision of Kamala Markandaya very well shows that she has a very deep and soft corner for the plights and persecution of women in the society. Their portrayal are very realistic and profound. In their realistic presentation of women they seem to be very much influence by doyens of feminism of the east and the west.

References

1. S.K. Arora: *A Study of Kamala Markandaya’s Women*, Atlantic Publication, New Delhi, 2006, P.
2. Ibid., p. 01.



3. Montgomery Truth: Kamala Markanday, Wilson Library Bulletin Biography, 1965, p. 296.
4. Kamala Markandaya: Nectar in a Sieve: A Critical Study, By Dr. Raghukul Tilak, Rama Brothers India Pvt. Ltd. Educational Publishers, New Delhi, 2005, p. 26.
5. V.Rangam, The Nowhere Man: A Critical Analysis, Natonalist Perspectives on Kamala Markandaya, ed. Madhusudan Prakashan, Ghaziabad, 1984,P.186.
6. Nagendra Kumar Singh: Society and Self in the Novels of R.P. Jhabvala and Kamala Markandaya, Sarup and Sons Publishers, New Delhi, 2005,p. 168.
7. R. A. Singh: The Novels of Kamala Markandaya: A Study. Prakash Book Depot, Bara Bazar Bareilly, 2005, p. 1.



MANJU KAPUR AND HER WORKS

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Abstract

Manju Kapur has earned coveted status among the modern Indian English women novelists. She registers her concern for the Indian women and deals with various – feministic issues like female education, their empowerment, financial independence of women's sexual abuse, etc. Kapur displays mature understanding of the female-psyche in portraying the inner subtlety of a women's mind, as she has intellectually described through her novels, the different states of women's mind in altered circumstances. She narrates important issues of class and nationhood and connects them to the emerging sense of female identity in postcolonial India. As a "post colonial" (Ali, ix) writer Manju Kapur has significantly contributed to the progression of Indian fiction. She innately realizes the position of women in the patriarchal society and deals with the problems of women - Her novels illustrate how the women of modern age in India are torn between tradition and modernity in trying to shape her life in her own ways. All her protagonists oppose against the social rules to become self dependent, but finally compromise for the sake of social harmony. Kapur is aware of the seriousness of the Indian woman's dilemma and generation old struggles behind it, but she believes that a positive change in her social status can materialize by bringing about a change in her mindset and making her literate and well informed.

Key Words: Covetous, feminist issues, tradition, modernity, social status.

Manju Kapur has an illustrious career in the field of modernism. She was born in 1948 in Amritsar, India. She was a Professor of English at Miranda House Delhi University under the name Manju Kapur Dalmia. She studied and received an MA Degree in 1972 from Delhousie University in Halifax, Canada and M. Phil from Delhi University. She is married to Gun Nidhi Dalmia, and has three children. Presently she lives in Delhi. Kapur very first novel *Difficult Daughters* came in 1988 and won the "Commonwealth Writers Prize for the Best first Book" (Eurasia) in 1999, and was a number one best seller in India. Her second novel *A Married Woman* was published in 2002. The novel was called "Fluent and Witty" (Singh, 36) in the 'Independent'. It was followed by *Home* in 2006. *Home* was described as "glistening with details and emotional

acuity” in the ‘Sunday times’. Kapur’s fourth novel *The Immigrant* came in 2009 and was shortlisted for DSC Prize for South Asian Literature in 2011. Her novel *Custody* was also published in 2011. A noted daily soap on Indian television – “Yeh Hain Mohabbatein”, produced by Balaji telefilms, was based on her novel *Custody*. *Brothers* (2016) is Manju Kapur’s sixth novel, and much like the previous ones, it highlights the lives of a woman in multiple locations, rural, urban, domestic, public. Manju Kapur, a well-known name in Modern Anglo Indian Literature is widely known as the Jane Austen of India. Her novels deal with everything that is related to the modern family and the patriarchal society. Her novels present the contemporary picture of today’s women who is eager to search an identity for herself. A modern writer with modern views and notions, Kapur knows that today’s women are far more intellectual and mature than their predecessor. Her novels are the chronicles of the Indian middle class society. They capture everything that comes in the course of time in a “middle class family – sexual abuse, the politics of arranged marriages, infidelity, infertility, adoption, divorce, sexual dysfunctions, family battles and many more issues” (Singh, 17-18). Her protagonists are today’s women who are not ready to submit to the age-old traditions and customs of patriarchal society. Kapur’s novels reveal an idea of feminist struggle against biases. As Durani says, “Our closed society considered it obscene for a woman to reveal her intimate secrets but would not silence be a great crime?” (Durani, 375)

Manju Kapur’s female protagonists are mostly educated, aspiring individuals caged within the confine of a conservative society. Their education leads them to independent thinking for which their family and society become intolerant of them. In the conservative society, for a woman, the home has been considered the only area of activity where she is supposed to find satisfaction in performing her duties in different roles- mother, sister, daughter, daughter-in-law etc. Her desire to go beyond the limits of home is considered to be wrong as home is considered her place of duty. The women who have been carrying the burden of embarrassment since ages, want to be free now. And in a male dominated society, Manju Kapur succeeds in brining the real picture of women. The present study is an attempt to bring out the changing images of women in Kapur’s novels from tradition to modern and post-modern era. Manju Kapur has portrayed memorable women characters. All her novels consist of a variety of “women characters” (Op. Cit., 4) as well as her novels are women characters centric. Her women characters bring forth the various shades of the lives of women. Through her women characters, she shows a mirror to the society denoting the condition of middle class women in a patriarchal society. In the changed cultural circumstances, Manju Kapur’s women characters do not become the victims of their male counterparts of patriarchal society. Rather they



are shown facing new problems with the upcoming of new responsibilities, availability of equal opportunity, social limitations and new freedom.

In her very first novel *Difficult Daughters*, Kapur presents a traditional family that considers a woman's education secondary, while giving importance to marriage and family duties as her primary duties. Virmati's mother is of conservative thinking and her father comes under the category of a benevolent patriarch. The novel deals with the conflict between traditional and the modern society. Virmati is a difficult daughter, who unlike her mother is not ready to blindly succumb herself to the age-old norms. Kasturi holds patriarchal values as an ideal inheritor, as her daughter rebels against such values, she takes it as a rebellion against her ownself. By suppressing Virmati's desire for freedom, she turns out to be a voice of patriarchy. Virmati's struggle to acquire higher education and self dependence continues further. The novel is about educating daughters and facing the consequences when they learn to think for themselves and begin to question the basic values of society. It is the old conflict again between the demands of modernity and tradition enacted this time in an "upright, high- minded, middle-class Punjabi" (Laxmiprasad, 49) Lalaji family in the 1930's and 1940's.

Set around the historical background of India's partition. *Difficult Daughters* is the story that focuses on the relationship between the "mother and daughter" (ibid, 51) who belong to different generations. It is the story of a women caught in between the sentimental situations of her family and her longing for education and her quest of identity. There are different perspectives between the female characters about exciting culture and norms. When Kasturi, the mother of the protagonists, Virmati, compels her daughter to accept the marriage as a traditional norm, Virmati refuses the proposal, rather she seeks knowledge. The narrator of the novel, Ida, is Virmati's daughter. Through her voice the novelist distinguishes the women from three generations. Manju Kapur takes Virmati as her mouthpiece and through her she highlights the marginalization suffered by women who are primarily concerned about their individuality and dignity. Manju Kapur successfully presents different shades of life, painted on the canvas of *Difficult Daughters*.

Kapur's preoccupation with the female revolt against deep rooted family values and the institution of marriage is followed through to her second novel, *A Married Woman*. It is the story of Ashta, a young woman brought up in Delhi in a typical middle-class household. Ashta succumbs to her parents finding her a husband in the traditional arranged manner. Within the matrix of marriage, she discovers a latent sexuality, which is driven by love and passion for her husband. She leads a seemingly blissful life finding her feet in the teaching profession as well as bearing two children. Yet somehow, underneath

all this, lies a life of repression and anguish. Against the backdrop of communal unrest in India with the Hindu-Muslim conflict over sacred ground in Ayodhya, Ms. Kapur develops the unrest within Astha's life. Her marriage becomes questionable after she involves herself in the outer world of rebellion and protest.

Kapur's *Home* captures the journey of Nisha from a little tender girl to a strong independent woman. Kapur's ability to portray the sexual abuse of a tender girl by her own cousin and its aftermath is just outstanding. There is a heartrending description of the traumatized state of little Nisha. The similar kind of pathetic condition of Nisha is explored later on in the novel. When we see her suffering from a skin disease as a result of deception that she gets from Suresh. Manju Kapur proves her potential to describe the molestation and disease in the same detached style in which she narrates is just remarkable. After a number of terrible ordeals, since her childhood, Nisha proves herself as Kapur's "New woman" (Singh, 35). Manju Kapur very effectively delineates the characters of traditional women such as Nisha's mother and grandmother who are gender stereotypes and willingly follow the norms of patriarchy. They not only carry the burden of tradition but also try to edify their next generation to do the same.

We find a kind of similarity of deliberation between Nisha's mother Sona in *Home* and Virmati's mother Karturi in *Difficult Daughters*. Sona and Kasturi have nothing to do with education. They just want their daughters to be experts of culinary skills: "What does a girl need with studying? Cooking will be useful her entire life. . . .No children had produced an express love, and a girl who was good for nothing" (*Home* 125). Kasturi too thinks in the same manners: "A women's shaan is in her home" (*Difficult Daughter*, 13).

Manju Kapur is a genius to portray the vulnerable condition of women in our society. Her novels are like vast colourful canvas with variant and vibrant women characters. In her fourth novel the immigrant, Kapur makes her protagonist Nina's life begin exactly from the place where the already developed women like Astha and Nisha start their journey towards emancipation. The novel deals with the sensitive portrait of Nina, a thirty year old spinster living with her widowed mother. Nina works as a lecturer in Miranda House, Delhi. The traditional societal expectation of a girl to be married before she crosses the bar of her thirties has left a mark on Nina's mind too. Ms. Kapur has brilliantly explained the inner psychology of an unmarried adult woman. In our Indian orthodox tradition, a girl is supposed to be married in her tender age only, otherwise, it would be a question mark on them and their parents as well. So, Nina's widowed mother is always worried about her daughter's marriage. Here, we are reminded of Astha's mother in *A Married Woman* whose prime concern is to marry her daughter in perfect tender age. Her mother declared, "When you are married, our responsibilities will be over"

(A Married Woman, 1).

However, education was never a second option for Nina like Virmati and Nisha who got the chance to educate themselves just because their marriage were being delayed by some reason. After her father's death Nina takes education as her priority. And now she is an independent woman taking care of both herself and her mother. The plot of the novel is partially set in India because after her marriage with NRI Ananda, Nina flies to Canada. The novel focuses on the concept of female identity in diasporic fiction. The Immigrant is the story of transformation of Nina and her quest for autonomy and identity in the land which is not her own. Nina, at home, has to stand against the patriarchal set up of the Indian middle class society, but she, on the other hand has to fight against her loneliness, frustration and her western ethos. She sacrifices her job of a lecturer which is a sort of loss of identity. Above all, the sexual disability of Ananda is a thunderbolt for Nina because this is the cause she could not enjoy her conjugal life fully and it also posed a barrier in her way to motherhood.

Kapur beautifully portrays the psyche of Nina in her novel. She minutely analyses her thought process so sensitively that the reader begins to equate her with her characters. Nina has been presented by Kapur as an educated ambitious woman who is not ready to sacrifice her emancipation in the name of fake marriage. She wants to live her life the way a woman should live with her husband and children which completes a family. But she is shocked to see Ananda's dominating behaviour all the time hiding his weakness for the sake of manliness. Ananda's arrogant nature compels Nina to leave Ananda for 'finding her feet' as she says, "I need to time myself" (the Immigrant, 237) Kapur's exploration of special challenges facing immigrant wives in this novel is carried through her sharp observations. She has the talent of looking beneath the surface and we come across his talent of hers throughout the novel. She beautifully shows, how gradually transformation is brought by first changing the dress code, then the dietary habits and then the way of life. Kapur's novels reveal the life of women, their struggle for basic rights, quest for identity and survival. With education, they become aware of their self reliance that is proved in concern with new women. Now they have considerable freedom of expression and thought. In every field they have proved their existence.

Custody (2011),

Kapur's fifth novel, exposes the reality of the modern people living in metropolitan cities. The novel deals with many important aspects of modern life such as extra-marital affairs, infertility, infidelity, divorce and so on. Manju Kapur depicts a clear picture of exploitation, manipulation victimization and suffering. Custody is completely different from Kapur's other previous novels. It reveals the unimagined uncertainties of matrimony. Shagun, the female

protagonist of the novel is an ambitious woman and presents a different shade of feminism that is aggressive feminism. She believes that everyone has the right to be happy and she is ready to go to any extent to fulfill her individual dreams instead of familial fulfilment. After eleven years of her marriage with Raman, Shagun feels that she is not satisfied. So, she takes a decision to divorce Raman and remarry Raman's bold and dashing boss Ashok. Now, the two divorcees are fighting a battle for the custody of the two children, eight year old Arjun and three year old Rooh. Moreover, Raman meets Ishita who is also a divorcee for being infertile. Here, Kapur's idea of putting together the two frustrated Raman and Ishita is very convincing. But at the same time the innocent children's condition is pathetic who are torn between two sets of parents. In the book Mrs. Kapur presents her own modern definition of marriage. She says:

Marriage is when two people decided to live together for ever. Should they change their minds they go to court and get their marriage cancelled. Finished. Divorced. They become strangers; sometimes they never see each other again. . . . Your mother decided she loved another man. She wanted to marry him and live in America. You saw him when you were there, no? (Custody, 326)

Each character of the novel is weaved so brilliantly that we feel a kind of empathy towards each of them. Dealing with sensitive issues of infidelity and infertility, Manju Kapur aptly describes the matter with her skillful writing and gives a message that what happens when a socially unacceptable romance emerges. The novel is a kind of gentle satire on the modern society.

Manju Kapur has proved her efficiency as a chronicler time and time again. In her latest novel *Brothers* which came in 2016, she deftly creates a plot that spans eight decades, from World war II to the first decade of the 21st Century. We must not be confused with the title *Brothers* because like all her other novels, this novel also deals with the lives of women. To conclude, with six greatly praised novels to her credit, *Difficult Daughter*, *A Married Woman*, *Home*, *the Immigrant*, *Custody* and *Brothers*, she has emerged as a significant feminist writer in Indian writing in English. As a post-colonial writer, Manju Kapur has significantly contributed to the progression of Indian fiction. She innately realizes the position of women in the patriarchal society and deals with the problems of women. Kapur highlights her ideas towards women and their problems. All her protagonists are middle class educated women and want to live their lives with their own identity. We see, Kapur has always given priority to education because it is education which makes her women independent and autonomous. They are skilled, obedient and dutiful, but at the same time they are bold enough to revolt against the patriarchal norms. They are Kapur's 'new women' who know their rights and they have proved time and time again that they are not at all less than men. They are not women but just human beings.



References

- Ali, Farzana, S. Novels of Manju Kapur: A Critical Study. Nagpur: Dattsons, 2017, ix
- Singh, K.K. A Critical Companion to Manju Kapur's Novels. Jaipur: Aadi Publications, 2015, 36.
- Singh, Chandra Bhushan. Women's Perspectives in the Novels of Manju Kapur. Jaipur: Aadi Publications, 2016, 17-18.
- Laxmiprasad, P.V. Critical Readings on the Fictional World of Manju Kapur. Jaipur: Aadi Publications, 2016, 49.
- Goel, Mona. "At Home With Manju Kapur" (An Interview), Unheard
- Melodies, A Journal of English Lit. (ed.). Amar Nath Prasad, New Delhi ; Sarup and Sons, May, 2008, 4.
- Beauvoir, Simone De. The Second Sex. Translated by Constance Borde and Sheila Malovany-Chevallier. London: Vintage Books, 2011, 293.
- Kapur, Manju. Home. Gurgaon: Penguin Random House India, 2007, 125.
- Difficult Daughter. England: Faber and Faber, 2010, 13.
- A Married Woman. England: Faber and Faber, 2011, 1.
- The Immigrant. Gurgaon: Penguin Random House India, 2010, 236.
- Custody. I Gurgaon: Penguin Random House India, 2011, 326.



RECIPROCAL TEACHING AND READING COMPREHENSION

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Abstract

Reciprocal teaching is a scaffolded discussion technique that is built on four strategies that good readers use to comprehend text: predicting, questioning, clarifying, and summarizing. This is a conversational and dialogue forming strategy in which teacher is there to instruct and model the four major comprehension strategies of reciprocal teaching, leading to the turn taking within a group of students. This paper is a thematic analysis of 'reciprocal teaching strategies' that would enhance students reading comprehension skills. Previous studies along with the model of reciprocal teaching strategy and reciprocal teaching role cards for reading comprehension were discussed at a length.

Key words: Reciprocal teaching; Reading Comprehension; Predicting, Questioning, Clarifying, Summarizing.

1.0 Introduction

Reciprocal teaching is an instructional practice identified as a way of improving reading comprehension through explicit teaching of skills needed for metacognition. It is also recognized as an example of an inclusive practice (Alton-Lee, Westera&Pulegatoa-Diggins, 2012; Palincsar & Brown, 1984; Rosenshine& Meister, 1994; Westera, 2002). Further, reciprocal teaching has been documented widely as an effective instructional routine that can improve reading comprehension through the co-ordination of four comprehension strategies (Brown & Palincsar, 1985; Coley, DePinto, Sharon, & Gardner, 1993; Kelly & Moore, 1994; Myers, 2005; Oczkus, 2003; Palincsar & Brown, 1983; Palincsar, Ransom, &Derber, 1988; Palincsar& Brown, 1984; Pilonieta& Medina, 2009; Rosenshine& Meister, 1994; van Garderen, 2004) (Meyer,2010).

Reciprocal teaching is a highly-adaptable teaching tool. It has been used with a range of students at all levels of development – elementary to secondary to adults (Arbor, 2013; Rosenshine& Meister, 1994). It has been used for small groups of learners (Alton-Lee, Westera&Pulegatoa-Diggins, 2012; Palincsar &Klenk, 1992) and whole classes (Smith, Timperley& Francis, 2011, cited in Alton-Lee et al., 2012). It has also been shown to be effective for diverse cultural groups (Fung, Wilkinson & Moore, 2003; Gilroy and Moore, 1988, both cited in Alton-Lee et al., 2012) and academically-diverse learners (Rosenhine& Meister, 1994) (Ruth, 2014).

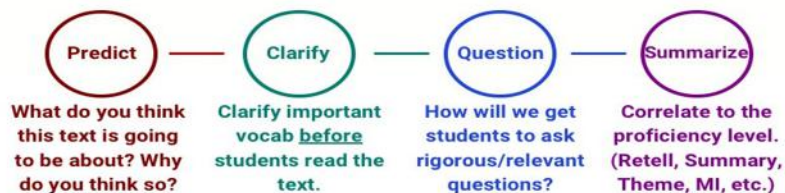
Brown and Palincsar (1989) have noted that reciprocal teaching is explained by three related theories of guided learning: Vygotsky's zone of proximal development (Vygotsky, 1978), proleptic teaching (Wertsch& Stone, 1979; Rogoff& Gardner, 1984), and expert scaffolding (Wood, Bruner, & Ross, 1976).

In reciprocal teaching (a) the focus is upon teaching students specific, concrete, comprehension-fostering strategies which they can apply to the reading of new text, and (b) this instruction takes place primarily in the context of a dialogue between the teacher and the students (Rosenhine and Meister,2016).

In reciprocal teaching, as developed by Palincsar and Brown (1984), students read a passage of expository material, paragraph by paragraph. During the reading they learn and practice four reading comprehension strategies: generating questions, summarizing, attempting to clarify word meanings or confusing text, and predicting what might appear in the next paragraph. During the early stages of reciprocal teaching, the teacher assumes the major responsibility for instruction by explicitly modeling the process of using these strategies on a selection of text. After the teacher has modeled, the students practice the strategies on the next section of text, and the teacher supports each student's participation through specific feedback, additional modeling, coaching, hints, and explanation. The teacher adjusts the difficulty of the task according to the current level of the student.

During this guided practice the teacher invites students to initiate discussion and to react to other students' statements. Students' participation can include (a) elaborating or commenting on another student's summary, (b) suggesting other questions. (c)Commenting on another's predictions (d) requesting clarification of material they did not understand, and (e) helping to resolve misunderstandings.

Reciprocal Teaching



Thus, reciprocal teaching has two major features. The first is instruction and practice of four comprehension-fostering strategies: question generation, summarization, prediction, and clarification. The second consists of the use of the reciprocal teaching dialogue as a vehicle for learning and practicing these four strategies.

1.1. Benefits of Reciprocal Teaching

Reciprocal Teaching provides explicit teaching through direct instruction that can make obvious what will the students do in reading learning process. It is a sharing of an active comprehension because it involves reciprocal dialogue (one of an important factor in Reciprocal Teaching) which is based on the premise that group participation and dialogue that can aids learning as well as promoting conceptual change (Meyer, 2010, p. 42). Besides, Reciprocal Teaching had proved to be effective in enhancing the students' comprehension through many researches that have been expanded (Todd & Tracey, 2006; Bess, 2007; Sarasti, 2007; Yoosabai, 2009; University of Western Illinois, 2010; Freihat& Al-Makhzoomi, 2012; Salehi&Vafakhah, 2013; Hou, 2015; Oczkus, 2010). Reciprocal Teaching not only helps the students to comprehend a text but it can also uses in solving mathematics problems (Quirk, 2010; Meyer, 2014) and musical understanding (Abrahams & Abrahams, 2010). It means that Reciprocal Teaching has developed as a strategy that can help the students in wide coverage of understanding. In short, this strategy can be considered as a good strategy to enhance students' comprehension because it can be applied in any school subjects

1.2 Previous Studies

Since the introduction of the concept of reciprocal teaching by Palincsar and Brown in 1984, researchers have conducted a number of studies that attempted to replicate and/or extend the original one.

Palincsar and Brown (1984, 1986), the creators of reciprocal teaching, found that when the strategies were used with a group of students for just 15–20 days, assessments of students' reading comprehension increased from 30 percent to 70–80 percent. According to a study by Palincsar and Klenk (1991), students not only improved their comprehension skills almost immediately but also maintained their improved comprehension skills when tested a year later.

Rosenshine & Meister (1993) reviewed 19 studies used reciprocal teaching to help students improve their ability to comprehend text. The review found that (a) results were usually more significant when explicit instruction in the cognitive strategies was provided before the reciprocal teaching began than when reciprocal teaching only was used; (b) results were mostly non-significant when below-average students were taught, yet usually significant when all other students were taught; and (c) results were usually significant when experimenter-developed tests were used, yet usually non-significant when standardized tests were used.

Lubliner (2001) also points out that reciprocal teaching is an effective teaching technique that can improve the kind of reading comprehension necessary not only for improved test scores but also for life in the Information Age.

Hattie's research (2008) points to the consistent success of reciprocal teaching and its promise of .74 growth—or almost two years in just one school year! Hattie's reporting of reciprocal teaching is significant because he looked at over 800 studies and 138 different practices and their effect sizes. Hattie ranks practices according to their effectiveness in yielding results with students, and reciprocal teaching ranks ninth (out of 138 practices) for its power to yield results! These exciting results, drawn from 15 years of studies, point to reciprocal teaching as a proven teaching strategy that has a strong effect on student achievement.

Research results, as stated by Gulhiz Pilten (2016) emphasized the benefits of using reciprocal teaching in: - Teaching students at different levels, and different subjects regardless of students' abilities (Myers, 2006); - Helping students acquire vocabulary and reading comprehension for low-achievers in elementary grades (Todd & Tracey, 2006; Pearson & Fielding, 1991); - Developing students higher order thinking skills (Hacker & Tenen, 2002).

Mohammad Abu El-Magd (2019) investigated Reciprocal Teaching Based Augmented Reality for Enhancing English Novel Reading Skills among Secondary Students. The findings revealed that reciprocal teaching based augmented reality had a significant positive effect on the 1st year secondary school students' target novel reading skills.



1.3 Model of Reciprocal Teaching Strategy

Reading Stage	Teacher Activity	Student's Activity
Pre-reading stage		
Activating students' prior knowledge	<ul style="list-style-type: none"> ➤ Introducing the theme. ➤ Showing topic related pictures to students. ➤ Connecting the pictures to student's background knowledge by asking some questions to the students about the pictures. ➤ Introducing reciprocal Teaching strategy and its objectives. 	<ul style="list-style-type: none"> ➤ Carefully listening to the theme mentioned. Paying attention to the pictures shown. ➤ Responding the teacher's questions by answering the questions about the pictures. ➤ Paying attention to Reciprocal Teaching strategy and its objectives explained by the teacher.
Predicting	<ul style="list-style-type: none"> ➤ Asking students to open their text-books. ➤ Distributing Reciprocal work sheets. ➤ Asking to predict what the text is about. ➤ Asking the students to write their predictions in the worksheet. 	<ul style="list-style-type: none"> ➤ Observing the text and also Reciprocal teaching worksheet. ➤ Predicting what is the text about or what will happen in the text. ➤ Writing their prediction on the Reciprocal Teaching worksheet.
Questioning	<ul style="list-style-type: none"> ➤ Asking the students to make a list of questions they expect to be answered in the reading. ➤ Giving time to the students to make their questions. ➤ Asking them to write their questions on the Reciprocal Teaching worksheet. 	<ul style="list-style-type: none"> ➤ Making a list of questions they expected to be answered. ➤ Writing their questions on the Reciprocal Teaching worksheet.
While-reading stage		
Clarifying	<ul style="list-style-type: none"> ➤ Asking the students to read deeply the text to answer the questions they have made. ➤ Asking the students to look for the meaning of the difficult words in text/dictionary. ➤ Asking the students to clarify the questions based on their comprehension of the text by writing them on the Reciprocal Teaching worksheet. ➤ Asking the students to write the meaning of the difficult words or sentences and write them on the Reciprocal Teaching worksheet. 	<ul style="list-style-type: none"> ➤ Reading the text (silently and aloud). ➤ Finding answers for the questions. ➤ Finding difficult words from the text/dictionary. ➤ Filling up the Reciprocal Teaching worksheet.
Post-reading Stage		
Summarizing	<ul style="list-style-type: none"> ➤ Asking the students to analyze their answers. ➤ Asking the students to summarize the main point or the conclusion of the text with their own words. 	<ul style="list-style-type: none"> ➤ Analyzing their answers. ➤ Summarizing the text. ➤ Writing their summaries on the reciprocal Teaching work sheet. ➤ Delivering their summaries in

	<ul style="list-style-type: none"> ➤ Asking the students to write their summary on the Reciprocal Teaching worksheet. ➤ Asking the students to deliver their summarized result in front of class. ➤ Asking the students to collect their works. ➤ Closing the class discussion. 	<ul style="list-style-type: none"> front of class. ➤ Handing over Reciprocal teaching worksheets to teacher.
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Table showing a model of Reciprocal Teaching Strategy

1.4 Reciprocal Teaching role cards

Reciprocal teaching strategies are based on incorporating four fundamental building blocks into the classroom so students have a better idea of how to digest assigned readings. The reciprocal teaching roles explained on the cards include:

- the questioner
- the clarifier
- the predictor
- the summarizer.

Reciprocal Teaching Role Cards

The Questioner

- Ask questions which will help the group to understand what has been read.
- Think of questions to ask as you read the text.

Who/What would?
Where / When would?
Which would?
Why would?
How would?
What will?
Where / When will? Which will?
Who will?
What might?

The Summariser

- Tell the group what you have read in your own words.
- Have the group pick out the main ideas.

The most important ideas are ...
The main idea is ...
This part was about ...
First,... Next, Then, ...
This story takes place in ...
The main events of ...
The problem is ...

The Clarifier

You must clarify when:

- The group is confused by what they have read.
- When a word is read and not understood.
- When a sentence is read that doesn't make sense.
- When a question is asked.
- Think about what you did to help you understand and tell the group. E.g. Reread the sentence looking for clues to help you figure out the word or phrase; Break the word apart and look for smaller words you already know; Look for a prefix or suffix; Look at the text features.

The Predictor

- Use what you have read and the text features to help figure out what the group will learn and/or what will happen in the next piece of text.
- The group can change their predictions as they read on!

I think ...
I wonder if ...
I imagine ...
I suppose ...
I predict ...
I think the next section will be about...

1.3 Conclusion

Reciprocal Teaching Method is one of reading comprehension methods that encompasses four activities as follows: 1) Predict. Students draw inferences and use evidence from the text throughout the reading process. 2) Question. Students ask and answer questions to understand the text. 3) Clarify. Students know and apply grade level phonics and word analysis skills in decoding words in texts. They also use context to confirm or self-correct, and they reread when necessary. 4) Summarize. Students can identify main ideas and details in paragraphs and in multi paragraph texts. This method appears to be the most appropriate for students because it provides high order thinking instructional strategy that can make the students fully engaged in reading comprehension process. Moreover, Reciprocal teaching is a supportive teaching practice because it:

- Supports students to develop comprehension strategies in a supportive context
- Makes explicit what readers do – predict, clarify, question and summarize
- Develops students' content knowledge and topic vocabulary
- Fosters meaningful dialogue among students including extended talk about texts
- Helps students to develop skills in locating, recording, and organizing information in preparation for writing.

References

- The findings indicated that reciprocal teaching had a significantly positive effect on the English reading motivation AdityaNugraha (2011) The Use of Reciprocal Teaching to Improve Students' Reading Comprehension. Theses submitted to SebelasMaret University, Surakarta.
- Brown, S. B. (2015). The Effects of Reciprocal Teaching on Third and Fourth Grade Students' Reading Comprehension and Vocabulary Attainment.Baker University.
- GulhizPilten (2016) The Evaluation of Effectiveness of Reciprocal Teaching Strategies on Comprehension of Expository Texts.Journal of Education and Training Studies Vol. 4, No. 10.pp.232-247.
- Jessica Davidson (2015) Improving Reading Comprehension through Reciprocal Teaching. Research paper submitted to Northwest Missouri State University Department of Professional Education.
- Kelly, Marie,(1994) Reciprocal Teaching in a Regular Primary School Classroom , Journal of Educational Research, 88:1. p.53.



- Mohammad Abu El-Magd (2019) Reciprocal Teaching Based Augmented Reality for Enhancing English Novel Reading Skills among Secondary Students. Semantic Scholar.
- Moh.Rodli&HariPrastyo (2017) Applying Reciprocal Teaching Method in Teaching Reading. Studies in Linguistics and Literature. Vol. 1, No. 2, pp.112-122.
- Palinscar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and instruction*, 1(2), 117-175.
- Park, H. (2008) Critical Review: The use of reciprocal teaching to improve reading comprehension of both normal learning and learning disabled individuals in the reading to learn stage.
- Rebecca B. Todd (2006) Reciprocal Teaching and Comprehension: A Single Subject Research Study. Thesis submitted to Kean University.
- RizkiMaulanaSahab (2014) The Use of Reciprocal Teaching Procedure in Teaching Narrative Texts to Improve Students' Reading Comprehension. *Journal of English and Education*, 2(2), pp.81-90.
- Ruth McAllum (2014) Reciprocal Teaching: Critical Reflection on Practice. *KAIRARANGA* – volume 15, issue 1: pp.26-35.



A COMPARATIVE STUDY TO EVALUATE THE LEVEL OF INTERLEUKIN-6 (IL-6) IN DIABETIC PATIENTS WITH NEPHROPATHY AND WITHOUT NEPHROPATHY AS COMPARED TO HEALTHY CONTROL SUBJECTS

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Abstract

Objective: To evaluate the level of IL-6 in diabetic patients with nephropathy and without nephropathy compared to healthy control subjects.

Methods: This was a comparative study. Patients having past history and blood glucose level suggestive of diabetes without any renal involvement and patients giving history suggestive of diabetes and high fasting blood glucose with duration of diabetes more than five years with involvement of kidneys were included in the study. A total of 34 patients of diabetes with diabetic nephropathy, 133 diabetes patients without DN and 133 healthy controls were included in this study. Interleukin-6 was estimated. Fasting plasma glucose (FPG), HbA1c, CRP, microalbumin, serum creatinine, urea, total cholesterol (TC), triglycerides (TG), high- and low density lipoprotein (HDL, LDL) were measured.

Results: No significant ($p > 0.05$) difference was found in age, gender and anthropometric parameters among the groups showing comparability of the groups in terms of age, gender and anthropometric parameters. The analysis of variance showed that there was significant ($p = 0.0001$) in IL-6 among the groups. The post-hoc tests revealed that IL-6 was significantly ($p = 0.0001$) different between DM-2 with DN & Controls and DM-2 without DN & Controls. IL-6 > 5 correctly predicted 14.4% patients of DM-2 with NP with sensitivity and specificity of 70.6% and 60.2% respectively. The PPV and NPV was 31.2% and 88.9% respectively. The AUC was also high ($AUC = 0.75$; $95\% CI = 0.62-0.87$). There was significant ($p < 0.05$) difference in lipid profile among the groups. The post hoc tests showed that total cholesterol, LDL, VLDL and TC/HDL ratio were significantly ($p < 0.05$) different between each pair of groups. The analysis of variance test showed that there was significant ($p < 0.05$) difference in HbA1C and CRP among the groups. The post hoc tests showed that CRP was significantly ($p < 0.05$)



different between each pair of groups. Similar finding was also found for microalbumin, urea and creatinine.

Conclusion: IL-6 can be used as a potential biomarker for the diagnosis of T2D. Also this cytokine may probably affects nephropathy in T2D, but nephropathic complications of T2D are very complex and depend on several environmental and genetic factors.

Key words: Type-2 diabetes, Nephropathy, Cytokines, IL-6, Microalbumin, CRP

Introduction

Diabetes mellitus (DM) is a complex metabolic disorder, characterized by chronic hyperglycemia that appears as a result of impaired insulin secretion, associated, in various degrees, with insulin resistance (IR). The prevalence of DM is continuously on the rise, being an extremely costly disorder from a socioeconomic standpoint. Worldwide prevalence of DM is estimated to be around 8.5%, almost 415 million people being diagnosed with this disease. It is estimated that their number will reach 642 million in 2040.¹

Patients with DM have significantly higher mortality and morbidity rates compared to the general population, mainly due to the numerous associated chronic complications. Cardiovascular disease (including ischemic heart disease, cerebrovascular disease and peripheral artery disease) is the most severe macrovascular complication found among patients of DM.^{2,3}

More than one third of DM patients develop microangiopathic complications such as retinopathy, nephropathy and neuropathy.^{4,5} Metabolic disorders such as hyperglycemia, accumulation of advanced glycation end products and oxidative stress as well as renal vasoactive factors like renin-angiotensin-aldosterone system and other vasoconstrictors play most important role in the development of diabetic nephropathy (DN). DN as characterized by high blood pressure, proteinuria and alteration of the renal function are the main cause for end stage chronic kidney disease (ESCKD).^{6,7}

Interleukin-6 is established pro-inflammatory cytokine. It is mainly produced by T cells and macrophages, renal cells, muscle cells, adipocytes and osteoblasts.⁸ IL-6 is found to serve as a regulator in the production of cell adhesion and chemotactic molecules. This also serves as regulator for the secretion of cytokines involved in amplification of the inflammatory responses.⁹ Over 90% of persons who are suffering from diabetes have T2D. This pathologic state involves severe complications in different body organs. This includes eye, nervous system and the kidneys. Attractions have been focused to the fact that renal involvement is a principal cause of morbidity and mortality among diabetic patients. Inflammatory responses play an important role(s) in development and further progression of DN with recruitment and activation cytokines.¹⁰

Inflammation plays important role in pathogenesis of the disease and inflammatory markers including interleukins, tumor necrosis factor-alpha (TNF- α), C- reactive

protein (CRP), tissue plasminogen activator (tPA), heptoglobulin and fibrinogen levels are reported to be increased in type 2 DM patients.¹¹

Microalbuminuria is an indicator and recognizing criterion for diabetic nephropathy in diabetes mellitus.^{12,14} Microalbuminuria also identifies patients who are at risk for early cardiovascular death and need more rigorous cardiovascular risk management.^{13,14}

The present study was conducted to evaluate the level of IL-6 in diabetic patients with nephropathy and without nephropathy compared to healthy control subjects.

Material and Methods

Study design and study population

This was a comparative study conducted in the Department of Biochemistry and General Medicine at S.M.M.H. Medical College and Hospital and Santosh Medical College & Hospital Ghaziabad (Delhi NCR). The patients were identified according to the standardized methodology and a predesigned Performa. The study was approved by the Ethical Committee of the Institute and consent was taken from each participant before including in the study. A total of 34 patients of diabetes with DN, 133 diabetes patients without DN and 133 healthy controls were included in this study. Proper history and clinical examination of the patients were undertaken. The demographic and anthropometric parameters were assessed

Inclusion criteria

Patients having past history and blood glucose level suggestive of diabetes without any renal involvement and patients giving history suggestive of diabetes and high fasting blood glucose with duration of diabetes more than five years with involvement of kidneys were included in the study.

Exclusion criteria

Patients with any evidence of renal failure from any other cause: nephritic syndrome, urinary tract infection, urolithiasis, acute illness, physiological, abnormal stress, exercise, high altitude hypoxia, myocardial ischaemia and ketonuria were excluded from the study.

Sample collection, laboratory methods and analysis

10ml of fasting venous blood was collected from all patients. The collected blood was divided into:

- (i) EDTA bottles (2ml) and appropriately stored in a refrigerator at a temperature of 4-8°C until assayed for HBA1c levels
- (ii) Fluoride oxalate bottles (2ml) for fasting plasma glucose
- (iii) 6ml into plain serum bottles and allowed for clotting and retraction. Sample was immediately centrifuged, separated and serum collected was stored at -70oC until estimated for IL-6, serum lipids, urea and creatinine.

Overnight urine sample for albumin was estimated in fresh urine.

IL-6 was measured by commercially available ELISA (Enzyme Linked Immunosorbent Assay), fasting plasma glucose (FPG) was determined by the glucose oxidase method¹⁵, serum creatinine by Jaffe kinetic method¹⁶, serum urea

by urease enzyme method¹⁷, total cholesterol by the oxidase/peroxidase (CHODPOD) method¹⁸, triglycerides by the enzymatic GPOD method¹⁹, high density lipoprotein by phosphotungstate precipitation and (CHOD-POD) method²⁰, HbA1c by the cation exchange resin method^{21,22} and agglutination method²³ was used to determine microalbumin levels in the urine sample.

Anthropometric measurements

BMI was calculated, dividing weight in a kilogram of an individual with the square of the height of that individual in the meter²⁴ and the WHR was calculated, dividing waist circumference (cm) with hip circumference(cm).

Statistical analysis

The results are presented in frequencies, percentages and mean \pm SD. The Chi-square test was used to compare categorical variables among the groups. The one way analysis of variance (ANOVA) followed by Tukey's post hoc tests was used continuous variables among the groups. The receiving operating curve (ROC) analysis was carried out to find the predictive value of IL-6 in predicting diabetes with DN. The area under the curve (AUC) with its 95% confidence interval (CI) was calculated. The sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) with its 95%CI was calculated. The p-value<0.05 was considered significant. All the analysis was carried out on SPSS 16.0 version (Chicago, Inc., USA).

Results

The mean age of patients of DM-2 with DN, DM-2 without DN and controls was 55.62 \pm 10.07, 54.11 \pm 10.99 and 49.34 \pm 11.09 years. More than half of patients of DM-2 with DN (52.9%), 39.8% of DM-2 without DN and 48.1% of controls were males. There was no significant (p>0.05) difference in age, gender and anthropometric parameters among the groups showing comparability of the groups in terms of age, gender and anthropometric parameters (Table-1).

The analysis of variance presented that there was significant (p=0.0001) in IL-6 among the groups. The post-hoc tests revealed that IL-6 was significantly (p=0.0001) different between DM-2 with DN & Controls and DM-2 without DN & Controls (Table-2 & 3).

IL-6>5 correctly predicted 14.4% patients of DM-2 with NP with sensitivity and specificity of 70.6% and 60.2% respectively. The PPV and NPV was 31.2% and 88.9% respectively. The AUC was also high (AUC=0.75; 95%CI=0.62-0.57) (Table-4 & Fig.1).

There was significant (p<0.05) difference in lipid profile among the groups. The post hoc tests showed that total cholesterol, LDL, VLDL and TC/HDL ratio were significantly (p<0.05) different between each pair of groups (Table-4).

The analysis of variance test showed that there was significant (p<0.05) difference in HbA1C and CRP among the groups. The post hoc tests showed that CRP was significantly (p<0.05) different between each pair of groups. Similar finding was also found for microalbumin, urea and creatinine (Table-5).

Discussion

There exist some reports, proposing association between different inflammatory mediators, the occurrence and severity of DN, although with conflicting results. Chronic inflammatory process participates in the development of microvascular complications of diabetes. Inflammatory cytokines like IL-6 play imperative variety of activities involved in DN from progression to the initial stages of diabetes in the development of DN and end stages of renal failure. Many are in agreement of the fact that inflammatory cytokines are the main predictors in the development of diabetes mellitus.^{11,25} Findings of this study observed that serum levels of IL-6 were elevated in T2D patients with or without nephropathy.

In consistent with findings of this study, previous studies have found that higher levels of IL-6 are associated with the elevated risk of diabetes mellitus. This supports a correlation between chronic inflammation and development of diabetes study done by Mirza et al.²⁶ This finding is in coherent with study done by Lagathu C et al. and Rotter V et al. that in vitro IL-6 induced insulin resistance which support its role in type 2 diabetes occurrence.^{27, 28} Conversely, studies had found significant correlation between IL-6 stated by Tang and Donate-Correa et al.^{29,30} These data are supportive for the concept that IL-6 can play an important role in pathogenesis of DN. Krystallenia et al observed the differences in inflammatory state in 2 types of diabetes can indicate their clinical history.³¹ But the similarities of inflammatory mediator impairment can reveal a common susceptibility to the insulin dependence and the possible reduction of the inflammation. The level of IL-6 was increased in type 2 diabetes, and associated with development of atherosclerosis.³² DN patients showed an elevated serum level of inflammatory cytokines, including IL-6, which positively correlated with the extent of proteinuria.^{33, 34} Hyperglycemia, generate IL-6 by triggering podocytes, mesangial cells, interstitial tissue, and tubules which contribute to local and systemic inflammatory process in DN.^{35,36} Apart from its involvement in Lupus Nephritis (LN), IL-6 gene polymorphism also conveys the susceptibility to cancer³⁷, lipid metabolic abnormalities, and inflammatory disorders.³⁸ Recently, it was found that IL-6 gene 174G>C polymorphism is an independent risk factor for DN in Turkish and Greek type 2 diabetic mellitus patients.^{39,40} Therefore, it again suggested that IL-6 is a cardinal player in DN.

In this study, analysis of variance test showed that there was significant ($p<0.05$) difference in HbA1C and CRP among the groups. The post hoc tests showed that CRP was significantly ($p<0.05$) different between each pair of groups. Similar finding was also found for microalbumin, urea and creatinine which is consistent with the similar findings of past study.^{41,42, 43} CRP is a plasma protein, an acute phase protein produced by the liver and by adipocytes. CRP is produced in response to various cytokines, including interleukin IL-6, IL-1 and tumor necrosis factor (TNF)-alpha during acute injury, infections, inflammatory stimuli, and malignant disease. In our study we see that in type 2 diabetic nephropathy patients have raised C- reactive proteins levels as compare to control. Similar results have been reported by Chaudhary et al.⁴⁴ The correlation of dyslipidemia, hsCRP and HbA1c levels has been reported.^{45,46,47} which is in support to this present study but a crosssectional study of Streja et al. elucidated no association of hs-CRP with the complications of diabetes.⁴⁸ Sharma R et al. suggested

that people developing DM had higher levels of hs-CRP than in controls⁴⁹, thus supporting our study

In this study, there was significant ($p<0.05$) difference in lipid profile among the groups. The post hoc tests showed that total cholesterol, LDL, VLDL and TC/HDL ratio were significantly ($p<0.05$) different between each pair of groups. These results were in accordance with the previous studies conducted by Mahat et al, Farid, Kansal and Kamble^{50,51,52,53}. Shrestha et al found that the concentrations of CRP and IL-6 were significantly high in both pre-diabetes and diabetes compared to controls. Significantly high values of cholesterol, TG and LDL were observed in the patient groups while the level of HDL was significantly low.⁵⁴

Limitations

The present study was limited to several limitations. The patients who participated in the this study had different stages of the disease as well as under different therapeutic agents for diabetes or its related complications. Self-reported data and shortage of prior studies with similar findings in DN patients was another important limitation of the study.

Conclusion

IL-6 can be used as a potential biomarker for the diagnosis of T2D. Also this cytokine may probably affects nephropathy in T2D, but nephropathic complications of T2D are very complex and depend on several environmental and genetic factors.

Authors' Contributions

Dr. Pradeep Kumar participated in the conception, design, and coordination of the study as well as in the acquisition and revision of the manuscript for submission. Shashi Prabha Singh participated in the acquisition and analysis of the data as well as in the drafting and submission of the manuscript. Dr. Preeti Sharma and Dr. Rakesh sharma, participated in the conception and design of the study and in the revision of the manuscript. All authors read and approved the final manuscript.

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Nil.

CONFLICTS OF INTEREST

None

References

1. Ogurtsova K, da Rocha Fernandes JD et al. IDF Diabetes Atlas: Global estimates for the prevalence of diabetes for 2015 and 2040. *Diabetes Res Clin Pract* 2017;128: 40-50.
2. Kannel WB, McGee DL. Diabetes and cardiovascular disease. The Framingham study. *JAMA* 1979;241: 2035-2038.
3. Ginsberg HN. Insulin resistance and cardiovascular disease. *J Clin Invest* 2000; 106: 453-458.



4. Battisti WP, Palmisano J, Keane WE. Dyslipidemia in patients with type 2 diabetes. relationships between lipids, kidney disease and cardiovascular disease. *Clin Chem Lab Med* 2003; 41: 1174–1181.
5. Tai TY, Tseng CH, Sung SM et al. Retinopathy, neuropathy and nephropathy in non-insulin-dependent diabetic patients. *J Formos Med Assoc* 1991 90: 936–940.
6. De Boer IH, Rue TC, Hall YN, Heagerty PJ et al. Temporal trends in the prevalence of diabetic kidney disease in the United States. *JAMA* 2011; 305: 2532–2539.
7. Collins AJ, Foley RN, Chavers B et al. United States Renal Data System 2011 Annual Data Report: Atlas of Chronic Kidney Disease and End-Stage Renal Disease in the United States. *Am J Kidney Dis* 2012; 59(1 Suppl 1): A7.
8. Valkanova V, Ebmeier KP, Allan CL. CRP, IL-6 and depression: a systematic review and meta-analysis of longitudinal studies. *J Affect Disord.* 2013; 150: 736-744.
9. Kishimoto T. IL-6: from its discovery to clinical applications. *Int Immunol.* 2010; 22: 347-352.
10. Tuttle, K.R., Linking metabolism and immunology: diabetic nephropathy is an inflammatory disease. *J Am Soc Nephrol.* 2005; 16: 1537-1538.
11. DeFuria J, Belkina AC, Jagannathan-Bogdan M et al. B cells promote inflammation in obesity and type 2 diabetes through regulation of T-cell function and an inflammatory cytokine profile. *Proc Natl Acad Sci U S A.* 2013; 110: 5133-5138.
12. Klausen K, Borch-Johnsen K, Feldt-Rasmussen B et al. Very low levels of microalbuminuria are associated with increased risk of coronary heart disease and death independently of renal function, hypertension, and diabetes. *Circulation* 2004; 110(1): 32-35.
13. Gerstein HC, Mann JF, Yi Q et al. HOPE Study Investigators. Albuminuria and risk of cardiovascular events, death, and heart failure in diabetic and nondiabetic individuals. *JAMA* 2001; 286(4): 421–426.
14. Adler AI, Stevens RJ, Manley SE et al. Development and progression of nephropathy in type 2 diabetes: The United Kingdom Prospective Diabetes Study (UKPDS 64). *Kidney Int* 2003; 63: 225 –232.
15. Trinder P. Determination of glucose in blood using glucose oxidase with an alternative oxygen acceptor. *Ann Clin Biochem* 1969; 6: 24-27.
16. Fabiny DL, Ertlingshausen G. Automated reaction rate method for determination of serum creatinine with Centrifichem. *Clin Chem* 1971; 17: 696-700
17. Tabacco A, Meiattini F, Moda E et al. Simplified enzymic/ colorimetric serum urea nitrogen determination *Clin Chem* 1979; 25: 336-337.
18. Allain CC, Poon LS, Chan CSG et al. Enzymatic determination of total serum cholesterol. *Clin Chem* 1974; 20: 470-475.
19. Fossati P and Prencipe L. Serum triglycerides determined colorimetrically with an enzyme that produces hydrogen peroxide. *Clin Chem* 1982; 28: 2077-2080.
20. Burstein M, Scholnick HR and Morfin R. Rapid method for the isolation of lipoproteins from human serum by precipitation with polyanions. *Scand J Clin Lab Invest* 1980; 40: 583-595.
21. Little RR, Wiedmeyer HM, England JD et al. *Clinical Chemistry* 2001; Vol. 47 (11), 1985-1992.
22. Hoelzel W. IFCC reference system for measurement of hemoglobin A1c in human blood and the national standardization schemes in the United States, Japan and Sweden: a method-comparison study. *Clin Chem* 2004; 50: 166-74
23. Feldt-Rasmussen B, Borch-Johnsen K, Deckert T et al. Microalbuminuria: An important diagnostic tool. *J Diabetes Complications* 1994; 8: 137–145.
24. Guh DP, Zhang W, Bansback N et al. The incidence of co-morbidities related to obesity and overweight: A systematic review and meta-analysis. *BMC Public Health* 2009; 9: 88.
25. Akash MS, Rehman K, Chen S, Chen, Role of inflammatory mechanisms in pathogenesis of type 2 diabetes mellitus. *J Cell Biochem.* 2013; 114: 525-531.
26. Mirza S, Hossain M, Mathews C et al. Type 2-diabetes is associated with elevated levels of TNF-alpha, IL-6 and adiponectin and low levels of leptin in a population of Mexican Americans: a cross-sectional study. *Cytokine.* 2012; 57: 136-142.
27. Lagathu C, Bastard JP, Auclair M et al. Chronic interleukin-6 (IL-6) treatment increased IL-6 secretion and induced insulin resistance in adipocyte: prevention by rosiglitazone. *Biochem Biophys Res Commun* 2003; 311: 372–9. doi:10.1016/j.bbrc.2003.10.013
28. Rotter V, Nagaev I, Smith U. Interleukin-6 (IL-6) induces insulin resistance in 3T3-L1 adipocytes and is, like IL-8 and tumor necrosis factor-alpha, overexpressed in human fat cells from insulin-resistant subjects. *J Biol Chem* 2003; 278: 45777–84. doi:10.1074/jbc.M301977200



29. Tang SC, Yiu WH, Lin M, Lai KN. Diabetic nephropathy and proximal tubular damage. *J Ren Nutr*. 2015. 25: 230-233.
30. Donate-Correa J, Martín-Núñez E, Muros-de-Fuentes M et al. Inflammatory cytokines in diabetic nephropathy. *J Diab Res*. 2015.
31. Alexandraki KI, Piperi C, Ziakas PD et al. Cytokine secretion in long-standing diabetes mellitus type 1 and 2: associations with low-grade systemic inflammation. *J Clin Immunol*. 2008; 28: 314-321.
32. Andriankaja OM, Barros SP, Moss K et al. Levels of serum interleukin (IL)-6 and gingival crevicular fluid of IL-1beta and prostaglandin E(2) among non-smoking subjects with gingivitis and type 2 diabetes. *J Periodontol* 2009; 80:307-16. doi:10.1902/jop. 2009.080385 M301977200
33. Dalla Vestra M, Mussap M, Gallina P et al. Acute-phase markers of inflammation and glomerular structure in patients with type 2 diabetes. *J Am Soc Nephrol* 2005; 16(Suppl 1):S78-82. doi:10.1681/ASN.2004110961
34. Navarro JF, Milena FJ, Mora C et al. Renal pro-inflammatory cytokine gene expression in diabetic nephropathy: effect of angiotensin-converting enzyme inhibition and pentoxifylline administration. *Am J Nephrol* 2006; 26:562-70. doi:10.1159/000098004
35. Pfafflin A, Brodbeck K, Heilig CW et al. Increased glucose uptake and metabolism in mesangial cells overexpressing glucose transporter 1 increases interleukin-6 and vascular endothelial growth factor production: role of AP-1 and HIF-1alpha. *Cell Physiol Biochem* 2006; 18:199-210. doi:10.1159/000097667
36. Kaur H, Chien A, Jialal I. Hyperglycemia induces toll like receptor 4 expression and activity in mouse mesangial cells: relevance to diabetic nephropathy. *Am J Physiol Renal Physiol* 2012 ; 303:F1145-50. doi:10.1152/ajprenal.00319.2012
37. Liu RY, Song X, Chen P et al. Association between IL6 -174G/C and cancer: a meta-analysis of 105,482 individuals. *Exp Ther Med* 2012; 3:655-64. doi:10.3892/etm.2012.454
38. Smith AJ, Humphries SE. Cytokine and cytokine receptor gene polymorphisms and their functionality. *Cytokine Growth Factor Rev* 2009; 20:43-59. doi:10.1016/j.cytogfr.2008.11.006
39. Papaoikonomou S, Tentolouris N, Tousoulis D et al. The association of the 174G>C polymorphism of interleukin 6 gene with diabetic nephropathy in patients with type 2 diabetes mellitus. *J Diabetes Complications* 2013; 27:576-9. doi:10.1016/j.jdiacomp.2013.06.006
40. Karadeniz M, Erdogan M, Berdeli A et al. Association of interleukin-6 -174 G>C promoter polymorphism with increased risk of type 2 diabetes mellitus patients with diabetic nephropathy in Turkey. *Genet Test Mol Biomarkers* 2014; 18:62-5. doi:10.1089/gtmb.2013.0357
41. Maiti A, Dey SK, Raychaudhuri P et al. The pattern of diabetic nephropathy in Saudi Arabia patients with NIDDM. *Ann Saudi Med*. 1995;15:120-4.
42. Nelson RG, Knowler WC, Pettitt DJ et al. Incident and determinants of elevated urinary albumin excretion in Pima Indians with NIDDM. *Diabetes Care*. 1995;18:182-7.
43. Manish Shrivastava, Preeti Sharma, Pradeep Kumar et al. Study of Microalbuminuria as Early Risk Markers of Nephropathy in Type 2 Diabetic Subjects **Internal J of Research in Med. Sciences** **2017; 5(7), 3161-66.**
44. Choudhary N, Ahlawat RS. Interleukin -6 and C reactive protein in the pathogenesis of diabetic nephropathy: new evidence linking inflammation, glycemic control, and microalbuminuria. *IJKD* 2008;2:72.
45. Streja D, Cressey P, Rabkin SW. Associations between inflammatory markers, traditional risk factors, and complications in patients with Type 2 diabetes mellitus. *J Diabetes Complications* 2003;17:120-7.
46. Sharma R., Sharma P., Kumar Pradeep et al. A correlation between Glycosylated Hemoglobin and Lipid profile in type - 2 Diabetes Mellitus with and without complications. *International journal of Contemporary Medicine Jan-Dec; 2015; 3(2) :120-125.*
47. Jeffcott WJ, Game F, Cavanagh PR. The role of proinflammatory cytokines in the cause of neuropathic osteoarthropathy (acute charcot foot) in diabetes. *Lancet* 2005;366:2058-61.
48. Halvatsiotis I, Tsiotra PC, Ikonomidis I et al. Genetic variation in the adiponectin receptor 2 (ADIPOR2) gene is associated with coronary artery disease and increased ADIPOR2 expression in peripheral monocytes. *Cardiovasc Diabetol* 2010; 9:10.
49. Hartemann-Heurtier A, Robert J, Jacqueminet S et al. Diabetic foot ulcer and multidrug-resistant organisms: Risk factors and impact. *Diabet Med* 2004; 21:710-5.
50. Kolb H, Mandrup-Poulsen T. The global diabetes epidemic as a consequence of lifestyle-induced low-grade inflammation. *Diabetologia* 2010; 53:10-20.

51. Mahat R, Singh N, Rathore V et al. Relationship between atherogenic indices and carotid intima-media thickness in prediabetes: A cross-sectional study from Central India. Med Sci. 2018; 6(3):pii:E55.
52. Farid SM. Gender-related differences in lipid profile and atherogenic indices in patients with type 2 diabetes mellitus in Jeddah, Saudi Arabia. Glob J Bio-Sci Biotechnol. 2017;6 (3):430-8.
53. Kansal S, Kamble TK. Lipid Profile in Prediabetes. J Assoc Physicians India. 2016; 64(3):18-21.
54. Shrestha S, Sharma P, Kumar P et al. A study on the lipid ratios and inflammatory markers in pre-diabetic and diabetic patients. Int J Res Med Sci. 2019 ; 7(9):3452-3460

Table-1: Distribution of demographic profile of patients among the groups

Demographic profile	DM-2 with DN (n=34)	DM-2 without DN (n=133)	Controls (n=133)	p-value ¹
Age in years, mean±SD	55.62±10.07	54.11±10.99	49.34±11.09	0.06
Gender, no. (%)				
Male	18 (52.9)	53 (39.8)	64 (48.1)	0.24
Female	16 (47.1)	80 (60.2)	69 (51.9)	
Anthropometric parameters				
Height in cms	165.82±9.34	161.83±8.80	164.45±9.01	0.06
Weight in kgs	94.88±5.75	78.71±8.86	64.80±8.81	0.07
BMI in kg/mtr ²	34.75±3.82	30.18±3.77	23.92±2.34	0.06
WHR	1.05±0.12	1.07±0.14	0.87±0.04	0.08

¹ANOVA test/Chi-square test

Table-2: Comparison of IL-6 among the groups

Groups	IL-6 (pg/ml) (Mean±SD)
DM-2 with DN	11.13±5.81
DM-2 without DN	9.83±4.30
Controls	4.63±1.04
p-value ¹	0.0001*

¹ANOVA test, *Significant

Table-3: Inter-group comparisons of IL-6

Dependent Variable	Groups	Groups	p-value ¹
IL-6	DM-2 with DN	DM-2 without DN	0.13
		Controls	0.0001*
	DM-2 without DN	Controls	0.0001*

¹Tukey's post-hoc tests test, *Significant

Table-4: Predictive values of IL-6 in predicting DM-2 with DN

IL-6 cutoff	DM-2 with DN		Controls		Total	
	No.	%	No.	%	No.	%
>5	24	14.4	53	31.7	77	46.1
≤5	10	6.0	80	47.9	90	53.9
Total	34	20.4	133	79.6	167	100.0
Predictive values, % (95%CI)						
Sensitivity	70.6 (55.3-85.9)					
Specificity	60.2 (51.8-68.5)					
PPV	31.2 (20.8-41.5)					
DNV	88.9 (82.4-95.4)					
AUC	0.75 (0.62-0.87)					

%age are from total cases, CI-Confidence interval, PPV-Positive predictive value, DNV-Negative predictive value, AUC-Area under the curve

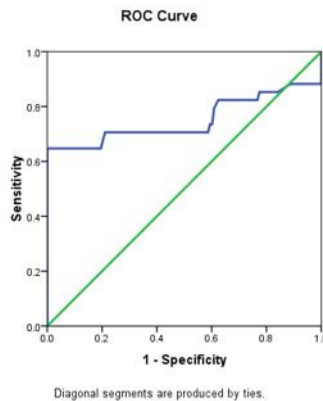


Fig.1: ROC curve showing sensitivity and specificity of IL-6 in predicting DM-2 with DN

Table-4: Comparison of lipid profile among the groups

Lipid profile	DM-2 with DN	DM-2 without DN	Controls	p-value ¹
Total cholesterol	200.53±30.94 ^a	178.27±46.80 ^a	157.86±24.47 ^a	0.0001*
Triglyceride	214.76±45.99 ^a	177.62±87.77 ^b	127.10±25.96 ^{a,b}	0.0001*
HDL	29.85±2.46 ^a	30.94±3.57	31.50±2.54 ^a	0.01*
LDL	143.21±32.32 ^a	112.49±42.08 ^a	100.97±22.86 ^a	0.0001*
VLDL	36.18±15.72 ^a	31.54±11.01 ^a	24.70±4.94 ^a	0.0001*
TC/HDL ratio	6.71±1.06 ^a	5.72±1.35 ^a	5.03±0.73 ^a	0.0001*

¹ANOVA test, *Significant, ^{a,b}<0.05 (Post hoc tests)



Table-5: Comparison of biochemical parameters among the groups

	DM-2 with DN	DM-2 without DN	Controls	p-value ¹
HbA1C	9.39±1.07 ^a	9.04±0.98 ^b	4.61±0.67 ^{a,b}	0.0001*
CRP	13.88±3.99 ^a	12.15±2.87 ^a	3.68±0.76 ^a	0.0001*
Microalbumin	149.40±9.55 ^a	34.38±3.09 ^a	6.49±0.95 ^a	0.0001*
Urea	162.38±52.44 ^a	42.64±9.08 ^a	25.24±3.77 ^a	0.0001*
Creatinine	3.41±0.76 ^a	1.14±0.19 ^a	0.82±0.16 ^a	0.0001*
Fasting (mg/dl)	259.56±90.49	178.41±43.91	88.03±9.70	0.0001*

¹ANOVA test, *Significant, ^{a,b}<0.05 (Post hoc tests)



LANTANA CAMARA: A PROBLEMATIC WEED

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Abstract

Lantana camara is a member of the family ‘Verbenaceae’ and it introduced as a weed in India, but it has become a problem for agriculture, therefore, it is categorized as in weed. The Lantana is a noxious weed the fast and easy growing plant. It is widely spread all over the world including India due to their adaptive nature. It shows many negative impacts on agriculture, ecosystem, animals and human being also. It is a measured threat to the environment. So, we focused on this problem and try to search the possible solutions for control and their management in this review which reduces the population of L. camara. Here suggested some solutions to control Lantana by using the chemical method, mechanical method, biological method, and their combinations. One of the other solutions is to control the Lantana population by maximizing the use. The Lantana has many beneficial uses like it is used to make medicines, essential oil, insect repellent, mosquito repellent, furniture making, and many others.

Keywords: Control & Management, Invasion, Lantana camara, Medicinal uses and Weed.

Introduction

General Introduction of Lantana camara

L. camara L., a shrub originates from American tropics, has become a problematic weed recorded in history. The control and management of Lantana is a big issue all over the world. It covers the hectares of land in India, America, Australia, and South Africa and affects the agricultural crops (Bhagwat et al., 2012). It is introduced as an ornamental plant in India. But now, it naturally found throughout India.

However, L. camara is an important medicinal plant (Ross, 1999). L. camara belongs to the “Verbenaceae” family and the word Lantana is obtained from the Latinized word ‘Lento’ which means ‘to bend’ (Ghisalberti, 2000).

Linnaeus was first acknowledged and represented and given its binomial name in 1753 (Kumarasamyraja et al., 2012). The *L. camara* is a most common ornamental plant and it is commonly known as “red sage” or “wild sage”. It belongs to the family “Verbenaceae” and it is a woody straggling plant with 600 variations existing natural, and it is an arboreous plant with different flower colors like pink, red, yellow, white, purple, orange, etc. The *L. camara* is an evergreen shrub with a strong smell. The leaves of lantana plants are simple, opposite with large petioles, oval blades which are rugged and hairy and have blunty toothed margins. The fruit of Lantana is the round, fleshy, two-seeded bean and initially, the berries are in green color which is turned into blue-black color at the maturity stage (Thamotharan et al., 2010). The Lantana berries are poisonous in nature though attractive to birds and insects. Its seeds are easily germinated. The general characteristics of *L. camara* are shown in Table 1.

The Lantana camara is grown in tropical regions and known as different names in different languages in India such as Raimuniya (Hindi), Chaturangi and Vanacehdi (Sanskrit), Nongballei (Manipuri), Aripooov, Poochedi, Konginipoo and Nattachedi (Malayalam), Thirei, Samballei, Kakke and Natahu (Kanada), Arippu and Unnichedi (Tamil), Tantani and Ghaneri (Marathi) and Pulikampa (Telegu) (Ganesh et al., 2010 and Kumar et al., 2010).

Table 1: General characteristics of Lantana camara (Priyanka & Joshi, 2013; www.iucngisd.org/gisd/species.php).

Characteristics	Description
Native	Tropical region in Central and South America
Synonyms	Camara vulgaris, Lantana scabrida
Distribution	Naturalized in countries/island between 35°N and 35°S latitudes
Plant Category	Annual and biennials, ground covers, perennials, shrubs
Plant characteristics	Poisonous
Foliage characteristics	Fragrant, evergreen, poisonous
Foliage color	Dark green
Flower characteristics	Long lasting, showy, unusual
Flower color	Pink, yellow, orange
Tolerances	Drought, heat and humidity, pollution, slope, wind
Propagation methods	From herbaceous stem cuttings
Pollinators	Lepidopteran species and thrip

Synonyms of Lantana

Lantana aculeate, *Camara vulgaris*, *Lantana indica* Roxb., *Lantana salvifolia* Jacq., *Lantana trifolia*, *Lantana orangemene*, *Lantana tiliaefolia* Cham, *Lantana achyranthifolia* Desf., *Lantana montevidensis* Briq., *Lantana viburnoides* Vahl (Mishra, 2014; www.brahmayurved.com/).

Botanical Classification

Superdivision: Spermatophyta

Division: Magnoliopsida

Subclass: Asteridae

Order: Lamiales

Family: Verbenaceae

Genus: *Lantana*

Species: *Lantana camara*



Figure 1: Botanical classification and *Lantana camara* plant with flower and fruits (Saxena et al., 2012;

<http://www.iucngisd.org/gisd/species.php?sc=56>).

Impacts of *Lantana camara*

L. camara has several negative impacts which include potentially disrupt succession cycle, displacing native biota and as a result, decreased biodiversity (Murali & Setty, 2001). Its infestations alter the structural and the floral composition of native communities (Sharma & Raghubanshi, 2010).

As the *L. camara* density increases in the forest, allelopathic interactions increase and as a result, there is a decline in species richness (Day et al., 2003). It is a big issue for agriculture lands in various regions of India because once established the species forms dense and impenetrable thickets thereby out-competing native pastures, blocking the movement of grazers as well as causing poisoning. *L. camara* has other secondary impacts as it harbors serious pests like malarial mosquitoes and tsetse flies, as a result, in grave health issues. The *L. camara* also found a significant role in a destructive wildfire in various regions of India (Hiremath & Sundaram, 2005). The other impacts caused by *L. camara* is summarized in Table 2.

Table 2: Impacts of Lantana camara (Priyanka & Joshi, 2013).

Impact	References
Disrupts succession and decreases biodiversity	Ghisalberti, 2000; Day et al., 2003
Understorey competitor for forestry	Asner, 2005; Sharma et al., 2005; FSI, 2006; ISSG, 2019
Reduce the economic viability of the crops	Day et al., 2003; Sharma et al., 2005
Allelopathic qualities reduces the vigor of native plant species and limits their productivity and interferes with harvesting	Sharma et al., 1988; Sharma & Sharma, 1989; Sharma et al., 2005
Loss of pasture in grazing areas	Humphries & Stanton, 1992; Weber, 2003; Walton et al., 2006
Poisoning of Livestock by plants	Pass & Heath, 1978; Mcsweeny et al., 1982; Sharma et al., 1999; Sharma et al., 2007
Seeds are poisonous if ingested	GISP, 2008
Affect agriculture by outcompeting native pastures	Sharma et al., 2005; Walton et al., 2006; GISP, 2008
Handling plant may cause skin irritation or allergic reaction	Day et al., 2003
Interferes with the mustering of cattle causing death of stock by poisoning	Yadava & Verma, 1978; Swarbrick et al., 1998
Reduce productivity in orchards	Day et al., 2003

Lantana camara – A Problematic Weed

The lantana recognized as a weed in 1920 in India and it grows easily and very fast in humid and drought conditions also. Thus, the need to control and their management arises. It is highly adaptable and growing in a range of habitats from sea level to mountains, rainfall areas from 1000-4000 mm/yr, and hinders the seedling growth of other plants. The eradication and management of Lantana have become cost-effective globally. Lantana continuously to spread and found 13 million hectares in India (Bhagwat et al., 2012). \$200 per hectare is the cost of control in India (Bhagwat et al., 2012). The L. camara has both positive and negative effects on the environment. Impacts such as the potential to hinder some and increase water runoff, increase the regeneration of some species and decrease or increase soil erosion.

Muniappan & Viraktamath (1993) and Bhatt et al. (1994) reported the L. camara replaced the *Quercus leucotrichophora* and *Pinus roxburghii* forests in Kumaun (U. K. Hills). The invasion of Lantana changed the nutrient composition of the soil (Rajwar & Kilmartin, 1998) and the loss of palatable and economically important spp. and change in the Garhwal region (U. K. hills), India.

Effect of Lantana Camara

➤ For Agriculture

The L. camara is recognized as a weed in India in which it has been introduced (Iyengar, 1933). Due to its prolific or productive nature of flowering and

dispersal, the species tends to transform the structure of the terrestrial ecosystem by gregarious presence. The species forms dense thickets and tends to remove the native species (GISIN, 2011). *L. camara* becomes the understory species in disturbed native forests thus dominating the flora, causing disruption in succession and loss in biodiversity. The allelopathic activities of the plant tend to decrease the vigor of other species in its proximity. In addition to its effect on grazing lands, *L. camara* often causes a decrement in yield. Also, species were able to contaminate the gene pool of the rare plant species. Elsewhere the native species of *L. camara* belongs to section *Calliorheas*, so the major threat is competition rather than hybridization.

It is a very effective competitor against native colonizers in the presence of light, soil moisture and soil nutrients (Priyanka & Joshi, 2013). One of the obvious changes found with the replacement of forest understory is reduced in community biomass. Allelopathy characteristics of species enable it to survive secondary succession and become monospecific thickets. For example, allelopathic effects resulting in either no growth or decreased growth close to *L. camara* have been showed in *Morrenia odorata* L. (milkweed vine), *Lolium multiflorum* L. (rye) and various crops such as wheat (*Triticum aestivum*), corn (*Zea mays*) and soybean (*Glycine max*) (Sharma et al., 1997).

➤ **For Forest**

Fire regimes are changed immensely by the presence of the *L. camara* in nature (Hiremath & Sundaram, 2005). The species burn fast and easily in hot and dry conditions. Its occurrence on forest margins is seen as major threat to the community, as a result of raised inroads of fire into the forest. This is particularly so when the species occurs on edges of forest tracks and creeks in natural forests such as in national parks.

➤ **For Human and Animals**

On social frontage, *L. camara* affects human health. The species harbors malarial mosquitoes in bushes resulting in health problems. These pests were previously brought under reasonable control through the clearing of vegetation that harbored them. Subsequently, these species colonize these cleared grounds resulting in disease-carrying pests reinvading cleared areas inhabited by humans and domestic stocks (Greathead, 1971). *L. camara* is a major problem in agricultural areas in most regions of India as it forms dense thickets, spread gregariously, outcompete pasture species, and affects both flora and fauna. The field cases occur mainly in young animals that have either been newly introduced into an area where *L. camara* grows (Sharma, 1997), or are without access to other fodder. Children and adults in many countries often consume ripe fruits of *L. camara*, without any ill effects.

However, consumption of green fruit has proved to be fatal in some parts of India (Sharma, 1997). Apart from causing the death of livestock, sublethal doses of *L. camara* toxin causes a reduction in potential production, manifested abortion, loss of milk production in dairy cows, and chronic wasting in beef cattle. Thus, in summation, *L. camara* invasion in natural ecosystem results in widespread loss of native species diversity and disrupts ecosystem structure and functioning (Sharma et al., 2005; Sahu & Singh, 2008; Dobhal et al., 2011; Sharma & Raghubanshi, 2010; Taylor et al., 2012).

Control and Their Management

Presently, many control measures have been used to control the *L. camara* infestations in India, but these have not been effective which completely control the invasion of *L. camara*. Several types of control measures are used to control the Lantana invasion such as mechanical, chemical, fire, biological and combinations, with combinations, used most commonly in India (Bhagwat et al., 2012).

➤ Physical Method

Control measure implicating mechanical methods are joint with some certain drawbacks such as re-growth of plant, this problem is due the plant root-stock remains in the field during weeding (Babu et al., 2009); these methods are suitable for smaller areas only and not recommended in areas which is susceptible to erosion (Babu et al., 2009). Some authors have recommended the application of chemical to control the Lantana (Achhireddy et al., 1985; Sharma et al., 1988).

➤ Chemical Method

Glyphosate is effective as a foliar spray to control the re-growth. Fluroxypyr (Vista) plus aminopyralid is effective when it is applied twice within 6 months but this cost-effective. Even, Fluroxypyr applied as a basal application is highly effective. However, these are still in the documentation stage and little has been done in relation to this. The other thing is these chemicals are harmful to the environment, human beings, and animals also (Priyanka & Joshi, 2013).

➤ Biological Method

Some biological control organisms have been studied to control the *L. camara* spread. There are no effective methods or techniques available on an operational scale at present. Biological organisms for controlling the *L. camara* are *Teleonemia elata* (leaf-sucking bug), *Teleonemia scrupulosa* (leaf-sucking bug), *Ophiomyia Lantanae* (fruitmining fly), *Calycomyza lantanae* (agromyzid seedfly). But, most are not effective as they have several varieties resulting in complicating the introduction and establishment of exotic insects.

Table 3: Techniques for control and Management of *Lantana camara* (Priyanka & Joshi, 2013).

Techniques	When to use	When not to use
Biological Control	➤ Biocontrol agents are available and not already present	➤ Biocontrol agents, if affect important species
Mechanical Control	➤ Area suitable for access by machinery without significant damage and action ➤ Not leading to further land degradation	➤ Close to rivers, creeks and drainage and lines, as damage to soil will impair water quality and increase erosion ➤ If not possible to follow up with treatments such as chemical or manual removal
Manual Removal	➤ Cheap labor available ➤ Limited area to clear ➤ When used as a follow-up technique after fire or mechanical removal	➤ Cost of labor outweighs land value
Fire Control	➤ Extensive area ➤ Little risk of fire spreading	➤ Species may increase the intensity and frequency of fire inappropriately. Not to be used unless treatment with chemical

Several other host-specific insects such *Octotoma scabripennis* (leaf-mining beetle), *Epinotia Lantanae* (flower-mining moth), *Diastema tigris* (flower-mining moth), *Salbia haemorrhoidalis* (leaf-floding caterpillar) and *Uroplata girardi* (leaf-mining beetle) have been proposed from time to time for the biological suppression of *Lantana camara* but have not been effective in controlling its infestation (Sharma et al., 2005).

The main causes of failures being the extreme variability of the plants, the extended climatic range it invades and high levels of parasitism on natural enemies. Some researchers are studying the potential source to completely control the invasion of *Lantana* (Rao et al., 1971; Sankaran et al., 1971; Sen-Sarma & Mishra, 1986; Thakur et al., 1992; Sharma et al., 2005) and no effective results have been found. Thereby, it is important for control programs to focus on methods or techniques which can be effective and in the least cost for better and sustainable management of *L. camara*. One of the effective technique include mapping and modeling of *L. camara* which is acting as early detection tool and help manage the control and invasion in current and future prospects.

Lantana Management by Utilization

➤ Allelopathy

Lantana residues are allelopathic to *Morrenla odorata* Undl (milk weed vine) (Achhireddy & Singh (1984)). This allelopathic effect might be due to release

group of phenolic compounds which is present in Lantana viz. p-hydroxybenzoic, syringic, ferulic, p-coumaric, m-coumaric, protocatechuic, gentisic, vanillin and methyl coumarin (Jain et al., 1989). Umapathi et al. (2000) reported that Incorporation of lantana combined with hand weeding resulted ineffectively control of sedges because of release to allelochemicals. The allelopathic effect of lantana may also be used for the nonchemical weed management at present in crop production (Nanjappa & Saravanane, 2003).

➤ Source of nutrients

Lantana contained 52.5, 2.5, 0.25 and 1.4 % of C, N, P, and K (Sharma & Verma, 2000). Long term addition of lantana enhanced the phytochemical properties of soil (Sharad & Verma, 2001a), soil nitrogen (Sharma & Verma, 2001), total and available phosphorus (Sharma & Verma, 2000) and zinc fractions (Sharad & Verma, 2001a). According to Nanjappa et al. (2005), the Lantana used as compost by the detailed study in the Department of Agronomy, G.K.V.K., VAS, and Bangalore.

➤ Several Uses of Lantana camara

L. camara is also used as a medicinal plant and has some uses, mainly in herbal medicine. There are many research studies conducted on the exploitation of the chemical composition of different parts of the Lantana. The studies showed that its leaves extract has many phytochemical properties such as antimicrobial, fungicide, insecticidal and nematocidal. It is used as a biocide has also been shown in many studies (Begum et al., 2004; Dharmagadda et al., 2005).

Table 5: Medicinal uses of L. camara (Priyanka and Joshi, 2013).

Parts Used	Medicinal Uses	References
Plant	➤ Act as hedge plant, provide perch sites and cover	Ghisalberti et al., 2000; Day et al., 2003
Flower	➤ Nectar source for butterflies and moths	Mohan Ram & Mathur, 1984; Day et al., 2003
Bark	➤ Astringent and used as a lotion in cutiginous eruptions, leprous ulcers	ISSG, 2019; TrekNature, 2009
Stalks	➤ Raw material for paper pulp which is used for wrapping, writing and printing paper ➤ Making baskets and temporary shelters ➤ Used as biofuel	Ray et al., 2006; Naithani & Pande, 2009; Kannan et al., 2008
Leaves	➤ Boiled and applied for swellings and pain in the body ➤ Alkaloidal fractions lower blood pressure, accelerate deep respiration and stimulate intestinal movements	Singh et al., 1996; Noble et al., 1998; Nagao et al., 2000
Plant Extracts	Drought-tolerant plant so good candidates for xeriscaping Used in folk medicine for the treatment of cancers, chicken pox, measles, asthma, ulcers,	Rauch, & Weissich, 2000 Chavan & Nikam 1982; Sharma & Sharma, 1989; Day et. al., 2003; Begum et al., 2003;



	swellings, eczema, tumors, high blood pressure, bilious fevers, catarrhal infections, tetanus, rheumatism and malaria	Sharma, 2007
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Future Prospects for Controlling of Lantana

- Various techniques areas used to control the invasion of Lantana, techniques like mapping and remote sensing, GPS/GNSS techniques and satellite. Some other methods are also effective like sowing the pastures, crop rotation, plantation, etc. are the effective steps to be taken for successful control of this alien or problem weed (Priyanka et al., 2013).
- The maximum use of this weed in our routine life can be reducing the population of this weed. This plant is used for making furniture, mosquito repellent cakes, incense sticks, baskets, etc. from lantana.
- The various parts of this plant are used for making medicines to treat many diseases such as respiratory infections, cancers, asthma, etc. (Deena & Thoppil, 2000; Ghisalberti, 2000; Bevilacqua et al., 2011). This weed is also used in the world to treatment of many ailments like rheumatism, wound healing, scratches, fever, toothache, rashes, and malaria (Chharba et al., 1993; Ghisalberti, 2000; Silva et al., 2005).
- The extracts obtained from various parts of lantana contained many beneficial properties like anthelmintic, antibacterial, anti-ulcerogenic, anti-inflammatory, termiticidal, antifungal, antiprotozoal, antipyretic and many more (Barre et al., 1997; Rajesh & Suman, 2006; Hussain et al., 2011; Sousa & Costa, 2012). The leaves of this weed consists many bioactive compounds and have insecticidal activities (Dua et al., 2010; Rajashekar et al., 2012c).
- The leaf extracts of lantana are consisting the inhibitory effect on aquatic weeds like *Microcystis aeruginosa* and *Eichhornia crassipes* (Sharma et al., 2007; Rai, 2013) and are used for controlling pests and almond moths in an environment-friendly way (Gotyal et al., 2010; Rajashekar et al., 2012c; Rajashekar et al, 2013).
- This weed can be utilized as a bio-fuel and in Kraft pulping (Naithani & Pande, 2009; Bhatt et al., 2011).
- *Lantana camara* is being utilized for vermin-composting at present (Hussain et al., 2015).

- Forest the department has introduced a 'Cut Root Stock (CRS)' method for the eradication of this weed in some of the states like Himachal Pradesh the state.

Conclusion

This review is concluded that the *Lantana camara* is a weed that shows negative impacts on the environment and agriculture by competing with the main crops. It affects the composition of soil and useful species of plants. Some chemical and biological methods may be used for controlling the *lantana*. But, these methods are cost-effective. According to some researchers, the *Lantana* has been shown a positive impact also. *Lantana* invasion may be under control by their utilization for making furniture, baskets, medicines, essential oils, biofuel, and natural oils. This is another effective method to reduce the population of *Lantana*. Such type of utilization of *lantana* is beneficial and it is a good source for income in the rural areas where it is high invasion. Much more researches required by researchers for completely control of *Lantana*.

References

- Ross, I. A. (1999). Medicinal plants of the world. Chemical constituents, traditional and modern medical uses. New Jersey Humana Press.
- Kumarasamyraja, D., Jeganathan, N. S., & Manavalan, R. (2012). Pharmacological review of *Lantana camara* L. International Journal of Pharm Res. 2, 1-5.
- Thamotharan, G., Sekar, G., Ganesh, T., Saikatsen, Chakraborty, R., & Kumar, S. N. (2010). Anti-ulcerogenic effect of *Lantana camara* Leaves on in-vivo test models in Rats. Asian Journal of Pharmaceutical and Clinical Research. 3, 57-60.
- Ghisalberti, E. L. (2000). *Lantana camara* Linn.: Review. Fitoterapia. 71, 467-485.
- Ganesh, T., Saikatsen, Thilagam, G., Loganatham, T., & Chakraborty, R. (2010). Pharmacognostic and antihyperglycemic evaluation of *Lantana camara* (L) var. aculeate leaves in alloxan-induced hyperglycemic rats. Int J Res Pharm. 1, 247-252.
- Kumar, G., Karthik, L., & Rao, K. V. B. (2010). In-vitro anti-candida activity of *Calotropis gigantea* against clinical isolates of *Candida*. Journal of Pharmacy Research. 3, 539-542.
- Mishra, A. (2014). Allelopathic properties of *Lantana camara*, a review article. 2, 32-52.
- Global Invasive Species Database (2014). www.issg.org.uk Retrieved. 03-22, 27. www.brahmayurved.com/.
- Priyanka, N., & Joshi, P. K. (2013). A review of *Lantana camara* studies in India. International Journal of Scientific and Research Publications. 3(10), 1-11.
- Sharma, G. P., & Raghubanshi, A. S. (2010). How *Lantana* invades dry deciduous forest: a case study from Vindhyan highlands, India. Tropical Ecology. 51(2S), 305-316.
- Bhagwat, S. A., Breman, E., Thekaekara, T., Thornton, T. F., & Willis, K. J. (2012). A Battle Lost? Report on Two Centuries of Invasion and Management of *Lantana camara* L. in Australia, India and South Africa. PLoS ONE. 7(3), e32407. <https://doi.org/10.1371/journal.pone.0032407>.
- Muniappan, R., & Viraktamath, C.A. (1993). Invasive alien weeds in the western Ghats. Curr. Sci. 64, 555-558.
- Bhatt, Y. D., Rawat, Y. S., & Singh, S. P. (1994). Changes in ecosystem functioning after replacement of forest by *lantana* shrubland in Kumaun Himalaya. J. Veg. Sci. 5, 67-70.
- Rajwar, G. S., & Kilmartin, M. P. (1998). Changes in plant diversity and related problems for environmental management in the headwaters of the Garhwal Himalaya. Headwaters:Water resources and soil conservation. Ed. M.J. Haigh, J. Krecek, G.S. Rajwar, Proc. Headwaters'98, 4th International Conf. on Headwater Control, Merano, Italy, April, pp. 335-343.



- Priyanka, N., Shiju, M. V., & Joshi, P. K. (2013). A framework for management of *Lantana camara* in India. *Proceedings of the International Academy of Ecology and Environmental Sciences*. 3, 306-323.
- Deena, M. J., & Thoppil, J. E. (2000). Antimicrobial activity of the essential oil of *Lantana camara*. *Fitoterapia*. 71, 453–455.
- Ghisalberti, E. L. (2000). *Lantana camara* L. (Verbenaceae). *Fitoterapia*. 71, 467–486.
- Bevilacqua, A. H. V., Suffredini, I. B., Romoff, P., Lago, J. H. G., Bernardi, M. M. (2011). Toxicity of apolar and polar *Lantana camara* L. crude extracts in mice. *Research in Veterinary Science*. 90, 106–115.
- Barre, J. T., Bowden, B. F., Coll, J. C., DeJesus, J., De La Fuente, V. E., Janairo, G. C., Ragasa, C. Y. (1997). A bioactive triterpene from *Lantana camara*. *Phytochemistry*. 45, 321–324.
- Rajesh, K. V., & Suman, K. V. (2006). Phytochemical and termiticidal study of *Lantana camara* var. *aculeata* leaves. *Fitoterapia*. 77, 466–468.
- Hussain, H., Hussain, J., Al-Harrasi, A., & Shinwari, Z. K. (2011). Chemistry of some species genus *Lantana*. *Pakistan Journal of Botany*. 43, 51–62.
- Sousa, E. O., & Costa, J. G. M. (2012). Genus *Lantana*: chemical aspects and biological activities. *Revista Brasileira de Farmacognosia*. 22, 1115-1180.
- Dua, V. K., Pandey, A. C., & Dash, A. P. (2010). Adulticidal activity of essential oil of *Lantana camara* +leaves against mosquitoes. *Indian Journal of Medical Research*. 131, 434–439.
- Rajashekar, Y., Ravindra, K. V., & Bakthavatsalam, N. (2012c). Leaves of *Lantana camara* Linn. (Verbenaceae) as a potential insecticide for the management of three species of stored grain insect pests. *Journal of Food Science and Technology*. 51, 3494-3499.
- Sharma, O. P., Sharma, S., Pattabhi, V., Mahato, S. B., & Sharma, P. D. (2007). A Review of the Hepatotoxic Plant *Lantana camara*. *Critical Reviews in Toxicology*. 37, 313-352.
- Rai, P. K. (2013). *Plant invasion ecology: Impacts and Sustainable management*. New York: Nova Science Publisher. pp. 196.
- Gotyal, B. S., Srivastava, C., Walia, S., Jain, S. K., & Reddy, D. S. (2010). Efficacy of wild sage (*Lantana camara*) extracts against almond moth (*Cadra cautella*) in stored wheat (*Triticum aestivum*) seeds. *Indian Journal of Agriculture Science*. 80, 433–436.
- Rajashekar, Y., Kumar, H. V., Kothapalli, V. & Ravindrac Bakthavatsalamc, N. (2013). Isolation and characterization of biofumigant from leaves of *Lantana camara* for control of stored grain insect pests. *Industrial Crops and Products*. 51, 224–228.
- Naithani, S. & Pande, P. K. (2009). Evaluation of *Lantana camara* Linn. stem for pulp and paper making. *Indian Forester*. 135(8), 1081-1087.
- Bhatt, N., Gupta, P. K. & Naithani, S. (2011). Ceric-induced grafting of Acrylonitrile onto Alpha Cellulose isolated from *Lantana camara*. *Cellulose Chemistry and Technology*. 45, 321-327.
- Hussain, N., Abbasi, T., & Abbas, S. A. (2015). Vermicomposting eliminates the toxicity of *Lantana* (*Lantana camara*) and turns it into a plant friendly organic fertilizer. *Journal of Hazardous Materials*. 298, 46-57.
- Day, M. D., Wiley, C. J., Playford, J., & Zalucki, M. P. (2003). *Lantana*: Current Management, Status and Future Prospects. *Australian Centre for International Agricultural Research*. 5, 1- 20.
- Mohan Ram, H. Y., & Mathur, G. (1984). Flower colour changes in *Lantana camara*. *Journal of Experimental Botany*, 35, 1656–1662.
- Ray, A. K., & Puri, M. K. (2006). Modeling H Factor-Kappa Number for Kraft Pulping of *Lantana camara* Plant- An Experimental Investigation. *Advances in BioCatalytics and Protein Engineering*. 15, 1–62.
- Kannan, R., Aravind, N. A., Joseph, G., Ganeshaiah, K. N., & Shaanker, R. U. (2008). *Lantana* Craft: A Weed for a Need. *Biotech News*. 3(2), 9-11.
- Sharma, O. P., & Sharma, P. D. (1989). Natural products of the *Lantana* plant - the present and prospects. *Journal of Scientific & Industrial Research*. 48, 471–478
- Sharma, G. P. (2007). *Habitat fragmentation induced plant species invasion in Vindhyan highlands*. Ph.D. Dissertation. Banaras Hindu University, Varanasi, India.
- Rao, V. P., Ghani, M. A., Sankaran, T., Mathur, K. C. (1971). A review of the biological control of insects and other pests in south-east Asia and the Pacific region.
- Sankaran, T. (1971). Biological control of weeds in India a review of introductions and current investigations of natural enemies. In: P.H. Dunn (ed.), *Proceedings of the II International Symposium on Biological Control of Weeds*, Rome, Italy. 82–88.



- Thakur, M. L., Ahmad, M., & Thakur, R. K. (1992). Lantana weed (*Lantana camara* var. *aculeata* Linn) and its possible management through natural insect pests in India. *Indian Forester*. 118, 466–488.
- Sharma, G. P., Raghubanshi, A. S., & Singh, J. S. (2005). Lantana invasion: An overview. *Weed Biology Management*. 5, 157–167.
- Achhireddy, N. R., Singh, M., Achhireddy, L. L., Nigg, H. N., & Nagy, S. (1985). Isolation and partial characterization of phytotoxic compounds from Lantana (*Lantana camara* L.). *Journal of Chemical Ecology*. 11, 979–988.
- Sharma, O. P., Makkar, H. P. S., & Dawra, R. K. (1988). A review of the noxious plant *Lantana camara*. *Toxicon*, 26, 975–987.
- Sahu, P. K., & Singh, J. S. (2008). Structural attributes of lantana-invaded forest plots in Achanakmar–Amarkantak Biosphere Reserve, Central India. *Current Science*. 94(4), 494–500.
- Dobhal, P. K., Kohli, R. K., & Batish, D. R. (2011). Impact of *Lantana camara* L. invasion on riparian vegetation of Nayar region in Garhwal Himalayas (Uttarakhand, India). *Journal of Ecology and the Natural Environment*. 3(1), 11–22.
- Sen-Sarma, P. K., & Mishra, S. C. (1986). Biological control of forest weeds in India -retrospect and prospects. *Indian Forester*. 112, 1088–1093.
- Sharma, G. P., & Raghubanshi, A. S. (2010). How Lantana invades dry deciduous forest: a case study from Vindhyan highlands, India. *Tropical Ecology*. 51(2S), 305–316.
- Hiremath, J., & Sundaram, B. (2005). The fire-Lantana cycle hypothesis in Indian forests. *Conservation and Society*. 3, 26–42.
- Walton, C. (2006). *Lantana camara* (shrub). Global Invasive Species Database. Retrieved from: <http://www.issg.org/database/species/ecology.asp?si=56andfr=1andsts=sss>
- Pass, M. A., & Heath, T. J. (1978). The effect of *Lantana camara* on intestinal motility in sheep. *Journal of Comparative Pathology*. 88, 149–156.
- Sharma, S., Singh, A., & Sharma, O. P. (1999). An improved procedure for isolation and purification of lantadene A, the bioactive pentacyclic triterpenoid from *Lantana camara* leaves. *Journal of Medicinal and Aromatic Plant Science*. 21, 686–688.
- Sharma, O. P., Sharma, S., Pattabhi, V., Mahato, S. B., & Sharma, P. D. (2007). A Review of the Hepatotoxic Plant. *Lantana camara*. *Journal of Scientific & Industrial Research*. 37, 313–352.
- Yadava, J. N. S., & Verma, N. S. (1978). An outbreak of Lantana poisoning in domesticated animals. *Indian Veterinary Medical Journal*. 2, 1–9.
- Global Invasive Species Database (2020). Species profile: *Lantana camara*. Downloaded from <http://www.iucngisd.org/gisd/species.php?sc=56> on 26-01-2020.
- Kumarasamyraja, D., Jeganathan, N. S., & Manavalan, R. (2012). Pharmacological Review of *Lantana camara* L. *International Journal of Pharmacy and Industrial Research*. 2(1), 1–5.
- Saxena, M., Saxena, J. & Khare, S. (2012). A brief review on: Therapeutical values of *Lantana camara* plant. *Int. J. of Pharm. & Life Sci*. 3(3).



NETWORK ROUTING PROBLEM USING ARTIFICIAL INTELLIGENT TECHNIQUES IN WIRELESS BODY SENSOR NETWORK (WBSN)

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Wireless body sensor network (WBSN) technologies is composed of wireless wearable computing devices that are implanted inside the body, may be surface-mounted on the body in a Wearable technology or may be devices which humans being can carry in different positions, in clothes pockets, by hand or in various bags. WBSN is self-configuring and self-organizing wireless networks which helped us to early detection of medical conditions because of Sensor technology. The wearable computing devices inside the human Body not just functions as hosts to receiver the detection of condition but in addition as routers that route data from/to source/destination. Routing in WBSN continues to be a challenging process ever since the wireless networks came into existence. A variety of networks topology and protocols are created for achieving the task. Routing basically a method of selecting the best paths in all condition like network traffic. Artificial intelligence is progressively as options in contrast to traditional techniques to pointing as a decision generating factor for choice of enhanced path. AI can be utilized for Solving Problem congestion and likewise, it can avoid a many problems in network structure from going into the condition where no transmission Occurs. This paper aims to provide a comprehensive review of recent developments we have proposed in routing protocol using artificial intelligence in WBSN network and is fit for selecting the best path by routing with zero postponements and no congestion. All Routing Problem and available technologies for Artificial Intelligence for wireless body sensor network have been studied regarding hardware and software for a low-cost, low-power, non-invasive and unobtrusive system.

Keywords : WBSN, Artificial Intelligence Technique.

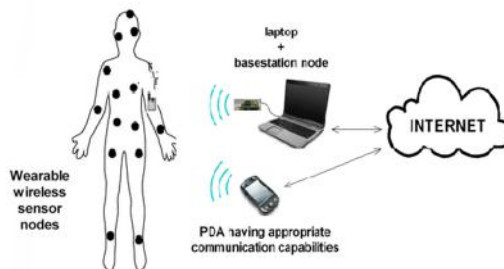
Introduction

The rapid development of wireless networks from 2G to 3G and now advancement to 5G used in Internet have brought great opportunities for growth, innovation, the creation of Wireless network in many field. Now a day, wireless technology for medical applications has been rapidly increasing. Wireless devices have invaded the medical area with a wide range of capability

so the quality of life of patients is Improved and doctor-patient efficiency, wireless technology enables to monitor patients remotely and timely give them health related information and support – potentially provide health care by making it available anywhere, anytime. WBSN (Wireless Body Sensor Network) is self-configuring and self-organizing wireless networks which helped us to early detection of medical conditions because of Sensor technology. The wearable computing devices inside the human Body not just functions as hosts to receiver the detection of condition but in addition as routers that route data from/to source/destination. Routing in WBSN continues to be a challenging process ever since the wireless networks came into existence and provide very test problem because of the inalienable attributes that diverse such networks from different wireless networks, for example, ad hoc networks and cell networks. For the reason of sensor highlights (low-power consumption, low radio range, low memory, low processing limit, and minimal effort), self-organizing network is the best appropriate network architecture to support applications in such a scenario. Artificial intelligence is progressively as options in contrast to traditional techniques to pointing as a decision generating factor for choice of enhanced path in routing for WBSN. AI can be utilized for Solving Problem congestion and likewise, it can avoid a many problems in network structure from going into the condition where no transmission Occurs.

WBSN Network Architecture

In WBSN network architecture Many Several homogeneously distributed sensors helped us to early detection of medical conditions with the help of MN to send and receive information. Thus, this wireless Body sensor network is a single-hop that gathered all information to the MN that analysed the information Obtained from the devices which humans being can carry in different positions, in clothes pockets, by hand or in various bags and then retransmitted it over next stage of wireless medium. In this case distance and routing between sensor and the MN are vary and affect the delivering data appropriately to the MN.



Network Routing Problem in WBSN

Network routing play significant role in data communication over a wide-ranging network computers in city, state or particular district. The network routing that send data from source to destination or vice versa. The real path it pursues and medium is what is dictated by the routing processes. For those that has a rapid web association, for example, link at home and business computer users, satellite, or DSL (Digital Subscriber Line), a switch can be arranged to carry on as a hardware firewall to anticipate the both software and the gadget from going down. With the expanding development rate of the web, the old 32 digit IPV4 (IP Version IV) number plan, which assume real job in Internet routing is never again special since it has a set number of public finishes, however because of the creation of IP version VI the impediment of the version IV will never again be a problem as it has countless end which makes it simple for network and data to be transmitted without multiple routing process. Meanwhile, there is requirement for the routing arrangement of network exchange to be legitimately overseen.

Equations used for congestion/delay evaluation and Performance Measurement

Congestion \propto 1/link speed..... (i)

Congestion \propto one packet size..... (ii)

Congestion \propto average delays of packets..... (iii)

Thus, from (i), (ii) and (iii) Congestion rate = $\beta * \text{delays} * (1/\lambda)$

Where delays = $1/(\text{link speed}) * ((N_{ps} - N_{tt}) + (DI - 1)) * N_q$

Where N_{tt} is the quantity of retransmissions, N_q is the quantity of nodes, N_{ps} is the packet size and DI is the average defer that is estimated considering the perfect conditions for transmissions.

Artificial Intelligence Approaches to Routing Problems in WBSN

Since the past sections have given some thought of the Apply AI in present arrangements and approaches to routing problem in wireless network, this section diagrams a portion of the work done in Artificial Intelligence which handles routing problems in WBSN.

•**Algorithmic Resource Allocation Methods** Many research focused on discovering that AI research effort on optimization techniques around there has been coordinated towards routing problems, for example, the Traveling Salesman Problem or towards shortest path problem. There would appear to be broad degree, in adapting a portion of these search techniques to understanding offline routing problems in WBSN. As of not long ago, numerous researches talk about routing techniques dependent on Genetic Algorithms and Simulated Annealing. Some routing as a multi-foundation optimization problem and presents aftereffects of

applying utility theoretic heuristics to grid networks. Others application of Constraint Satisfaction (CSP) techniques joined with conceptual problem representations to routing with bandwidth.

- Shortest Path Algorithms:** Shortest path algorithms play a significant part of the work on routing. The quantity of algorithms which have been formed and published keeps running into the thousands and showing up. The best algorithms, for example, Dijkstra's and Bellman-Ford algorithm; keep running in low request polynomial time. The standard Dijkstra algorithm, for instance, keep running in time $O(n^2) + O(m)$ where n is the quantity of nodes in the network and m is the quantity of connections in the network. In spite of the fact that the algorithms are low-request polynomial a few troubles emerge while applying them to a running network:

1. **Routing numerous demands.** For taking care of off-line problems such as optimization algorithm to allotting a lot of demands to a given network topology, the problem ends up balanced to the rucksack problem or multi commodity flow.

2. **Metrics for Quality of Services.** The decision for evaluation connection/path metrics affects path selection multifaceted nature. Utilizing two multiplicative or additive metrics makes finding a even single demand for course become in NP complete. Such NP-complete blends are permitted in ATM where potential metrics include: exchange delay, bandwidth, and Cell misfortune ratio and postpone jitter.

3. **Distribution.** The majority of the polynomial time algorithms were at first intended to performing pruning, run halfway and search dependent completely on representation of the network and its state. In a network, information is exceptionally appropriated. Numbers of the algorithms can be kept running in an appropriated way so that communication cost between network nodes at that point turns into the main consideration in the execution time. Course calculation is ordinarily much slower than demand arrival.

- Agent Based Routing and Distributed AI:** Since routing protocol includes circulated control and information representation techniques from Artificial Intelligence which have been proposed for Addressing routing problems. From Papers by Susan the utilization of adaptive association of agents is examined to on-line source routing problems. They present the requirement in Active Networks for authoritative techniques for routing. The PNNI ATM Forum's viewed to perform routing assignments in a network for instance of the utilization of an authoritative structure. The PNNI architecture could positively be given a role as a multi-agent framework. Agents and CSP techniques have likewise been connected to the multi authority routing protocol problem.

•**Biologically Inspired Paradigms:** It is hard to upgrade routers so that it handles new routing techniques, since most have already upgraded to IPV6. Swarm intelligence for routing optimization in network utilizes a comparative ant routing in addressing network routing problems by utilization of stigmergy. Stigmergy is a communication technique that encodes information about the problem (and its answers) on the environment. They generate the comparable ants that cross the network and gather timestamps when they go through each and every node. The ants are directed by a process called stochastic that is weighted. When an ant achieves its destination it generates a retrogressive ant which pursues a similar course as the first ant back to its source. The commitment is to build up a framework to encourage the evaluation of a swarm intelligence routing with a regular static and dynamic routing approach.

A general prologue to the established and routing protocols based on swarm intelligence in Wireless Body Sensor Networks. In multifaceted computational nature, energy productivity, network structure and path foundation the swarm-based routing protocols into: Location-based protocols, Data Centric routing protocols, Hierarchical protocols and QoS-mindful protocols. Besides, they generate a packet of recreation data to analyse different types of the protocols in term of the idleness, dependability, throughput, achievement rate, energy proficiency. From this it is observed that significant endeavours have been made in addressing the techniques for efficient protocols for WBSNs.

Conclusion

It's been discovered that because the distance between sensor the MN is vary so the distance affect the routing protocol problems in WBSN. The incorporation of AI techniques in wireless sensor body networks has been ended up being a helpful instrument to improve organizes performances. The AI based routing protocol possess poor delay and also huge packet delivery ratio. If delay is major requirements in application and reliability and throughput are major parameters for solving network routing protocol then Using AI gives improved outcomes when compared with others since its package delivery ratio is best among others providing of multitude of nodes.

References

- [1] Bai Hao (2014), "A SURVEY OF ARTIFICIAL INTELLIGENCE FOR NETWORK ROUTING PROBLEMS", Department of Electrical and Computer Engineering, University of New Mexico, NM, USA
- [2] Barbancho Julio, Leo'n Carlos, Molina Javier and Barbancho Antonio (2006), "USING ARTIFICIAL INTELLIGENCE IN WIRELESS SENSOR ROUTING

PROTOCOLS”, Department of Electronic Technology, University of Seville. C/ Virgen de Africa, 7. Seville 41011 (Spain)

[3] Qadir Junaid (2013), “ARTIFICIAL INTELLIGENCE BASED COGNITIVE ROUTING FOR COGNITIVE RADIO NETWORKS”, Electrical Engineering Department at the School of Electrical Engineering and Computer Science (SEECs) at the National University of Sciences and Technology (NUST), Pakistan

[4] J. Barbancho, Carlos Leon, F.J. Molina, Antonio Barbancho(2007), “USING ARTIFICIAL INTELLIGENCE IN ROUTING SCHEMES FOR WIRELESS NETWORKS”, Computer Communications, vol. 30, pp. 2802– 2811, 2007. Routing Schemes for Wireless Networks using Artificial Intelligence

[5] Sharma Vishal, Soni Amitoj, Gunjit Sodhi Singh, Gupta Takshi (2012), “AN EFFICIENT APPROACH FOR ROUTING IN WIRELESS AD HOC NETWORK USING ARTIFICIAL INTELLIGENCE”, ISSN : 0975-3397 Vol. 4 No. 02 February 2012 , al. / International Journal on Computer Science and Engineering (IJCSE)

[6] T. W. Rondeau(2007),” APPLICATION OF ARTIFICIAL INTELLIGENCE TO WIRELESS COMMUNICATIONS” PhD thesis, Virginia Polytechnic Institute and State University. [7] Hsien-tang Wu; Wen-ta Hsiao; Chihsang Lin; Tao-ming Cheng; Dept. of Constr. Eng., Chaoyang Univ. of Technol., Taichung, Taiwan, “Application of genetic algorithm to the development of artificial intelligence module system”, Intelligent Control and Information Processing (ICICIP), 2011, 978-1- 4577-0813-8

[8] Dr. R.K. Singh, Vishal Sharma:”Dead State Recovery Based Power Optimization Routing Protocol for MANETs”, HPAGC-2011, CCIS 169, pp.424-429,2011. © Springer-Verlag Berlin Heidelberg-2011.

[9] Sunil Taneja and Ashwani Kush:” A Survey of Routing Protocols in Mobile Ad Hoc abstract”. International Journal of Innovation, Management and Technology, Vol. 1, No. 3, August 2010.

[10] Alkhayyat, A., Thabit, A. A., Al-Mayali, F. A., & Abbasi, Q. H. (2019). WBSN in IoT health-based application: toward delay and energy consumption minimization. Journal of Sensors, 2019.

[11] S. Willmott, B. Faltings, “Workshop Note: Artificial Intelligence for Network Routing Problems”, AAAI Technical Report, WS-99-03, 1999.

[12]. Hayzelden, A, L. G. and Bigham, J. Heterogeneous MultiAgent Architecture for ATM Virtual Path Network Resource Configuration, Proceedings Second International Workshop on Intelligent Agents for Telecommunications Applications IATA, 2008, pp 45-59.

[13]. Willmott, S. N., Frei, C., Faltings, B., and Calisti, M. “Organization and Co - ordination for On -line Routing in Communications Networks”, Software Agents for Future Communication Systems. 2009

[14]. Subramanian, P. Druschel, J. Chen, “Ants and reinforcement learning: A case study in routing in dynamic networks”, Proceeding of the Fifteenth International Joint Conf, 20077



ENVIRONMENT SUSTAINABILITY THROUGH INDIAN RAILWAYS - AN OVERVIEW

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Abstract

Indian Railways (IR) is a great asset to the Indian transport sector. IR is one of the world's largest rail network spread over 68,400 kilometer and total track length of 121,407 kilometers as of March 2018-19. Routes are electrified with 25 kV AC electric traction while 33 per cent of them are double or multi-tracked and particularly IR is naturally a Green mode of Transport. IR is the lifeline of the country carrying nearly 23 million passengers every day making it the largest passenger carrying system in the world. It is also the 4th largest freight transporter in the world moving 1,160 million tonnes of freight annually as it traverses the length and breadth of the country. The paper deals with Energy Management and environment-friendly initiatives in IR. The paper is based on secondary sources of information gathered from journal articles, books, IR website, and relevant other websites.

Keywords: IR, Environment Sustainability, Green Transport, Railway Network, LED

Introduction

Being one of the largest modes of public transport, the IR has been playing a dominant and significant role in the Indian transport sector for a long time in the country. Surely, the IR is the lifeline of the country carrying nearly 23 million passengers daily and carries about 1160 million tons of freight per annum traversing the length and

breadth of the country. IR being a major consumer of energy, systematic programs has been launched towards improving energy efficiency and energy conservation including the use of renewable sources of energy and alternative fuels in its energy mix.

GreenCo¹ has helped IR bring in a focused approach towards green practices by strengthening its energy conservation initiatives, facilitating renewable energy opportunities, water management, and waste management. The IR has also utilized GreenCo as an opportunity to work with its suppliers in greening their operations. The awareness and training imparted to employees and other relevant stakeholders are extremely impressive. The IR has not only reduced the environmental impact but has also been realizing substantial benefits, both tangible and intangible. The participation in GreenCo rating process has helped the IR manufacturing units and workshops in achieving approximately Rs 10 crores per year of saving.²

As part of its initiative for Green Buildings, 8 Production Units and 42 major Workshops are certified to ISO 14001: 38 Diesel Sheds, 61 Coaching Depots, 21 Freight Depots and 8 Electric Loco Sheds 3 Mainline Electric Multiple Unit (MEMU) / Diesel-Electric Multiple Unit (DEMU) Car Sheds, 2 Engineering Workshops, and 1 Stores Depot have been certified.³ As Sanitary Napkin Vending Machines and Incinerators are being installed at several stations. MOUs have been signed with States for the planting of trees on vacant railway land to increase Carbon Sink. Use of plastics of less than 20-micron thickness in packaging is banned. As many as 166 plastic bottle crushing machines have been set up at 128 railway stations. Apart from the focus on Water Recycling Plants and Rain Water Harvesting, several old/dead water bodies have been revived. The IRCTC has mandated to install Water Vending Machines (WVM) on stations.

IR is a lead signatory to India's National Determined Contributions (NDC) by committing to reduce 20 per cent of freshwater consumption by 2030 and to reduce carbon emission by 32 per cent over the base year 2005 by improving rail traction energy & fuel efficiency; also the IR has planned various initiatives to meet its commitment to sustainability.

Review of Literature

A brief review of studies is carried out in the following passages

A study carried out by Pallavi Das (2016) on **Colonialism and the Environment in India: Railways and Deforestation in 19th Century Punjab**, found that the investment in railways in Punjab as a percentage of the total investment in other public works was an average 51.4 per cent in the periods 1859-60 and 1883-84. At the same time, the Madras Presidency showed

¹ The concept of **GreenCo** refers to Green Company Rating system; Implementation of GreenCo rating provides leadership and guidance to companies on how to make products, services and operations greener.

² http://www.irgreenri.gov.in/tile_solarEnergy.html.

³ <https://pib.gov.in/newsite/PrintRelease.aspx?relid=190294>.

an average railway investment of 37 per cent as a proportion of the total investment in other public works.

A paper entitled **Decentralized Waste Management in Indian Railways - A Preliminary Analysis** by Mohit Sharma et. al. (2016) concluded that the IR needs a comprehensive strategy for management of waste requiring efforts at different levels. To create an enabling environment, it should simultaneously leverage existing regulations, find synergies with national missions/policies, restructure existing institutional arrangements or create new institutions, wherever required.

The report on **Environment Management in Indian Railways-Stations, Trains, and Tracks** by Public Accounts Committee, IR (2014-15) found that vision 2020 document of Railways envisage sourcing at least 10 per cent of energy use from renewable source.

A study conducted by the International Union of Railways (2013), **Rail and Sustainable Development**, found that some railway organizations are active members of the United Nations Global Compact, which requires regular reporting on progress in implementing key sustainable development principles.

Objectives of the Study

1. To discuss the Energy Management of IR
2. To know the environment-friendly initiatives of IR

Paper Scheme

The present paper is based on secondary sources of information gathered from journal articles and relevant websites. In the paper, a brief review of studies has been made. No statistical techniques are used.

Analysis and Interpretation

The IR is one of the largest network in the world, its spread over 1, 15,000 track kilometers (66,030 route km) connected with 8,500 stations, serving people since 1853. In 2014-15, the Indian Railways transported 8.39 billion passengers, that is, more than 23 million passengers a day. Also, it transported 1050.18 million tonnes of freight across the country. Indian Railways consumed about 18.25 billion KW electricity in 2018-19 which is 1.8 per cent of the country's total electricity consumption.

Keeping in view the projected electricity demand from the railways in the next decade, to grow at about 9 per cent per annum, Indian Railways has developed a long-term Energy Efficiency and Conservation Program (EECP) (2010-2032) to reduce energy consumption by 10 per cent by 2032. Towards this, the Ministry of Railways in partnership with United Nations Development Programme (UNDP) is supporting the Indian Railways is rolling out and implementing the EECP and improving its energy efficiency in the long run.

The IR is one of the largest organizations with the highest electricity consumption in India. It consumes about 2.4 per cent of India's total electricity



consumption. In the fiscal year 2017-18, the IR consumed 14.1 billion kilowatt-hours of which 11.7 billion (about 83%) for traction usages and 2.4 billion (17%) in non-traction usages⁴.

Initiatives for Improving the Energy Utilization in IR

1. Energy Audits

World over, it has been recognized that continuously auditing various energy consumption centers in the light of the latest technological solutions available for energy-saving brings out the potential areas of energy-saving and after carrying out Always Better Control (A B C) analysis of these areas, investment planning is done. Accordingly, all Zonal Railways and Production Units have been asked to carry out fresh energy audits on consumption centers of more than 100 KW of electric energy and identify areas having energy-saving potential. Railways have been given target to complete analysis for such units using both external and internal means (using our officers and staff as well). While railways have already started taking actions on their earlier audits and have started looking for savings across all the establishments based on these earlier audits, however, new audits will provide potential areas for latest technological developments and based on these Energy Audits, will take up technology up-gradation works. They will also assess the benefits of energy-saving on the implementation of these new technologies, to decide on expansion of uses of such identified new energy efficiency technologies. Railways through these audits will also identify areas of energy wastage and will devise means of monitoring to avoid such wastages.⁵

2. Adoption of LED lighting

With recent advancement in Light Emitting Diode (LED) lighting technology, which has substantially brought down the prices of LED lights to a level where LED lights have become cost-effective as compared to all other means of lighting, with payback periods of about 2-3 years and with 5 years warranty, thereby reduced maintenance costs, it has been decided by Railways to use only LED lighting in future, in all-new establishments and for replacement of old lights in railway offices, stations, street lights etc. A policy directive to this effect was issued by the Ministry on 17th April 2015. Railways probably are the first organization to issue a policy directive to use only LED lighting for all its future establishments and replacements of existing light fitting on completion of their life. Railways are further working to take more policy decisions for the introduction of energy-efficient equipment.

⁴ www.irgreenari.co.in

⁵ <http://www.irgreenri.gov.in/index.html>.

3. Super- Efficient Ceiling Fans for railway quarters, offices, railway stations

The super-efficient (SE) fan consumes 35W as compared to the current market average of 60W. The SE fan is also significantly more efficient than the 5 stars rated fan (most efficient fan) which consumes about 45- 52 W. In case conventional fans are replaced with super-efficient fans (Brush Less DC motor), there exists an energy-saving potential of 30-50 per cent. Looking at the huge use of this appliance in Railways, the IR has taken up a pilot project for using SE fans on Northern Railways.

4. Energy Management System

To achieve sustained efforts on Energy Efficiency and Fuel Conservation on IR, all railways units are taking up the implementation of ISO: 50001 (Energy Management System). The units which are already certified for ISO: 9001 and ISO: 14000 will take lead in the initial phase, as it would be easier for them to adopt such a standard.

The ISO 50001 is the International Standard for Energy Management System providing a robust framework for optimizing energy efficiency in public and private sector organizations. Certification to this standard demonstrates an organization's commitment to continual improvement in energy management, allowing them to lead by example within their respective industries and ensures that related legislative and regulatory requirements are met. The key benefits of certification include:

- Reduced operating cost - Significant financial savings can be achieved through increased energy conservation,
- Improved energy efficiency- ISO 50001 is the most robust energy management system, enabling to make continual improvements to become as efficient as possible,
- Reduced carbon footprint - It reduces the carbon footprints and people will respond positively to the organization,
- Legal compliance - Makes understand how statutory and regulatory requirements impact the organization and stay on the right side of the law, and
- Proven business credentials - Independent verification against recognized standards enhance the brand value of the organization Environment-friendly initiatives in Indian Railways

In recent days the IR took action to control the environmental issues because of the future concern of the people. The actions taken include the following:

1. Railways Electrification

Now a days IR adopted electrification of the railway's route because of the development of transport in the context of the environment-friendly. Data

pertaining to electrification targets and of actual achievement of the IR are provided in below Table 1.

Table1

Growth of Electrification

Years	Route (Kms)		Running Track (Kms)		Total Track (Kms)	
	Electrified	Total	Electrified	Total	Electrified	Total
1950-51	388 (-)	53596 (-)	937 (-)	59.315 -	1293 (-)	77609 -
1960-61	748 (0.48)	56247 (0.04)	1752 (0.46)	63602 (0.06)	2259 (0.42)	83706 (0.07)
1970-71	3706 (0.79)	59790 (0.05)	7447 (7.65)	91669 (0.11)	9586 (0.76)	98546 (0.15)
1980-81	5345 (0.30)	612240 (0.90)	10474 (0.28)	75860 (0.05)	13348 (0.28)	104480 (0.05)
1990-91	9965 (0.46)	62367 (-8.81)	1895 (0.44)	78607 (0.03)	25305 (0.46)	108858 (0.04)
2000-01	14856 (0.32)	63028 (0.01)	27937 (0.32)	81865 (0.09)	36950 (0.31)	108706 (-0.001)
2010-11	19607 (0.24)	64460 (0.02)	36007 (0.22)	87114 (0.06)	49489 (0.25)	113993 (0.04)
2013-14	21614 (0.09)	65808 (0.02)	3661 (0.03)	89919 (0.03)	53509 (0.07)	16765 (0.02)
2014-15	22224 (0.02)	66030 (0.00)	43357 (0.05)	90803 (0.009)	55266 (0.03)	117996 (0.01)
2015-16	23555 (0.05)	66687 (0.009)	48239 (0.10)	92081 (0.01)	57738 (0.04)	119630 (0.01)
2016-17	25367 (0.07)	67368 (0.01)	5292 (0.08)	93902 (0.01)	62522 (0.07)	121407 (0.01)
2017-18	29376 (0.13)	68442 (0.01)	36007 (0.22)	94735 (0.008)	69297 (0.09)	123236 (0.01)
Percentage increase over the year	0.98	0.17	0.96	0.37	0.98	0.37

Source: www.irgreenari.co.in

The above Table depicts the trends of railway network electrification of the particular period. The data prove that in the year 1950-51 the route electrification of railway network it was 388 route km, running track 937 km and total track 1293 km of the total network in railway during this period. Further, it has continue to from 1960-61 to 2017-18. It's clear from above the route electrification ratio was found increasing trend up to 2017-18. Percentage increased over the year 1950-51 which was 0.98 to 0.37 respectively. It shows that railway gives a more priority to change of route electrification and government has given more preference to modernizing the IR in a globalized era.

2. Rolling Stock

Electric Traction energy consumed in the IR is about 15 billion units and the traction energy bill is nearly 11218 Crore in 2015-16 (BE). This forms about 22 per cent of total working expenditure of the IR. Even a small increase

in regeneration of energy can cause a substantial impact in the reduction of IR electricity consumption and thereby energy bill.

As a step towards green initiative in Electric locomotives, the IR had procured new generation three-phase high horsepower locomotives from M/s ASEA Brown Boveri (ABB)⁶, Switzerland in year 1995 with Transfer of Technology (ToT) agreement. These locomotives had an energy-efficient 'state-of-the-art' Geostationary Transfer Orbit (GTO) propulsion system equipped with a regenerative braking feature enabling regeneration up to 20 per cent electricity. This regenerated energy is fed back to the grid and consumed by other trains running in the section and resulting in a reduction in traction supply bill and thereby lead to substantial reductions in CO₂ emission.

3. Energy Conservation

Globally, the transport sector consumed 27.6 per cent of global energy use, where liquid fuels are the dominant source. Transportation alone accounts for more than 50 per cent of the world's consumption of liquid fuels, and this share is likely to grow to over 60 per cent by 2035. Within the transport sector energy consumption and therefore CO₂ emissions are dominated by road, followed by aviation and shipping. 2.2 per cent of this energy is consumed by the rail sector, which means that 0.6 per cent of the world's energy is consumed by railways. This energy usage is categorized for traction power (used to power trains) and for non-traction (used mainly in buildings). Further, Railways are considered to be safe, energy-efficient & low carbon mode of transport & has a pivotal role not just in the economic progress of any country but is being increasingly viewed as the key player in switching over to a low carbon and sustainable society by attracting passengers from other modes of transport, optimize electrification, incorporating technological innovations & building up capacity and resources.

4. Solar Energy

The IR, being a significant consumer of energy resources, it is important to identify cost-effective energy system options with least environmental impacts. Vision 2020 document of the IR states that a key target is to utilize at least 10 per cent of its energy requirement from renewable sources. Further, in the Rail Budget 2015-16, it has been announced that: "To reduce dependence on fossil fuels, it is intended to expand sourcing of Solar Power as part of the Solar Mission of Railways. Further, 1000 MW solar plants will be set up by the developers on Railway/private land and the rooftop of Railway buildings at their own cost with subsidy/viability gap funding support of Ministry of Non-Renewable Energy in next five years. This initiative of the Indian Railways

⁶ ABB (ASEA Brown Boveri) is a Swiss-Swedish Multinational Corporation Headquartered in Zurich, Switzerland, operating mainly in robotics, power, heavy electrical equipment, and automation technology areas.

would go a long way in contributing towards India's 100 GW solar targets under the National Solar Mission. For this purpose, Railways plan to use the rooftop space available on its buildings, platforms, workshops and spare land which does not have much commercial value otherwise. Recently, in a study conducted by the Council on Energy, Environment, and Water (CEEW), a conservative estimate indicates that this initiative of IR could reduce cumulative emission up to 45 Million tone Carbon Dioxide (CO₂)⁷.

5. Wind Energy

This green energy project of the IR assumes great importance in the wake of the growing concern of environmental pollution and global warming issues on the one hand and the depletion of fossil fuels on the other hand and also a shortage in energy demand and hence is in complete agreement to the "Go-Green" slogan propagated internationally.

IR first-ever Wind Mill Project of the capacity of 10.5 MW was commissioned at Tirunelveli District, Tamil Nadu for meeting the energy demand of Integral Coach Factory (ICF), Chennai. These wind turbines have generated about 100 million units so far. The project has also been registered with the United Nations frameworks Convention on Climate Change (UNFCCC) which will earn carbon credits of 20000 Certified Emission Reductions (CERs) per annum⁸.

Suggestions

Based on the above, following suggestions may be made:

1. Adopt towards a low Carbon Mass Transport System in railways

Sustainable low carbon transport provides economically viable infrastructure and operation that offers safe and secure access for both persons and goods whilst reducing short and long term negative impacts on the local and global environments.

2. Reducing Global Carbon footprints in Indian Railways

IR should be active in planning and taking measures towards a less carbon intensive system.

3. Training

IR should be given proper training to use employees and passenger about Energy efficiency in working place and railway coaches.

4. Government support

Government should be given more priority to Green Railway Transport in India to avoid global warming and increasing share of renewable energy in railways transport.

Conclusion

⁷ https://www.railsaver.gov.in/en_mgmt_comp.html.

⁸ Ibid



IR is the most energy efficient mode of transport and environmentally sustainable among all mode of other transport in the recent days. It has always considered as environmental management and friendly as part of the core operating strategy, in this concerned. Hence sustainable, environmental friendly nature can be achieved through the proper adoption of technology in IR is the urgent need in the future.

References

1. Bert van Wee (2010). "The Transport System and Transport Policy", Edward Elgar Publishing Limited.
2. David A. Hensher and Kenneth J. Button (ed.) (2007). "Handbook of Transport and the Environment", EJTIR, No. 1, pp. 63-66.
3. Globalization, Transport and the Environment by OECD. 12th January 2010, pp. 270 - 276. ISBN: 9789264072916 (PDF).
4. Jean-Paul Rodrigue (2010). "The Geography Transport System", Routledge Imprint of the Taylor & Francis Group.
5. Transport Environment and Health by World Health Organization Regional Office for Europe Copenhagen, ISBN 0378-2255.

Websites

1. www.google.co.in
2. www.indianrailways.co.in
3. www.swr.co.in
4. www.irgreenari.co.in



**RAZMNAMA
THE KING'S CRAFT AND THE BOOK OF WARS
ANALYZING THE TEXT WITH PAINTING OF 1598-99 RAZMNAMA
SET**

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Abstract

My paper evokes the cultural, religious and artistic traditions of the Miniature paintings dated 1598-99 especially of dispersed Razmnama set. I elaborated the political and social changes of that time in India with focus on how Mughals expanded their horizons from Persian to Sanskrit language. My research work established that the personal approach of the king in various perspectives made the great epic the Mahabharata as Razmnama by explaining one of the folios from the dispersed set.

An Indian painting, especially Mughal miniatures, are rich in sonority, seemingly simple but full of layers of meaning. From these miniatures one can see the medieval history of medieval India. The miniature painting in India became one of the most productive and richest schools. Portray life and lifestyle of Indian Emperors and Kings narrating the Heroic stories of Mughal Emperors and Rajput Kings were the basic subjects of the miniature artists.

Miniatures also became the mixture of cultural, religious and artistic tradition. These miniature paintings have big role in manipulating the socio-political scenario of medieval era. The cultural amalgamation of the Mughals and Hindus through these manuscripts became a way to maintain a power by Akbar. Under his patronage one can trace the emergence of a clear new style. Akbar expands his horizons of knowledge from Persian classic stories to Sanskrit text. Apart from this the working of the Atelier is the main area of interest how artist made a miniature as a group activity and how they became popular by their depiction of unique visuals and different approaches in the manuscripts. How the artist work with the religious text like Razmnama, the epic which is very close to the hearts of Hindus became a popular manuscript of his reign and because of the popularity and the brilliant work the set was copied

many times. Akbar was keen to expand the horizons of his own knowledge but also because he wanted to disseminate knowledge to his principal courtiers and subjects. It was also meant to serve a broader political purpose. Akbar's maintenance of power depended upon the success of his strategy to incorporate Hindu and other religious and political factions into the imperial bureaucracy, and to allow a degree of autonomy in various regions of the empire.

The Mahabharata is said to have been composed by Rishi Ved Vyasa who is better known for compiling the Chatur-Vedas. It is believed that God Ganesha had written Vyasa's tale of the Mahabharata which had been earlier passed on orally, from bard to bard, to a variety of audiences. It was also written by multiple authors over a period of 1,000 years. As we all know, the Mahabharata is a lengthy narrative poem which is constructed around the fight for inheritance of rights between the Pandvas and Kaurvas. It is the longest poem ever written, comprising more than 90,000 shlokas or verses. Over the centuries the Mahabharata has been retold countless times in temples, at family gatherings and at village fairs in various languages and in different forms by dancers, singers, painters and learned scholars. The epic also travelled to many countries like Nepal, Indonesia and Thailand and emerged with many regional layers on it. Mahabharata is arranged into 18 parvas. Each parva is composed of many chapters with several shlokas. These parvas have separate chapters within them, some of which can be treated individually like the Bhagvat Geeta in the Bhishma parva.

The painters in Akbar's atelier in the Taswikhana of Fatehpur Sikri were fully equipped to take on works of complex and challenging subjects. He planned a series of large manuscripts with numerous illustrations. It started from the production of multi volume Hamza nama. Painters also prepared number of Persian classics such as 'Duwal Rani Khizr Khan' and 'Sadi's Gulistan' and animal fables such as Anwar-e Suhayli and Tuti nama. AbulFazl's account of painting in the Ain-I Akbari begins as "drawing the likeness of anything is called tasvir." He also mentioned other manuscripts patron by Akbar is the 'Chingiz Nama', the 'Zafarnama', the 'Kalilawa Dimna', the 'Iyar-i Danish' and other books have been illustrated as he himself indicated the scene to be painted.¹ The emperor's top scribes and secretaries were given the task of translating a huge range of Sanskrit texts including the Rajatarangini (The History of the Kings of Kashmir) and the Ramayana into Persian.

Translation of Sanskrit text Mahabharata into the Persian Razmnama:

When we talk about the authenticity of the text after the translation, scholars believe that they rarely maintained a word-for-word, line-for-line discipline.

¹ Abu al- Fazl, Ain-I Akbari. Pp 113-115, as translated by C. Naim in Chandra

We can compare this with the text converted by the Mughals from Sanskrit to Persian.

As it already mentioned that in India Mahabharata has been retold many times and as per the theory of Indian translation this epic goes from many changes orally and visually. In the Mughal Atelier where Persian had established itself in India as the language of Muslim Elite as it was the official Language of the Akbar's court. Akbar was very fond of Mahabharata story and according to the text and depiction of Razmnama one can assume many changes in the depiction of various stories and also the selection of the particular incidents which is depicted in the Razmnama. The Mughals realized bringing the Mahabharata into Persian as a vastly political project.

Abul Fazl- a leading historian was commissioned by Akbar to record a detailed history of his reign where he mentioned that the Mahabharata is a compendium of the basic and minor belief of Brahmans. Akbar set up an interesting process. He invited Sanskrit scholars from different part of his empire and selected a handful of his courtiers including Naqib Khan, a theologian, Sheikh Sultan Thanesari, a philosopher, Mulla Sheri, the court poet and eminent historian Abdul Qadir Badauni to write Razmnama.² in Persian.

The first abundantly illustrated imperial manuscript of Razmnama, completed between 1584 and 1586 was initially made for Akbar, which is now housed in the City Palace Museum of Jaipur. But later due to its aesthetic quality copies were made and the royals (amirs) had orders to take copies of it, with the blessing and favor of God (according to the Mughal courtier 'Abd al-Qadir Bada'uni).

The first oldest known illustrated copy of the Razmnama was completed between 1598 and 1599 and since no other copies were made earlier than this, It is popular among scholars, for pages from this manuscript were dispersed and are now in many public and private collections in North America, Europe, and India. Some of them are at present kept in the Museum and Picture Gallery, Vadodara. The second copy of Razmnana which is now kept in the collection of Birla House has been written upon by Ashok Kumar Das. And the completion date of this set is 1605.

The third copy of Razmnama dated 1616-17 was a sub-imperial one, patronized by Abdur Rahim Khankhanan. The original set of Razmnana made under Akbar is better known as the Jaipur Razmnama and most of its 168 paintings are known only through the faded photographs published in the fourth volume of

²Asok Kumar Das, "Paintings of The Razmnama the book of war", Birla Academy of Art and Culture, Kolkata, Mapping Publishing Pvt. Ltd, 2005, p.9

the T.H Hendley's 'Memorials of Jeypore Exhibition' The set is divided into four large volumes³. Most of the paintings are the collaborative works of the leading masters like Daswant , Baswan, Lal, Mukund, Kesav and few more whose names are in Abul Fazl's list of leading masters of Akbar's tasvirkhana⁴. He provides the outline of how different tasks such as the tarahi or composition, the rangamezi i.e, colouring and amal i.e, fininshing were distributed among the artists according to their skill and rank.



*Yudhishter led to Hell,
Artist:Amal: Daswanth,
Madho? Maharaja Sawai
Man Singh II Museum,
Jaipur*

Stylistically almost every miniature has two names who have worked in collaboration with many compositions in a single folio. Artist beautifully managed each and every character where large number of the people crowd around the Principal characters. The depiction of the court room scenes, scenes of war, and sacrifices or reception rendered with the strong element of drama and attention paid to the landscape, complete with the realistically rendered birds, animals, trees, hillocks and water-bodies to create an appropriate atmosphere.

The noticeable feature in the manuscript is the presence of multiple compositions where a large crowd gathers around the principal characters. This

³Chaghatai,M. Abdullah, " *Bulletin of the Deccan College Research Institute*", 1943-44

⁴Asok Kumar Das, "Paintings of The Razmnama the book of war", Birla Academy of Art and Culture, Kolkata, Maping Publishing Pvt. Ltd, 2005



especially one can find in the court scenes, scenes of war and sacrifices or receptions that are rendered with a strong element of drama.

Within a decade the tasvirkhana of Akbar produced another illustrated copy Razmnama manuscripts. Scholars call it as the 1598-99 copy of Razmnama. This is the second one made after the first original illustrated copy of the Razmnama, which was made for the personal use of Akbar. Compared to the earlier, imperial copy, “the 161 known paintings from the 1598- 1599 Razmnama appear to be more abbreviated and hastily executed. For this reason, scholars have long attributed the manuscript to a sub-imperial patron”⁵. 1598-99 Razmnama have their own aesthetic qualities .Many artist worked first time on this manuscript, some were brilliant in handling the whole compositions. The change in the quality of manuscript with the patrons becomes the value of these manuscripts now. The manuscripts dispersed in the museums by the dealers from where the work of an art historian starts.

Stylistically these Paintings bear short descriptive labels and name of the artist. The compositional format is different from that of the imperial one and there is no indication of opulence in the selection of paper, pigment or painters. As the folios are much smaller the paper is very thin and the color has been applied in thin layers with a preliminary nimqalam. The colour palette maintains a monochromatic structure with beautiful rendering of trees and flowers.

Analysing 1598-99 Razmnama folio from the Baroda Museum and the Picture Gallery, Vadodara.

The Museum was founded by Maharaja Sayaji Rao III Gaekwad. The foundation stone of the museum was laid in 1887 after that the museum reached its glorious phase with the passage of time. The collection of the museum was the personal collection of the King and other artifacts were collected from many countries and various places of India from the various exhibitions’ with full identification from the various scholars and connoisseurs.

There is very rich collection of Indian and European paintings, Razmnama is one of them according to great scholar O.C Ganguly I translated 12 of the paintings from Persian to English though the text is not very much readable and ink is scattered in some of the places one can assume some of the events if we are known to the story of the text. Many of the artists worked in the imperial workshop even some of them having name on the Imperial Jaipur

⁵Asok Kumar Das, “Paintings of The Razmnama the book of war”, Birla Academy of Art and Culture, Kolkata, Mapping Publishing Pvt. Ltd, 2005

Razmnama which is in controvertible evidence that the manuscript was produced within the imperial atelier.

In one of the folio titled “Indra speaks to Parrot”, the parrot sitting on the dead tree identifies Indra and bestows upon him with great honor. The parrot says that it was a God fearing entity and is devoted to him. Out of curiosity, Indra asks the parrot that given the abundance of lush trees in the forest why the parrot has chosen the dried tree as its habitat. To which the parrot replies that the dried tree is in the destiny which God has chosen for it. It further ads that it is beyond its power to fly away and defy the will of the almighty. The parrot also states that since she was born and spent all of its life on the same tree, out of its gratitude it is unable to leave its home now that it is in a ramshackle. Indra is highly impressed by the parrot’s faithfulness towards the tree and wishes the tree to become lush and flowery again.



Title: *Indra speaks to the
Parrot,*

Artist: *Haji, Acc. No.*

P.G.5C.198/4

*Baroda Museum and Picture
Gallery, Gujarat*

The Artist exhibits great dexterity in the division of space. The foreground comprises of fountain which is giving the live effect of the water is suggesting that scene is taking place in a garden rather than the wilderness. The artist has laid emphasis on the delineation of vegetation in the middle ground and the trees of Cyprus, maple and cherry blossom are done in utmost detail in a typical Mughal fashion. The upper most part of the folio comprises of the diminishing background consisting of hills and far away trees. Artist made one more folio of this set which is the British museum where he depicts the



beautiful deer s and peacock which shows that he is very creative in making plants birds and animals. His pallet is dark then other artists as we can see in the painting he used dark green and blues with red and brown and his efforts to make the narrative is somehow successful as Indra's hand gestures are in the conversing position as he is talking with the parrot who sits on the dry tree.

Akbar's affection for the morals of the Mahabharata identifies from the explanation of this folio and to distribute these moral values among people Akbar order copies of imperial Razmnama set.

As Badayuni mentioned in his book Muntakhab al-Tavarikh, the nobles were procuring copies of the illustrated imperial manuscript of the Razmnama. These copies afforded an unusual opportunity to have the influence of the imperial copy. Every set of Razmnama have their unique qualities and individualities to depict various scene of the story

The basic concern is all about the political advice and kingship, political importance of the Mahabharata by placing the work in the history which some way associated with the imperial objectives of the Persian tradition. These manuscripts were having a great role in the history of Mughals in India.

References:

1. Asok Kumar Das, "Paintings of The Razmnama the book of war", Birla Academy of Art and Culture, Kolkata, Mapping Publishing Pvt. Ltd, 2005
2. Abu al- Fazl, Ain-I Akbari. Pp 113-115, as translated by C. Naim in Chandra
3. Chaghatai,M. Abdullah, "Bulletin of the Deccan College Research Institute", 1943-44

f"kkk eafunŝku dh Hædk

Mukund Prasad Singh

Rajendra Collegiate School

Chapra

Abstract

thou l eL; k xlr gA l ek/kku grq funŝku vko"; d gA ; g euq; dks okLrfodr k ds fudV ykrk gS vkŝ l e; ij fu.kz yusea 0; fDr dh enn djrk gS "funŝku ea nks fopkj/kjk; dke djrh gS l dhzk er funŝku dks fof"kv l ok ekurk gS tcd mnkjeYk ds vuq kj funŝku Hkkoh thou dh rŝ kjh gA ; g 0; fDr dh 0; fDrxr fofHkUrkvla l eL; kvla ds vfrfjDr l kelftd l eL; kvla dk l ek/kku iLr djrk gA funŝku 0; fDrxr ij /; ku nrk gS l kfk&gh&l kfk fo'k; ka ds puko ea vko"; d l qko nrk gA funŝku Nk=ka ds l e; vkŝ "kDr ds gkus okys vi 0; ; dks jkdrk gA funŝku thfodkvla l s ifjp; ea ; ksnku nrk gS rFkk f"kkk ds Lo: i dks Li'V djrk gA bl idkj dgk tk l drk gS fd funŝku dk Nk= ds thou ea ije egYkk gS d; kAd ; g Nk= l s l æd/kr l eLr l eL; kvla dk l ek/kku iLr djrk gA

thou l eL; kvla dh , d yEch ÜkEkyk gA ; g ckr l R; gS fd pks l eL; k; a 0; fDrxr ikfjokfjd l kelftd dŝ h Hkh D; ka u gŝ l eL; kvla dh Hksh ea ba ku l nk tyrk jgrk gS bu l eL; kvla l s futkr ikus ds fy, euq; l nb iz Ru"thy jgrk gA cgr gn rd l eL; kvla dk gy fudky ikrk gS i jarq dHkh&dHkh vl Qy Hkh jgrk gA og l eL; kvla l s l ekt; kstu djus dk Hkh iz kl djrk gA i jarq os ba ku tks l ek; kstu"thy ugha gkrs ml ds fy, l eL; k; a ijs'kkuh dk dkj.k cu tkrh gA Qyr%euq; rFkk l ekt nksuka dh fLFkr d'Vin gk tkrh gA , d h fLFkr dk l keuk djus ds fy, 0; fDr rFkk l ekt nksuka dks l ygd kj dh vko"; drk gksh gS tks ba ku dks l eL; kvla ds l ek/kku ea l gk; rk dj l dŝ mudk exn"ku dj l dA exh"ku dh ; gh fD; k funŝku gA funŝku 0; fDr dks vius xqkka rFkk voxqkka dks l e>us vkŝ rneud kj l ek; kstu LFkkr djusea enn djrk gA xqkka dk rRi; l 0; fDr dh ; k; rkva rFkk miyC/k l k/kula l s gS vkŝ voxqkka dk vFZ mudh nçyrvkva rFkk ck/kvka l s gA bl idkj funŝku , d , d h ifjLFkr mRiUu djrk tks ba ku dks okLrfodr k ds djhc ykrk gA ; g ek= xqkka rFkk voxqkka l s ifjp; ugha djrk gS cfYd Hkkoh thou dh : i jŝkk Hkh rŝ kj djusea enn djrk gA funŝku 0; fDr dks l eL; kstu"thy cukrk gA funŝku dk vFZ gS & iFk in"ku djuka l ogk nsk ; k l ær djuka ; g , d 0; fDrxr dk; l gŝ tks fdl h 0; fDr dks mudh l eL; kvla ds l ek/kku ds fy, fn; k tkrk gA ; g , d i fD; k gS ftl ea vuqkoh 0; fDr] vuqkoghu ik.kh dks funŝ"kr djrk gS fdl h 0; fDr dh : fp] ; k; rk o {kerk dks /; ku ea j[krs gq iFk & inŝku djuk gh funŝku dgykrk gA ; g fujl rj pyus okyh i fD; k gS ftl dk mŝ; l e; & l e; ij fu.kz yusea 0; fDr dh l gk; rk djuk gA

l jy "kEnka ea dgk tk l drk gS, d fo"kskK }kjk , d 0; fDr ds 0; fDrRo ds fodkl rFkk thou ea mfr fn"kk ikr djusea l gk; rk inku djuk gA bl ea 0; fDr dks Lo; a fu.kz yusea ds dkfcy cuk; k tkrk gA bl l æk nks fopkj /kjk; i pfyr gA

funŝku ds l æh.kz er ds vuq kj bl s , d idkj dh fof"kv l ok ekurk x; k gS ftl dk mŝ; mu egroi wZ idfr dh l eL; kvla dk l ek/kku djusea 0; fDr dh l gk; rk djuk gS ftudk l keuk mlga thou dky eadruk iMrk gA bl l æYiuk ds vlrxh l eL; k rFk fodYi fo'k; ka i j fof"kv funŝku dk; }kjk }kjk l gk; rk inku dh tkrh gA og Nk=ka dks mudh "kŝ[kd] 0; ol kf; d] 0; fDrxr rFkk l ekt l eL; kvla ds l ek/kku ea budk l g; kx djrk gA

mnkj er ds vuq kj funŝku dks , d cPps dks inku dh tkus okyh fdl h Hkh idkj dh l gk; rk ekurk tk l drk gS tks ml ds l okæ "kŝ[kd] 0; ol kf; d] 0; fDrxr] l kelftd] uŝrd "kjhfd fodkl ea l gk; rk inku djrk gA bl ea ekrk&fi rk v/; ki d] Ldny] i jke"khkr okLrfod

funʃkudYkz cu tkrs gA “Mayer Georye E dk dguk gʃ funʃku 0; fDr dh l eL; kvla dk l ek/kku <kus eal gk; rk djuk gʃ%¹ bl idkj funʃku ekxZfn[kkuk gA Husband dk ekuuk gʃ fd “guidance may be defin d as assisting individiul to prepare for his future life to fit for his place in society”² bl idkj dgk tk l drk gʃ fd funʃku 0; fDr dks Lo; a l kpus fopkj djuʃ fu.kz djus l eL; vka dks l e>uʃ fparu djuʃ l ek/kku l kpus ds fy, iʃjr djus okyh iʃ0; k gA Jones dk ekuuk gʃ fd funʃku ,d idkj dh 0; fDrxr l gk; rk gʃ tks thou ds yʃ; ka dks fu/kkZjr djus ea thou ej vuphyu LFkkfir djus ea vʃ yʃ; ka dh ikfir ej ml ds l keus vkuokyh l eL; kvla dks l y>kusea ,d 0; fDr }kjk ml js 0; fDr dks nh tkrh gA³

Skinner dk dguk gʃ guidance is a process of helping young person learn to adjust to self, to other and to Circumstances ⁴

bl idkj mijkDr ckrka ds vk/kkj ij ge dg l drs gʃ fd funʃku 0; fDr dks Hkkoh thou ds fy, rʃkj djus ea l gk; rk inku djuk gA funʃku }kjk 0; fDr viuh cf)] {kerk] ; kx; rk rFkk vFkk: fp; ka ds fo'k; ea tkudkj ih ikr dj thou dh iR; d l Fkfr ea tks fd 0; fDrxr rFkk l kelftd l eL; kvla l s l aʃ/kr gksh gʃ vius dks l ek; kʃtr djus dk iz Ru djrk gA bl idkj funʃku }kjk 0; fDr dks thou ds iR; d {k= ea foHkklu ifjLFkfr; ka ds vuq kj mYk jnkf; Ro dks fuHkkus; kx; cukuseal gk; rk nh tkrh gA

vk/kqud fʃk{k ea 0; fDrxr foHkkjurk ds vuq kj fʃk{k nus ds fl) kar dks foʃsk egRo fn; k tkrk gA 0; fDrxr foHkkjurk rFkk foʃkʃV ckydka ds v; ; u djus ds mijkar ; g Hkyh&Hkkar LiʃV gks tkrk gʃ fd l Hkh ckydks adks ,d idkj dh fʃk{k ugha nh tk l drh gʃ vʃ u gh ,d l eku ifjLFkfr ea j[kdj mudks dñ fl [kk; k tk l drk gA 0; fDrxr foHkkjurk ds fl) kar dk mi ; kx fʃk{k ea rHkh gks l drk gʃ tc foHkklu idkj ds ckydka dh l eL; kvla dks l e>dj] mlga mfpur eukokkfud funʃk inku fd; k tk, A

fo|ky; ka ea muds l ekus ; g l eL; k foʃsk : i l s mRi u gks tkrh gʃ os fdu foʃk; ka dk puko dja ik; % os fcuk fdl h mfpur l ykg ds ikB; foʃk; ka dk puko dj yrs gʃ tks mudh {kerk] ; kx; rk] : fp ds vuphy ugha gksh iR; d ckyd dh : fp] idfr] {kerk ; kx; rk fHkklu&fHkklu gksh gA ; fn dkbZkyd Engineer or Doctor cuuk pkrk gʃ rks vko”; d fd mueabu foʃk; ka l s l aʃ/kr ikB; foʃk; ka dk v; ; u djus rFkk l Qyrk ikr djus dh {kerk vʃ ; kx; rk Hkh gka mnkgj.k Lo: i vkt fo|ky; ka ea Nk= /kMys l s foKku foʃk; dks yrs gʃ vʃ ckj&ckj i jh{k ea vl Qy gks tkrk gA vl Qyrk ds ckn os ml js foʃk; dh vʃ vkdfr- gkus yxrA ,d foʃk; dks Nk&dj ml js foʃk; dh vʃ Hkkus yxrs gA bl idkj muds l e; vʃ “kDr nksuka dk vi 0; ; gkrk gA mlga fʃk{k ikr djus rFkk 0; ol k; dk puko ikr djus ea dfBukb; ka dk l keuk djuk iMrk gA os ; g l e>us ea vl FkZ jgrs gʃ fd muds fy, dks l k foʃk; mfpur gʃ vʃ os fdl 0; ol k; ds ; kx; gA vkt vf/kdkrk Nk=ka ds l keus “k{k d] 0; ol kf; d vʃ 0; fDrxr l eL; k; i cjkcj cuh jgrh gʃ ftlga os Lo; afunku ugha dj ikr gA ,d h LFkfr ea ; g vko”; d gks tkrk gʃ fd i jh{k l s gh mudh ; kx; rk dk eki dj mlga vko”; d funʃku inku fd; k tk, A funʃku dk ; g Lo: i “k{k d funʃku dgykrk gA bl ea fʃk{k d foʃsk funʃku (Instruction) i jh{k.k (Testing) ds l gks mlga eity rd igpus ea enn djrs gA j0j dk ekuuk gʃ fd ~k{k d funʃku og gʃ tgl Ldwy ds dk; ka ea funʃk] i jke”kZ ds ek; e l s jk; nus rFkk l gk; rk igpus i j cy fn; k tkrk gA⁵ bl idkj LiʃV gʃ fd “k{k d funʃku ea Nk=ka dks eyr% “k{k d dk; k l s l aʃ/kr l eL; kvla dks l ek/kku djus ea enn igpus ds ml s; l s l gk; rk igpkr tkrh gA “k{k d funʃku ds ifj.kke Lo: i Nk= viuh ekuf d “kDr] vFkk; kx; rk (Aptitude) ds vuq kj foʃk; ka ; k ikB; Øeka dk p; u dj yrs gA Ruth Strange dk ekuuk gʃ fd ~k{k d funʃku dk ml s; ,d ml ; Ør okroj.k dk p; u djus rFkk muea i xfr djus ea 0; fDr dh l gk; rk djrk gA⁶

Carter V. Good ds vuq kj "kskd funzku dk l mdk 0; kol kf; dj l keptd ; k 0; fDrxr ekeyka ds ctk; ed; r%Ldnyka dkd k iKB; Øeka rFkk Ldny l s l mdk/kr ekeyka l s gkrk gA" bl idkj dgk tk l drk gsf d "kskd ekxh"ku dk l mdk , d 0; fDr jkj Lo; a dks l ekt ds fy, mi; ksxh cukus dh nfV l s vius "kskd fodkl ds fy, vko"; d l gk; rk l s gA ; g ifØ; k Nk=ka dks mu dkj dks dks nj; djus ea l gk; rk inku djus dh g s tks mudh ixfr ea ck/kk igpkrk gA ; g f"kk ds fofHkUu Lrjka dks ikj djus i "pkr-ubz l fFkvka ea i os'k ds le; vkus okyh l eL; kvka dks Hkh nj; djrh gA ; g f"kk ds fofHkUu Lrjka ij fo'k; ka dsp; u ea l gk; rk inku djrh gA

"kskd funzku dh vko"; drk bl fy, vls T; knk c++ tkrh gSD; kfd iR; d 0; fDr dh cks) d ; kx; rk] : fp] vfHkij.kk ds Lrj ea varj gkrk gA vr%bl ea 0; fDrxr fofHkUurk dk /; ku j[kdj funzku fn; k tkrk g s rkd Nk= viuh vkus okyh ck/kvka dks vkl kuh l s ikj dj l ds rFkk Hkfo'; dh l gh ; kstuk cuk l dA bl dk l mdk ekuo thou ds iR; d i f l s gA orzku f"kk izkkyh 0; fDr rFkk l ekt dh vko"; drkva ds vuq i ugha gA nksimz f"kk izkkyh ds dkj.k Nk=ka dk vi 0; ; rFkk vijzku gkrk gA bl dks nj; djus dk , d ek= egroiwk "kskd l k/ku "kskd funzku gA Hamerin and Ericson :- Education guidance provides a technique of knowing the abilities, interests background and needs of individual people"⁸

"kskd funzku jkj Nk=ka dks iKB; Øe rFkk f"kk l mdkh fofHkUu fØ; kvka ds fy, l ek; rk nh tkrh gA f"kk jkj 0; fDr dk fodkl fd; k tk l drk gA f"kk dk dk; Z 0; fDr dk "kkhfjd ekuf d rFkk pkj f=d xqkka dk fodkl djds l ekt ds mi; ksxh l nL; cukukA vko"; dr bl ckr dh g s bl dk l gh funzku fn; k tk, l keptd fodkl ds bl Øe ea l gk; rk nusuk f"kk funzku dk gh dk; Z gA bl idkj dgk tk l drk g s f"kk funzku fo | kffz; ka ds thou ea l h[kus ds Øe ea l gk; rk nus dh ifØ; k gA

iR; d 0; fDr ea i f rHk, j gsrh gA dN 0; fDr; ka ea dpy , d i f rHk g s l drh g s dN 0; fDr; ka ea dbz i f rHk, j g s l drh gA i f rHkva dks ydj 0; fDr tle k g s vxj blga l gh < a l s funz'kr ugha fd; k tk, rks g s l drk g s og fufØ; g s tk,] d f r g s tk; A bl ds fy, iR; d 0; fDr dk oKlfud rFkk 0; fDrxr v; ; u djuk vko"; d gA funzku dh ifØ; k fcydy , d k gh djrh gA funzku 0; fDrxr fofHkUurkva ds vk/kj ij l fko iLr; djrk gA vk/kqud ; q ea f"kk(kffz; ka dh 0; fDrxr fofHkUurk igys l s c< x; h gA , d Nk= dh vfHk; fp] vko"; drk] {kerk nL js Nk= dh vfHk; fp] vko"; drk] dkOh fHkUu g s x; h gA bl rjg dh 0; fDrxr fofHkUurkva ds dkj.k Nk=ka dks "kskd funzku fn; k tkuk vfr vko"; d g s x; k gA bl ds vHko ea Nk= , d nL js dh udy dj l EHkor% , d gh jkg ij pyus dh dks" k djxat l s muds Hkfo'; ea vl Qyrk gkFk yx l drh gA vr% "kskd funzku ndj iR; d Nk= dks viuh vko"; drk {kerk , oa vfHk; fp ds vuqj vyx&vyx iFk ij j[kdj l Qyrk dh vls yk; k tk l drk gA

vk/kqud f"kk jkst xkj k d fHk , oa 0; ogkfjd vf/kd g s x; h g s vkt dy Ldny vls dNyst ea Hkh mu fo'k; ka ij vf/kd cy fn; k tk jgk g s ft l ea Nk= dks dkbz mi; Ør jkst xkj /kdk i jEHk djusea vf/kd l g; kx fey l dA ; gh dkj.k g s fd Ldnyka ea okf.kT; (Commerce) yfyrdyk (Fine Arts), Home Science t s fo'k; ka dh i < kbz i jEHk dh x; h gA ckydks dks funzku ndj bu iKB; Øeka ea budh vfHk; fp , oa : > ku ds vuqj mfr iKB; Øeka dks pius ea l gk; rk nh tk l drh gA

tfodkvka , oa vol jka l s ifjp; djkus ea funzku dh ije egrk gA fo | ky; ka ea vDl j n f k tkrk g s fd Nk=ka dks ; g irk ugha gkrk fd dks l k fo'k; ; k iKB; Øe yus l s mlga vxks pydj fdl 0; ol k; ea enn feyxa mlga ; g Hkh irk ugha gkrk fd fdl fo'k; dks i < us l s mlga jkst xkj ds vol j vxks pydj vf/kd feyxa rFkk fdl fo'k; dks i < us l s mlga





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PREVALENCE OF EATING DISORDERS AMONG COLLEGE GOING GIRLS -A STUDY IN BHUBANESWAR CITY, ODISHA

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Abstract

Background: Consuming food in an unbalanced manner in relation to the emotional status is denoted as eating disorder. Increasing rate of overweight and obesity has reached epidemic proportions in developed countries and is rapidly increasing in many middle-income and less-developed countries. The research aims to study the socioeconomic status of the respondents, nutritional anthropometry of college going girls and the association of BMI with eating disorders.

Material and Method: The study was conducted in Bhubaneswar of Odisha. 350 college going girls aged between 18-25 years, were selected from different colleges of Bhubaneswar by purposive sampling method. Descriptive research design was chosen for this study.

Results: Young girls are more conscious about their body shape in comparison to other age groups. Results of the present study revealed prevalence of eating disorder among majority(71.14%) of the respondents irrespective of age and socio-economic class. More percentage of eating disorder was observed in the age group of 16-18 year girls especially among graduation students and also among respondents belonged to upper and upper middle class families. Abnormal eating disorder was found to be more among all category BMI respondents in comparison to normal eating habits. Statistically it was observed that there was no significant association between age ($p < 0.76$), BMI ($p < 0.49$) and Socio economic class ($p < 0.14$) of the respondents with prevalence of eating disorder. However, prevalence of eating disorder was found more among Obese-I category i.e. 80% out of total obese respondents in comparison to other BMI groups.

Conclusion: As today's young girls are tomorrows mothers, it is necessary to promote healthy eating habits among college going girls through nutrition education to save them from ill effects of eating disorder and to keep them fit for their future life.

Key Words: Eating disorder, College going girls, BMI, Obese, Pre obese

Introduction:

Disordered eating attitudes prevail mostly in the young mass of the present days. Individual pattern of leading lifestyle and increasing rates of overweight & obesity have become a global phenomenon. The major reason behind eating disorder is the unhealthy eating patterns in day to day life.

Eating disorders (EDs) are a group of mental illnesses characterized by abnormal eating habits from a clinical point of view. Eating Disorders are an important cause of morbidity and mortality in adolescent girls and young adult women due to the severe changes in their eating behaviours. (Saleh et.al., 2018).

Consuming food in an unbalanced manner in relation to the emotional status is likely denoted as eating disorder. The influence of such eating habits may be in many of the cases stated due to certain impact of environment. So further it may not be taken as a serious problem instead it may be treated purely as a behavioural problem dealing with daily diet. Disordered in eating attitudes are mostly found in females.

Objective of the Study

1. To study the socioeconomic status of the respondents.
2. To assess the nutritional status of college going girls
3. To find the relation between the BMI in relation with eating disorder.

Methodology:

The proposed study was conducted in Bhubaneswar, the capital city of the state of Odisha. Bhubaneswar is located in Khordha district of Odisha. The respondents from whom the necessary data was collected were the college going girls of different colleges of BBSR ranging in the age group of 16 -24 years of age. Around 350 college going girls were taken as respondents by purposive sampling method from the capital city of the state Odisha. A descriptive research design was adopted for carrying out the present study.

Measures

Demographics: Participants reported their ages and responded to general and socio-economic information on respondent's age, sex, religion, caste, educational status, family size, parental occupation, income, health and nutritional status.

Disordered eating attitudes: The Eating Attitudes Test -26 (EAT-26) is a validated screening tool for attitudes associated with anorexia and bulimia. The eat-26 assesses concern with shape and weight, fear of fatness, perception of societal pressure to be thin, and bingeing, compensatory and restricting behaviors. The EAT-26 uses a 1-6 Likert scale- type response scale and is scored by recording responses such that scores of 1, 2, or 3 = 0 and 4 = 1, 5= 2, and 6= 3. The resulting scores are summed. A score of 20 or higher is considered potentially indicative of disordered eating attitudes and behavior (Garner et al.,1982).

Anthropometric Parameters: The measurements were obtained from the study subjects. Weight was measured to the nearest 100 gms, in light clothing, using a standard weighing machine after correcting the zero error. Height was measured using a stadiometer to the nearest 0.5 cm with the person standing upright with heels together, and the head held in upright position.

Body mass index (BMI): It was calculated using the formula BMI= Weight in (Kgs)/ Height in (metre).The subjects were classified as underweight (<18.5), normal (18.5-24.9), pre-obese/overweight (25-29.9), obese (≥ 30). The WHO classification of BMI was used. (Kelishadi et al.,2007)

The data were analysed using the Statistical Package for Social Science software (SPSS, Version 25). Description statistics are presented as mean and standard deviation. Chi-square test was used to find the significance between parameters BMI & Eating Disorder. The level of significance was set at $P < 0.05$.

Results& Discussion

1.Socio-Economic profile

Table: 1- Distribution of respondents according to Socio-economic profile:

GENERAL INFORMATION	FREQUENCY	PERCENTAGE (%)
AGE		
16-18	107	30.571
19-21	196	56.00
22-24	47	13.428
EDUCATION		
+2	19	5.428
Graduation	223	63.714
Post-Graduation	108	30.857
RELIGION		
Hindu	341	97.428
Muslim	3	0.857
Christian	6	1.714
NATIVE PLACE		
Urban	208	59.428
Rural	142	40.571
TYPES OF FAMILY		
Joint	137	39.142
Nuclear	213	60.857

CLASS OF FAMILY		
Upper	16	4.571
Upper Middle	122	34.857
Lower Middle	134	38.285
Upper Lower	78	22.285
CATEGORY		
General	182	52.00
OBC	108	30.857
SC &ST	60	17.142

Table 1: Illustrates the sample characteristics. Majority of the respondents belonged to the age group of 19-21 years i.e.56%. Most (63.714%) of them were educated up to graduation. Nuclear family system was found to be prevalent among the respondents. Majority of them belonged to lower-middle class family i.e. 38.28%. Goel et.al., (2013) also found in their studies that 42.50% of respondents belonged to the age group of 18 years and most of them were from nuclear family. Maximum (63%) subjects had monthly family income in the range of Rs. 25,000-50,000. Similar findings were also observed by Mishra et.al.(2013).

2. Anthropometric Measurement:

Table:2-Distribution of respondents according to BMI:

Weight Status	Frequency	%	Mean	STDV	MIN	MAX
Under Weight (< 18.5)	71	20.28	17.079	±1.053	13.803	18.441
Normal (18.5-24.9)	202	57.71	21.528	±1.716	18.513	24.993
Pre-Obese (25-29.9)	57	16.28	26.797	±1.236	25	29.708
Obesity (Grade-I) (30-34.9)	20	5.714	32.246	±2.840	30.003	38.319
Total	350	100				

Table 2: Illustrates an estimation of nutritional status according to body mass index. Based on BMI, it shows that most respondents belonged to the normal health status i.e. 57.71% whereas 16.28% were pre-obese & only 5.714 % were obese. Syed et.al., (2017) also found in their study majority (55%) subjects belonged to normal health status with a minimum of 7% falling under the category of obesity. Mishra et.al., (2013) found in their study majority respondents (62%) had normal BMI whereas 24% and 4% were under obese –I and obese-II category respectively.

Table: 3 Distribution of samples with regard to BMI in relation with eating disorders

BMI RANGE	EAT-26 Scores		Total
	Normal < 20	Abnormal ≥ 20	
Under Weight (< 18.5)	23 (32.394%)	48 (67.605%)	71
Normal (18.5-24.9)	61 (30.198%)	141 (69.801%)	202
Pre-Obese (25-29.9)	13 (22.807%)	44 (77.192%)	57
Obesity (Grade-I) (30-34.9)	4 (20%)	16 (80%)	20
Total	101(28.86%)	249(71.14%)	350

$X^2 = 2.39$, $df=3$, $P=0.49$ Not significant

Table 3 revealed the association between BMI and Eating disorder. It was observed that 71.14% respondents were suffering from eating disorder. Prevalence of abnormal eating habit was found to be more among all category BMI respondents in comparison to normal eating habit. It was observed that 80% obese respondents were suffering from eating disorder followed by 77.19% pre obese, 69.80% normal and 67.60% underweight respondents out of each individual BMI category respondents. The result shows that there was no statistically significant association ($p < 0.49$) between BMI and Eating Disorder of the respondents. Thus, it can be concluded that eating disorder affects not only obese respondents but also respondents of all category. In contrast Saleh et.al., (2018) found in their study a significant and positive correlation between BMI and EAT-26 (Spearman correlation $r=0.173$, $p=0.011$) suggestive of higher risk of ED among females with a higher BMI value.

4. Age and Eating Disorder of respondents

Table: 5 Distribution of respondents according to Age and Eating Disorder:

Age	EAT-26 Scores		Total
	Normal < 20	Abnormal ≥ 20	
16-18	28 (26.168%)	79 (73.831%)	107
19-21	59 (30.10%)	137 (69.897%)	196
22-24	14 (29.787 %)	33 (70.212 %)	47
Total	101 (28.86%)	249 (71.14%)	350

$X^2 = 0.54$, $df=2$, $P=0.76$ Not significant

From Table 4it was observed that majority respondents belong to age group of 16-18 years were suffering from eating disorder followed by the girls belonged

to the age group of 22-24 and 19-21 years respectively. It was also interesting to note that there was not much difference in prevalence of eating disorders in different age groups. Thus, it can be concluded the age has no role in the prevalence of eating disorder. Statistically it was also observed that there was no significant relation between the age group of the respondents with prevalence of the eating disorder ($p > 0.05$).

5. Socio Economic class and Eating Disorder

Table 5: Distribution of respondents according to Socioeconomic class with eating disorder

Socio Economic Class	EAT-26 Scores		Total
	Normal < 20	Abnormal ≥ 20	
Upper	2 (12.5%)	14 (87.5%)	16
Upper Middle	29 (23.77%)	93 (76.22%)	122
Lower Middle	44 (32.83%)	90 (67.14%)	134
Upper Lower	26 (33.33)	52 (66.66%)	78
Total	101 (28.85%)	249 (71.14%)	350

$X^2 = 5.41$, $df=6$, $P=0.14$ Not significant

Table 5 Illustrates the socio-economic status in relation to the EAT-26 where it is observed that most of the subjects i.e. 87.5% and 76.22% belonging to upper and upper middle-class family background were into the risk category of eating abnormalities. Even in Lower middle and Upper lower income classes the prevalence of eating disorder was found among 67.14% and 66.66 % respondents. Thus it can be concluded that the socioeconomic class has no role in the prevalence of eating disorder on the present generation. Statistically it was also observed that there was no significant association between the socioeconomic class of the respondents with prevalence of the eating disorder ($p > 0.05$).

Conclusion:

Now the world is facing dual burden of malnutrition where key role of the mothers cannot be overlooked. Today's young girls are tomorrow's mothers. Healthy eating habits play an important role in maintaining future health of young generation. But due to impact of modernisation, beauty idols and mind set up for slim figure the young girls are more concerned about their health, body shape and size. So various types of eating disorders are seen mostly among young college-going girls. The present study highlights prevalence of eating disorders among young girls in relation to BMI, age and socioeconomic class. The results of the study revealed that majority of the girls had normal

BMI whereas only 5.7% girls were suffering from obesity. Prevalence eating disorder was found among 71.14% respondents irrespective of age, socio economic class and BMI. Thus, focus should be given on educating younger mass for development of healthy eating habits for maintaining optimal weight. As problem of eating disorder is growing at an alarming rate all over the world, thinking critically for its solution is the call of the hour. Thus compulsory nutrition education at school and college level with counselling to develop healthy eating habits is the only way to reduce prevalence of eating disorder among the younger generation.

Reference

1. Ayesha Syed, Zia ud Din, Falak Zeb, Fazia Ghaffar, Saleem Khan, Mudassir Iqbal and Bilal Ali Khan (2017). Eating Attitudes Related to the Nutritional Status of University Girls in Peshawar Khyber Pakhtunkhwa, Pakistan. *Journal of Clinical Nutrition & Dietetics*, Vol. 3 No. 1: 8.
2. Garner, D.M., Olmstead, M.P., Bohr, Y., & Garfinkel, P.E. (1982). The Eating Attitudes Test: Psychometric features and clinical correlates. *Psychological Medicine*, 12, 871-878.
3. Goel S., Kaur T. and Gupta M. (2013)) 'Increasing Proclivity for Junk Food among Overweight Adolescent Girls in District Kurukshetra, India ', *International Research Journal of Biological Sciences*, Vol. 2(3), pp. 80-84.
4. Kelishadi R, Ardalan G, Gheiratmand R, Gouya MM, Razaghi EM, Delavari A, (2007). Association of physical activity and dietary behaviours in relation to the body mass index in a national sample of Iranian children and adolescents: CASPIAN Study. *Bull World Health Organ*;85(1):19-26.
5. Mishra Minati, LenkaChandrashree, Dwari Gita (2013) Health Status of College Going Girls and Fast Food .*Journal of Extension Education*, Vol.XVIII,No-2:149-154.
6. Pradeep singhChahar (2015) 'Survey of eating disorder in relation to waist to hip ratio and waist to height ratio among school going children', *International Journal of Science and research*, volume 4 (issue 6), 2095-98.
7. Saleh RN, Salameh RA, Yhya HH, and SweilehWM (2018). Disorder eating attitudes in female students of An-Najah National University: a cross-sectional study. *Journal of Eating Disorder*, 6:16.



A BRIEF HISTORY OF AFFILIATED COLLEGE TEACHERS ASSOCIATION ANDHRA PRADESH

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ACTA HAS A PROUD HISTORY OF OVER SIXTY YEARS. It is a pioneer in the College Teachers' Movement in Andhra Pradesh as well as in the country. It is a founder member of AIFUCTO which was formed in 1962, and has contributes to the growth of College Teachers' Movement in the country. it has played a leading role in the revolution of the state and the national educational policies, specially at the Higher Level. It has fought many a battle for the emancipation of college teachers and for securing for them a pride of place in the Indian society. It has to its credit several brilliant, outstanding and pioneering achievements.

ACTA WAS CONCEIVED in 1938 and was formed in 1942, by Shri DS Subrahmanyam, Shri Telikacharla Venkataratnam and Shri TS Paulus – all of AC college, Guntur, and Shri B.Govinda Rao, Shri I Ranganayakulu and Vallabhajyosula Subba Rao of Hindu College, Guntur. It represented college teachers – both Government and Private – in Andhra Area in the composite Madras State. ACTA (Osmania) representing private college teachers in the erst while Telenagana are were founded in 1964 and was rechristened as TACTA in 1969, in the wake of separate Telangana agitation. It worked in cooeration with ACTA (A) since its inception. In 1988, the merger of ACTA (A) and TACTA gave brith to ACTA, AP, which ever since has been the sole representative of the private college teachers in Andhra Pradesh.

Prior to 1963, private college teachers depended totally on the mercy of the managements. “Hire and Fire” policy was the basic policy of administration in private colleges. Management fixed the pay and paid at their will and pleasure through the Government used to grant substantial aided college teachers suffered all sorts of indignities, had to frequent, Masters house standing at their gates with folded arms and with all submissiveness of a servant eagerly awaiting a smile sparkle on the “Deity”s lips and mercy glow in his eyes as he doled out favours and curbe. A smile or a frown of the great “Philanthropist” used to be a hot topic of discussion among the college teachers, who spend hours dissecting, analysing and philosophising the mind great “Monalisa” facial contortion and through that, trying to divine the mind and the intention of the

“Master”. It was a life of misery, demeaning slavery and beggary. The oracles of the day used to exhort the college teachers to hold their head high in the empty skies, not to look down at the earth, not to talk of salaries, scales and securities, but to talk of ideals and ideas for their profession was 'holy' and 'noble'. Suffering was real and biting, status and security were empty, meaningless and obnoxious words, which had no place in the lexicon of the great educationists and philanthropists. College teachers taught lessons or hunger, suffered hunger in life, they decried slavery and serfdom in the class room, but lived with them in their life, they spoke of lofty ideals and high status, but suffered all sorts of indignities and low status. Post-retirement life was a curse. Retired college teachers were an unwanted burden on their children; often driven from pillar to post with a begging bowl, carrying their noble souls in their withered bodies, praying their deities to terminate their lives. Noble lives thus, had a heart-rending tragic end. College teachers were then the objects of pity and derision. Such was the life of the college teachers upto the fifties and the early sixties.

When hunger becomes wrenching, humiliation and persecution become intolerable when the fear of the lurking dark future grips the mind, when everything looks dry, depressing, and decaying, man starts questioning the system, and fights for his own survival; as he lives and therefore he has to live. The revolt begins. This is exactly what happened in the sixties and has continued since then. New generations of college teachers came upon the scene.

Sir MJM was the head of the teacher community, he dedicated his life for the welfare of teaching community, he was a humble pioneer of the ACTA. The followings are under the leadership of MJM successfully

A series of struggles - protracted, bitter, militant, nerve-racking were waged for 1) freedom from hunger, 2) Security of service and redemption from bondage and 3) a status commensurate with the crucial role of college teachers as the creators of ideas and moulders of the rising generations.

ACTA has won many a battle, won many a laurel and brought about a quantitative change in

- 1) The relations between the teachers and the managements,
- 2) The managements of private colleges,
- 3) The status of college teachers, and
- 4) The college teachers' movements.

Many spectacular achievements were accomplished by ACTA owing to the great sacrifices that the old generations had made to make their successors happy and contented.

- 1) Undergraduate education was brought under the UGC purview in 1955.

- 2) Pursuant to the recommendations of the DS Reddy Committee (1964), the State Government revised the then existing policy on Grant-in-aid, and then shouldered the total financial burden. This is the foundation of the new policy of in the management of Higher Education. AP is the pioneer in this respect. The rest of India followed suit. The recommendations of the DS Reddy Committee that there should be a parity between the Government and the Private aided college teachers in all matters was not implemented in full.
- 3) As a result of the 38 day-strike in 1973, the state Government admitted 12 unaided colleges to Grant-in-aid, and this laid down policy for the admission of Unaided Colleges to Grant-in-aid, enriching the DS Reddy formula.
- 4) HRA was extended to the aided college teachers in 1974. This was the first step taken to bring about a parity between the Government and the Aided college teachers.
- 5) On 5-10-1974, the state Government promulgated an ordinance, ensuring statutory protection to college teachers, breaking the chains of bondage and freeing them from the clutches of the managements. This was legislated AS ACT 11 of 1975, which formed the core of ACT 1 of 1982. 5.10.1974 was the day of the emancipation for the teachers of private college and schools. This transformed radically the relationship between the teachers in private schools and colleges and their managements from that of a servant-master as pronounced by the AP High Court in 1965 to that of 'partners' in the educational process under the control of the state. The character of aided colleges had undergone a qualitative change and they became colleges financed, regulated and controlled, by the Government, but managed by the Private Committees. Thus they became quasi- Governmental college.
- 6) The Government extended the AP Liberalised Pension Rules to the teachers in aided colleges (vide GO MS NO 544, EDN. (C) Dt. 11.4.1975) w-e-f- 1-4-1974 covering everybody who retired after 1973.
- 7) ACTA in cooperation with the other organizations forced a reluctant Government to implement the fifth plan scales of pay with effect from 1.4.1976 and succeeded in securing the abolition of cadres in degree colleges along with the up gradation of JLS and tutors/demonstrators through struggles and legal battles. AP is the only state where JLS, tutors/demonstrators were upgraded as lecturers. This is yet another unique achievement of ACTA.
- 8) i) The state government had reiterated the policy for the admission of unaided colleges and sections and admitted all the unaided colleges and sections in existence Prior to 1.4.1977 to Grant-in-aid and ordered that

no private management should be allowed to open colleges thereafter. However, this has been violated and a number of unaided colleges and sections came into existence later.

ii) The Government revised its stand with a view to alleviating the hardship being faced by the teachers in unaided colleges and admitted all the unaided colleges (about 150 Junior Colleges and 53 degree colleges), and sections to Grant-in-aid, with effect from 16.4.1990, though denying the benefit of increments for the unaided teachers for the unaided period!

Thus the policy laid down in 1964 for the admission of unaided college and sections to Grant-in-aid, was honoured and continued till 1.3.1985; though partly distorted in 1990.

- 9) Through a series of orders, all the fringe benefits being enjoyed by the Government College Teachers were extended to the aided college teachers, except LTC and Medical reimbursements.
- 10) ACTA and TACTA in cooperation with sister organizations forced the Government to introduce "Payment of salaries through banks" scheme from 1981. This is yet another spectacular achievement, replacing managements by the Government as the Pay masters.
- 11) The State Government was forced to implement RPS (UGC) 1986 along with C which has further raised the status of the college teachers.
- 12) In 1993, the State Government/prevalled upon to extend the RPR 1980 denied to Aided College Teachers for over 15 tormenting years.
- 13) The State Government was persuaded to sanction interim relief on a par with the central government employees. This is yet another achievement which ensured the implementation of the forth – coming revision of pay scales.

We successfully repelled the first lightning attack unleashed against the aided school and college teachers and forced the Government to relent and continue the 3 decade-old parity policy by sanctioning DA on a par with the Government employees which the Government tried to terminate in Dec 1995. We forestalled the attempts of the Government to impose a cut in Grant-in-aid, the first step in the process of privatisation of Higher Education, the avowed policy of the state Government.

- 14) ACTA initiated, pioneered and fortified united college teachers movement in A.P. which has been instrumental in wresting several benefits from the Government. ACTA, along with GOTA formed FAPOTA in 1980, which was later expanded to include GCGTA. Today, the federation is the sole representative of college teachers in Andhra Pradesh.



ACTA has marched on a rugged uncharted road for over 50 years, struggling to find its way, shedding complexes, overcoming fears and social barriers and evolved itself into a Principled, militant and fighting organization, committed to the cause of college teachers and Higher Education. ACTA's history is that of here in and bitter struggles, heavy sacrifices and glorious achievements. ACTA has compromised never on basic issues, never sacrificed the interests of college teacher and it has passed through fiery ordeals and fashioned itself into a powerful weapon in the service of the College Teachers.

You are the proud inheritors of this great legacy. Your predecessors suffered, fought and made heavy sacrifice to keep you happy, secure and on a high pedestal in the social hierarchy 50 years of ACTA's life has been eventful.

To remember is to learn to learn is to act; to act is to change.

Learning from the past, acting in the present and changing the environment for the future is the quintessence of all the human activities. We, the teachers as the intellectual class of the society are called upon: to create and disseminate new ideas and change and spur the society towards a glorious future.

ACTA is stepping into the 21st Century in two years from now. Let us rededicate ourselves to the cause of education and strive for the creation of a new humane social order.

Sources:-

- College view
- MJM debates as MLC
- Personal interviews
- MJM articles and letters
- Aparna Basu- growth of education and political development in India Oxford University Press Delhi 1974.



FLANNERY O'CONNOR: MAN AND HIS WORKS

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Abstract

Flannery O'Connor, a renowned name in American literature is famous for his novels and short stories. Her works have a great sense of evil and sin, and explore the religious sensibility of the Deep South. She has grotesque vision. Her vision is unique because she was a religious writer in a non-religious world. She declared that "My subject in fiction is the action of grace in territory held largely by the devil." Her fiction is a powerful example of what Kenneth Burke calls "a symbolic action," functioning for the author as well as for the reader. The meaning of "caricature" is overload and in this sense O'Connor created characters and their dramatic oppositions by separating, exaggeration, and polarizing elements in her.

Key Words: Evil, Sin, Religious Sensibility, Symbolic Action, Caricature.

Flannery O'Connor is considered one of America's greatest fiction writers and one of the strongest apologists for Roman Catholicism in the twentieth century. Born of the marriage of two of Georgia's oldest Catholic families, O'Connor was a devout believer whose small but impressive body of fiction presents the soul's struggle with what she called the "stinking mad shadow of Jesus" (Donner, 46). Mary Flannery O'Connor was born in Savannah on March 25, 1925, to Regina Cline and Edward F. O'Connor. She began her education in the city's parochial schools. After the family's move to Milledgeville in 1938, she continued her schooling at the Peabody Laboratory School associated with Georgia State College for Women (GSCW), now Georgia College and State University. When she was fifteen, O'Connor, an only child, lost her father to systemic lupus erythematosus, the disease that would eventually take her own life at age thirty-nine. Devastated by the loss of this close relationship, O'Connor elected to remain in Milledgeville and attend GSCW as a day student in an accelerated three-year program.

An avid reader and artist, she served as editor of the *Corinthian*, GSCW's college literary magazine, and as unofficial campus cartoonist. O'Connor provided cartoons for nearly every issue of the campus newspaper, for the college yearbook, and for the *Corinthian*, as well as for the walls of the student lounge. Most significant, she contributed fiction, essays, and occasional



poems to the Corinthian, demonstrating early on her penchant for satire and comedy. A social science major with a number of courses in English, O'Connor is remembered by her classmates as obviously gifted but extremely shy. Her closest friends recall her sly humor, her disdain for mediocrity, and her often merciless attacks on affectation and triviality.

In 1945 O'Connor received a scholarship in journalism from the State University of Iowa (now the University of Iowa). In her first term, she decided that journalism was not her metier and sought out Paul Engle, head of the now world-famous Writers' Workshop, to ask if she might enter the master's program in creative writing. Engle agreed, and O'Connor is now numbered among the many fine American writers who are graduates of the Iowa program. While there she got to know several important writers and critics who lectured or taught in the program, among them Robert Penn Warren, John Crowe Ransom, Austin Warren, and Andrew Lytle. Lytle, for many years editor of the *Sewanee Review*, was one of the earliest admirers of O'Connor's fiction. He later published several of her stories in the *Sewanee Review*, as well as critical essays on her work. Engle years after declared that O'Connor was so intensely shy and possessed such a nasal southern drawl that he himself read her stories aloud to workshop classes. He also asserted that O'Connor was one of the most gifted writers he had ever taught. Engle was the first to read and comment on the initial drafts of what would become *Wise Blood*, her first novel, published in 1952.

O'Connor's master's thesis was a collection of short stories entitled *The Geranium*, the title work having already become her first published story (Accent, 1946). Most stories in this collection, however, are the work of an apprentice in search of her own territory and voice; they suggest only faintly the sharp wit, finely honed style, and spiritual scope of O'Connor's mature work. "The Turkey" most genuinely represents the significant connection between language and belief that came to pervade O'Connor's work. This story also reveals her ear for southern dialect and marks one of her first attempts at the literary irony for which she later became famous (Stanton, 57).

Following the completion of her M.F.A. in 1947, O'Connor won the Rinehart-Iowa Fiction Award for a first novel (for her submission of a portion of *Wise Blood*) and was accepted at Yaddo, an artists' retreat in Saratoga Springs, New York. There she continued to work on the novel and became friends with the poet Robert Lowell. In 1949, after several months at Yaddo and some time in New York City and Milledgeville, O'Connor moved into the garage apartment of Sally and Robert Fitzgerald in Ridgefield, Connecticut, where she boarded for nearly two years. In the Fitzgeralds, O'Connor found devout Catholics who provided her with the balance of solitude and communion necessary to her creativity and her intellectual and spiritual life. This stabilizing

and productive time was interrupted in 1950, however, when O'Connor was stricken with lupus, the incurable, autoimmune disease that was then treated only by the use of steroid drugs. O'Connor survived the first life-threatening attack, but she was forced to return to Milledgeville permanently. Remaining in this historic central Georgia town for the rest of her life, from 1951 until 1964, O'Connor lived quietly at Andalusia, the family farm just outside town. In spite of the debilitating effects of the drugs used for treating lupus, O'Connor managed to devote a good part of every day to writing, and she even took a surprising number of trips to lecture and read from her works.

A prolific and devoted correspondent, O'Connor stayed in touch with the literary world through letters to the Fitzgeralds, Robert Lowell, Caroline Gordon, and others. It was, in fact, through letters that O'Connor came to know Gordon, who offered invaluable suggestions about her writing, especially about *Wise Blood*. O'Connor also took time to respond to letters from younger writers, to review works of theology for the *Georgia Bulletin* (a publication of the diocese of Atlanta), to tend her growing number of peacocks, and to receive visitors seeking advice on matters both literary and spiritual. During this time, O'Connor won numerous awards, among them grants from the National Institute of Arts and Letters and the Ford Foundation, a fellowship from the Kenyon Review, and several O. Henry awards.

An early 1964 surgery for a fibroid tumor reactivated O'Connor's lupus, which had been in remission, and her health worsened during the following months. On August 3, 1964, after several days in a coma, she died in the Baldwin County Hospital. She is buried beside her father in Memory Hill Cemetery in Milledgeville. At the time of her death, the *Atlanta Journal* observed that O'Connor's "deep spirituality qualified her to speak with a forcefulness not often matched in American literature" (Simons, 19). In 1972 the posthumous collection *The Complete Stories* received the National Book Award, usually given to a living writer. The judges deemed O'Connor's work so deserving that an exception was made to honor her lifetime achievement. In 1979 *The Habit of Being: Letters*, edited by Sally Fitzgerald, was published to rave reviews. These letters reveal a great deal about O'Connor's life in Milledgeville, her writing habits, and most important, her profound religious convictions. For the first time readers were able to see—beyond the shocking stories—the warm and witty personality and the incisive intellect of the writer. The collection of letters received a number of awards, and *Christian Century* magazine named *The Habit of Being* one of the twelve most influential religious books of the decade.

O'Connor's first novel, *Wise Blood*, received mixed reviews. Even some of the strongest commentators on southern literature seemed to be at a loss to describe this dark novel. While working on the novel in the early years,

O'Connor had defied an insistent and authoritative editor at Rinehart by stating that *Wise Blood* was not "a conventional novel," so confident was she in her intent. Scholars who have spent time in the O'Connor Collection in the Georgia College and State University library know that even O'Connor's juvenilia anticipate the relentlessly stark vision that became the mature writer's trademark. The closest literary "kin" of *Wise Blood* in American letters arguably is Nathanael West's *Miss Lonelyhearts*; both novels are filled with black humor and written in a sharply honed style. A novel of spiritual quest, *Wise Blood* presents the male "pilgrim," Hazel Motes, as inhabiting a sterile and ugly modern landscape derivative of T. S. Eliot's *Waste Land* (Hicks, 83).

The publication of her first short-story collection, *A Good Man Is Hard to Find* (1955), made O'Connor's Christian vision and darkly comic intent somewhat clearer to readers and allowed them to more easily grasp the intent of her 1960 novel, *The Violent Bear It Away*. A second collection of stories, *Everything That Rises Must Converge*, published posthumously in 1965, contains some of O'Connor's most popular short fiction, including the title story and "Revelation" (ibid, 84).

The body of O'Connor's work resists conventional description. Although many of her narratives begin in the familiar quotidian world—on a family vacation or in a doctor's waiting room, for example—they are not, finally, realistic and certainly not in the sense of the southern realism of William Faulkner or Erskine Caldwell. Furthermore, although O'Connor's work was written during a time of great social change in the South, those changes—and the relationships among blacks and whites—were not at the center of her fiction. O'Connor made frequent use of violence and shock tactics. She argued that she wrote for an audience who, for all its Sunday piety, did not share her belief in the fall of humanity and its need for redemption. "To the hard of hearing," she explained, "Christian writers" shout, and for the... almost-blind they draw large and startling figures—a statement that has become a succinct and popular explanation of O'Connor's conscious intent as a writer.

O'Connor had read Faulkner and Caldwell, as well as Eudora Welty, Caroline Gordon, and Katherine Anne Porter, among southern writers. Faulkner and Porter were strong influences, as were Nathaniel Hawthorne, Joseph Conrad, and the French writers Georges Bernanos and François Mauriac. These last four reinforced O'Connor's emphasis on original sin, guilt, and alienation, especially as she focused on the twentieth-century tendency to find in technology and in the idea of "progress" the panacea to life's ills. Although O'Connor knew that she—like her early model T. S. Eliot—was in the minority in her disdain for the increasing secularism of her time, she refused to back down.

Flannery O'Connor was a painstaking and disciplined writer, devoting each morning to her work and making great demands of herself even in her last years as she struggled with lupus. She possessed a keen ear for southern dialect and a fine sense of irony and comic timing; with the combination of these skills, she produced some of the finest comedy in American literature. Like the comedy of Dante, O'Connor's dark humor consciously intends to underscore boldly our common human sinfulness and need for divine grace. Even her characters' names (Tom T. Shiflet, Mary Grace, Joy/Hulga Hopewell, Mrs. Cope) are often ironic clues to their spiritual deficiencies. O'Connor's recurrent characters, from Hazel Motes in *Wise Blood* to O. E. Parker of "Parker's Back," are spiritually lean and hungry figures who reject mere lip service to Christianity and the bland certainty of rationalism in their pursuit of salvation. These same characters, usually deprived economically, emotionally, or both, inhabit a world in which, in O'Connor's words, "the good is under construction" (Coulthard, 71). O'Connor was a Roman Catholic in the Bible Belt South; her fiction, though, is largely concerned with fundamentalist Protestants, many of whom she admired for the integrity of their search for Truth. The publication of her essays and lectures, *Mystery and Manners* (1969), and the publication ten years later of *The Habit of Being* confirmed the strong connection between O'Connor's fictional treatment of the search for God and the quest for the holy in her own life. Indeed, her life and work were of a piece. She attained in her brief life what Sally Fitzgerald called (after St. Thomas Aquinas) "the habit of being," which Fitzgerald describes as "an excellence not only of action but of interior disposition and activity" that struggled to reflect the goodness and love of God. In 1992 O'Connor was inducted as an inaugural honoree into Georgia Women of Achievement, and in 2000 she was inducted as a charter member into the Georgia Writers Hall of Fame.

References

- Donner, Robert. "She Writes Powerful Fiction," *The Sign*, 40, March 1961, 46-48.
- Coulthard, A.R. *American Literature*. 55:1 March 1983, 71.
- Hicks, Granville. "A Writer At Home With Her Heritage." *Saturday Review*, 45, May 12, 1962, 22-23.
- Simons, John W. "Wise Blood: A Case of Possession," in *Critical Essays on Flannery O'Connor*. Ed. Friedman, Melvin J. and Beverly Lion Clark, 19.
- Santon, Harry Dean Halliwell's *Film and Video guide*, 2001, 57.



SPATIAL PRACTICES OF WOMEN IN INDIA, MALAYALAM, ADOORGOPALAKRISHNAN'S FILMS

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Abstract

This study is an attempt to understanding the importance and the spatial dimensions of physical location in the narrative trajectory of women in Indian Films. The narrative structure of Indian film is unique in the sense that it is very peculiar and different from the films of the world but in spatial contexts was not yet seriously discussed. Most Indian films are punctuated with domestic and outside the spatial location which are very deeply synthesised with social reality. In the modern and progressive film study discipline covered the different aspects of films and its narrative elements in the cinematic world. However spatial perspective is very rare and very complex in the narrative trajectory of India, specifically Malayalam films.

Key Words: Women Films, Space and Narration, Domestic and Public Space.

Introduction

The narrative structure of Indian film is unique in the sense that it is very peculiar and different from the films of the world. Most Indian films are punctuated with songs and dances, which are very rare in India's social reality. These are often used to express the interiority of the characters and sometimes to further the narrative. In the view of great Indian filmmakers, like ShyamBenagal, the subject of popular Indian cinema, until quite recently, skirted all these inconveniences when dealing with Indian tradition. Tradition in popular cinema is not reality, but an ideal. As an ideal, it has been sanitized, concerning itself not with the harsh realities of the caste, untouchability, gender discrimination and the various feudal economic oppressions that exist in traditional society, but rather to evoke a nostalgic sentiment and a sense belonging to the certainties of tradition. In another sense, Indian films are meant to objectify masculine ideals. Even the postmodern strategies of parody and pastiche simply serve to maintain the male domination in filmic representation. "In Indian films, we continue to see a patriarchal version of female sexuality.

Masculinity is defined as the muscular body and physical aggression. The visual spectacle of masculinity is expressed as a mandatory song and dance sequence through confusing international locales which disrupt the viewer's sense of time and space. Increasingly the pleasure element is going precedence over any concern with narrative" (Datta, 2000). For a long time, the portrayal of Indian womanhood was dominated by images of the upper-caste Hindu women whose virginity and motherhood were reinforced through stereotypical myths and legends. In contrast, sexual liberation was thrust upon marginalized women, who were punished by subsequent downfall and death. While upper –caste women sometimes faced disaster in a few films they remained pure and self-sacrificing until tragedy destroyed their lives (Gopinath& Raj, 2015).

The theme of gender oppression and the culture of silence in Indian films can be dealt with meaningfully in a well anchored study. Studying films and their spaces has become extremely important in any serious study of the women's question today because it is an art and medium that is essentially allegorical and that the women on screen come to represent not an individual, but the social reality of gendered discrimination in domestic and public spaces (Jain & Rai, 2002). There is a need to study the rigid hierarchy of a family structure which calls upon the young women members to live by its rules. In this structure, women have their demarcated spaces in which they fulfil their designated tasks. These kinds of the ordinary spaces have been offered in the narrative life of women as well.

Kerala has remained in the forefront in matters of socio-political awareness and development for the past several decades. Statistics on male–female population ratios and literacy levels lend support to this contention. Kerala had a background of matrilineal system even in the recent past. It is a system that gave women great security and financial powers. Not long ago, widow remarriage and divorce carried no social stigma, unlike in the present-day society. High level of education of women led to low level of infant mortality and relatively high work participation for women. Matrilineal and joint family disappeared from Kerala during the third decade of the twentieth century. Educational attainments and a limited degree of economic freedom do not seem to have conferred on Kerala women a high degree of social freedom. In dress and demeanour, she is more constrained than her educated counterparts elsewhere in India or abroad. And with the passage of time and in spite of 'progress' on several fronts, her safety in the workplace or place inside the home have become uncertain. Vulnerable as she is in her physical environment, the social taboos forbid support to her in terms of need (Usha, 2004). However, there are positive signs as well pointing in the direction of women's development and freedom because of women's movement and their protest strategies in Kerala.

One cannot relate to the problematic of spatiality of women and Malayalam cinema without invoking the fate that had befallen P K Rosy. The fate of P. K. Rosy, Malayalam cinema's first heroine, was tragic. She was a victim of patriarchal forces and discrimination based on caste. Rosy was a woman, that too a Dalit, who dared to appear in the 'public' space of the movie screen and portray the role of a Nair - an upper caste in her first, and only film Vigathakumaran (1928) (The Lost Child), caused a controversy. She was forced to flee her hometown in Thiruvananthapuram. Her ostracism illustrates moral and sexual policing, both off-screen and on. We are in a different age and yet Rosi remain in social reality as well as in filmic realities. That the so-called liberal democratic spaces of Kerala's public domain are increasingly becoming punitive and disciplinary as far as enforcing gender norms are concerned has been the cause of the rising anxiety among culture critics. The multifocal terrains of the early movie hall have eventually been stamped as a masculine space. The tragic fate of Rosy signals the inevitable taming of women in the public sphere in Kerala who dare to offer themselves to the Malayalam male gaze (Pillai, 2013). However, in the views of Usha (2004), in the films of earlier decades, women characters were more individualistic and powerful, capable of thinking for themselves and acting on their own. In fact, most well-known film actresses of recent years have gone on record complaining about the lack of a powerful role in contemporary Malayalam cinema, which provides an opportunity for them to display their acting prowess. The actresses are typecast in a roles such as the loving and dedicated mother, the dutiful wife, the suffering sister, the obedient daughter and so on. On the other side, there are the figures of the mean mother-in-law, the errant daughter-in-law, the selfish daughter, sister, usually married off but demanding their dues from the family of their birth, taking side with the mercenary husband against their own kith and kin. According to the story position, if the women character is good, they suffer all along in silence, and perhaps will be rewarded in the end; or else, their reward is the happiness of their loved ones; if they are mean they are normally rewarded with some punishment in the end. Of course, no women in consulted with regard to her opinion in the matter, for she is not expected to have an individual opinion, as different from the commonly accepted one (the male-centric one). "Through it's 85-odd years of history, Malayalam cinema has colluded with reformulated patriarchal ideologies to function as a false mirror: one which has the magical capacity to reflect the figure of the Malayali men at twice or thrice its natural size while cutting down women to the tiniest possible proportion. Malayalam cinema provides strong clues to the gender paradoxes that comprise Kerala's experience of modernity" (Pillai, 2014). Malayalam films are popular and enjoy the patronage of the population in the Southern part of India that has reached the high level of social development and literacy level.

The paradoxical position occupied by women in this society is reflected in the film as well. Malayalam film has maintained its distinct identity in terms of selection of stories and narrative aesthetic right from the beginning to the present. But when it comes in the presentation of women in films, we do not find any difference between them and other language films. “Located in everyday space, Malayalam films, however, provide a gendered version of modernity. By representing women’s choices between public and private, work and home, these films serve as a cultural form and has shown female subjectivity under negotiation” (Menon, 2010). Representing women in physical space are not innocent in the narrative context of spatial temporality which is an instinctive part of the everyday life of society.

Gender stereotypes are very common in Western literature and their visual adaptations abound in film and television. The character of popular American fiction and cinema are usually either variations of Eve or Pandora as sources of evil and demonic projections of Delilah and Circe as temptresses. The male protagonists of these tales also fit into a typical pattern- that of the modern day macho hero/anti- hero Oedipus, Ulysses, Hamlet, Captain Ahab, Huckleberry Finn, or the inordinately evil villain with his motiveless malignity. These figures are adapted to the cultural contexts of the Malayalam story (Usha, 2004, p.12). This position argues support for the view that the women images in the film have been strongly influenced through the stereotypical image from literary works from western influence.

Adoor Gopalakrishnan is a rare auteur in film history whose cinema has constantly explored a different aspect of social practice and everyday life of people in Kerala. He helped to put the Malayalam (Kerala) film industry in the world map. After the Satyajit Ray, he has the most significant reputation as India’s iconic film maker. In all his films, the Gopalakrishnan makes an attempt in search of the identity of Malayali. The structure of Gopalakrishnan’s films, their themes and style all coalesce, informing us about the filmmaker’s own world view, how he dealt with Kerala history, and his political beliefs and humanism. But it also gives us hope and a sense of political detachment (Joshi, 2016). In the structural sense, Gopalakrishnan’s films also deals with visual discourses and have multiple layers of the reality and unreality that have been interlaced in the visual narration. It has been the narrative beauty of reality and myth.

Films are one of the most influential cultural and creative discourses of the modern era as they reflect the socio-political and cultural norms of the society. The film has the potential to effect social change and open a new insight and experience to the human life. Film narrative styles occur in a unique and yet diverse spatial contexts, notably among the socio-cultural spaces produced within the filmic space. The relationship between women and space

has now been recognized as an important issue for feminist discussion. The developments in psychology and geography have encouraged the use of social maps to explore the way in which space is perceived (Ardener, 1981). Several scholars have examined the spatial location of narratives (de Lauretis, 1984; Khatib, 2004; Jain- Shanker, 2009; Mennel, 2010). The compelling reasons to study spatial practices in films are many. Firstly, the film acquires a power of control by fixing in place the conflicting idea about the constitution of social space. Secondly, the film spaces are temporally replaced by real space in which we live. Third, with space, one can contribute to the dynamics of the narrative (Konstantarakos, 2010). The present study attempts to examine the modes and patterns of social production of space (Lefebvre, 1991) in the negotiations of the women characters within the filmic spaces of AdoorGopalakrishnan's films.

The available research literature shows gaps in our understanding of the social production of space mediated by women in filmic spaces. Despite the works of Laura Mulvey and (1975) Theresa De Lauretis (1984) which had contributed enormously to our understanding of the ideologies behind images of women in films, there is a gap and the same points in the direction of the significance of the present study. The present study focuses on spatial practices, production of social spaces of women in the spatial discourses in AdoorGopalakrishnan's films. The space and spatiality of women are fairly uncomplicated, which refers to the location, mediation of ideology within the physical space. The present study maps with the Critical Discourse Analysis (CDS) the spatial practices and social production of space and women.

Visual space

The basic visual components in a film are space, shape, tone, colour, movement, and rhythms. These visual components are found in every moving or still picture we see. Actor, locations, props, costumes, and scenery are made of these visual components. A visual component communicates moods, emotions, ideas, and most importantly, gives visual structure to the picture. In the narrative process of film narration, space is very important. Three kinds of visual space are to deal with. They are the physical space in front of the camera, the space as it appears on a screen and third the spatial size and shape of the screen itself (Block, 2013). Space is a complex visual component. It is not only defining the screen where all the other visual components are seen, but space itself has several subcomponents. Employing this spatial notion, this study focuses on the socio- culturally centered spatial locations of women in the narrative discourse.

Space (Physical Space)

“Space is fundamental in any form of communal life and is a basic fundamental in any exercise of power” (Foucault, 1984). “There is no space

without space of the family, the school, the workplace, the church and so on and each one of them possesses its appropriate space” (Brenner, Jones & Maclal, 2003). According to Henri Lefebvre, “(social) space (product) which is cancelled by double illusion, the illusion of transparency and realistic illusion, each side refer back to one another, refer to the other and hide behind the other”. In the agreement show space and spatial practice is not innocent which is a complex notion of gendered identity in spatial practice in our everyday life.

Space, Power and Spatial practice

“Space and spatial analysis are now being considered widely as the essential elements in the development of theoretical knowledge and understanding as well as empirical investigations in a range of social scientific disciplines” (Zelenivic, 2007), Zelenivic states that we need to have the knowledge of the connections of modern life as well as understanding the space(s) which we experience and potentially shape. The questions asked about space can inform us of the development of structures and organizations, institutions and practices, behaviours and experiences, power and politics that have moulded and have been the characteristics of modernity. The relation of humans and space is more relevant as space is shaped by human relations, but conversely human relations are also shaped by space. As with terms like ‘society’ and ‘nature’ space is not a commonsense background to human and social action. Rather, it is the outcome of a series of action (Thrift, 2003, p.95).

The spatial discourses are viewed in the new perspective in the inventions of Lefebvre’s triadic space. In the ‘The Production of Space’, Lefebvre (1991) discovers space as fundamental to our understanding and interaction within society. It develops an alternative theory of space that would clarify the role it should play. He posited space as the primary locus of lived experience the world has conceived as an approach to space, which moves it from the realm of the mental to become the institution of our engagement with the world (Lefebvre, 1991).

In the relations of power and space, according to Foucault, power is commonly thought of as negative, which poses from top to bottom, by those who consider “powerless”, which is that one is oppressed by those who possess weapons or occupy legitimate states. Further, he explains that their relations of power are then changeable, reversible and unchangeable. One must also observe that these cannot be relations of power unless the subject is free (Bernear&Rasmusen, 1998, p.12). Power and space are examining the different level of power relationships between subject, between subject and institution, as well as between states. Foucault considers that space and spatializing are an analysis of related effects of power. Space is fundamental in any form of communal life; space is fundamental in any exercise of power (Foucault, 1984).



Foucault considers space is an important element in any exercise of power relation.

Spatial Practice, Gender Relations in Indian Society

“Indian society is ancient one and is extremely complex to explain” (Dube, 1990). India has a long history and its social structure is very peculiar. The Indian social system, with a few exceptions, is characterized by patriarchy. Patriarchy recognizes male dominance and female subordination. On marriage, the bride breaks loose from her parental home and acquires membership of the family into which she is married. Children born to her belong to her husband’s lineage. Authority within the family is vested in the males, most often in the eldest linearly related male. He is a principal decision maker, a woman’s presence in the decision-making process is not conspicuously visible, though experienced, strong-willed and mature women do assert themselves. But they often remain in the background (Dube, 1996, p.108). In a system of patriarchal notion, the greatest challenge is the progress and development of women.

“Socially and culturally, women are still traditionally-bound and it is a disadvantageous position. They are well known for their hard working nature-expert weavers and farmers, in addition to being the carrier of rich culture. After globalization, the traditional work culture and the role of women are being undermined whereas mechanization and atomization is prevailing in the market-based economy, which has adversely affected the village based traditional economy” (Devi, 2015). According to Rosald, the roots of female oppression cross-culturally lay in the division between the public and domestic sphere, and the systematic understanding of the domestic, which was defined by those roles and activities, revolving around women and children. The extent to which women were subordinate in a given society depended on the degree of division between the public and domestic premises.

Gender as spatially contextualized

Thinking about the dialectical relation of gender and space, one finds that studies in geography and anthropology are largely silent on the ways and means in which gender and space are represented. Even the available works in these disciplines are lacking in any explicit discussion of the role of representation in negotiating the complex relation between gendered identities and spaces. This inadequacy is a matter of concern as it is important to note that space is also produced as gendered through representations (Rendell, 2003). “In bringing gender into focus, geography in India has largely followed the conventional and acceptable tools of research and at the same time has ventured into several newer ways of looking at the issues at hand. The recent contributions to feminist geography have successfully offered new interpretations of place and have

redefined space, as well as thrown new insights into men and women as well as their gender roles and gender relation” (Raju&Dutt, 2011). In India, it is well documented that women’s dependence on common property resources is disproportionately higher than that of men because they are the prime users of these resources (Raju, 2011, p. 13).

Messy and Allen show that ‘geography matters’ in the constitution, not only of gender but also the age, class, ethnicity and other factors that determine home differences and inequalities which are perceived and lived over space. The working choices, even in the formal settings outside the domain of the home are gendered. This area remains under-researched in the Indian context (Sandow, 2008). These studies further show that women’s workplaces are usually situated closer to their homes than men, near distance to work for women are because their work is usually concentrated near their houses and the transport accessibility and its spatial control continues. In an interesting experiment concerned with the spread of the literacy in one of the most backward districts, Pudukkottai in rural Tamil Nadu, ‘mobility’ was added to the other requisites of the project including literacy, numeracy, functionality, and awareness. The existing means of transport were not in sync with women’s needs in terms of routes and timing (Raju, 2011). This evidently shows how spatiality intersects with gendered constraints.

In any attempt to relate space with gender, what would be immediately apparent is the centrality of women to the formation and continuation of the domestic space. While this identification of women with the domestic could be explicated in terms of her material contribution to the running of the household or her tasks of childcare, a more prominent axis would be her association with the quality of ‘auspiciousness’ as well (Niranjana,2001). Space, Spatial practice and gender relations in Kerala society.

Kerala occupies a unique position in the socio- cultural and political map which is located on the Western side of the Southern region of India. Though this stretch of land is not as big as other states of India, the cultural synthesis and the political developments have had a great impact on the early settlements. The early history of Kerala is very complicated and there are many problems remaining to be resolved by historians. The region was united approximately between A.D. 216 and 825 when the Malayalam era was said to have begun. By the beginning of the nineteenth century A.D. the area has been divided into a number of small kingdoms, each ruled by a Nair or Kshatriya (higher matrilineal sub-castes related to Nairs) royal family. Those families were relatively autonomous, owing little allegiance to any overlord. Between the thirteenth century and 1498 (when the Portuguese arrived in Kerala) two Nair chieftains, Kolattiri in the north and Travancore in the south, expanded into small kingdoms (Nair, 1897). The existing data shows that the upper caste,

community, especially Nambuthiri, Nair, are the ruling community in the ancient Kerala society.

Kerala has remained in the forefront of the developing states of India in matters of social- political awareness and development for the past several decades. Statistics on male-female population ratios and literacy levels lend support to this contention. But in matters of gender sensitivity, Kerala had a system of matrilineal, a system that gave women great security and financial hype in this unique system. On the other side, in domestic space, there are figures of mean mother- in-law, the errant daughter-in-law, the selfish daughter, sister, usually married off, but demanding their dues from the family of their birth, taking side with the mercenary husband against their own kith and kin. According to the story position, if the women characters are good, they suffer all along in silence, and perhaps will be rewarded in the end; or else, their reward is the happiness of their loved ones; if they are mean they are normally rewarded with some punishment in the end. Of course, no women in consulted with regard to her opinion in the matter, for she is not expected to have an individual opinion, as different from the commonly accepted one (the male-centric one) (Usha, 2004, p.13).

The social indices of Kerala display a gender equality that one scarcely encounters in developing regions of the world. These favourable indicators coexist with pervasive female unemployment, increasing the incidence of dowry, gender violence and an escalating sense of danger in women's lives (Sreekumar, 2007). New gender based especially women centered research proven that the women conditions are very crucial in public space. The recent report on Sahi, 2012 conducted research among three culturally and literarily top distinct, which reveal the ground breaking realities of women condition in public space. In the public spaces are very horrible at evening and morning. The girls and women are harassed, criticized with obnoxious word, dress were cut with sharp instrument inside of bus, sexually assaults inside train and office. This has revealed that the literarily culturally projected images are myth in the contemporary society in Kerala.

Conclusion

The space and spatial practices are not innocent in society it has very complex and political intervene, every space has been suspended, and produced complex sense of meaning in the social existence. In the Temple, Church and Mosque, houses, schools, and Institution has their own space and these all institution produced the spatial sense. However these all spatial production create men and women in a separate spaces. The actual spatial discourses and its practices control and maintained by the people. Probably this spaces are created and practiced by the patriarchal lineage and their ideas. Spatial practice and spaces

were circulated in everyday life. This has been keenly showcased by cinema. This study has been very deeply traced the social spaces and social ethos and women cantered narrative location.

References

- Ardener, S. (1981). Women abs space: ground ruler and social maps. London: Croon Helm.
- Brenner, N., Jessop, B., Jones, M., & Macleod, G. (Eds.). (2008). State/space: a reader. Germany: Black well Publisher John Wiley & Sons.
- Calafell, B. & Delgado, F. Zelenivic (2004). Reading Latino image: integrating Americans, Rutldge, NewYorrk.
- Christopher, F. (1976). The Nairs today, New York: Cambridge University Press. pp. 220.
- Datta, S. (2000). Global and representation of women in Indian cinema. Social Scientist. 28, 3-4.
- De Certeau, M. (1988). The practice of everyday life. (Rendell. S. Trans.). London: University of California.
- Dube, C., S. (1990). Indian society. India: National Book trust. pp. 108.
- Ghosh, B. (1992). Satyajit ray's Devi: constructing a third- world feminist critique. Screen, 33(2), 162-173.
- Gopinath, S., & Raj, J. (2015). Gender construction and text: the female protagonist in new generation malayalam cinema, South Asian Popular Culture. England: Rutledge.DOI: 10.1080/14746689.2014.1000648
- Joshi, N. (2016). Tho Biopics Joined at the hip, The Hindu, pp. B15
- Khatib, L. (2004). The spatial manifestations of representing middle eastern politics in American and Egyptian cinemas. Visual Communication. (3) 1.
- Kostantarakos, M. (2000). Space in European cinema: London. Intellect books.
- Lauretis, De, L. (1984). Alice doesn't feminism, semiotics, cinema. Bloomington: Indiana University.
- Lefebvre, H. (1991). Production of space. (Smith. Trans.). Australia: Blackwell.
- Mennel, B. (2010). Turkish cinema in the new millennium: site, sound, and screens. New York: Berghabn Books.
- Menon, B. (2010).Malayalam middle cinema and category of woman. Pillai. T. M, (Ed.), Women in Malayalam cinema; nurturing gender hierarchies. New Delhi: Orient BlackSwan.

- Menon, B. (2010).Malayalam middle cinema and category of woman. Pillai. T. M, (Ed.), Women in Malayalam cinema; nurturing gender hierarchies. New Delhi: Orient BlackSwan
- Mulvey, L. (1975). Visual pleasure and narrative cinema. Screen, 16 (3).
- Nanda. M, (2002). Symbolism and space in AparnaSen'sparoma and Deepa Mehta's fire. Jain & Rai. (Eds.), Film and feminism: essays in Indian cinema. Rawat Publication: New Delhi.
- Niranjana, S. (2001). Gender and space; femininity, sexualization and the female body. New Delhi: Sage Publication, pp. 38.
- Pillai, T, M. (Ed.). (2010). Women in Malayalam Cinema; Nurturing Gender Hierarchies. New Delhi: Orient BlackSwan.
- Raju,S., &Dutt, L., K. (2011). Doing gender, doing geography: emerging research in India, Raju&Dutt. (Eds.). Film and feminism: essays in Indian cinema.London: Routledge.
- Rendell, J. (1991). Introduction: 'gender, space'. Rendell, J. Penner, B. & Borden. (Eds.) Gender space architecture: an interdisciplinary introduction. New York: Routledge.
- Rosald, M. (1974). Culture and society: a theoretical over view. Stanford: University Press.
- Sandow, E. (2008). Commuting behaviour in sparsely populated areas: evidence from northern Sweden. Journal of Transport Geography, 16 (1).
- Shanker, J. (Ed). (2009). Characterization of space and female iconography in Deepa Mehta's water. Rawat Publication: New Delhi.
- Sreekumar, S. (2007). The land of 'gender paradox'? getting past the commonsense of contemporary Kerala. Inter- Asia Cultural Studies. 1 (1).
- Thrift, N. (2003). Space: the fundamental stuff of geography'. Holloway, S. Valentine,G. (Eds.). Key concepts in Geography. London: Sage Publication. pp. 95-110. Retrieve From the.corewin.cm/upm data/955- 019254ch5.pdf.
- Usha, V. G. (2004). Gender, value, and signification: women and television in kerala: Center for Development Studies. Thiruvananthapuram.



ROLE OF MGNREGS IN THE SOCIO-ECONOMIC EMPOWERMENT OF RURAL WOMEN

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Abstract

The National Rural Employment Guarantee Act 2005 (NREGA) which was later renamed as 'Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is an Indian labour law and social security measure that aims to guarantee the right to work. The MNREG Scheme was implemented honestly and in an anti-corruptive way capable of yielding better results. The Major objective of MNREGP is the socio-economic empowerment of women. The success of the programme depends on the awareness level of beneficiaries. Therefore, effective implementation of the programme is necessary to achieve the objective of wiping off poverty and unemployment. It will lead to the socio-economic development of the society. The scope of the project is limited to the study of socio-economic empowerment of women workers under MGNREGP in Chalavara Grama Panchayat. It also examined the awareness level and problems of women in Chalavara Grama Panchayat regarding the MGNREGP programme.

Key Words: MGNREGS, Empowerment, Poverty

Introduction

The National Rural Employment Guarantee Act 2005 (NREGA) which was later renamed as 'Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is an Indian labour law and social security measure that aims to guarantee the right to work'. In order to make inclusive and overall development a reality, the NREGA was passed as labour law and implemented across 200 districts in the country in 2006. By 2008, it came to cover the country as a whole. The scheme provides a guarantee for at least 100 days' employment in every financial year to adult members of any household willing to do public works by the unskilled manually for the statutory minimum wages of ₹ 240 per day. The scheme was launched in 2005 – '06. For the first time it covered 200 districts, and was extended to another 130 districts in 2007 - '08; to all remaining 285 rural districts in 2008-09. All rural families are entitled to apply for involvement in the scheme and to get job cards. Workers in families that obtain job cards are entitled to guarantee employment in public works for a period of up to 100 days per family in a year. The government is obliged to provide employment within 15 days of the demand for job. In case such employment is not provided within 15 days of registration, the applicant becomes eligible for an unemployment allowance.

The MGNREGA gives priority to the women workers. As much as 1/3rd of the beneficiaries under this act are women. Women are the base of our society. Development of women is essential for development of the nation. Women constitute around half of the total world population.

In traditional societies, women are confined to the four walls of the house, performing household activities and they have been considered jobless. In the modern era, women do participate in all kinds of activities. Women have been performing well in different spheres of activities like education, politics, administration, space, social work and so on and so forth. The Government have introduced many programme for the women to increase their earnings. The NREGA also gives special attention to the empowerment problem confronted by the workers.

The MNREG Scheme was implemented honestly and in an anti-corruptive way capable of yielding better results. Apart from uplift of the rural infrastructure, it resulted as a source of earnings for women as most of its beneficiaries are women and it has also positively changed the life-style of many households.

Significance of the Study

The efficiency of our government to wipe off poverty and unemployment from our country has led to form National Rural Guarantee Act at the Panchayath ward level to offer satisfactory solution to these problems. Therefore, effective implementation of the programme is necessary to achieve the objective of wiping off poverty and unemployment. It will lead to the socio-economic development of the society.

Government have been facing a number of problems at the time of implementation of the programme. The basic problem is that the beneficiaries of the programme are not aware of their rights and responsibilities. Women face many problems and difficulties at the work place. Their responsibilities are more to the family. They want to care the children and maintain the house.

The Major objective of MNREGP is the socio-economic empowerment of women. The success of the programme depends on the awareness level of beneficiaries. Therefore, the study entitled 'A study on the role of MNREGP in socio-economic empowerment of women –with special reference to Chalavara Grama Panchayat which is conducted among the women workers under the MNREGP in Chalavara Grama Panchayat is significant.

Objectives of the Study

1. To know the socio-economic background of women workers under MNREGS.
2. To study the problems faced by the women employees regarding MNREGS.

Research Design

The study was both descriptive and analytical in nature. Both primary and secondary data were used for the purpose of the study.

Secondary data

Secondary data needed for the study were collected from various records of the Grama Panchayath office, published books, reports and websites

Primary data

Primary data required for the study were collected from the workers and programmers of the MNREGP. Data were collected through an interview with the workers by using a structured interview schedule.

Sampling design

Population of the study consists of women workers in Chalavara Grama Panchayat. There are 13 wards in the panchayath which comes to 1560. A size of 100 samples was set for the study. Such a figure was selected only because of the easiness and comforts associated with it. An average of 120 workers was there in each of the wards. They work in different sites at the same time. In order to collect the data, the researcher personally visited the work sites. As much as 8 persons were selected from 12 wards and remaining 4 from the last ward the researcher visited. The method of selection was purely random. The names of the workers were considered for this purpose. Those names with the first alphabets in the team were selected.

Women Empowerment through NREGA

NREGA contributed to very high level of women empowerment particularly in the following aspects,

1. As the work is organised by women group, the gender perspective gets built in automatically.
2. As women are comfortable working along with their neighbours, nearly 8% of the workers have been women.
3. For the first time equal wages are really paid and this has boosted the earnings of women.
4. As the wages are paid to bank a/c the habits thrift which was already included through the kudumbasree experiment has further been strengthened.
5. As the bank deposit are increasing the household status of the women has also been improving commensurately as she controls substantially as she controls substantial cash resources and withdrawal can be only on her decision.

NREGA a New Identity for Women

Any progressive policy enactment is bound to produce associate impact in the levels of any citizens when is implemented in the same spirit. For e.g.:- through NREGA is about providing an immediate livelihood alternate to the poor masses in the rural India but has various associates challenges in actual empowerment of the same when women are supposed to take up economic activities under employment guarantee act (EGA), they are also bound to make certain decisions on the kind of works they would do, like taking decisions on spending their hard won wages, contribution to family expenditure and participation in the community association. These are some of the condition that link EGA with creation of space for an emergent assertive identity of women workers in particular.

Review of Literature

An attempt has been made to review the work already done in respect of MGNREGA.

Year	Topic	Researcher
2006	Rural poverty alleviation and employment	Verma
2007	Corruption in rural employment in Orissa	Dreze
2007	Political Economy of poverty	Manoj Kumar
2008	MGNREA will be an extremely cost effective way of increasing employment	Ghosh

2008	Appraisal of various processes and procedures of MGNREA in AP	IIM Bangalore
2009	An appraisal and Impact assessment of NREGA in sample districts of Himachal Pradesh	CRRID
2010	Operation of the National Rural Employment Gurantee Scheme West Bengal	Bedi
2010	MGNREGA cannot be a long-term solution to the unemployment problem of rural India	Harsha
2011	NREGA: A Revolution	Asha kiran
2012	Impact of MGNREGA programme & the poverty in three Gram Panchayats in Tunkur District of Karnataka was studied	Gundegowda & Nagaraju

Results and Discussions

Socio-Economic background of Women

Table 1

Age wise classification

Age group	Number of respondents	Percentage (%)
Below 20	0	0
20-30	5	5
30-40	22	22
40-50	26	26
50-60	32	32
Above 60	15	15
Total	100	100

Source: Primary Data

From the table and diagram it is clear that 5% of the respondents belong to the age group of 20-30, 22% of the respondents belong to category of 30-40, 40-50 category includes 26%, 32% of respondents belong to 50-60 and only 15% belongs to above 60.

Table 2

Educational Qualification

Educational level	Number of respondents	percentage
No schooling	27	27
Primary education	56	56
Secondary education	17	17
Higher education	0	0
Total	100	100

Source: Primary Data

The above table shows that 27% of the respondents are under the category of 'No schooling' and 56% of the respondents have got primary education, 17% of them belong to the category of secondary education and none of the belongs to the category of higher education.

Table 3**Marital status of workers**

Marital status	Number of respondents	percentage
Married	57	57
Unmarried	14	14
Widow	26	26
Separated	3	3
Total	100	100

Source: Primary Data

The table shows that majority of the respondents are married (57%), 14% of them belongs to the group of single, 26% of them are widows and 3% of them are separated.

Table 4**Number of members in family**

Number of members	Number of respondents	percentage
1	-	-
2	13	13
3	34	34
4	32	32
5 and above	21	21
Total	100	100

Source: Primary Data

The above table clearly reveals that 34% of the family includes 3 members, 32% of the family includes 4 members. 21% of the family includes 5 and above members and only a minor part, i.e. 13% of the respondent family consist of two members.

Table 5- Family status of the workers

Family status	Number of respondents	Percentage
BPL	96	96
APL	4	4
Total	100	100

Source: Primary Data

It is clear that 96% of the respondents are BPL card holders and only 4% of them are APL card holders.

Table 6 - Number of earning members in family

Number of members	Number of respondents	Percentage
1	7	7
2	71	71
3	17	17
4	5	5
5 and above	-	-
Total	100	100

Source: Primary Data

As per the table 71% of the houses include 2 earning members. 17% out of them include 3 earning members, 7% out of them include 1 earning member and 5% of the houses include 4 earning members, and there are no family which has a number of 5 and above earning members.

Table 7

Assets held by the household

Name of the asset	Number of the household	Percentage
Agricultural land	-	-
House	100	100
Television	65	65
Two wheelers	3	3
Savings bank a/c	100	100
Fixed deposits	0	-
Insurance policies	0	-

Source: Primary Data

The above table clearly reveals that 100% of the households have own houses, 65% of them have television and 100% of the respondents have savings bank a/c. None of them have agricultural land and only 3% have two wheelers with them.

Table 8

Number of days worked under MGNREGS

No. of days	No. of respondents	percentage
Up to 25	4	4
25-50	11	11
50-75	62	62
75-100	23	23
Total	100	100

Source: Primary Data

The table shows that only 4% of the workers are working for less than 25 days, 23% of them are working for 25-50 days, the majority. i.e. 62% are working for 50-75 days and 11% are working for 75-100 days

Table 9

Assets purchased after joining MGNREGS

Assets	Number of respondents	percentage
Home appliances	30	30
Financial assets	12	12
Cattles	52	52
Others	6	6
Total	100	100

Source: Primary Data

It is clear that 52% of the respondents utilized their income for owning cattles, 30% were used it for purchasing home appliances. only 12% of them utilized their income for purchasing financial assets and 6% of them used the income for some other purposes.

Table 10**Financial products purchased after joining MGNREGS**

Financial products	No. of respondents	percentage
Savings bank a/c in banks	100	100
Savings bank a/c in post office	23	23
Fixed deposit	-	-
Life insurance products	2	2
Other financial assets	-	-

Source: Primary Data

Table clearly shows that 100% of the workers are holding savings bank a/c in banks, 23% of them have savings bank a/c in post offices and only 2% of them have life insurance. none of them have any fixed deposits or other financial assets.

Table 11**Opinion regarding credit standing and economic status of women after joining MGNREGS**

Particulars	No. of respondents	percentage
Strongly agree	51	51
Agree	44	44
Neutral	5	5
Disagree	-	-
Strongly disagree	-	-
Total	100	100

Source: Primary Data

The above table revealed that 51% of the respondents strongly agree with the statement that MGNREGS have improved the credit standing and economic status of the women and 44% of the respondents merely agree with the statement.5% of them have no opinion.

Table 12**Problems faced by workers under MGNREGS**

Problems	frequently	Less frequently	never
No implements at worksite	4	26	70
No muster rolls	-	-	100
Harassment	-	-	100
Accessibility to worksite	-	4	96

Source: Primary data

The above table shows that majority of the respondents opined that they have no problems regarding implements at worksite. They have no problems regarding Absence of muster rolls (100%), harassment (100%), only 4 % have problems with regard to accessibility to worksite.

Table 13**Opinion about wage rate followed under MGNREGS**

particulars	No. of respondents	percentage
Highly satisfied	12	12
Satisfied	58	58
Neutral	-	-
Dissatisfied	30	30
Highly dissatisfied	-	-
Total	100	100

Source: Primary Data

From the table it is clear that 12% of the respondents are highly satisfied with the wage rate, 58% of them are merely satisfied with the wage rate and 30% of the respondents are not satisfied with the wage rate followed by MGNREGS

Table 14**Opinion regarding MGNREGA reduces disparity in wages prevailed in society**

particulars	No. of respondents	percentage
Strongly agree	-	-
Agree	14	14
Neutral	16	16
Disagree	53	53
Strongly disagree	17	17
Total	100	100

Source: Primary Data

53% of the respondents opined that they disagreed with the statement that “MGNREGS reduces disparity in wages”, 17% strongly disagreed with the statement, 14% of them agreed with the statement and 16% of the respondents have no opinion about the statement.

Table 15**MGNREGP's acceptance as a factor in creating employment opportunities among women**

Particulars	No. of respondents	percentage
Strongly agree	93	93
Agree	7	7
Neutral	-	-
Disagree	-	-
Strongly disagree	-	-
Total	100	100

Source: Primary Data

It is clear from the table that 93% of the respondents strongly agreed with the statement that MGNREGS is helpful in creating employment opportunities for women and 7% of them are merely agreed with the statement.

Table 16
Efficiency of grievances handling system

Particulars	No. of respondents	percentage
Efficient	74	74
Not efficient	26	26
Total	100	100

Source: Primary Data

The above table shows that 74% of the respondents opined that the grievances handling system is efficient and 26% opined that it is not efficient.

Table 17
Level of satisfaction regarding working of MGNREGS system

Satisfaction level	Number of respondents	percentage
Highly satisfied	5	5
Satisfied	85	85
Neutral	2	2
Dissatisfied	8	8
Highly dissatisfied	-	-
Total	100	100

Source: Primary Data

The above table revealed that 5% of the respondents are highly satisfied with the working of MGNREGS ,85% of them are satisfied with the working. Among the respondents 8% are dissatisfied and 2% have no opinion about this.

Findings

1. Most of the workers working under MGNREGS belongs to the BPL category.
2. Most of the workers are working under MGNREGS for a period of 2-3 years and some times more than 3 years.
3. As much as 62% of the workers worked b/w 50-75 days and the major reason for their absence were they could earn higher wages from the other works in the remaining days.
4. As much as 52% of the workers used their income for purchasing cattle and 30% of them for purchasing home appliances.
5. MGNREGS gives earning capacity to women, this help them to take more role in decision making in their family and improves the economic status.
6. MGNREGS gives identity to women as they contribute to family expenditure and participates in community associations.
7. Most of the workers are satisfied with the working conditions provided under MGNREGS.
8. Some of the workers (30%) are dissatisfied with the wage rate followed by the scheme.
9. MGNREGS doesn't helps to reduce the disparity in wage payments, since only this scheme gives equal wages to the men and women.in other works disparity still exists.



10. All workers are maintaining a savings a/c only for the purpose of payment of their wages. Investment in other financial assets are very low, thus the objective of financial inclusion is not achieved.
11. The level of acceptance of MGNREGS is higher (93%) as it creates more employment opportunities.
12. The grievances handling system in Panchayat is efficient.
13. The workers are satisfied with the working of MGNREGS in Chalavara panchayat.
14. The basic objective of MGNREGS is poverty eradication. The other objectives are elimination of unemployment, increasing the status of women, increasing social well fare etc.

Suggestions

1. The beneficiaries of the scheme have an average or even sometimes very low awareness about the scheme. The communication channels, especially the officials should ensure the proper understanding of the rural about the procedures and features of the scheme.
2. Proper provision of adequate working conditions is very essential especially for women workers, so that they could work at their best.
3. The workers are to be educated about MGNREGA. Then only they will aware about their rights and responsibilities, especially about the unemployment allowances and minimum wages.
4. Steps should be taken to avoid the delay in wage payments as far as possible.
5. The panchayat should conduct Gram Sabha meetings once in a month and should properly evaluate the problems and difficulties of workers and take necessary actions to avoid these issues.
6. The authorities should give proper guidance to the workers regarding the investments in financial assets and their benefits, so that the scheme could achieve the objective of financial inclusion.
7. Audits are to be conducted properly, then only the effective and efficient implementation of MGNREGS in the Panchayat can be ensured.
8. There is high negligence towards the workers of MGNREGS from the part of authorities, which should be avoided.

Conclusion

On the basis of the study conducted, it was found that majority of the workers are satisfied with the implementation of MGNREGS. Even though the awareness level is low the scheme has helped much in improving the decision making role of women in family as well as in the society. The MGNREGA provides a guaranteed 100 days of employment and livelihood security to the workers. The part of the rural job market the MGNREGS did seem to have a more significant impact on was for females. The history indicates that MGNREGS “may well be the first opportunity many women have to earn cash income”. as a result there was a substantial increase in women’s control over resources –including cash in hand and the likelihood of having a bank account- and improvement in women’s ability to make independent decisions about their own matters.

References



1. Agrawal , A. N(2010) Indian Economy Problems of Development and Planning , 34th Edition. New Age International Private Limited.
2. Dhar P. K (2015)Indian Economy - Its Growing Dimension, 13th Edition, Kalyani Publishers.
3. Saraswathi Raju,(2005) Locating Women in Social Development, , Oxford Council for Social Development.
4. Sushama Devi A., Empowering Women Through Political Participation”, Volume VIII No.2, Kerala Academy of Social Science.
5. <http://www.nrega.nic.in>
6. http://en.wikipedia.org/wiki/Mahatma_Gandhi_National_Rural_Employment_Guarantee_Act.



CONTRIBUTION OF MULTIMEDIA TECHNOLOGY IN EDUCATION

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Abstract

The use of multimedia technologies in education has enabled teachers to stimulate final outcomes and assist students in applying knowledge learned from textbooks, thereby compensating for the deficiency of traditional teaching methods. In the current scenario of educational institutions, multimedia has dug up its own kind of space in some or the other way as a tool of educational technology. Multimedia has overcome the barriers of time and space and provides evidence to be accepted as an anytime and anywhere tool for educating multi-disciplinary masses. The process of knowledge acquisition becomes more efficient when the learners experience an event through a multimedia simulation. Multimedia technology empowers the educational process by means of increased interaction between teachers and the students. Apart from the fact that multimedia can provide educators and students with endless possibilities of quality teaching and learning, taking vital considerations of the pedagogical strengths and limitations of Multimedia. It is important to examine how effective these technologies are in practical use.

Key Words: Pedagogy, Multimedia and Educational Technology

Introduction

Multimedia is a melody sung in harmony with multi-channel and multi-modal bits of knowledge and creation. Multimedia is the exciting combination of computer hardware and software that allows you to integrate video, animation, audio, graphics, and text resources to develop effective presentations on an affordable desktop computer. Multimedia is all-pervading, thrilling and involving method of info-edu-tainment with multiple facets and long lasting approbation. This paper presents a comprehensive study of selected papers that are pertinent to the use of Multimedia in Education, as well as lists down the various proposed multi-disciplinary educational frameworks and tools for the same. In this paper, a study of most commonly used methods and issues related to the use of Multimedia as a new education technology tool has been carried out and reported. It also presents a categorized listing of such papers,



accompanied by annotations that describe the content of the papers and their relevance to the use of Multimedia in Education.

Multimedia Learning Environment

Multimedia provides a technology based constructivist learning environment where students are able to solve a problem by means of self-explorations, collaboration and active participation. Simulations, models and media rich study materials like still and animated graphics, video and audio integrated in a structured manner facilitate the learning of new knowledge much more effectively. The interactive nature of multimedia provides the room to enhance traditional "chalk-and-talk" method of teaching with more flexibility to learners to adapt to individual learning strategy. It enables both the educators and learners to work together in an informal setting. The role of educators and learners are extended. Furthermore, it encourages and enhances peer learning as well as individual creativity and innovation.

Educational Technology

Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources. It is most simply and contentedly defined as an assortment of tools that might prove helpful in student centered learning, problem based learning or case-based learning. It advocates the teacher becoming "Guide on the Side" rather than "Sage on the Stage". Educational Technology also called „Learning Technology“, mainly comprise of the use of technology in the process of teaching and learning. Here the term „Technology“ does not only include the use of latest tools and techniques like laptops, interactive whiteboards, and smart phones; internet, Wi-Fi, and YouTube etc., although they are massively preferred by today's learners for their learning potential, but also encompasses efficient and enhanced learning management systems, schema of information dissemination, effective teaching and management of student masses, feedback mechanisms and performance evaluation methodologies etc.

Multimedia in Education

There are two ways, multimedia education is imparted to the students by various universities / institutions: a)Teaching methodologies of multimedia content creation, which include imparting hands-on skills of software packages used for creation and authoring of multimedia content, and b) Employing interactive multimedia content and technology for effective teaching, which include the various methods of engaged learning like multimodal interactive information delivery; and personalized and enhanced anytime-anywhere access

of the content. Table I presents a few initiatives taken by various educational bodies to understand, implement and evaluate the type of multimedia required in the time to come so that it justifies its universal acceptance as a major tool of Educational Technology.

Multimedia and its Pedagogical Strengths

Multimedia facilitates mastering basic skills of a student by means of drill and practice. It helps in problem solving by means of learning by doing, understanding abstract concepts, provide enhanced access for teachers and students in remote locations, facilitate individualized and cooperative learning, helps in management and administration of classroom activities and learning content, and simulate real life problem handling environments. Multimedia Technology is used and experimented by various educational institutions of all levels all over the world in their own designed modes.

Use of Multimedia In an Educational Setting

Let us look at some examples of what is called “innovative use”. Let us say a student wants to write a paper on desert animals. Traditionally, the primary source for obtaining information would be the encyclopedia generally available in the library. With access to interactive multimedia, the student would collect various textual materials about the camel from sources on a CD-ROM. In addition, the student may be able to copy a diagram or the skeleton and muscular structure of the camel and the ostrich to study what is common about the two creatures. With a multimedia approach, the student could also access Web sites on the Internet to get more information. The student could then add film clips on these animals in their natural habitat (all may be from the same CD-ROM) and blend them into a report. Then by adding titles and credits, the student now has a new and original way of communicating his/her own individual perspective.

Advantages of Multimedia

The pedagogical strength of multimedia is that it uses the natural information processing abilities that we already possess as humans. Our eyes and ears, in conjunction with our brain, form a formidable system for transforming meaningless sense data into information. The old saying that "a picture is worth a thousand words" often understates the case especially with regard to moving images, as our eyes are highly adapted by evolution to detecting and interpreting movement. For example, a photograph of Ganges in Varanasi, apart from being aesthetically pleasing, can contain a wealth of information relating to the culture, religion, geography, geology, climate, history, and economics of the



area. Similarly, a recording of a politician's speech can allow us to discern significant semantic features not obvious in a written transcript.

For the student, one advantage of multimedia courseware over the text-based variety is that the application looks better. If the courseware includes only a few images at least it gives relief from screens of text and stimulates the eye, even if the images have little pedagogical value. More often than not, the inclusion of nontextual media into courseware adds pedagogical value to the application. For example, a piece of courseware describing a dig at an archeological site would be more valuable to the student, if it included images of the site, such as enhanced aerial images showing features like old field boundaries, or diagrams illustrating where the digging and scanning took place. In this respect, using the text only, even in a creative way, has obvious limitations as compared to the use of both text and pictures.

Personalized Teaching

The features of a personalized teaching platform include immediate feedback and self-controlled learning schedules. The multimedia learning platform allows students to learn at any time, without emotional factors affecting the learning schedule. The multimedia resources can also be used as preparation material for study. Students may be able to learn skills at their own pace, having their individual learning demands satisfied.

effective teaching materials

Presentations using multimedia applications can encourage student learning and effectively integrate a variety of media elements. The multimedia learning platform can also simulate situational applications, allowing students to understand the subject more easily and observe its relevance. With respect to preparation of teaching resources, the high cost of production and widespread service area of a multimedia learning platform provides assurance that more time and effort will be spent on evaluating the selection and arrangement of teaching materials. The hyperlinks included in teaching material increase overall effectiveness and range of subject comprehension.

High Quality Teaching

The multimedia platform eradicates the human factors present in traditional teaching activities, so the teaching scenario and process provides a more stable environment. Negative factors caused by teacher's psychological status or other aspects are decreased, and a certain level of instructional quality is assured in addition, a multimedia platform allows students to learn convenient times and under optimal conditions.



Repetitive Learning and Immediate Feedback

The multimedia platform may enhance learning effectiveness through immediate feedback. In a traditional teaching setting, the learning effectiveness of students is related to the teaching attitudes and methods of individual teachers. The multimedia learning platform provides opportunities to learn and practice repetitively.

Conclusion

Teaching occupies an honorable position in the society. ICT helps the teacher to update the new knowledge, skills to use the new digital tools and resources. The multimedia learning platform provides immediate feedback and solutions for problems. More over the multimedia learning platform is not affected by time or space; through internet or uploading, students can have repetitive learning objectives, and the comprehensiveness of the multimedia learning platform can be extended. Multimedia used in right direction has also succeeded in psychomotor development and strengthening of visual processing of the intended users. The above studies have clearly indicated that even if the networked classroom technology is made available to the students, there were many other pedagogical issues because of which the students' interest and interaction in the class room could not be increased.

References

1. Dahiya, S. S. (2018). ICT-Enabled Teacher Educator, University News, 43 page 109-114 May 2-8.
2. N. R. Gonzalez, G. Cranitch, and J. Jo, "Academic directions of multimedia education," Communications of the ACM. vol. 48, no. 1, January 2017.
3. G. Krippel, A. J. McKee, and J. Moody (March 2016). Multimedia use in higher education: promises and pitfalls. Journal of Instructional Pedagogies [Online]. Vol. 2. pp. 1-8. Available: <http://www.w.aabri.com/manuscripts/09329.pdf>
4. Bharadwaj, A. P. (2015). "Assuring Quality in Teacher Education", University News, Vol. 43. No. 18
5. A. Radford. (2018). The future of Multimedia in Education. First Monday Peer-reviewed on the internet.



A STUDY ON ROLE OF PUBLIC POLICIES: HEALTH POLICIES IN TELANGANA STATE

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Abstract

Public Policies plays a crucial role towards the development of any nation. The status of the India even today is said to list in the developing nation. This is due to the lack of taking effective decision making in framing the public policies and also due to lack of implementation and monitoring from the officials. There is a need for sustainable development in all sectors in India. Over all development can lead to the development of the nation.

This paper focus on the initiatives of the government towards the effective policy making and implementation of the schemes for the welfare and development of the government.

Key Words: Public Policies, Sustainable development, Government, Challenges

Introduction:

The development of the any nation in the world depends upon the role of the government in framing effective public policies which leads to the development of the people. The initiatives of the government in framing the public policies can focus upon the decision of the government towards the welfare of the citizens. The government should concentrate on the effective decision making process in public policies. The public policy is resultant of conscious of human effort. It is a course of actions involving the official machinery, pressure groups and various agencies and people. It has been mentioned earlier that public policy is not a decision, but a pattern or course of activity.

Objectives of the Study:

The objectives of the study are

- To study about the role of the Public Policies in the Government
- To access the public policies in development
- To know about the challenges faced by government towards success of public polic

The present study is taken to analyze the role of the public policies towards development and welfare of the public. The study is on Health Policies initiated by the Telangana State.

Primary Data and secondary data is collected through discussions with the local people regarding the welfare schemes taken up by the government of Telangana State.

Interventions towards Development

Government policies and interventions for development in various sectors and issues arising out of their design and implementation. India is developing country and has implemented growth strategies in different sectors to enhance its economic status. At global scale. It has continually shown high growth rate during the post-liberalisation period through the execution of economic reforms in the beginning of 1990s. After independence, development of the country and the community has always been the major objective of the government. It has attained excellence in several key areas that range from information technology and pharmaceuticals to automotive parts, and is currently considered as one of the rapidly growing economies of the world. Though India has gained success in some areas and there are positive developments, it is still among the countries with some of the lowest indicators of human development. The levels of malnutrition, illiteracy and poverty are unsatisfactorily high in India. There are numerous issues like the increase in income disparities and regional discrepancies which disrupt the growth of nation. Though employment opportunities have increased but the jobs created are not of high quality. Although there has been an increase in several social services like health, nutrition and education, the quality of most of these services remains poor in most of the rural areas. Major issue is irresistible majority of the population deprived of basic social protection. Policy-makers are facing with inconsistency in the persistence of deprivations and increasing uncertainties among majority of public in growing wealth and prosperity for some groups.

Experts have categorized some areas where government has to play a vital role.

1. Creating a good policy environment for economic growth which is investor-friendly and supportive of inclusive growth. Such a policy environment will allow the creative spirit of farmers and entrepreneurs to get full expression.
2. Policy environment will include Macro-economic stability, Efficient functioning of markets, Good financial system for allocating financial resources, Good governance with emphasis on transparency, accountability and rule of law.

3. Developing the critical infrastructure: It is required in both rural and urban areas to support broad and inclusive growth.

4. Introducing special programmes: For livelihood support for the poor and the vulnerable, aimed at directly improving their income earning capabilities and at mainstreaming them in the overall growth process.

5. Social development: It must be ensured that every inhabitant must have access to essential public services of acceptable quality in health, education, skill-development, safe drinking water, sanitation.

Furthermore, in many of these areas of governmental interventions, the state governments have the major implementing role. Numerous flagship schemes were launched towards development of Social Sector including rural development. The Government's policy documents recognise that ultimate objective of development is to guarantee improvement in incomes and living standards for the citizens. Government can accomplish this tough objective through quicker economic growth accompanied by economic and social support programmes.

Policies and Interventions for Development in various sectors:

In earlier period, there was more focus of government to accumulate wealth. Economic growth itself was regarded as the function of capital inputs in the decades of 80s. The main quest of economic policy was to organize the resources required for achieving a desired rate of growth. Acceleration in the rate of growth was supposed to take care of both economic and social problems. When evaluating the various sector development, the social sector development involves the following constituents:

1. Poverty alleviation and employment generation
2. Access to education
3. Access to improved health services and public health
4. Development of critical rural infrastructure, e.g. rural roads, housing, sanitation, availability of safe drinking water, electricity etc.
5. Urban infrastructure, housing, sanitation, sewage, waste disposal, urban transport etc.
6. Skill development for better livelihood means
7. Enhanced social security
8. Development of backward regions/ district in the country

Among the following schemes taken by the government, the study is limited to the PUBLIC HEALTH SERVICES of the public in the selected areas.

Public Health Services

Public Health is the important concept towards the welfare of the public. The aim of any government is to provide the health facilities to the public in all the regions and to all sections without any discrimination. The government of Telangana State is providing the free health schemes towards the welfare of the public. The schemes like

1. Aryogyasri,
2. Amma Odi (Women and Child health care)
3. Kanti Velugu

1. Aarogyasri

Aarogyasri Scheme is a unique Community Health Insurance Scheme being implemented in State. The scheme provides financial protection to families living below poverty line upto Rs. 2 lakhs in a year for the treatment of serious ailments requiring hospitalization and surgery. 949 treatments are covered under the scheme.

The objective of the scheme is

- to improve access of BPL families to quality medical care for treatment of identified diseases involving hospitalization, surgeries and therapies through an identified network of health care providers.
- The scheme provides coverage for the systems like Heart, Lung, Liver, Pancreas, Kidney, Neuro-Surgery, Pediatric Congenital Malformations, Burns, Post -Burn Contracture Surgeries for Functional Improvement, Prostheses (Artificial limbs), Cancer treatment (Surgery, Chemo Therapy, Radio Therapy), Polytrauma (including cases covered under MV Act) and Cochlear Implant Surgery with Auditory-Verbal Therapy for Children below 2 years.
- All the pre-existing cases of the above mentioned diseases are covered under the scheme.

The beneficiaries of the scheme are the members of Below Poverty Line (BPL) families as enumerated and photographed in BPL Ration Card and available in Civil Supplies Department database. The benefit on family is on floater basis i.e. the total reimbursement of Rs.1.50 lakhs can be availed of individually or collectively by members of the family. An additional sum of Rs 50,000 is provided as buffer to take care of expenses if it exceeds the original sum i.e. Rs 1.50 lakhs per family. Cost for cochlear Implant Surgery with Auditory Verbal Therapy is paid by the Trust up to a maximum of Rs.6.50 lakhs per case.

The diseases specifically excluded from the list are high end diseases such as hip and knee replacement, bone marrow, cardiac and liver transplantations, gamma-knife procedures in neuro surgery, assisted devices for cardiac failures

etc; and diseases covered by national programmes viz., TB, HIV/AIDS, Leprosy, Infectious diseases, Malaria, Filariasis, Gastroenteritis, Jaundice etc.

To the extended Aarogyasri Scheme covers the treatments, it would no longer be permissible for the BPL population to approach the Government for providing relief for medical purposes from the CMRF.

2. Ammavodi (Kcr Kit)

Women and Child Health care scheme Amma Vodi (KCR Kit) KCR KIT is an exclusive scheme which is launched by the government of Telangana which takes complete care of women at every stage of their pregnancy. Beneficiaries who belong to the Telangana State and must have Aadhaar card no with TS. Thinking about the welfare of pregnant women and their newborn baby, Telangana Chief Minister Sri. K Chandrasekhara Reddy launched KCR Kit Scheme. In this scheme, the mother and kid care items will be provided to newborn babies and their mothers. And beneficiaries will get the benefit's until baby turns to three months, and a financial aid of 12000/- will be given to pregnant women. The first 4000/- will be given to pregnant women. Second 4000/- will provide after delivery. And 4000/- at the time of baby vaccination. And In the case of baby girl extra 1000 Rs will provide to mother and baby.



The items list under KCR Kit scheme:

- o Special Mother and Child care soap,
- o Newborn Baby bed, Baby Oil,
- o Baby mosquitos net,
- o Sarees for mother,

- Hand Bags,
- Towel & Napkins,
- Dresses for baby,
- Baby Powder,
- Diapers,
- Baby Shampoo,
- Kid Toys.

Beneficiary:

beneficiaries will get the benefit's until baby turns to three months, and a financial aid of 12000/- will be given to pregnant women

Benefits:

Eg: Monetary benefit, Scholarships, Subsidy, etc.

Exclusion

Following people are not eligible for KCR Kit scheme.

- If beneficiary have more than **two live children**.
- For deliveries before 2nd June 2017.
- If beneficiary has taken treatment from non- government hospitals (eg: private hospital)
- If beneficiary's Aadhaar card does not belong to the Telangana state.

KCR Kit Impact

KCR Kit scheme has not only led to an increase in the number of deliveries in the government hospitals but has also improved regular Antenatal (ANC) check-up and even immunization. Out of 14 lakh deliveries that took place since the launch of the KCR Kits scheme, close to 13 lakh children have received full immunization in the first three and half months while over 10 lakh children have received complete immunization after nine months.

KCR Kit scheme fuelled the rise in admissions of pregnant women in government hospitals, positively influencing IMR and MMR. Under the KCR Kit scheme, the authorities have ensured that every child who is born in

public-institutions has received vaccines immediately, three months and nine months after their birth.

3. Kantivelu :

To work towards “Avoidable Blindness Free Telangana”, the Government has decided to take up universal eye screening by covering the entire population of the state under the name “Kanti Velugu”. The programme will be launched on **15.8.2018**. The objectives of “Kanti Velugu” are (i) to conduct eye screening & vision test for all citizens of the state (ii) provide spectacles free of cost (iii) arrange for surgeries and other treatments free of cost (iv) provide medicines for common eye ailments (v) educate people on prevention of serious disabling eye diseases.

The State Government has embarked on a Noble Project of achieving “avoidable blindness-free” status by conducting a Comprehensive and Universal Eye Screening for the entire population of the State under the title ‘Kanti Velugu’.

The salient features of “Telangana Kanti Velugu” are:-

- Universal Eye Screening to be done for all the citizens of Telangana.
- All cases that require correction of Refraction Errors, Spectacles to be distributed free of cost
- Surgeries will be organised in all cases of Cataract, Glaucoma, Retinopathy, corneal disorders etc.,
- All the services will be provided free of cost
- Medicines for common eye ailments will be provided
- Citizens will be educated on prevention of serious disabling eye diseases.

Impact of Health Scheme Policies :

The government of Telangana State initiated the welfare of the public through implementing Health Schemes. These Health schemes have been successfully implemented in all the districts of Telangana State. The State Government after coming into existence since 2014, concentrated towards the welfare of the people with the concept of “Bangaru Telangana”. Almost all the sections of the people who are below the poverty line are being benefited with these schemes. The government is moving ahead with the difference policies related to the health benefits of the women and child.

Mostly the deprived sections of people who are below poverty level are being benefited with these health schemes in the state. The state government



apart from the health schemes concentrated towards the education of the children in the rural and slum areas where the literacy rate is low.

- After implementing the KCR KIT scheme all most all the women are going to the government hospital for the delivery purpose and getting the benefit of 12,000/-
- The KCR Kit scheme is benefited to the deprived communities mostly by providing the financial assistance to the mother and child.
- Kanti Velugu scheme is successful implemented in all the district, to provide good eye check ups and operations to the required patients.
- School children are getting benefit of the Kanti velugu schemes who are having the eye sight problems.

Conclusion : The government success can be traced only on implementing of good public policies towards the welfare of the people. The policies should be always towards the benefit of the all the sections in the society without any discrimination. The effective decision making of the policies can leads to the development of the society towards the sustainability. The development should be in the areas of education, health and employment which plays the key areas of the people. The government must take initiative towards framing good policies from time to time and see that they are being implemented towards the development of the state.



ANALYTICAL RP-HPLC METHOD DEVELOPMENT AND VALIDATION FOR THE SIMULTANEOUS ESTIMATION OF LAMIVUDINE AND ZIDOVUDINE IN PURE AND PHARMACEUTICAL DOSAGE FORM

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Abstract:

A rapid and precise reverse phase high performance liquid chromatographic method has been developed for the validated of Lamivudine and Zidovudine, in its pure form as well as in tablet dosage form. Chromatography was carried out on an Altima C18 (4.6mm x 150mm, 5 μ m) column using a mixture of ACN, Methanol and Phosphate buffer pH4.6 (10:25:65 v/v) as the mobile phase at a flow rate of 1.0ml/min, the detection was carried out at 265nm. The retention time of the Lamivudine and Zidovudine was 2.088, 6.068 \pm 0.02min respectively. The method produce linear responses in the concentration range of 10-50mg/ml of Lamivudine and 20-100mg/ml of Zidovudine. The method precision for the determination of assay was below 2.0%RSD. The method is useful in the quality control of bulk and pharmaceutical formulations.

Keywords: Lamivudine, Zidovudine, RP-HPLC, Validation, Accuracy.

1. Introduction:

These drugs active against human immunodeficiency virus (HIV) which is a retro virus.¹ they are useful in prolonging and improving the quality of life and postponing complications of acquired immune deficiency syndrome (AIDS) or AIDS-related complex(ARC),but do not cure the infection. Lamivudine (LAMI) is chemically 1[(2R,5S)-2-(Hydroxy methyl)-1-3 oxathiolan-5yl] cytosine and used as an antiretroviral activity. Zidovudine (ZIDO) is chemically 1-[(2R,4S,5S) -4azido-5-(hydroxymethyl) tetrahydrofuran-2-yl]-5-methyl pyrimidine-2, 4(1H,3H0-dione and used as an antiretroviral activity (Figure 1).² Reverse transcriptase inhibitors such as lamivudine and zidovudine have been used in combination to treat patients with HIV.³⁻⁵ The treatment is used to prevent or prolong the onset of acquired immune deficiency syndrome, which can lead to a variety of fatal complications. lamivudine is also used in lower doses to treat patients with chronic hepatitis B, in whom the virus has replicated and caused liver inflammation.⁶⁻⁸

The literature review reveals that few reverse-phase-high-performance liquid chromatography (RP-HPLC) methods for the estimation of lamivudine and zidovudine alone and in combination with other drugs.⁹⁻¹³ However, the present study is to develop an accurate and reliable HPLC method for simultaneous estimation of lamivudine and zidovudine in tablet dosage form as per the ICH norm.

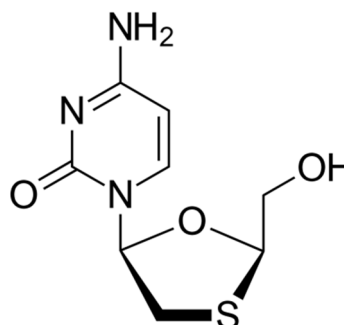
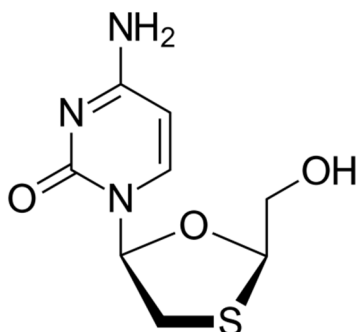


Figure: 1 Structure of Lamivudine Figure: 2 Structure of zidovudine

2. MATERIALS & METHODS:

Lamivudine and zidovudine was given by Sura labs. Water and Methanol for HPLC, Acetonitrile for HPLC were purchased from Merck. The FDC tablets of Lamivudine and zidovudine obtained from local pharmacy.

Instruments: RP-HPLC(WATERS Alliance 2695 separation module, Software: Empower 2, 996 PDA Detector.), Digital weighing balance(Sartorius), Ultra Sonicator(Enertech), pH meter(Lab India).

Mobile Phase Optimization:

Initially the mobile phase tried was Methanol: Orthophosphoric acid and Phosphoric acid (pH 3): Acetonitrile and Methanol: ACN with varying proportions. Finally, the mobile phase was optimized to Buffer: Methanol: ACN in proportion 65:25:10v/v respectively.

OPTIMIZED CHROMATOGRAPHIC CONDITIONS:

Instrument used : Waters HPLC with auto sampler and PDA detector 996 model.

Temperature : 35°C

Column : Altima C18 (4.6×150mm, 5μ)

Buffer : Phosphate buffer (pH-4.6)-Dissolve 0.9g of anhydrous dihydrogen phosphate and 1.298 g of Citric acid mono hydrate in

sufficient water to produce 1000mL. Adjust the pH 4.6 by using ortho phosphoric acid.

pH	:	4.6
Mobile phase	:	Buffer: Methanol: ACN (65:25:10v/v/v)
Flow rate	:	1ml/min
Wavelength	:	265 nm
Injection volume	:	10 μ l
Run time	:	14 min

HPLC METHOD DEVELOPMENT:

Preparation of standard solution:

Accurately weigh and transfer 10 mg of Lamivudine and Zidovudine working standard into a 10ml of clean dry volumetric flasks add about 7ml of Methanol and sonicate to dissolve and removal of air completely and make volume up to the mark with the same Methanol.

Further pipette 0.1 ml of the above Lamivudine and Zidovudine stock solutions into a 10ml volumetric flask and dilute up to the mark with Methanol.

Method validation:¹⁴

System Suitability

Accurately weigh and transfer 10 mg of Lamivudine and 10mg of Zidovudine working standard into a 10ml of clean dry volumetric flasks add about 7mL of Diluents and sonicate to dissolve it completely and make volume up to the mark with the same solvent. (Stock solution)

Further pipette 0.15ml of Lamivudine and 0.3ml of Zidovudine from the above stock solutions into a 10ml volumetric flask and dilute up to the mark with diluents.

Procedure:

The standard solution was injected for five times and measured the area for all five injections in HPLC. The %RSD for the area of five replicate injections was found to be within the specified limits

Linearity:

The linearity of detector response for lamivudine and zidovudine is demonstrated by concentration versus area. Over the range of 10-50 μ g/ml. The linearity was performed by using standard preparation. From the standard preparation transfer 0.2-1ml in to series of volumetric flasks and make up the volume with mobile phase to get concentration of 10-50 μ g/ml. from this take 20 μ g of solution and inject and calculate r^2 .

Precision:

The Intra-day precision (repeatability) and inter-day precision (intermediate precision) study of lamivudine & zidovudine was carried out by estimating



different concentrations of 10-50 µg/ml three times on the same day and on three different days and the results were reported in terms of % RSD. All the experiments were carried in a dark room environment that the raw material is photo sensitive in day light.

Accuracy:

Accuracy was assessed by determination of the recovery study. Addition of standard drug to the pre quantified sample preparation at different concentration levels (50%, 100%, and 150%).

Limit of detection:

According to ICH guidelines the detection limit of an individual analytical procedure is the lowest amount of analyte in a sample which can be detected but not necessarily quantities as an exact value. Limit of detection can be calculated using following equation as per ICH guidelines.

$$\text{LOD}=3.3*\text{standard deviation/slope}$$

Limit of quantification:

The quantitation limit of an individual analytical procedure is the lowest amount of analyte in a sample which can be quantitatively determined with suitable precision and accuracy. The quantitation limit is a parameter of quantitative assays for low levels of compounds in sample matrices, and is used particularly for the determination of impurities and/or degradation products. Limit of quantification can be calculated using following equation as per ICH guidelines.

$$\text{LOQ}=10*\text{standard deviation/slope}$$

Ruggedness:

Ruggedness of the proposed method was determined by analysis of aliquots from two homogenous slots by analyst using same operational and environmental condition.

Robustness:

Method was determined by two different operate and environmental conditions.

Assay:

Inject the three replicate injections of standard and sample solutions and calculate the assay by using formula:

$$\% \text{ASSAY} =$$

$$\frac{\text{Sample area} \times \text{Weight of standard} \times \text{Dilution of sample} \times \text{Purity}}{\text{Weight of tablet} \times \text{Dilution of standard} \times \text{Weight of sample} \times 100} \times 100$$

Standard area
Label claim

3. RESULTS & DISCUSSION: OPTIMIZED METHOD CHROMATOGRAMS OF LAMIVUDINE & ZIDOVUDINE

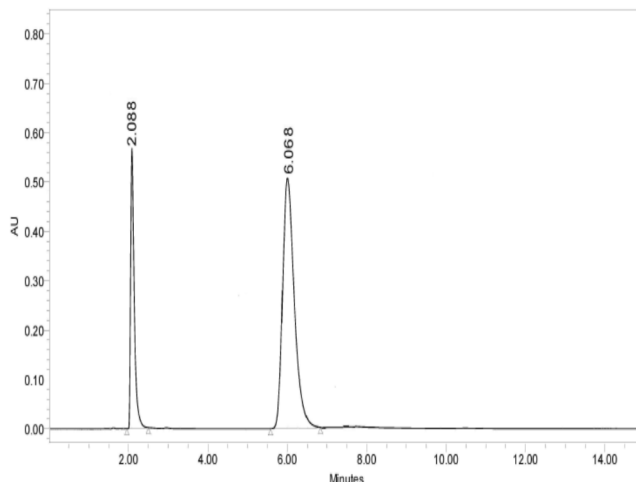


Figure: 3 Optimized Chromatogram

Table: 1 Peak Results for Optimized Chromatogram

S. No	Peak name	R _t	Area	Height	USP Resolution	USP Tailing	USP plate count
1	Lamivudine	2.088	3425413	567933	-	1.0	5565.5
2	Zidovudine	6.068	1629854	517733	2.5	1.1	5355.2

Observation:

From the above chromatogram it was observed that the Lamivudine and Zidovudine peaks are well separated and they show proper retention time, resolution, peak tail and plate count. So it's optimized trial.

Optimized Chromatogram (Sample)

Table: 2 Optimized Chromatogram (Sample)

S. No	Name	Retention time (min)	Area (μV sec)	Height (μV)	USP resolution	USP Tailing	USP plate count
1	Lamivudine	2.090	3468547	567933		1.0	5565.5
2	Zidovudine	6.070	16289441	517733	2.5	1.1	5355.2

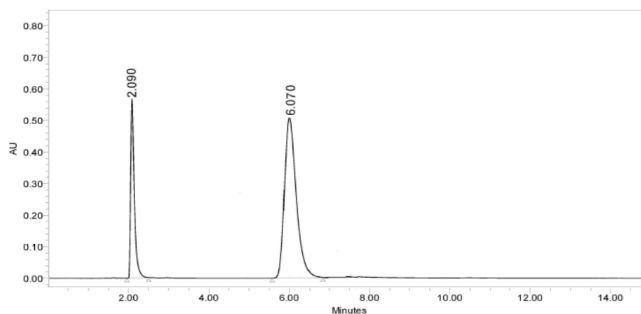


Figure: 4 Optimized Chromatogram (Sample)

Acceptance Criteria:

- Resolution between two drugs must be not less than 2.
- Theoretical plates must be not less than 2000.
- Tailing factor must be not less than 0.9 and not more than 2.
- It was found from above data that all the system suitability parameters

for developed method were within the limit.

VALIDATION RESULTS OF LAMIVUDINE & ZIDOVUDINE

Blank:

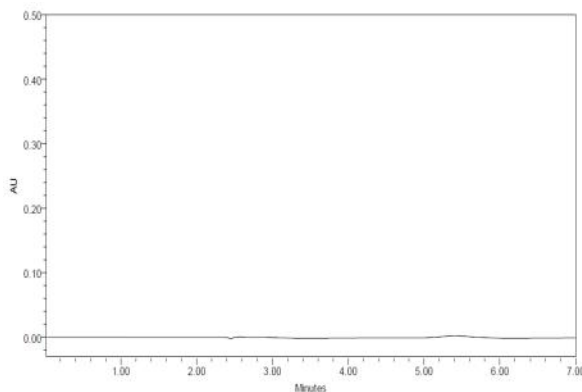


Figure :5 Chromatogram showing blank (mobile phase preparation)

Table: 3 Results of system suitability for Lamivudine

S.No.	Name	Rt	Area	Height	USP count plate	USP Tailing
1	Lamivudine	2.080	3569412	567917	5568.0	1.0
2	Lamivudine	2.080	3465125	517719	6359.2	1.1
3	Lamivudine	2.080	3598154	567933	5565.5	1.0
4	Lamivudine	2.081	3586491	517733	5355.2	1.1
5	Lamivudine	2.081	3582694	567917	6348.0	1.0
Mean			3560375			
Std. Dev			54225.61			
% RSD			1.523031			

Table: 4 Results of method precession for Zidovudine

	Name	Rt	Area	Height	USP plate count	USP Tailing	USP Resolution
1	Zidovudine	2.080	3582264	567917	5568.0	1.0	2.5
2	Zidovudine	2.080	3586491	517719	5359.2	1.1	2.5
3	Zidovudine	2.080	3598154	567933	5565.5	1.0	2.5
4	Zidovudine	2.081	3564125	517733	5355.2	1.1	2.5
5	Zidovudine	2.081	3569412	562173	5568.0	1.0	2.5
Mean			3580089				
Std. Dev			13609.81				
% RSD			0.380153				

Linearity Study:

Lamivudine:

Table: 5 standard graph values of lamivudine

Concentration Level (%)	Concentration µg/ml	Average Peak Area
33.3	10	1010252
66.6	20	2049374
100	30	3072706
133.3	40	3921068
166.6	50	4952813

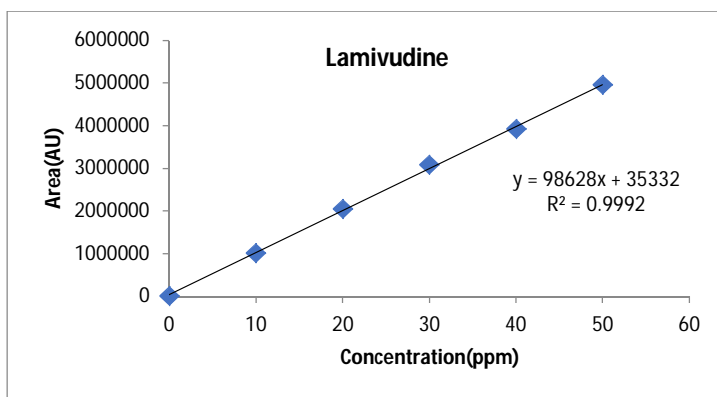


Figure: 6 Calibration Graph for Lamivudine

LINEARITY PLOT:

The plot of Concentration (x) versus the Average Peak Area (y) data of DRUG is a straight line.

$$Y = mx + c$$

$$\text{Slope (m)} = 98628$$

$$\text{Intercept (c)} = 35332; \text{Correlation Coefficient (r)} = 0.999$$

Zidovudine

Table: 6 standard graph values of zidovudine

Concentration Level (%)	Concentration $\mu\text{g/ml}$	Average Peak Area
33	20	8040807
66	40	14318417
100	60	21087985
133	80	27913928
166	100	34584741

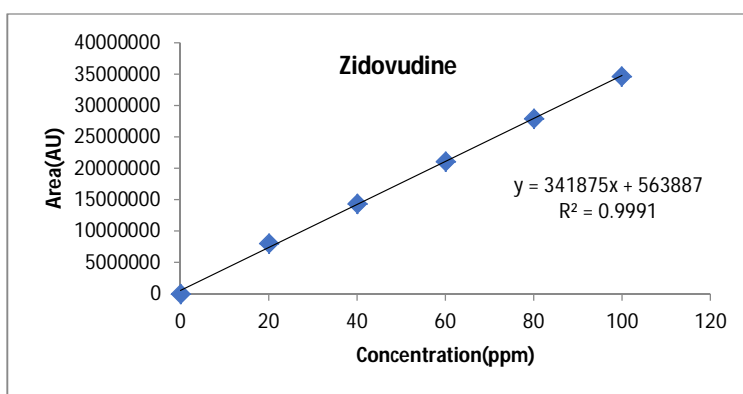


Figure: 7 Calibration Graph for Zidovudine

LINEARITY PLOT:

The plot of Concentration (x) versus the Average Peak Area (y) data of DRUG is a straight line.

$$Y = mx + c$$

$$\text{Slope (m)} = 34187$$

$$\text{Intercept (c)} = 56388; \text{Correlation Coefficient (r)} = 0.999$$

Table: 7 Peak results for assay standard

S. No.	Name	Rt	Area	Height	USP Resolution	USP Tailing	US P plate count	Injection
1	Lamivudine	2.087	3425681	567917		1.0	5568.0	1
2	Zidovudine	6.067	16235984	517719	2.5	1.1	5359.2	1
3	Lamivudine	2.088	3425413	567933		1.0	5565.5	2
4	Zidovudine	6.068	16298543	517733	2.5	1.1	5355.2	2
5	Lamivudine	2.088	3465423	567933		1.0	5545.5	3
6	Zidovudine	6.068	16265213	517733	2.5	1.1	5352.1	3

Table: 8 Peak results for Assay sample

S. No.	Name	Rt	Area	Height	USP Resolution	USP Tailing	US P plate count	Injection
1	Lamivudine	2.089	3469821	567917		1.0	6568.0	1
2	Zidovudine	6.069	16259845	517719	2.5	1.1	5359.2	1
3	Lamivudine	2.090	3468547	567933		1.0	5565.5	2
4	Zidovudine	6.070	16287531	517733	2.5	1.1	5355.2	2
5	Lamivudine	2.090	3468143	567813		1.0	5391.1	3
6	Zidovudine	6.070	16282431	517623	2.5	1.1	5564.0	3

%ASSAY =

$$\begin{aligned}
 & \frac{\text{Sample area}}{\text{Weight of tablet}} \times \frac{\text{Weight of standard}}{\text{Dilution of sample}} \times \frac{\text{Purity}}{\text{Label claim}} \times 100 \\
 & \frac{\text{Standard area}}{\text{Dilution of standard}} \times \frac{\text{Weight of sample}}{\text{Weight of sample}} \times 100 \\
 & == 16276602 / 16266580 \times 10/60 \times 60/0.0136 \times 99.6/100 \times 0.4102/300 \times 100 \\
 & = 100.1\%
 \end{aligned}$$

The % purity of Lamivudine and Zidovudine in pharmaceutical dosage form was found to be 100.1%.

Table: 9 Results of Precision (Repeatability) for lamivudine

S.No.	Name	Rt	Area	Height	USP Plate Count	USP Tailing
1	Lamivudine	2.084	3569412	567917	5568.0	1.0
2	Lamivudine	2.083	3465125	517719	5359.2	1.1
3	Lamivudine	2.082	3598154	567933	5565.5	1.0
4	Lamivudine	2.081	3586491	517733	5355.2	1.1
5	Lamivudine	2.080	3582694	567917	5568.0	1.0
Mean			3560375			



Std.Dev			54225.61			
% RSD			1.523031			

Table: 10 Results of Precision (Reproducibility) for lamivudine

S.No.	Name	Rt	Area	Height	USP plate count	USP Tailing
1	Lamivudine	2.081	3481579	567917	5568.0	1.0
2	Lamivudine	2.082	3458121	517719	5359.2	1.1
3	Lamivudine	2.083	3426581	567933	5565.5	1.0
4	Lamivudine	2.084	3465712	517733	5355.2	1.1
5	Lamivudine	2.085	3451476	567917	5568.0	1.0
6	Lamivudine	2.085	3452106	567514	5359.2	1.1
Mean			3455929			
Std.Dev			18188.92			
% RSD			0.5			

Table: 11 Results of Precision (Repeatability) for zidovudine

Sno	Name	Rt	Area	Height	USP plate count	USP Tailing	USP Resolution
1	Zidovudine	6.061	15481579	567917	5568.0	1.0	2.5
2	Zidovudine	6.062	15369852	517719	5359.2	1.1	2.5
3	Zidovudine	6.063	15248454	567933	5565.5	1.0	2.5
4	Zidovudine	6.064	15874692	517733	5355.2	1.1	2.5
5	Zidovudine	6.064	15236547	567933	5568.0	1.0	2.5
6	Zidovudine	6.064	15217547	567133	5359.2	1.1	2.5
Mean			15404779				
Std.Dev			251289.4				
% RSD			1.6				

Table: 12 Results of Precision (Reproducibility) for zidovudine

S.No.	Name	Rt	Area	Height	USP plate count	USP Tailing	USP Resolution
1	Zidovudine	6.061	15481579	567917	5568.0	1.0	2.5
2	Zidovudine	6.062	15369852	517719	5359.2	1.1	2.5
3	Zidovudine	6.063	15248454	567933	5565.5	1.0	2.5



4	Zidovudine	6.0 64	1587469 2	51773 3	5355. 2	1.1	2.5
5	Zidovudine	6.0 64	1523654 7	56793 3	5568. 0	1.0	2.5
6	Zidovudine	6.0 64	1521754 7	56713 3	5359. 2	1.1	2.5
Mean			1540477 9				
Std.Dev			251289.4				
% RSD			1.6				

Table: 13 accuracy results for Lamivudine

%Concentration (at specification Level)	Area	Amount Added (ppm)	Amount Found (ppm)	% Recovery	Mean Recovery
50%	1543793	15	15.2	101.9	100.9%
100%	3035883	30	30.4	101.4	
150%	4451005	45	44.7	99.4	

Table: 14 accuracy results for Zidovudine

%Concentration (at specification Level)	Area	Amount Added (ppm)	Amount Found (ppm)	% Recovery	Mean Recovery
50%	1084420	30	30.07	100.2	99.6%
100%	2096069	60	59.6	99.4	
150%	3112684	90	89.3	99.3	

Table -: 15 LOD and LOQ Results of lamivudine

LOD	LOQ
1.9/ml	8.6µg/ml

Table -: 16 LOD and LOQ Results of zidovudine

LOD	LOQ
5.1µg/ml	51.5µg/ml

Table: 17 Robustness Results of Lamivudine:

Parameter used for sample analysis	Peak Area	Retention Time	Theoretical plates	Tailing factor
Flow rate of 1.0 mL/min	3425413	2.088	5568.2	1.0
Flow rate of 0.9 mL/min	3425282	3.111	5922.2	1.2
Flow rate of 1.1 mL/min	3517879	1.880	5868.8	1.2
Less aqueous phase	3175485	3.101	5836.2	1.2
More aqueous phase	3365431	1.881	5282.6	1.1

Table: 18 Robustness Results of zidovudine

Parameter used for sample analysis	Peak Area	Retention Time	Theoretical plates	Tailing factor
Flow rate of 1.0 mL/min	2029854	6.068	5359.2	1.1
Flow rate of 0.9 mL/min	1738319	7.101	5999.1	1.2
Flow rate of 1.1 mL/min	1638304	5.007	5989.2	1.1
Less aqueous phase	1973724	7.108	5387.2	1.1
More aqueous phase	2102838	5.008	5938.1	1.1

Discussion:

The method is developed by using Buffer: Methanol: ACN (65:25:10v/v/v) mobile phase and 5 trials are carried out in which some trials are showing high tailing factor and some trials are showing asymmetrical peaks

In the optimized chromatogram, the peak is well separated and theoretical plate count is within the limit. So, this chromatogram is optimized. The standard graph between concentration and absorbance gives linear curve with 0.999 r^2 value for both drugs. The % purity of lamivudine and zidovudine in pharmaceutical dosage form was found to be 100.1%.

The precision studies explain that the results are reproducible at different precisions and %RSD was found to be below 2.

The percentage recovery was found to be 100.9 for lamivudine and 99.6 for zidovudine. And the results obtained for recovery at 50%, 100%, 150% are within the limits. Hence method is accurate.

References:

- 1) Tripathi.K. D.,Essentials of Medical Pharmacology. Jaypee Brothers Medical Publishers Pvt:2010.
- 2) Ahmad, et al.: Simultaneous estimation of lamivudine and zidovudine by RP-HPLC,Journal of Advanced Pharmacy Education & Research ,Apr-Jun 2017 Vol 7(2), pp-66-71
- 3) Kumar DA, Babu MV, Rao JV, Raj J. Simultaneous determination of Lamivudine and Zidovudine and Nevirapine in tablet dosage forms by RP-HPLC method. Chem 2010;3:94-9.
- 4) Gilcélia A, Cordeiro GA, Nagata N, Messerschmidt I, PeraltaZamora P, Rodriguesb LN. Multivariate spectroscopic determination of the Lamivudine - Zidovudine. J Braz Chem Soc 2010;1:78-3.
- 5) Jayakar B, Kumar M, Saravanan C, Kumudhavalli MV. Method development and validation of RP-HPLC method for simultaneous determination of Lamivudine and Zidovudine. J Chem Pharm Res 2010;2:478-1.

- 6) Shanoojaa V, Jameela SA, Harilala BK, Rajakb H, Ravichandrana V. Application of UV-spectrophotometric methods for estimation of lamivudine in tablets digest. J Nanomaterials Biostructures 2009; 4:357-60.
- 7) Bulchandani HH. Simultaneous quantitative determination of Zidovudine and Nevirapine in human plasma using isocratic, RP-HPLC. Trop J Pharm Res 2009;8:79.
- 8) Mandloi DK, Tyagi PK, Rai VK, Dey S, Ashada RK, Mohanraj P. Method development and validation of RP-HPLC in the application of in vitro dissolution study of Lamivudine in bulk drug and tablet formulation. J Chem Pharm Res 2009;1:286-96.
- 9) J. Nijamdeen, B. Jayalakshmi, N. Senthikumar, Vijayamirtharaj and C. Saravanan. Method development and validation of RP-HPLC method for simultaneous determination of Lamivudine and Zidovudine. Journal of Chemical and Pharmaceutical Research. J. Chem. Pharm. Res., 2010, 2(3):92-96.
- 10) Kenney KB, Wring SA, Carr RM, Wells GN, Dunn JA. Simultaneous determination of Zidovudine and Lamivudine in human serum using HPLC with tandem mass spectrometry. J Pharm Biomed Anal. 2000 Jul; 22(6):967-83.
- 11) P. Venkatesh, Lydia Smiley and Mahesh D. Simultaneous estimation of Zidovudine and Lamivudine tablets by RP-HPLC method. International Journal of Chem Tech Research. 2011, Vol. 3, No.1, pp 376-380,
- 12) B. Jayakar, M. Kumar, C. Saravanan and M. V. Kumudhavalli. Method development and validation of RP-HPLC method for simultaneous determination of Lamivudine and Zidovudine. Journal of Chemical and Pharmaceutical Research. 2016, 2(1): 478-481.
- 13) Ravi Prakash Mahor, Versha Parcha, Yogendra Singh, Rajiv Sharma and Anil Bhandari. Development and Validation of a HPLC Method for Simultaneous Estimation of Lamivudine and Zidovudine in Tablet Dosage Forms. Pelagia Research Library. Der Chemica Sinica, 2015, 2(6):12-19.
- 14) ICH:Q2A Text on validation of analytical procedure; 1994.

INVESTIGATION OF INHOMOGENEOUS AND ATTENUATION WAVE PROPAGATION IN A MICROPOLAR ELASTIC MEDIUM

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Abstract: Wave propagation in a micropolar elastic medium of large region is studied. The dispersion relation connecting attenuation angle and phase velocities for attenuation waves and inhomogeneous waves are derived. Inhomogeneous waves are depends on attenuation angle, while homogeneous waves are not depend on attenuation angle in a micropolar elastic medium. Numerical computations have been performed and also have been plotted against attenuation angle for attenuation phase velocity and inhomogeneous phase velocity.

Key Words: Micropolar elastic solid, Inhomogeneous Wave theory, Attenuation waves, Inhomogeneous waves, Attenuation angle, Dispersion relation.

1 Introduction:

The propagation of waves in a micropolar elastic materials has many applications in various fields of science and technology. The micropolar theory of elasticity incorporates a local rotation of points as well as deformation in classical elasticity and couple stress (a torque for unit area) as well as the force stress is referred to simply as 'Stress' in classical elasticity in which there is no other kind of stress. The modern continuum mechanics capabilities are developed the theories incorporating couple stresses. One of the ways to take into an account the couple-stress is to use the model of micropolar elastic medium which is based on the assumption that the

displacement vector \vec{u} of the medium point is related to the vector of small rotation $\vec{\phi}$ by the equation $\vec{\phi} = \frac{1}{2} \nabla \times \vec{u}$. So, for consideration of

micropolar Continuum we have one independent kinematic unknown \vec{u} . However the asymmetric part of the stress and the symmetric part of the couple stress cannot be derived directly from the physical equations, which was

reason why Eringen [1] named the theory of the micro-polar Continuum theory as the theory of undefined couple-stresses.

Classical elasticity ignores this effect by ascribing only translation degrees of freedom of material point of body. Linear micropolar theory of elasticity Eringen, [2] by including intrinsic rotations of the microstructure, provides a model that can support body and surface couples and displays high frequency optical branch of the wave spectrum. The plane wave propagation in an infinite isotropic homogeneous micropolar elastic solid half-space was discussed by Parfitt and Eringen [3] and they showed the existence of four basic waves (a longitudinal displacement wave, a longitudinal microrotational wave and two sets of two coupled waves) propagating with different velocities in an isotropic micropolar elastic solid. Wave propagation in micropolar elastic solids also discussed by Smith [4] and Ariman [5]. Wave problems in micropolar elastic media have been discussed by many authors like Nowacki [6]. The frequency equation for free vibration of a solid cylinder of arbitrary cross-section immersed in a fluid using Fourier expansion collocation method have obtained by Venkatesan and Ponnusamy [7, 8].

This paper is organized in the following way. The basic equations for motion in a micropolar elastic medium of large region and their formulation are given in sections 2 and 3. In section 4, the inhomogeneous wave solution and their secular equations are derived. Inhomogeneous phase velocity and attenuation phase velocity are discussed and plotted against attenuation angle in the last section.

2BASIC GOVERNING EQUATIONS

The equations of motion in a linear homogeneous micropolar elastic medium under the absence of body forces and body couples in terms of displacement

vector \vec{u} and micro-rotation vector $\vec{\phi}$ are given by [9]

$$(1) \quad (\lambda + 2\mu + K)\nabla\nabla \cdot \vec{u} - (\mu + K)\nabla \times \nabla \times \vec{u} + K\nabla \times \vec{\phi} = \rho \frac{\partial^2 \vec{u}}{\partial t^2}$$

$$(2) \quad (\alpha + \beta + \gamma)\nabla\nabla \cdot \vec{\phi} - \gamma \nabla \times \nabla \times \vec{\phi} + K\nabla \times \vec{u} - 2K\vec{\phi} = \rho J \frac{\partial^2 \vec{\phi}}{\partial t^2}$$

where ρ is the density of the body and J is the moment of micro inertia, λ, μ are Lamé's constants, while K is the elastic constant and α, β, γ are micro-rotational constants.

The displacement vector \vec{u} can be represented as a sum of two vectors,

one of which is solenoidal and other irrotational. This leads to consideration of the case

$$(3) \quad \text{Curl } \vec{u} = \vec{0}$$

The micropolar Continuum is based on the assumption

$$(4) \quad \vec{\phi} = \frac{1}{2} \nabla \times \vec{u}$$

In view of eq. (3) and (4) the equation of motion (1) and (2) reduces to

$$(5) \quad (\lambda + 2\mu + K) \nabla \nabla \cdot \vec{u} - (\mu + K) \nabla \times \nabla \times \vec{u} = \rho \frac{\partial^2 \vec{u}}{\partial t^2}$$

3 FORMULATION OF THE PROBLEM

We consider origin of coordinate system (x_1, x_2, x_3) at any point on the plane horizontal surface and x_3 -axis pointing vertically downwards into the body. So, we take $\vec{u} = (u_1, u_2, 0)$, where u_1, u_2 are functions of x_1 and x_2 only.

The equation (5) can be written in $x_1 x_2$ -plane as,

$$(6) \quad (\lambda + 2\mu + K) \frac{\partial^2 u_1}{\partial x_1^2} + (\lambda + \mu) \frac{\partial^2 u_2}{\partial x_1 \partial x_2} + (\mu + K) \frac{\partial^2 u_1}{\partial x_2^2} = \rho D^2 u_1$$

$$(7) \quad (\lambda + 2\mu + K) \frac{\partial^2 u_2}{\partial x_2^2} + (\lambda + \mu) \frac{\partial^2 u_1}{\partial x_2 \partial x_1} + (\mu + K) \frac{\partial^2 u_2}{\partial x_1^2} = \rho D^2 u_2$$

where

$$D^2 = \frac{\partial^2}{\partial t^2}; \quad \nabla^2 = \frac{\partial^2}{\partial x_1^2} + \frac{\partial^2}{\partial x_2^2}.$$

Let us introduce the potential functions Φ and Ψ as,

$$(8) \quad u_1 = \frac{\partial \Phi}{\partial x_1} + \frac{\partial \Psi}{\partial x_2}; \quad u_2 = \frac{\partial \Phi}{\partial x_2} - \frac{\partial \Psi}{\partial x_1}$$

Inserting eq.(8) in equations (6) and (7) we obtain,

$$(9) \quad \left(\frac{\mu + K}{2\rho} \right) \nabla^2 \Psi = \frac{\partial^2 \Psi}{\partial t^2}$$

$$(10) \quad \left(\frac{2\lambda + 2\mu + K}{2\rho} \right) \nabla^2 \Phi = \frac{\partial^2 \Phi}{\partial t^2}$$

4 THE INHOMOGENEOUS WAVE SOLUTION

Generally the wave equations (9) and (10) can be solved by introducing complex monochromatic plane wave functions such as,

$$(11) \quad (\Phi, \Psi) = [\Phi^*, \Psi^*] e^{i(k_j x_j - \omega t)}$$

where k_j is the complex wave vector, ω is the wave circular frequency with phase velocity $= \frac{\omega}{k_j}$, i is the imaginary unit ($i = \sqrt{-1}$), t is the time variable and (Φ^*, Ψ^*) are the complex amplitudes of displacements of the continuum, index $j = 1, 2$. Substituting eq. (11) into equations (9) and (10) we obtain,

$$(12) \quad \left[\left(\frac{\mu + K}{2\rho} \right) (k_1^2 + k_2^2) + \rho \omega^2 \right] \Psi^* = 0$$

$$(13) \quad \left[\left(\frac{2\lambda + 2\mu + K}{2\rho} \right) (k_1^2 + k_2^2) + \rho \omega^2 \right] \Phi^* = 0$$

A non-trivial solution of the homogeneous equations (12) and (13) exists only if the determinant of the coefficient variables, which yields the governing dispersion relation

$$(14) \quad \det B = 0$$

in which the elements b_{ij} , ($i, j = 1, 2$) of the matrix B are

$$(15) \quad \begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \end{bmatrix} \begin{bmatrix} \Phi^* \\ \Psi^* \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

where

$$(16) \quad b_{11} = b_{22} = 0 ; \quad b_{12} = \left(\frac{\mu + K}{2\rho} \right) (k_1^2 + k_2^2) + \rho \omega^2 ;$$

$$b_{21} = \left(\frac{2\lambda + 2\mu + K}{2\rho} \right) (k_1^2 + k_2^2) + \rho \omega^2$$

Further, with the help of inhomogeneous wave theory [10, 11], assume that the complex wave vector can be decomposed in terms of wave propagation

direction

as,

(17)

$$k_j = P_j + iA_j = Pn_j + iAm_j$$

where P_j is the propagation vector with its magnitude of $P = \sqrt{P_j P_j}$, A_j is the attenuation vector with its magnitude of $A = \sqrt{A_j A_j}$, and (n_j, m_j) are unit vectors along propagation direction (normal to the equiphase plane) and perpendicular to the plane of constant amplitude (normal to the equiamplitude plane), respectively. Generally $n_j \neq m_j$ represents an inhomogeneous wave problem while $n_j = m_j$ represent a homogeneous wave problem. Further, the unit vectors (n_j, m_j) can be expressed in terms of angle θ between n_j and x_3 , and θ_1 between n_j and m_j as shown in figure (1). From eq. (17) we obtain,

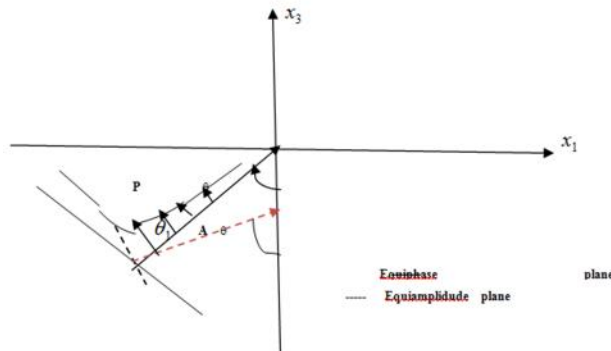


Figure (1): Illustration of equiphase and equiamplitude planes and exponential Variation of the amplitude along the phase propagation direction

$$\{n_1, n_2\} = \{\sin \theta, \cos \theta\}^T$$

$$\{m_1, m_2\} = \{\sin(\theta + \theta_1), \cos(\theta + \theta_1)\}^T$$

$$n_j m_j = \cos \theta_1.$$

Correspondingly, the wave vector k_j can be expressed in terms of one complex numbers, the propagation angle θ and the attenuation angle θ_1 such that

$$k_1 = P \sin \theta + iA \sin(\theta + \theta_1) \quad (19)$$

$$k_2 = P \cos \theta + iA \cos(\theta + \theta_1)$$

Inserting eq. (19) into dispersion relation (14) we obtain,

$$(20) \quad x^2 + Dx + E = 0$$

where

$$x = k_1^2 + k_2^2 = P^2 - A^2 + 2iPA \cos \theta_1$$

$$(21) \quad D = \frac{b(a+c)}{ac}; \quad E = \frac{b^2}{ac}$$

$$a = \frac{\mu + K}{2\rho}; \quad b = \rho\omega^2;$$

$$c = \frac{2\lambda + 2\mu + K}{2\rho}$$

Eq. (20) gives two

inhomogeneous waves propagate in a micropolar elastic solid for given θ_1 .

After P is solved, the phase velocity can be defined as,

$$(22) \quad c^* = \frac{\omega}{P}$$

and after A is solved the attenuation phase velocity v can be defined as,

$$(23) \quad v = \frac{\omega}{A}$$

In case of homogeneous wave propagation, i.e., $n_j = m_j; j = 1, 2$ we have,

$$(24) \quad k_1^2 + k_2^2 = (P^2 - A^2) + 2iPA$$

By eq. (24) we say that the homogeneous waves are not affected by attenuation angle.

5 NUMERICAL RESULTS AND DISCUSSION

In order to discuss the problem in great detail and to find the attenuation angle θ_1 of the Continuum on inhomogeneous phase velocity

c^* , attenuation phase velocity v and attenuation coefficient A of the inhomogeneous wave, we have taken the material parameters [12] as,

$$\rho = 1.74 \times 10^5 \text{ kg.m}^{-3}; \quad \lambda = 9.4 \times 10^{11} \text{ kg.m}^{-1}.\text{s}^{-2};$$

$$\mu = 4.0 \times 10^{11} \text{ kg.m}^{-1}.\text{s}^{-2}; \quad K = 1.0 \times 10^{11} \text{ kg.m}^{-1}.\text{s}^{-2}; \quad \text{and}$$

$\omega = 1.0 \times 10^{-4}$ (non- dimensional). Take the attenuation angle θ_1 ranging from 0^0 to 360^0 . The variation of attenuation angle versus inhomogeneous phase velocity for non-dimensional values of $A=0.5, 1$ and 5 are shown in figures 2, 3 and 4 respectively and these comparative graphs are shown in figures 4, 5 and 6. It is observed that inhomogeneous phase velocity is inverse proportional to attenuation vector in the given range of attenuation angle. All these phase velocities are vanishes at 0^0 and occurs highest values at 360^0 . The variation of attenuation angle versus magnitude of attenuation phase velocity for non-dimensional values of $P=0.5, 0.8$ and 1 are shown in figures 7, 8 and 9 respectively and these comparative graphs are shown in figure 10.

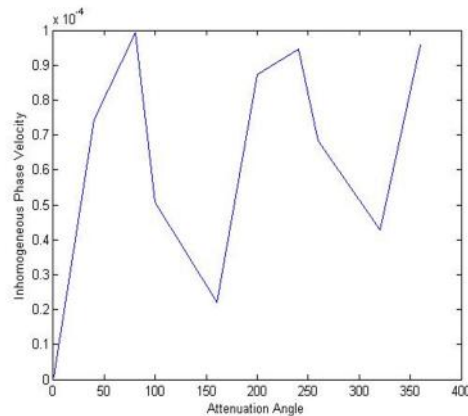


Fig. (2): Variation of Attenuation angle versus Inhomogeneous phase velocity for $A=0.5$

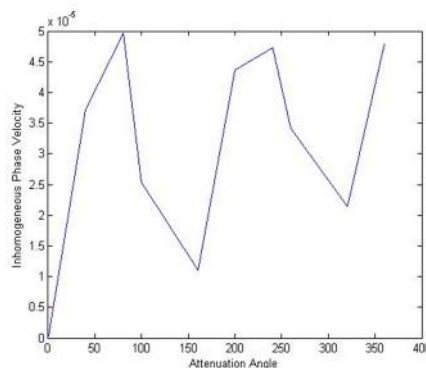


Fig. (3): Variation of Attenuation angle versus Inhomogeneous phase velocity for $A=1$

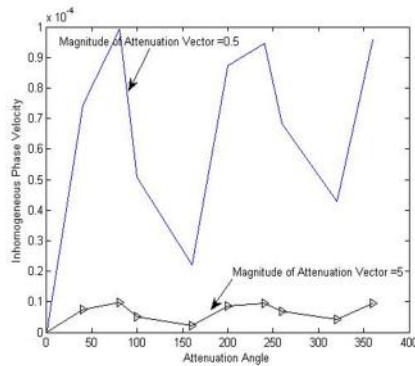


Fig. (4): Variation of Attenuation angle versus Inhomogeneous phase velocity for $A = 0.5$ and 5

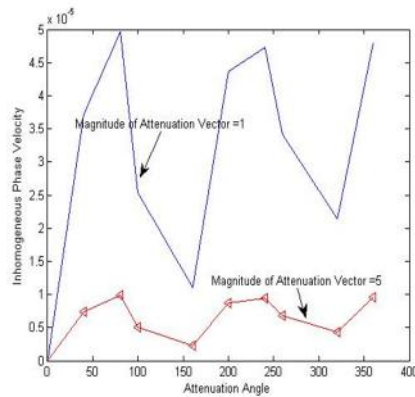


Fig. (5): Variation of Attenuation angle versus Inhomogeneous phase velocity for $A = 0.5, 1$

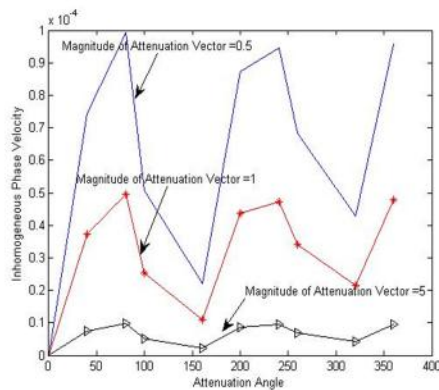


Fig. (6): Variation of Attenuation angle versus Inhomogeneous phase velocity for $A = 0.5, 1$ and 5

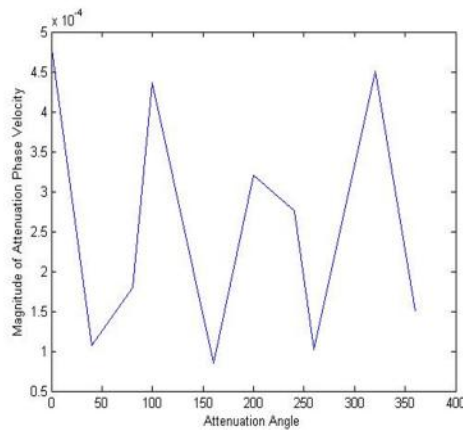


Fig. (7): Variation of Attenuation angle versus magnitude of attenuation phase velocity for $P = 0.5$

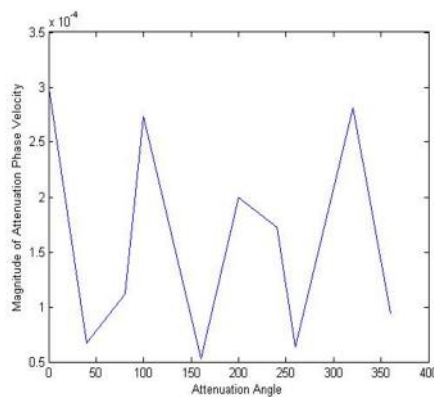


Fig. (8): Variation of Attenuation angle versus magnitude of attenuation phase velocity for $P = 0.8$

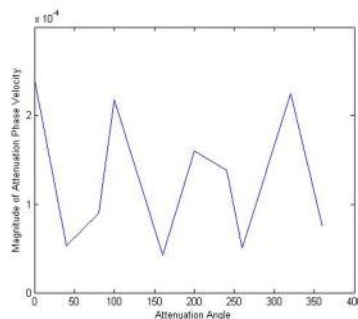


Fig. (9): Variation of Attenuation angle versus magnitude of attenuation phase velocity for $P = 1$

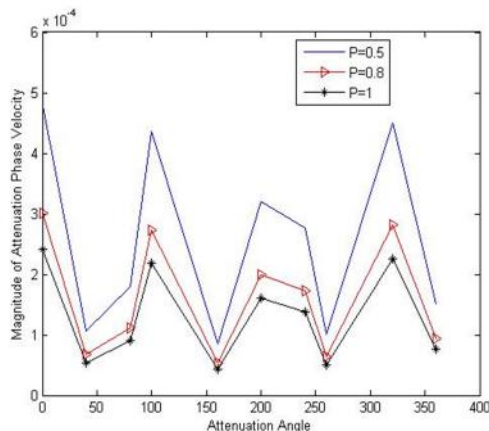


Fig. (10): Variation of Attenuation angle versus magnitude of attenuation phase velocity for $P = 0.5$, 0.8 and 1

It is observed that magnitude of attenuation phase velocity also is inverse proportional to propagation vector in the given range of attenuation angle. All these phase velocities occurs highest values at 0° and least values at 160° and 260° .

6 CONCLUDING REMARKS:

In the frame work of inhomogeneous wave theory the wave propagation in a Micropolar Elastic Solid have been studied. Throughout this investigations and numerical results we have conclude that

- (i) Two inhomogeneous, two homogeneous and two attenuation waves are propagate in a Micropolar Elastic Solid.
- (ii) Inhomogeneous and attenuation waves are effected, while homogeneous waves are not effected by attenuation angle.
- (iii) Inhomogeneous waves are inverse proportional to the attenuation vector.
- (iv) Attenuation wave also is inverse proportional to the propagation vector.
- (v) All these inhomogeneous waves are vanishes at 0° and occurs highest values at 360° .
- (vi) All these attenuation waves occurs highest values at 0° and least values at 160° and 260° .

ACKNOWLEDGEMENT

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References

- [1] Eringen, A.C., 1968, “The theorem of micropolar elasticity,” In H. Liebowitz (ed.), Fracture Academic Press, V2, p.621.
- [2] Eringen, A.C., 1966, “Linear theory of micropolar elasticity,” J.Math. Mech. 15, pp. 909– 924.
- [3] Parfitt,V.R., and Eringen, A.C., 1969, “Reflection of plane waves from a flat boundary of a micropolar elastic half-space,” J. Acoust. Soc. Am. 45, pp. 1258–1272.
- [4] Smith.A.C., 1967, “Waves in micropolar elastic solids,” Int. J. Engng. Sci.5, pp. 741-746.
- [5] Ariman,T., 1972, “Wave propagation in a micropolar elastic half-space,” J. Math. Mech. 13, pp. 11–17.
- [6] Nowaki, W., 1970, “Theory of micropolar elasticity,”(Courses and Lectures, International Centre for Mechanical Sciences), (Udine: Springer).
- [7] Venkatesan, M., and P. Ponnusamy,P., 2002, “Wave propagation in a solid cylinder of arbitrary cross-section immersed in a fluid” J. Acoust. Soc. Am.112, pp. 936–942.
- [8] Venkatesan, M., and P. Ponnusamy,P., 2003, “Wave propagation in a solid cylinder of polygonal cross section immersed in a fluid,” Indian J. Pure Appl. Math. 34 (9), pp. 1381- 1391.
- [9] Eringen, A.C., 1999, “Micro-continuum field theories I, Foundation and Solids,” Springer-Verlag, New York.
- [10] Yuan , X, and Kuang, Z., 2010, “The inhomogeneous waves in Pyroelectrics,” Journal of Thermal stresses, Vol. 33, No. 3, pp. 172-186.
- [11] Z.B Kuang,Z.B., and Yuan , X, 2011, “Reflection and transmission of waves in Pyroelectric and piezoelectric materials,” Journal of Sound and Vibration, Vol. 330, No. 6, pp. 1111-1120.
- [12] Somaiah,K., 2017, “Propagation of Plane Waves in Micro-stretch Elastic Solid in Special Case,” Global Journal of Pure and Applied Mathematics, Volume 13, No. 6, pp. 2143-2151.



A SURVEY OF DALIT WOMEN IN WEST BENGAL 1980-2010

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Abstract:

Several upheavals have modified our social history at the threshold of the 21st century. As civilization cannot be thought of except society, the position of women in a society has to be assessed in order to write down the history of a society. The history of the 'Sudras', the fourth class in the Hindu society, also says of such a thing. Although the 'Sudras' are the fourth class of the society, there remains another group just after it and it is called the Dalits. According to the census of 2011 the number of Dalit people in West Bengal was 1 crore 85 lakh people. However in accordance with modern constitution these people are known as Schedule Caste. These people have neither social position nor economic sufficiency. Slowly but steadily they are making a forward movement. They have got back social respect due to the sincere and selfless activities of Dr.B.R. Ambedkar but there is a big question as to how far the position of Dalit women have improved in the patriarchal society. I am trying to present this issue on the basis of information from the background of West Bengal.

Keywords: Women, Dalit, Exploitation, Harassment, Violence, Empowerment

Introduction : The present study paper to focus on the nature of promises, problems and prospects of empowerment of the Dalits women in West Bengal. It is a micro study about the socio-economic political and cultural spaces of Dalit women within a greater society. The objective of this study is to highlight the harsh reality of the suppression, struggle and torture Dalit women face every day of their miserable lives. The hardships of Dalit women are not simply due to their poverty, economical status, or lack of education, but are a direct result of the severe exploitation and suppression by the upper classes, which is legitimized by Hindu religious scriptures (Thind n.pag; Agarwal n.pag). Dalit women are discriminated against not only by people of higher castes, but also within their own communities. Men are dominant in Dalit communities. Gail Omvedt, a feminist sociologist, has called Indian Dalit women "Dalit among Dalit". Dalit women also have less power within the Dalit movement itself. Women are active in large numbers in the movement but most leadership positions in the organisations, local bodies and associations have



until now been held by men. So the situation of Dalit women in west Bengal needs special attention.

Caste system, the unique feature of Indian society divides its members into

different segments on the basis of ascribed status. The people situated at the bottom have been identified as unclean or untouchables or achhuts. Though it is an eternal truth that all men are not equal but when and where human beings became unequal due to their birth then that inequality became a crucial issue in the process of social, political and economical mobilization. The common feature of this problem is maintaining a specific order which generally stood for suppressing the voices of the bottom rungs and concomitantly ignoring the usefulness of voice as instrumental to attain social justice. However after Independence the introduction of parliamentary democracy, universal adult franchise, various constitutional rights, and government sponsored development programs and enactments brought a massive change in caste based inequality. Various developmental and social transformation programs gave birth to the demands for equality and assertion of collective identity among the erstwhile segregated and marginalized groups.³ They became vociferous about their identity, honor, dignity and prestige. They emphatically demanded their share and participation in every walk of life. Actually the postindependence discursive history of caste inequality has been viewed on the one hand as an ameliorative mechanism for the low caste and on the other hand as a tale of severe deprivation and obnoxious acts perpetrated on low caste people. This dialectical situation ultimately gives birth to new forces, which stand up to erase traditional abysmal position of the poor, segregated, low caste people and at the same time organize themselves for the installation of dignified and hegemonic position. This new forces raise hope among the low castes that they could set aside the parochial strictures of castes which would make way for a more secular political society. They were propagating the notion that individual equality per se would not emancipate automatically, so they need to re-invent dignity in their collective identity.⁴ This contextual transformation ultimately provoked those marginalized low caste groups who have, by the help of the aforementioned mechanisms of politicization, emerged with a new sense of humanity and forge ahead to shape a new society based on the principles of- justice, equality and freedom.

Dalit :At the outset it is necessary to justify the construction of the term 'Dalit'; whom we may identify as dalit or who are identified as dalit in this study. The word was derived from Sanskrit language and its literary meaning is 'ground down' 'oppressed' or 'broken'.⁵ As political epithet it was used in the 1930s as a Hindi Marathi translation of 'Depressed class'. Generally since



1960s the exuntouchables have been identified as dalit. It is important to note that the category dalit is not a homogenous one, but made with three broad divisions, each having its own distinctive background and own problems. These three divisions are scheduled castes, scheduled tribes and other backward communities. Besides, the religious minorities have also begun to claim their belongingness to this category. We may not consider the members of dalit category as simple laborers' or economically deprived or exploited individual. It is an aggregate of closed status group. The commonality of the members of this category is they are socio-economically oppressed, culturally subjugated and politically marginalized for centuries; actually all the members of this category are ex-untouchable. The determining factor of this category is not economic but the birth identity. For interpreter 'Dalits' are those who have been broken, ground down by social groups above them in a deliberate manner. This identity is actually constructed on the one hand to express the denial of pollution or untouchability, unjustified caste hierarchy and on the other hand to express the spirit of pride and militancy.⁶ By this constructed identity ex-untouchables emphatically express their willingness to uproot the traditional practice of untouchability and forge initiative in adopting and promoting a new identity which stands for their honor and advancement. In administrative parlance, scheduled castes are considered as dalits. But some scholars and activists considered it as a narrow inclusion and demanded a broader one to encompass all those considered to be either similarly placed or natural allies. They intend to include landless poor peasant, women, scheduled tribes and other backward castes in this category. However though scheduled castes, scheduled tribes and other backward castes are all marginalized group, yet their social heritage is not the same. The backward castes identified themselves as 'pichadi jati' and the scheduled tribes preferred to call themselves as 'soshits'. The three words 'dalita', 'soshita' and 'pichadi jati' are evocative of the anguish and frustrated aspirations but it is not sufficient for sameness.⁷ It is also important to note that always conceptualization of dalit in terms of traditional account would not provide complete picture of their places in society. It is difficult to provide a single universal definition of dalit. However considering present situation and common parlance this study regarded the scheduled castes as 'dalit'.

Current static dalit in west Bengal: The total population of West Bengal at 2001 Census has been 80,176,197. Of these 18,452,555 persons are Scheduled Castes (SCs), constituting 23 per cent of the total population of the state. The state has registered 14.8 per cent decadal growth of SC population in 1991-2001. There are fifty nine (59) notified SCs, and all have been enumerated in 2001 Census.

Population: Size & Distribution:The Rajbanshi and Namasudra having more than 32 lakhs population each constitute 35.8 per cent of the total SC population of the state. Bagdi, Pod, Bauri and Chamar each have more than 10 lakhs population. They along with Rajbanshi and Namasudra together constitute 73.9 per cent of the total SCs. The Jalia Kaibartta, Hari, Dhoba, Sunri (excluding Saha), Dom, Lohar, Mal, Kaora, and Tiyyar have sizeable population (Statement-1). The rest of the SCs have a comparatively smaller population.

Statement-1: All Scheduled Castes 18,452,555 100 %

2 Rajbanshi 3,386,617 18.4 3 Namasudra 3,212,393 17.4 4 Bagdi 2,740,385 14.9 5 Pod 2,216,513 12.0 6 Bauri 1,091,022 5.9 7 Chamar 995,756 5.4 8 Jalia Kaibartta 409,303 2.2 9 Hari 390,619 2.1 10 Dhoba 369,808 2.0 11 Sunri (excluding Saha) 317,543 1.7 12 Dom 316,337 1.7 13 Jhalo Malo 293,714 1.6 14 Lohar 279,582 1.5 15 Mal 273,641 1.5 16 Kaora 263,731 1.4 17 Tiyyar 195,340 1.1.

3. North Twenty Four Pargana, South Twenty Four Pargana and Bardhaman districts account for one third of the total SC population of the state.

4. Majority of SCs are living in rural areas (84.1 per cent).

Sex Ratio : The sex ratio of the total SC population is 949, which is higher than the national average (936) for all SCs. Of the sixteen major SCs, the sex ratio among Bagdi (978), Bauri (973), Kaora (963), Hari (963), Mal (962), Dom (959), Lohar (959), and Jalia Kaibartta (951) is above the state average for all SCs. It is lower than the state average among the remaining seven major SCs; the lowest has been among the Chamar (911).

The child sex ratio (0-6 age group) of 958 for SCs in the state is higher than the national average for the same category (938). Jalia Kaibartta (954), Sunri (excluding Saha) (951), Tiyyar (951), Hari (948), Pod (947), and Dhoba (942) have recorded lower child sex ratio as compared to the state average (958).

Social status : Some of the sociologists describe that the status of Dalit women is better than that of the high caste women as both the men and women share the same work. So there are not so many rules that create gender discrimination in the low caste groups (Bennett, 1981). But so far as the social status is concerned Dalit women have been doubly victimised, being "women and untouchables. Often times they have to face humiliation and psychological depression while using the public spaces e.g. water sources, entering mandirs and others. Besides that, When they have to survive on the mercy of the upper caste groups they need to provide various services that are low paid and risky. In the labour force also, if there are untouchables, they are segregated while serving food. They need to stay away from the so called upper caste people of the same economic status while eating. Such practices have not been changed much from education and legal sanctions. A Chamar woman however is the

most needed person during the time of delivery. She attends the birth and does all the required works as a doctor yet she is not allowed to enter the house. A certain amount of wage is given either in cash or in kind as the fees, which the person using her service can afford. Dolit women are often found to be the victims of illegitimate sexual relationships. If they have such relationships with the higher caste men, they are not accepted in their family. In such cases they have to lead a miserable life. On the other hand there are some groups in which women are indulged in prostitution as their profession. The Badi women are indulged in sex trade from the very young age which is a big source of earning to the family. Men of the family work as the dealers for their trade. Many Dolit women also have become the victims of girl traffickers being ignorant of all these activities. Having no other source of income, Dalit women are compelled to adopt such illegal and odious occupation for being destitutes in the society.

Economic:

Most of the Dalits have no land and no other regular source of income. Those who are the occupational groups especially in the rural areas, get a fixed wage. For example a tailor will sew the clothes mostly during the Dasai or during rainy season when people usually sew new clothes. The blacksmith will make tools or sharpen them at the same time of the season when they are in use. Women share hands with their male in these activities. For this purpose they are given a certain amount of food grains from the families where they work seasonally, as most of the farmers also don't have their regular income. This allowance is not sufficient if there are more family members to feed. In such cases they live in hand to mouth situation. So, they are compelled to take whatever job is available for them. Those who don't work as fixed labour still have difficulty to survive as there is no job in the rural areas. In such cases they become the victims of low wages of their arduous jobs as they have to take whatever job is available just to survive. Women will be the victims of such cases as they are not the skilled labourers. Due to illiteracy and lack of awareness men mostly spend their income in alcohol. Even the little food grains is used in preparing alcohol rather used as staple food. Women have to work hard in case of alcoholic husband to feed their children and take other household works. They also get continuous mental and physical torture from the drunken husband. Such households face all the hardships leading to a condition of destitute. A Dalit woman is the one to bear all the problems associated with these hardships. She may even leave the house and become victim of other social evils due to her own ignorance having no other alternative to survive. Terai Dalits still lead a miserable life than the hill Dalits. Most of the Dalits in the Terai own no land of their own. They mostly live in the land of others, so they have to adjust in a limited space that is available for them. It is found that

majority of them have just a small house to live in. The whole family have to adjust in that little space. They also keep birds and animals in the same house - chicken, duck, pig, goat, cow to add their income. Without space and proper food to feed they cannot rear the animals in proper way rather add up additional burden. This burden also falls on the shoulder of the women as the males have to go for wage earning. The women thus are never free from the household chores without proper food to eat and dress to wear. A Dalit woman leads a life worse than that of an animal full of scarcity throughout her life.

Health: The health condition depends on various factors economy, sanitation, education, health facilities, and other available and affordable resources. Most of the Dalits live in filthy areas and poor sanitation condition. Most of them even do not have access to pure drinking water facility. The health condition of Dalits is the lowest due to all the cumulative factors, low calorie intake and use of stale food, unhygienic labour work, poor living condition, heavy work load, ignorance, etc. They are the ones who suffer mostly from the infectious, and waterborne diseases. The most common diseases are skin diseases, bacterial and viral infections, gastro-intestinal diseases, worms and others. Most of the Dalit children are severely malnourished due to food deficiency and low calorie intake. Women are the victims of all these hazards as they have to look after all the sick and diseased people in addition to her household burden. She ignores her health to provide service to others and cuts short her life span. Due to various health problems Dalits have a short life span. There is also a high death rate among the children below 5 years. Due to this reason women are compelled to give birth to many children so that a few children could survive. Maternal and infant mortality rate which is quite high in the country itself, is the highest among the Dalits. When there is no health facility they are compelled to depend on the faith healers, traditional birth attendants and locally available medicines at the time of illness and delivery. They rush to the hospital only in the case of emergency otherwise they survive in the mercy of the almighty. Women face the problem of anaemia, uterus prolapse and other gynaecological problems as they do not get good care and good food during pregnancy and lactation. The case of Dalit women is even severe if they are indulged in sex trade. The statistics show that quite a large number of Dalit women have adopted this profession. The Dalit women are well known for such activities. Apart from this, girls from these communities are also trafficked in the very young age. All these factors have caused women to suffer from the problems of HIV/AIDS.

Education:



History tells that Dalits were not allowed to attain knowledge as they were the service providing groups. Women in particular, even in the upper-caste groups were prohibited for gaining knowledge. Where women of upper castes were somehow benefited by their men, the Dalit women were prohibited from such opportunity also. So they lived in complete ignorance. This in total, affected the Dalit community. They even didn't feel the need of education for their children due to all the cumulative factors. Although the opportunity for schooling was opened for all since 1950 only in the country itself, the social and economic situation did not allow to do so for the Dalits. The situation for Women of all groups did not change much due to the religious orthodoxy, so both the women and the Dalits have been left behind from the educational opportunities. The Dalit women hold the lowest status in education being doubly exploited as Dalit and women. A study (CERID, 1997) shows that the literacy percentage of Dalits is below 10% and that of Dalit women is below 5%. The enrolment of Dalit children at the primary level is negligible. Schools in most part of the country do not treat the Dalit children equally. They are kept away from other children in the class room, are not allowed to drink water from the same pot, or eat food with other children. Most of the Dalit children are not attended properly by the teachers in schools so they cannot perform well in their studies and dropout even at grade I. There are ample of stories told by the educated Dalits about the humiliating situations they had to face during the time of their schooling. People did not rent their houses when they knew that they were the untouchable castes. Even the friends kept seclusion from them to avoid the societal encroachment. The other fact is that due to poverty they do not get sufficient food to eat at home and cannot stay in the school for long. When they become older to share hands with parents they are withdrawn from the school due to the necessity of survival. Girls are the most vulnerable groups among the Dalits also, as son preference is practised there too. There are few Dalits who have received graduates or above degree, and women can be counted in fingers. The educated also have not got job opportunity which has brought frustration among them.

Employment: Only about 8% of the total population is engaged in the productive work and the rest is engaged in agricultural works. When there are fewer job opportunities for the younger generation in the country there is very little or no job opportunity " for the Dalits being educationally left behind and having none of their people in power. Only a few Dalits who have received higher level of education also have not been able to join the government job. Due to low level of education and approach to the authority, they hardly get the opportunity in other jobs too. There is no reservation system for Dalits either in education or in the job which has further marginalized them as they cannot



compete with others. Some of the areas where Do/its have been engaged are in teaching, music, and other occupation. The situation escalates in the case of Dalil women as they lag far behind in education and other opportunities. A few of the Dalil women are found to work as nurses, and teachers. A vast majority of the Dalil population work as wage labourers, women also equally participate in the wage labour as there is no other alternative to survive.

Politics

There is hardly any representation of the Dalils in the politics. There is one government nominee in the house of representatives. No one has represented this group as the electorate candidate in the house of representative. None of them have come in the cabinet since the establishment of democracy. There is a nominal representation even in the local level politics. There is not a single representation from the woman Dalil in the higher level politics in the history. Dalil women have been marginalized in the total voices of women as they are small in number. However, the Dalil Women's Organisation is raising the voices about the Do/it women's issues which has drawn the attention of Government, NGOs and I Gas at the present time.

Policy of GO, NGO and INGO for the Upliftment of Dalits: Since the establishment of democracy the voices against untouchability and upliftment of Dalil community has been raised by various NGOs and the INGOs. The government also has started to give due consideration on the issue. There are GOs and rNGOs who work for the benefits of the Do/its as they are the poorest of the poor of the country. Various Dalil's organisations are raising their voices against the issue and are also working to uplift their condition. A separate NGO 'Dalil Women's Organisation' works on the issue of women of this group. The I GOs, Plan International, Action Aid, and Lutheran have been working since long in this area. Since the establishment of democracy the government has been providing scholarships to all the Dalil children enrolled in school. All these programmes have drawn public attention to the issue which has aroused some awareness among the people. However, due to long established caste system, the upliftment of Do/its' situation especially in the social situation has not changed much. Other major lacuna of all these programmes, especially of the INGOs have been the big investment in the administration and contingencies than to the beneficiaries. They are termed as the White Elephants who consume a large amount of their budget on their own benefits rather than to the target groups. Although there are programmes addressed for the upliftment of the Dalils they are run on the piece-meal basis. They have not been able to design and run programmes for the whole country in a consolidated form. Apart from the Dalil Organisations, other GOs and I GOs have programmes in their specific areas focusing to all the poor people of the surrounding locality. In such a situation

the Dalits have not been able to utilise the benefits and are marginalized. There is no specific programme for Dalit women from these organizations and the programmes addressed especially for women have hardly been able to bring the Dalit women in it. It is also difficult for the Dalit women who have to live in the hand to mouth situation to attend the programme on the regular basis and so they drop out. On the other hand their problems have not been addressed by such programs and so they do not feel comfortable to participate fully. There is also the discrimination against caste groups among the participants in the programme. A handful of Dalit women participating in the programme would hardly be taken care by the programme organisers as special focus group and are given due care. In such a situation they feel even embarrassed and humiliated and try to keep away themselves from such an awkward situation.

Violence, Exploitation, Harassment and Problems :

Certain abuse and sexual epithets, naked parading, dismemberment, being forced to drink urine and eat all kinds of violence are traditionally reserved for Dalit women. Extreme filthy verbal faeces, branding, pulling out of teeth, tongue and nails, and violence including murder after proclaiming witchcraft, are only experienced by Dalit women. Dalit women are threatened by rape as part of Collective violence by the higher castes. However, sexual assault and rape of Dalit women and girls also occur within their own communities. For Dalit men, the suppression Dalit women and girls also occur within their own communities. For Dalit men, the suppression Devdasi system of temple prostitution is the most extreme form of exploitation of Dalit women. Dalit girls children are forced to prostitution. Women are often also unaware of the laws and their ignorance is exploited by their opponents, by the police, and by the judiciary system. The status of Dalit women is in such a pathetic condition that upper caste men exploit the women and the lower caste men and women. Again the upper caste women also exploit the lower caste women. The Dalit women is thus exploited by Dalit men and the upper caste men and women.

Therefore it is very urgent and important to focus attention and policies on the betterment of Dalit women and to establish their equal status and personality as a human being. First and foremost Dalit women are victims of social, religious and cultural practices like Devdasis and Jogins. In the name of these practices, village girls are married to God by their helpless parents. These girls are then sexually exploited by the upper caste landlords and rich men and directed in to trafficking and prostitution. Dalit women's are oppressed by the broader Hindu society, their own community's men and also their own husbands. Dalit women's husbands are mostly suffering from false sense of superiority for being men and thus suffering from all kinds male chauvinism. They command the authority structure in the family putting Dalit women at the secondary or tertiary positions. They are often under the habits of liquor- Women's Link

VolXVII consumption and gambling, and take away the wages earned by Dalit women and thus, leaving the whole family to starve. They also beat their wives on the slightest pretext and protest. Dalit women are often employed in agricultural farms owned by higher caste feudal landlords during tilling, sowing, irrigating, cutting and harvesting seasons, and are on their mercy for their bread and butter. They are always paid far less wages than prescribed by the rules and have to work for longer hours. Dalit women have largely been the targets of population control programmes, in an effort to limit their family size and to provide them an opportunity for development. Horror stories have been related by Dalit women of how they along with many other communities have been butchered in family planning camps, often without their knowledge of what is happening to them. Injectable contraceptives and other hormones drugs are tested on these powerless, voiceless women by unscrupulous multinational business houses. The atrocities on Dalits by uppercastes is also directly affecting the normal life of Dalit women, the murders of Dalits stabbing, social boycott, loss of property, revenging them using the public well, tanks, entry to public places such as temples, cinema hall, denial of employment of the Dalit women and many such types of incidents add to the distress of Dalit women. The social security and protection of Dalit women are low. The lack of control over productive resources and a persistent gap between consumption and expenditure leading to perpetual indebtedness deprived them of all important bargaining power and are comparatively higher when compared to upper caste women. The components of this vast group occupational mobility. The proportion of Dalit women below the poverty line are unskilled workers, landless agricultural labourers, factory workers, members of household with uneconomic holdings and those in traditional menial jobs. These women have been subjected to wage discrimination, physical harassment, maternity benefit, pension promotion, leave facility and other jobs security. The structural adjustment in the new economic policy lists women, as leading the decline in employment and income by the introduction of imported technology. The policies totally neglect women's role in Indian economy and especially rural technology. The policies totally neglect women's role in Indian economy and especially rural the economic status of women and also right to work and not even allowed the single Dalit women to participate in policy and decision making.

Conclusion:

1. Economic factors must be given full weightage in an attempt to uplift Dalit women from their prevailing marginalized, dehumanized status. This requires consideration of all issues that have relevance to the development perspectives and strategies of our nation.

2. Rural development and urban development should be considered together and not in isolation. Same way, organized and unorganized sectors should be examined together because they constitute two sides of the same coin that is the national economy parameter.

3.All aspects of the present debate on liberalization of Indian economy should be thoroughly examined. Dalit women have contributed to growth and development throughout history. And even then they have remained at the lowest rung of the society, lowest of the low. What has contributed to this state of affairs? Which are the forces responsible for the present insecure, unstable and dehumanized status of the Dalit women?

4. There is a cultural domain which requires deeper scrutiny. This includes structure of relationship between Dalit women and non Dalit women. What are the perceptions of each other? to what extent they are helpful and sympathetic? What are the reason for apathy and alienation and social divisiveness among them?

References:

- 1 .Sen, Amartya, The Argumentative Indian, Writings on Indian Culture, History and Identity,2005, Penguin Books, P-xiii.
- 2 .Ibid P-xiii.
- 3 .Oommen.T. K.; Understanding Indian Society: The Relevance of the Perspective from Below, in Dahiwalla.S.M., Understanding Indian Society, The Non-Brahminick Perspective (ed) , 2005, P-35.
- 4 . Ibid, P-35.
- 5 . Zelliott Elernor, From Untouchable to Dalit, Essays on the Ambedkar Movement, 1992, P-264.
- 6 . Michael. S.M., Dalits in Modern India, Vision and Value, 1999, p-15.
- 7 Ibid P-108.
- 8 . Webster, Neil; Panchayati Raj and The Decentralization of Development Planning in West Bengal (A Case Study), 1992
- 9 . Westergard, Kirsten; People's Participation, Local Government and Rural Development: the case of West Bengal, 1986, CDR Research Report No.8
- 10 . Lieten, Georges. Kristoffel, Continuity and Change in Rural West Bengal, 1992 Pp 12-18.
- 11 . Mukhopadhyay Apurba.K.;Changing Profile Of Rural West Bengal, in Millick, Amit; Pal,Pankaj; Ghosh, Apurba Ratan (eds)- Education, Society, Environment; A.S.C., B.U., 1995, P-59
12. Dre'ze, Jean and Sen Amartya (eds), India Development : Selected Regional Perspectives, 1996, P-4.



HAMLIN GARLAND: MAN AND HIS WORKS

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Abstract

Hamlin Garland is an important figure in American literature, one whose achievements as an advocate of realism were matched, and perhaps surpassed, by his accomplishments in professionalizing the craft of writing. But he is also significant as a representative man of letters of his age. A nineteenth-century sensibility shaped his advocacy of and achievement in literature, but at the same time it determined his resistance to the advance of modernism. What follows is the story of his personal and professional struggle with that historic divide. His life was, by anyone's standards, successful, yet Garland was plagued with a lifelong sense of having failed to measure up to his own ambition. Even in 1899, one of his most productive years, he mourned to his diary, "I don't feel that the last five years has brought me very much. There is no feeling of having widened my reputation or made any considerable impression on the art and literature of my country"

Key Words: Realism, sensibility, modernism, personal and professional struggle.

Hamlin Garland, a genuine voice of American Literature, was born September 14, 1860, on a homestead near West Salem, Wisconsin. He grew up moving with his family from farm to farm in Iowa and Dakota Territory. Garland's boyhood experiences gave him a strong personal sense of life on the prairie as well as a fierce determination to be a writer. He left the land, moving first to Boston and then Chicago in pursuit of a literary career, but he maintained the vision, one deeply rooted in his family's hardscrabble life. It led him to call for a realistic literature of the West, based on experience, not just on hope. His accomplishments reveal his devotion to belles lettres, a genius for friendship, and a rare talent for organization, yet his temperament occasioned both admiration and ridicule. Although Garland was kind and generous (especially to young writers), his passionate commitment to his causes also elicited, at times, a patronizing dismissal—both from his contemporaries and from later critics. Booth Tarkington wrote, "It is impossible to think of Garland without thinking of his kindness, the greatness of heart that was in all of his work and in all of his

life; and I believe that one next thinks of his integrity, his almost incorrigible intellectual probity" (Newlin, 05-7). The critic Robert Morss Lovett praised his "strong humanitarian feeling" and his generosity "to those who need help particularly younger authors." Henry James thought Garland's ability to saturate his stories with the detail of time and place "to have almost the value of genius." And William Dean Howells counseled, "Watch Garland, he is the most worthwhile of his generation" (ibid, 12).

In his later years he became bitter and cranky, obsessed with the rise of the modernism that had supplanted his own work, unable to set aside his Victorian sense of propriety when the intellectual currents shifted inward to probe the psychological and sexual motives for action. As other writers ascended to claim the public's attention, he suffered a keen fear that he might not have achieved a lasting place in American letters. As his friend and Macmillan editor Harold Latham noted, Garland was "sensitive to a high degree, easily hurt, overgenerous toward others, firm in his convictions, he was a man deeply admired and respected by the editors who worked with him . . . but he was easily discouraged, and his publishing friends tried ever to stress the recognition which his work had aroused throughout the world" (Moore, 50).

The realistic local-color stories contained in Garland's first book, *Main-Travelled Roads* (1891), were followed three years later by a collection of literary essays, *Crumbling Idols*. He wrote a biography of Ulysses Grant (1898) and a narrative of the Alaskan Gold Rush (1899), and he also gained popularity as a public lecturer. *Rose of Dutcher's Coolley* (1895) was his first novel, and there were several others, such as *Her Mountain Lover* (1901) and *The Captain of the Grey Troop* (1902), though he soon tired of fiction and turned to his family's history. *A Son of the Middle Border* (1917), *A Daughter of the Middle Border* (1922), *Trail-Makers of the Middle Border* (1926), and *Back-Trailers of the Middle Border* (1928) were even more popular than his fiction. *A Daughter of the Middle Border* was awarded the Pulitzer Prize for biography. Although he wrote other memoirs and a book of Indian stories, *The Book of the American Indian* (1923), his last books were defenses of psychic phenomena. He died in Hollywood on March 4, 1940.

The publication of six original stories in *Main-Travelled Roads* in 1891 launched the literary career of thirty-one-year-old Hamlin Garland. Over time, expanded by five additional stories, the book emerged as a minor American classic. Its setting was what was referred to at the turn of the century as the "Middle Border," straddling the boundary between the Middle West and the West and including places where he had lived growing up in western Wisconsin, Iowa, and Dakota Territory near Aberdeen. The original impulse for writing these stories was a trip Garland, an adoptive Bostonian, took back to visit his parents on their farm. His main observations on that journey concerned the

oppressive economic and social conditions existing on the frontier, especially the drudgery and isolation suffered by his mother and other rural women. These images worked their way into the stories he wrote soon afterwards. While the pieces he wrote made for searing and dramatic indictments of life on the Middle Border, however, they did not necessarily present a fair and balanced view. It certainly is true that conditions there were harsh, toilsome, and precarious, but there were many compensations provided by life in the region that Garland failed to celebrate or appreciate, at least in his published work.

His collection of short stories (borrowing the judgment of William Dean Howells, he calls them historical fiction) drew upon the difficult experiences of his family on several claims as they moved about on the frontier. It was not a life based on romantic vistas, but one based on conditions on an “enormous sun-burnt, treeless plain.” In the preface to the book, Garland observes that his view of rural life echoes “the ugliness, the endless drudgery, and the loneliness of the farmer’s lot.” This experience “smote me with stern insistence. I was the militant reformer.” It was a militancy rooted in resentment—a resentment that grew with later visits to his parents’ farm.

The first story in the expanded version of *Main-Travelled Roads*, “The Branch Road,” opens with a young man named Will Hannan (“young, jubilant, and a happy lover”) on his way to help “thrash” (thresh) the wheat of a man named Dingman. He is home between semesters at the seminary (equivalent to a high school) he attends to help his family and neighbors, but what holds him is the allure of a young woman named Agnes Dingman, with whom he shares a “tacit understanding of mutual love” (That it is tacit is shown by his unwillingness to show regard for her, or have it shown in return, though he boils inside when others respond to Agnes’s serving them at lunch. None of the others are fooled by Will’s seeming indifference. Nevertheless, Will remains emotionally paralyzed. When an accident with a buggy keeps him from meeting Agnes later that night and she goes out with another, the young suitor is devastated, and he writes her an angry farewell letter.

Seven years later, Will returns to the area, having worked in the Southwest as a railroad conductor and a ranch owner (though thought by some to have become a gambler). The scene is “bountiful and beautiful,” and lush with growth. And what of Agnes? She is married to his one-time quicker rival, who has turned out to be a bully and a lout. At first, the notion of a suffering Agnes pleases Will, but her obvious despair moves him to apologize for his earlier rashness and to attempt to overcome the mistake he had made. “I’ve made you suffer, so I should spend the rest of my life making you happy. . . . Stay here and be killed



by inches,” he says, or go to Europe and beyond and reclaim your health. And so they leave the scene of their mistake and, with her (and his) child, they seek their fortune in the outside world (Peter, 123).

If the first story is a romantic fantasy based on stark choices between stultifying rural life and the promise of the whole world, “Up the Coulee” makes the choice even clearer. Howard McLane, another seminary graduate, returns to where he grew up, having become a successful actor and having stayed away much longer than he had intended. Elegantly dressed, he meets his brother, Grant, who is rudely, though sensibly, dressed and working ankle-deep in mud, raising a calf to its feet. The contrast is clear. Howard’s guilt at ignoring his family is matched by his mother’s frailty and his brother’s resentment. The family farm has been foreclosed on, and they are living on a smaller place. The contrast in their situations strikes at Howard like “the lash of a wire whip,” but the pain it causes is made stronger by his brother’s accusations. Howard has become someone who wears elegant clothes and toadies to millionaires, while Grant has remained a poor rustic in a two-dollar suit who has to work too hard to try to make ends meet.

A welcome party the second night makes the choices even clearer. It underscores “the infinite tragedy of these lives which the world loves to call peaceful and pastoral,” but which are unfulfilled and economically precarious. As Grant’s wife says, farm life is “nothing but fret, fret, and work the whole time.” Home is not a home, but “a bare, blank, cold, drab-colored shelter.” When Howard’s mother recoils at the prospect of living in the city, Howard replies, “There speaks the true rural mind.” When Howard’s brother refuses his financial aid (“life’s a failure for ninety-nine percent of us”), it is clear that Howard’s escape from the dreariness of rural life was fortunate for him, but also that it added to the misfortunes of those left behind.

Garland’s stories hammer home the same truth again and again. Rural life means “bondage to hard labor,” as Julia Peterson thinks in “Among the Corn-Rows,” and with little material gain to show for it. Escape for Julia from “plough in’ corn and milk in’ cows till the day of judgment” is provided by marriage to a man with a hundred good acres of wheat. Her new relationship will trade virtual indentured servitude for the promise of hard work with someone who needs a wife, but hard work will mark either situation. When Ed Smith returns from the Civil War (“The Return of a Private”), he exchanges fighting the South for fighting nature, the banks, and social injustice. Tim Haskel, an energetic farmer set on improving rented land (“Under the Lion’s Paw”), exchanges his hard work for being swindled by the land speculator who

holds the mortgage. After all, the land that Haskell has improved is now worth more to the land speculator, who thereby charges Haskell that much more when he seeks to buy the land he has improved. As William Dean Howells observes in the preface, the story “is a lesson in political economy, as well as a tragedy of the darkest cast” (Lawrence, 294).

Fortunately, there are occasional human compensations for living such a hard life. In “The Creamery Man,” the compensation is love. In “A Day’s Pleasure,” it is the sympathy of one woman for another that lightens the load for a moment. In “Mrs. Ripley’s Trip,” it is the journey back to see her family after twenty-three years that lightens Mrs. Ripley’s life. And in “God’s Ravens,” it is the kindness of new neighbors that gives strength: “We know our neighbors now, don’t we? We can never hate or ridicule them again” (Jean, 13).

The last story, “A Good Fellow’s Wife,” has the most consolation built into it, and the most character development. A banker who has lost his depositors’ money in illegal speculative mining investments finds redemption when he owns up to his malfeasance and sets about repaying those to whom he owes money. He also takes comfort from his wife, who stoically assists him by building a thriving business to help him settle his debts. They come to a renewed understanding of their relationship and begin anew as partners, both in the store and in their marriage. “It’s almost like getting married again,” observes the husband. Sometimes hardship can be ameliorated.

Garland offers no apologies for his self-imposed exile. He was honest with himself and brave enough to live as he felt he must. That he did not find companionship in his native village was not an incrimination of the people, but merely a fact he recognized and accepted. His duty to his mother and father was finished, and he was free to depart.

References

- Jean, Bernardette. *American Realism*. New York: Educational Resources Corporation, 1972, 13.
- Lawrence, Buell. *New England Literary Culture: From Revolution through Renaissance* (Cambridge: Cambridge University Press, 1986), 294.
- Moore, Harry T. *Contemporary American Novelists*. USA: Southern Illinois University Press, 1966, 50.
- Newlin, Keith. *Hamlin Garland: A Life*. London: University of Nebraska Press, 2008, 05-07.
- Peter, H. Feist. *Impressionist Art, 1860-1920: Impressionism in France*, ed. Ingo F. Walther (Köln: Benedikt Taschen, 1993), 19-23.



SOCIO-ECONOMIC CONDITIONS OF THE WADDERA COMMUNITY IN TELANGANA STATE

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Abstract

In India even now the caste system is prevailing in the era of information technology. The caste system has a great impact on the society. Mostly all the sections of the people are divided into caste based on the Occupation which they are performing. In India the Backward classes occupies the majority portion sub divided into different groups. Basically the Backward classes are divided into A, B,C and D categories in Telangana region. Under the Group A which is the most backward community in telangana are under this group i.e., Bestha, Waddera, Chakali, Medara etc.,

Waddera community people are even today away from the socio economic development in all areas in the society. There is a need for upliftment of this community in all areas. The Government of Telangana has provided with the Reservation facilities in employment, education, political.

This paper deals with the present socio-economic conditions of the waddera community in Telangana state.

Keywords: Waddera, Backward classes, socio-economic, development

Introduction

India is a secular country where we can find different types of caste system. Everyone in the state are free to follow their own religion and caste. There is no discrimination among the people, all are treated equally in implementation the government policies as per rule of law. Basically the varna system exists on the type of the occupation they are involve. The varan or caste system has a great impact on the occupation they are performing.

In India the Caste system is identified basically upon the type of occupation involved. In the hindu cluture the caste system is occupying important placed even today. Caste system is basically based upon the occupation performed by an individual in the society. Depending upon the type of work they are involved they are being given an identity (recognition) by caste. All most in



all areas the people are identified based upon their occupation. In this way the caste is being identified in India.

Backward Classes in India:-

Though the system of social stratification into four major Varnas and its subdivision into various casts based upon occupation is an age-old system in India, yet the concept of backward class has a recent origin. It becomes necessary with reference to the subject matter under study to have a deeper understanding of backward classes in India. A division or order of society according status; a rank or grade of society the system of such divisions of society; rank, caste. The classes of community rose above or separated from 'the masses' or great body of the people. OBC stands for other backward classes and it is essentially a legal category of disparate communities, with in the traditional caste hierarchy, belonging mostly to 'shudra' caste-the lowest rung in the 4-Verna system, higher only to the outcastes or Dalit. They also include former Dalits who converted Manynomadic people and even some adivasis. Its vast classification comprising 52% of the population and so diverse that most OBC5 have never been able to unite politically. Of the 5000 castes and sub-castes, 5052 are in the OBC list. The term other was added to distinguish this category from Dalits. In 1979 the Janta Govt. setup the mandal commission, BC Mandal evolved 121 indicators of backwardness under broad heads. Most communities on the list through are what are called "Occupation" castes like Telli, Bhobi.

Vaddera (alternatively Vadde, Vadderaju or Waddera) is a caste in Andhra Pradesh, Tamil Nadu and some other states in India. The Vaddera have traditionally been stone-cutters but many have had to change to agricultural labouring. The effects of mechanisation, usually financed and run by higher caste groups, has caused this change and government recognition of the issues has led to them being designated as an Other Backward Class.

Their ancestors were stonecutters and diggers of wells. Alternatively Vaddera people known as vadders in Maharashtra, Vadde, vaddila in Andhra Pradesh and as Bhovi in Karnataka are an ethnic community native to Karnataka, Andhra Pradesh, Tamil Nadu, Maharashtra, Gujarat, Western Orissa and other states in the India.

The Vaddar, have various other names too such as Bhovi, Wadda, Tudugvaddar, Voddar, Vaddar, Girinivaddar, Od and Odde. The Vaddar have decreased in population considerably during british rule. They are basically from Rayala seema, meaning the country of rocks and hills located in Southern India mainly from Andhra Pradesh and bordering Karnataka.

They warriors by caste, due to the decline of Indian imperial power and invasion of muslims and british rule turned to be many went fugitives and the captive were put to laboureous works like stone cutting, earth digging and therefore, the warrior class reduced dust. These unfortunates turned out to be permanently stone cutter, earth-workers, and are constantly moving about in search of work.



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- i. Kallu Bhovi who are stone cutters,
- ii. Mannu Bhovi who are earth-workers and
- iii. Uppar Bhovi who work as menial laborers in the municipality.

They speak ODDE language out of which the Telugu, Kannada, Tulu and after which Tamil, Malayalam and Sihamlese languages said to have taken origin. The wadders were the first to scribe on Rocks during the reign of the Asoka the Great. The King Kharavela claim him as the great Odda and his hathigumpa Inscription subscribes with superscripture as sri odde, meaning the blessings of Odda, the fore father of present Orissa. Bhovi Waddar or Vaddar, Vaddar, Od, Odde, have common Gothras all over Karnataka, Andhara Pradesh and Tamil Nadu. The Gotra is a term applied to an ancestor or an originator through whom a particular family has originated. A Gotra is the lineage or clan assigned to a Hindu at birth. In most cases, the system is patrilineal and the

gotra assigned is the gotra of the persons father. Lineage segment within an Indian caste, indicating common descent from a mythical ancestor. Marriage by members of the same gotra is traditionally prohibited. The custom is intended to prevent inbreeding as well as to broaden the influence of each gotra through marriage alliances. A common mistake is to consider gotra to be synonymous with cult or 'Kula'. A 'kula' is basically a set of people following similar rituals, often worshipping the same God (the Kula-Devata - the God of the cult). Kula has nothing to do with lineage or caste and it is possible to change ones Kula based on faith or ista devtha. Bhovi caste consists several Gotras (Kulams) which has same meaniSng in Telugu and Tamil language. These gotras are believed to be shared from Reddi. As per a folklore belief the Odda was the is elder brother among Radda,the Reddy, Kamma and Komati Gotras. (Rajulu, 2013)

Status of Waddera Community in Telangana State

Waddera community who are nearly 2% among the backward classes in the state. These people's basic occupation is related to the stone work(cutting). Since the erarly period it is observed that all the waddera community are dependent upon their traditional work. But as time is passing they are not getting the work related to their tradition. In place of human being the huge machinces are taken place in the granite cutting areas. The waddera community are away from the work and they are facing several financial problems and made to led the life smoothly.



From time to time there is a change in the occupation of the waddera community this is because they are unable to find the work. These community are diverted to different types of work i.e., labour, dail wages, vegetable sellers,

house hold workd, small scale business etc., But it is found that most of the families are socially,economically and political backward in the rural and urban areas. There are different level reasons for economic backward ness. They are

- Below poverty level
- No agriculture land for cultivation
- No permanent house
- Lack of government job opportunities
- Low literacy level
- Identification problem of caste
- Domination of Upper Caste
- Not utilizing Reservation Facilities

Socio-Economic Conditions- Waddera Community in Telangana

The waddera community are the section people who are away from the socio economic conditions even today in the state. There are many reasons towards the cause of the economical backward of this community. The Waddera community are the people who basically depend upon the traditional occupation i.e., STONE CUTTING. But from day to day as there is a tremendous change in the occupational status of the people due to lack of employment opportunity. The major reason is due to the occupying the place of individual by the MACHINES (stone cutting). In almost all are depended on the machines for stone cutting today.



Latest Machines used in cutting stones

The impact of the modernization has been effected a lot on the Waddera community. At present the Waddera community are engaged in different types of labour workers instead of the traditional stone cutting. The Waddera community are socially backward in the society due to various reasons. The

basic cause for the low poverty level among these section, unemployment problems etc.,

As per the analysis it is found that the waddera community are possessing the following causes for Socio-Economic backwardness, they are

- **Lack of Education :** The foremost thing is due to the lack of basic education among these community. Education is the most important for the development of the any individual in the society. Lack of education can deal to the backwardness of the individual as a whole.

- **Traditional Occupation :** The waddera community are basically depended on the traditional occupation in the rural areas. This occupation is creating the unemployment to most of them which is the cause for the economical backwardness among them.

- **Labourer :** All the waddera community are engaged in other labour works in the state. Most of the waddera are engaged in the unrecognized sector of works.

- **Daily Wages-Work:** Apart from the other labour works the waddera community are engaged in the daily wages work. Due to the daily wages work engaged the economical status of the community is economical weak.

- **Domination of Technology :** It is found that the use of latest technology in the field of stone cutting man power is replaced with the huge machines. Adopting the latest technology and use of machines is making the waddera community unemployed.

- **Landless :** The other major draw back of the wadder community is due to the landless. In the rural areas most of the families are Agriculture land less. Hence, they have to depend upon the daily wages labour work.

- **Reservation :** Among the backward classes there are other communities which falls under BA 'A' group apart from the waddera. Due to this technical issue most of the youth are unable to utilize the Reservation facilities in education, employment and in politics.

- **Domination by Other Communities :** It is found that the waddera community are dominated by the other community in the group 'A' itself. They are being criticized at all the levels.

- **Need of Strong Leader from Community :** There is no strong and powerful leaders among the waddera community. Who can fight for their rights in the society. Lack of political representatives in the community they are away from the development.

- **Lack of Mobilization :** The waddera community people are away from the development in the society due to lack of effective mobilization to them in

all governmental welfare programmes. Participation of the community will help them towards development.

Development of the technology should bring the change in the Socio-Economic status among the people in the society. But due to the development and replacing the MACHINES instead of man power the Waddera community people are getting unemployed. This is the major reason for the economical backwardness. The other cause is the not proper use of the Reservation facilities among the GROUP 'A' of the Backward classes. The waddera community are being dominated by the other upper caste in all areas.

Conclusion :

Even though the Governments are providing Reservation facilities, free education, employment opportunities to the backward classes. There is no change in their status; this is due to the lack of education among the communities. Until and unless the wadder community are socially and economically developed the development of these sections cannot be imagined. There is an immediate need for the development of them in the society.

यमलयोगविचारः

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समुपलब्धविश्ववाङ्मयस्य प्रप्रथमप्रमाणं भवति वेदः। अयञ्च प्रवृत्तिनिवृत्तिपरः। पुरुषार्थसिद्धिरेवास्य लक्ष्यम्। तत्र पुरुषार्थाः धर्मार्थकाममोक्षाः चत्वारः। पूर्वत्रयाणाम् अर्थात् धर्मार्थकामानां विधिवदुपयोगानन्तरं मोक्षप्राप्तिः। वेदस्य शिक्षा - कल्पः - व्याकरणं - निरुक्तः - छन्दः - ज्योतिषमिति षडङ्गानि।

छन्दः पादौ तु वेदस्य हस्तौ कल्पोऽथ पठ्यते। ज्योतिषामयनं चक्षुर्निरुक्तं श्रोत्रमुच्यते ॥ शिक्षाग्राणं तु वेदस्य मुखं व्याकरणं स्मृतम्। तस्मात् साङ्गमधीत्यैव ब्रह्मलोके महीयते ॥^१

पतञ्जलिनाप्युक्तं पस्पशाह्निके - “ ब्राह्मणेन निष्कारणो धर्मः षडङ्गो वेदोऽध्येयो ज्ञेयश्च”^२ इति।

वेदाङ्गेषु षट्सु ज्योतिषस्य प्राधान्यमन्यादृशं भवति। उक्तञ्च - ‘ज्योतिषामयनं चक्षुः’^३, ‘वेदस्य निर्मलं चक्षुः’, ‘ज्योतिः शास्त्रमकल्मषम्’ इत्यादि। ज्योतिषं काल- विज्ञापकं शास्त्रम्। सुमुहूर्तानुरोधेन क्रियमाण यज्ञादि क्रियाविशेषाः फलाय कल्पते, नान्यथा, तन्मुहूर्तज्ञानञ्च ज्योतिषायत्तमतोऽस्य ज्योतिषशास्त्रस्य वेदाङ्गत्वं स्वीकृतम्। उक्तञ्चार्च्यज्योतिषे यथा -

वेदा हि यज्ञार्थमभिप्रवृत्ताः कालानुपूर्वा विहिताश्च यज्ञाः।

तस्मादिदं कालविधानशास्त्रं यो ज्योतिषं वेद स वेद यज्ञान् ॥

ज्योतिषस्य प्राधान्यम्

यथा शिखा मयूराणां नागानां मणयो यथा ।

तद्वद्वेदाङ्गशास्त्राणां ज्योतिषं मूर्ध्नि संस्थितम् ॥

परमपुरुषार्थस्य मोक्षस्यावाप्तये धर्मानुष्ठानम्, अर्थोपार्जनं, कामोपभोगश्च कदा, कथं

स्यादिति निश्चेतुं मुहूर्तकालादीनां ज्ञानमवश्यमपेक्षितमिति शास्त्रमिदं तदर्थं प्रवृत्तम्। अतः वेदाङ्गभूतस्य ज्योतिषस्य अन्याङ्गापेक्षया अस्त्येव प्राधान्यम्।

तत्र पूर्वजन्मकृतपुण्यपापज्ञानार्थम्, इहास्मिन् जन्मनि किं करणीयमिति ज्ञानार्थञ्च ज्योतिषशास्त्रस्य उपयोगः क्रियते। षडङ्गीभूतस्य अस्य शास्त्रस्य स्वरूपमधोच्यते -

ज्योतिषशास्त्रस्य प्रयोजनम्

“प्रयोजनं तु जगतः शुभाशुभनिरूपणम्”^{१५} इत्यनेन जगतः शुभाशुभफलानि आविष्कर्तुं येन शक्यते तच्छास्त्रं ज्योतिषशास्त्रमिति ज्योतिर्विदां मतम्। मानवानां जन्तूनां समस्तप्राणिनां वस्तूनां चोपरि अस्ति ग्रहाणां प्रभाव इति सर्वविदितमेव। तेन प्रभावेनैव तेषां शुभाशुभफलानि जायन्ते। उक्तं यथा - “ग्रहबद्धं कर्मफलं शुभाशुभं सर्वजन्तूनाम्”^{१६} इति।

एवञ्च प्रपञ्चशक्तिः येन शास्त्रेण स्पष्टा ज्ञायते तच्छास्त्रं ज्योतिषम्। “प्रत्यक्षं ज्योतिषं शास्त्रं चन्द्रार्कौ यत्र साक्षिणौ” इत्यनेन सूर्यचन्द्रादिग्रहाः दृष्टिगोचराः तेन प्रत्यक्षमनुभव-सम्पन्नञ्च जायते इदं शास्त्रम्।

ग्रहाणां भावकारकविचारः

“द्वादशारं नही तज्जराय” इति ऋग्वेदमन्त्रान्तु सम्पूर्णविश्वस्य गोलपरिकल्पनया तत्र द्वादश आराः कल्पिताः। यथा शकटस्य चक्रम्। समस्तविश्वस्य चाक्रिककल्पना भारतीयसंस्कृतेः उदात्तकल्पना अस्ति। जननं, मरणं, पुनर्जन्म इति विश्वासः अयं चाक्रिक-कल्पनायामधिष्ठितः। पुनश्च जगत् द्वादशभागैः विभक्तम्। तथा द्वादशराशयः द्वादशभावाः जन्मलग्नादाभ्यः। ते तु - तनुधनसोदरगृहपुत्रशत्रुकाममृत्युभाग्यकर्मायव्ययाः। ग्रहाणां कारकत्वं यथा उक्तम् -

सूर्यः - पिता, आत्मा, प्रतापः, आरोग्यम्, अशक्तिः, श्रीः। **चन्द्रः** - मनः, बुद्धिः, राजप्रीतिः, माता, धनम्। **कुजः** - भ्राता, पराक्रमः, रोगः, गुणम्, भूमिः, शत्रुः। **बुधः** - विद्या, बन्धुः, मातुलः, मित्रम्, वचनम्। **गुरुः** - बुद्धिः, शरीरपुष्टिः, पुत्रः, ज्ञानम्। **शुक्रः** - स्त्री, वाहनं, भूषणं, कामः, व्यापारः, सुखम्। **शनिः** - आयुः, जीवनं, मृत्युः, विपत्, सम्पत्। **राहुः** - पितामहः। **केतुः** - मातामहः।

पञ्चमभावः

पूर्वोक्तप्रकारेण आहत्य द्वादशभावाः सन्ति । तेषु पुत्रभावनिरूपणं पञ्चमभावेन क्रियते ।

प्रश्नमार्गे पञ्चमभावेन चिन्तनीयाः विषयाः उक्ताः -

प्रज्ञाप्रतिभामेधा विवेकशक्तिः पुरातनं पुण्यम् ।

मन्त्रामात्यतनूजाः पञ्चमभात् सौमनस्यमपि चिन्त्यम् ॥^{१७}

होरादयस्तनुकुटुम्बसहोत्थबन्धु पुत्रारिपत्निमरणानि शुभास्पदायाः ।

रिःफारव्यमित्युपचयान्यरिकर्मलाभ दुश्चिक्यसंज्ञितगृहाणि न नित्यमेके ॥^{१८}

इति होरावचनात् पञ्चमभावस्य चिन्ताविषयः अतिप्रधानतया सन्ततिरेवेति ज्ञायते । संज्ञाध्याये

पञ्चमभावस्य संज्ञात्वेन पुत्रशब्दोपदेशः अत एव सङ्गच्छते ।

सन्ततिकारको ग्रहः

तातश्चात्मप्रभावो ह्युमणिरथमनोमातरौ शीतरश्मिः

भ्राता सत्त्वं च भौमः क्षितिरपि वचनं ज्ञानमिन्दोस्तनूजः ।

धीचित्पुत्राङ्गसौख्यं सुरगुरुखलाभोगयानानिशुक्रो

मृत्युर्व्याधिश्च दुःखं शनिरिह गदितो दासभृत्यादिकोऽपि ॥^{१९}

इति प्रश्नमार्गे पुत्रकारकत्वं गुरोः प्रतिपादितम् ।

यमलयोगविचारः

सामान्यतः सर्वेषु जातकग्रन्थेषु यमलयोगलक्षणानि दृश्यन्ते । यथा - बृहज्जातकम्, सारावली, जातकपारिजातः, प्रश्नमार्गः इत्यादि ग्रन्थेषु यमलयोगलक्षणानि सुष्ठु निरूपितं वर्तते ।

युग्मे चन्द्रसितौ तथौजभवने स्युर्ज्ञारजीवोदया

लग्नेन्दू नृनिरीक्षितौ च समयौ युग्मेषु वा प्राणिनः ।

कुर्युस्ते मिथुनं गृहोदयगतान्द्रयंगांशकान्पश्यति

स्वांशे ये त्रितयं जगांशकवशाद्युग्मं त्वमिश्रौ समम् ॥^{२०}

चन्द्रशुक्रौ यदि समराशिषु तिष्ठतः तथा विषमराशिः लग्नं तत्रैव बुधः, कुजः, गुरुः यदि तिष्ठन्ति तर्हि यमलयोगः वाच्यः। लग्नं समराशिः, लग्ने चन्द्रः, लग्नचन्द्रौ पुरुषग्रहेण दृष्टौ (सूर्यः, कुजः, गुरुः) तदा मिथुनजन्मो भवति। समराशिः लग्नं, लग्ने बलिनाः बुधः, कुजः, गुरुः यदि तिष्ठन्ति तदा यमलजन्मो भवति।

द्विस्वभावगतावर्कगुरु बुधनिरीक्षितौ

पुंयुगं कुरुतस्तद्वत् शशिशुक्रमहीसुताः।

कुर्वन्ति स्त्रीयुगं तत्र बलाबलविशेषतः

स्त्रीनपुंसकदशचान्द्रिः पुंनपुंसकदोऽर्कजः॥^{११}

द्विस्वभावराशिगतौ गुरुसूर्यौ बुधेन यदा निरीक्षितौ भवतः तदा पुरुषयमलौ भवतः। एवञ्च चन्द्रशुक्रकुजाः द्विस्वभावराशिगताः बुधेन ईक्षिताः भवन्ति तदा स्त्रीयमलो वाच्यः। द्वयोरपि योगयोः बलाबलं ज्ञात्वा फलनिरूपणं कर्तव्यम्।

निषेके भ्रातृलग्नेशयोगे यमलसम्भवः। लग्नेशे भ्रातृपक्षस्थे स्वोच्चे वा यमलोद्भवः॥^{१२}
गर्भाधानकाले भ्रातृलग्नेशयोः यदा योगः भवति तदा यमलजन्मो वाच्यः। लग्नेशः भ्रातृ-स्थानगताः अथवा उच्चस्थानगताश्चेदपि यमलयोगो भवति।

बलिनो विषमेऽर्कगुरु नरं स्त्रियं समगृहे कुजेन्द्रसिताः।

यमलं द्विशरीरांशेष्विन्दुजदृष्ट्या स्वपक्षसमम्॥^{१३}

विषमराशिषु गुरुसूर्यौ यदि तिष्ठतः, तौ ग्रहौ बुधेन दृष्टौ तथा पुरुषयमलयोगः वाच्यः। यदि समराशिषु कुजः, चन्द्रः, शुक्राः बुधेन दृष्टाः तदा स्त्रीयमलो वाच्यः। यदि सूर्यः, गुरुः, शुक्रः, कुजः, चन्द्रः एते पञ्चग्रहाः द्विस्वभावराशिषु बुधेन दृष्टाः तदा गर्भे यमलसन्तानं भवति।

रविजीवौ युग्मधनुर्नवांशस्थौ बुधेक्षितौ।

पुंयुगं मीनकन्यांशस्थितौ पुंस्त्रियुगं वदेत्॥^{१४}

यदि गर्भाधानकाले सूर्यः अथवा गुरुः मिथुनधनुर्नवांशस्थौ बुधेन दृष्टौ तदा पुरुष-यमलयोगो वाच्यः। यदि सूर्यजीवौ मीनस्य अथवा कन्यायाः नवांशे बुधेन दृष्टौ तर्हि एकः पुत्रः, एका पुत्री च भवति।

चतुष्पदगते भानौ शेषैर्वीर्यसमन्वितैः ।

द्वितनुस्थैश्च यमलौ भवतः केशवेष्टितौ ॥^{२५}

सूर्यः यदा चतुष्पदराशिषु (मेषः, वृषभः, सिंहः, धनुः, मकरः) तिष्ठति, बलयुतैः उभयराशिस्थितैः अन्यै च ग्रहैः युक्तः तदा यमलयोगः वाच्यः ।

मिथुने चापेऽर्कगुरू बुधदृष्टौ दारकद्वयं कुरुतः ।

स्त्रीयुग्मं कन्यायां सितशशिभौमा झषो च बुधदृष्टाः ॥^{२६}

यदि प्रश्नकाले अथवा गर्भाधानकाले मिथुनधनुराशिषु गुरुसूर्यौ स्थितौ एवञ्च बुधेन दृष्टः चेत् द्वौ बालकौ भवतः । यदि शुक्रचन्द्रकुजाः कन्यायाम् अथवा मीने बुधेन वीक्षितश्चेत् द्वे बालिके भवतः ।

सूर्यश्चतुष्पदस्थः शेषा द्विशरीरसंस्थिता बलिनः ।

केशैर्वेष्टितदेहो यमलौ खलु तौ प्रसूयते ॥^{२७}

सूर्यः चतुष्पदराशिगतः अन्ये च ग्रहाः द्विस्वभावराशिस्थाः बलिनाः यदा भवन्ति तदा केशवेष्टितौ यमलौ भवतः ।

चन्द्रपञ्चमगे जीवे जीवात्पञ्चमगे शनौ ।

मन्दात्पञ्चमगे राहू पुत्रद्वयमुदीरयेत् ॥^{२८}

चन्द्रस्थितस्थानात् पञ्चमस्थाने गुरुः तस्मात् पञ्चमस्थाने शनिः तस्मात् पञ्चमस्थाने राहुः यदा भवति तदा यमलयोगः जायते ।

समराशौ शशिसितयोर्विषमे गुरुवक्रसौम्यलग्नेषु ।

द्विशरीरे वा बलिषु प्रवदेत् स्त्रीपुरुषमत्रैव ॥^{२९}

यदि समराशिस्थः चन्द्रः अथवा शुक्रः तथा विषमराशिस्थः अथवा द्विस्वभावराशिस्थः बली गुरुः बुधो वा लग्ने तथा यमलयोगो वाच्यः ।

इत्येवं प्रकारेण बहुषु ज्योतिष ग्रन्थेषु यमलयोगाः उक्ताः सन्ति ।

पादटिप्पणी

१. पा.शि.४१,४२	२. पा.शि.	३. पा.शि.४१,४२
४. सि.शि.	५. आ.ज्यो.	६. प्र.मा.१-५
७. प्र.मा.१-६	८. प्र.मा.१-१९	९. बृ.जा.१-३
१०. बृ.जा.१-९	११. प्र.मा.१-९	१२. प्र.मा.१-७
१३. प्र.मा.१-३७	१४. मु.चि.	१५. ना.सं.
१६. ना.सं.	१७. प्र.मा.१४-७	१८. बृ.जा.१-१५
१९. प्र.मा.१४-३१	२०. जा.पा.वियो.२४	२१. जा.पा.वियो.२९,३०
२२. जा.पा.वियो.३२.	२३. होरा.र.आधा. ७२	२४. होरा.र.आधा.७३
२५. बृ.जा.सूति.४	२६. सारा.८-१६	२७. मा.सा.४-५१२
२८. स.दी.३-१२	२९. सारा.८-२२	

अनुशीलितग्रन्थसूची

- १) होरास्तम् – मिश्रा बलभद्रः मोतीलाल बनारसी दास, वाराणसी, १९९६.
- २) बृहत्संहिता – वराहमिहिरः व्या. पण्डित श्री अच्युतानन्द झा, चौखम्बा विद्याभवन, वाराणसी, २००७
- ३) जातकपारिजातः – वैद्यनाथः व्या. उपद्रष्ट कामेश्वरराव गोळपूडि वीरास्वामि सन्, राजमहेन्द्रि, १९९८
- ४) फलदीपिका – मन्त्रेश्वः व्या. उपद्रष्ट कामेश्वरराव गोळपूडि वीरास्वामि सन्, राजमहेन्द्रि, १९९८
- ५) सारावली – कल्याणवर्मा व्या. वड्डादि वीरार्जु सिद्धान्ति गोळपूडि वीरास्वामि सन्, राजमहेन्द्रि, १९९६
- ६) मानसागरी व्या. श्री पुच्चा श्रीनिवासरव मोहन पब्लिकेशन्स्, राजमहेन्द्रि, २००५.
- ८) जातकतत्त्वम् – श्रीमन्महादेवपाठकः व्या. श्री पुच्चा श्रीनिवासरव मोहन पब्लिकेशन्स्, राजमहेन्द्रि, २००५.
- ९) प्रश्नमार्गम् चौखम्बा संस्कृतसंस्थान, वाराणसी, १९७८
- ९) बृहत्पराशरहोराशास्त्रम् – पराशरः चौखम्बा संस्कृतसंस्थान, वाराणसी, १९७८
- १०) भारतीयज्योतिषम् – नेमि चन्द्रशास्त्रि चौखम्बा सुरभारती, वाराणसी, २००२.