Volume 9, Issue 3(4), March 2020

International Journal of Multidisciplinary Educational Research

Published by
Sucharitha Publications
D.No: 8-42-18/3, F-2,1st Floor, M.K. Residency
Tamil Street , Chinna Waltair
Visakhapatnam – 530 017
Andhra Pradesh – India
Email: victorphilosophy@gmail.com
Website: www.ijmer.in

Editorial Board

Typeset and Printed in India
www.ijmer.in

IJMER, Journal of Multidisciplinary Educational Research, concentrates on critical and creative research in multidisciplinary traditions. This journal seeks to promote original research and cultivate a fruitful dialogue between old and new thought.

C O N T E N T S

Volume 9 **Issue 3(4)** **March 2020**

Dr. K. VICTOR BABU

M.A.,M.A.,M.Phil.,Ph.D.,PDF, (D.Lit)

Associate Professor, Institute of Education & Editor-in-Chief
International Journal of Multidisciplinary Educational Research (IJMER) & Sucharitha: A Journal of Philosophy and Religion
Mettu University, Metu, Ethiopia.

IJMER

ISSN : 2277 – 7881
Impact Factor :6.514 (2020)
Index Copernicus Value: 5.16

2277 - 7881

JISRA F

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

Note: IJMER is Peer Reviewed Journal according to UGC CARE New regulations on 16th September 2019 (2nd Para-6th Line) According that IJMER is eligible for APA score .

विश्वविद्यालय अनुदान आयोग
University Grants Commission
(मानव संसाधन विकास मंत्रालय, भारत सरकार)
(Ministry of Human Resource Development, Govt. of India)
बहादुरशाह ज़फ़र मार्ग, नई दिल्ली-110002
Bahadur Shah Zafar Marg, New Delhi-110002

F.1-1/2018(Journal/CARE) 16th September, 2019

PUBLIC NOTICE

In the interests of Indian academic publishing and the credibility of our research and knowledge production, the UGC reiterates the following :

(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.

(2) The Vice Chancellors, Selection Committees, Screening Committees, research supervisors and all/any expert(s) involved in academic/ performance evaluation and assessment are hereby advised to ensure that their decisions in the case of selections, promotions, credit-allotment, award of research degrees etc. must be based on the quality of published work rather than just numbers or a mere presence in peer reviewed or in old UGC Approved List of Journals which is available for reference on the UGC website.

(P.K. Thakur)
Secretary(Officiating)

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

THE DYNAMIC OF HINDU ALUKTA IN TANA TORAJA, SOUTH SULAWESI

I Nyoman Yoga Segara, I Ketut Gunarta,
I Nyoman Alit Putrawan, I Made Adi Brahman
Universitas Hindu, Negeri I Gusti Bagus Sugriwa, Denpasar,Indonesia

Abstract
Hindu Alukta is a Hindu thatcomes from the belief of Aluk Todolo, a "local religion" of Tana Toraja, South Sulawesi. Most of the followers of Aluk Todolo have integrated with Hinduism in Indonesia since the 1960s. To distinguish them from other Hindus, they prefer to call themselves Hindu Alukta. Formally, Alukta is part of the Hindu in Indonesia in general. Even so, they still get a stigma as a local religion that is close to the animist beliefs. They also accept the inconvenience with the choice of the Hindu name Alukta which is not shared by all followers of Aluk Todolo because as the development of religions throughout Indonesia, they also adhere to Christianity, Catholicism, and Islam. In the context of building a harmonious religious life, the religions in Tana Toraja can do well because they are culturally united by the same customs that originate from the values of Aluk Todolo. The life of Hindu Aluktadoes not take place slowly because they face barriers in the present and the future. After all, because structurally they have not received priority to be fostered intensively by the government, especially the central government and other Hindu religious institutions, there are no extension workers, teachers, and Hindu organizers. While culturally, they continue to face challenges both internally and externally including the discourse as an "Indigenous Religion Follower".

Keywords: Dynamic, Hindu Alukta, Aluk Todolo, Tana Toraja.

Introduction

This article is part of the results of research on the history, existence, religious activities and dynamic of Alukta Hindus in Tana Toraja, South Sulawesi in 2019. The background of this research is based on the great interest in exploring historical traces of the emergence of Hindus who depart from local belief. Hindu Alukta in Tana Toraja, South Sulawesi is one of them, besides Hindu Tolotang (South Sulawesi) and Hindu Kaharingan (Central Kalimantan). The result of this research can also be directed to examine other Hindus in Indonesia, such as Sadhar Mapan (CentralJava), Ngadas (EastJava), Wetu Telu (Lombok), Merapu (Sumba), and some areas of Eastern or Western Indonesia. Some findings from historians and archaeologists, not many who pay attention in that direction.

In addition to the above reasons, this research was also inspired by the findings of research conducted by the Center for Religious Life, Research and Development Agency of the Ministry of Religion which was recorded in 2014 on the Dynamic of Local Religion in Indonesia. In this book, it is explained that until now there are still many local religions that are adhered to by most Indonesian people. These local religions are still alive and are based on the Constitutional Court Decree Number 97/PUU-XIV/2016 (MK 97/2016 Decision), some of which are included as Indigenous Religion Believers. Some adherents of local beliefs have also consciously declared and volunteered to become an Indigenous Religion Believers according to the decision.

Although the terms "official religion" and "Indigenous Religion" are still a tough discussion, with the Constitutional Court's Decree, adherents of local beliefs can at least survive until now and their existence is legally recognized by the state through columns in self-identity. This recognition is important because as Nowak said (2005: 414) that the interpretation of religion and belief in article 18 of the ICCPR is not only limited to traditional religions (major religions)

but also beliefs that resemble traditional religions (local religions), even including people's beliefs, not to God (atheistic), agnosticism, non-god (non-theistic) freedom of thought and rationalism. As a result, these groups are vulnerable to discrimination to conversion.

But other phenomena that are still developing, local religion is often only equated with local wisdom, even though the two terms are not always the same. Even before it was officially recognized by the Constitutional Court, religion and/or local wisdom could not stand alone so they were vulnerable to political intervention or conversion, as experienced by the Tolotang tribe (Dharmapoetra, 2013, 2014) and the Wetu Telu community in Lombok (Zuhdi, 2006; Rasmianto, 2009; Aziz, 2009). Among the many local religions is Aluk Todolo, who is still alive and surviving in Tana Toraja and most of his followers have become Hindu Alukta. Although they have become the dominant Hindu Alukta in Tana Toraja Regency and North Tana Toraja Regency, they often get stigmatized as animism, even called kafir, even though in 1969 they officially declared a part of Hinduism. Similar to this Hindu Alukta, almost all local religions generally begin with the life of worshiping mystical objects. This is in line with the assumption of anthropologists who state that the development of religion starts from animism then develops toward dynamism, and subsequently experiences development by the divine philosophy of the major religions in the world.

What's interesting then is how the Aluk Todolo people through traditional figures and institutions consciously without pressure joined to Hinduism. Then how can they transform the influence of Hinduism into officially recognized religion. After long being followers of Hindu Alukta and experiencing various dynamics, one important question answered in this research is how they still survive amid the existence of other people, especially Christians, Catholics and Muslims who also began to dominate Tana Toraja. The presence of Dutch missionaries in the past, especially during colonialism, has made the map of the people change significantly. But what is unique, although different religions, Aluk Todolo traditions are still run by all religions in Tana Toraja.

Until this research was completed in 2019, the dynamic of AluktaHindus life had never been done by Hindu academics. Some research with the local religious database has been done, especially the Research and Development Center for Religious Life, but has not discussed Aluk Todolo thoroughly, because the research conducted by Hakim (2007) has only reached its outermost layer so that it impressed as it passed. The research of Baturante (2019) is considered qualified because in addition to details it is also rich in data, but indeed from the beginning, he did not specialize in discussing Hindu Alukta alone. But in general, this research rests a lot from his book. Research on Aluk Todolo itself has done it, but it does not have similarities with the point of view based on the focus of this research. Considering that there is still not much literature and research results discussing Alukta Hinduism, this research will address this deficiency by describing field data both ethically and emically by answering the key question of how the dynamic of Alukta Hinduism in Tana Toraja, South Sulawesi.

Operationally, in this research, the term dynamic is used only to describe that currently, Hindu Alukta has experienced many challenges. First, the relationship with other religions, mainly because of the theological differences that exist and their different efforts to build a life together. Second, until now, Alukta Hindus also still get a stigma as a religion of animism and even infidels. They continue to struggle to rid themselves of this stigma. Third, even though they have joined Hinduism, structurally and culturally they still feel "neglected" to be fostered intensively. Fourth, after experiencing these challenges, what is most important is their future projections and expectations.

To discuss field data and literature, this research uses the AGIL theory developed by Talcott Parsons and makes it a perspective to see how the historical awareness of the Aluk Todolo people when they joined Hinduism, and how they are now. Discussing the historical landscape of a community and the beliefs it adopts is not an easy task. In the course of

such a long time, the landscape contained several ripples and harmony. This rhythmic and dynamic cannot be seen only monolithically. Likewise, Hindu Alukta has a long journey to be able to survive and project himself in the future. Hindu Alukta experiences struggles that cannot be simplified by simply using a big theory.

Understanding AGIL from Parsons, Rocher (in Ritzer and Goodman, 2008: 121) states that a function is a collection of activities aimed at meeting certain needs or system requirements. Based on Rocher's analysis, Parsons believes that there are four important functions required by all systems through Adaptation (A), Goal attainment (G), Integration (I) and Latency (L). A system can function if these four functional imperatives encourage a condition to survive. Therefore, Ritzer and Goodman (2008: 121) state that the system must have the function of (a) Adaptation: a system must cope with an external situation that is critical. The system must adapt to the environment and adjust the environment to the needs, (b) Goal Attention: a system must define and achieve its main objectives, (c) Integration: a system must regulate the interrelationships of its parts, and (d) Latency: a system must equip, maintain and improve both individual motivation and cultural patterns that create and sustain motivation.

The AGIL Parsons scheme (in Ritzer and Goodman, 2008: 121-122) operationally in understanding general actions, can be explained as follows (a) Behavioral organism is a system of actions that carries out the adaptation function by adjusting and changing the external environment, (b) The personality system carries out the function of achieving goals by setting system goals and mobilizing available resources to achieve them, (c) The social system overcomes the function of integration by controlling its parts, and (d) Cultural systems carry out the function of maintaining patterns by providing actors with a set of norms and values that motivate them to act.

Results and Discussion

1. Relationship between Hindu Alukta and Other Religions

Tana Toraja is hilly, but in some other areas, the shape of the lowlands is a unique sight. There is even an area where the road is uphill and winding like climbing a mountain, but it sloping when at the peak. People call it “the land in the clouds”. This area has become an amazing tourist attraction. In Tana Toraja there are many winding roads with shady trees, giving a different feel when in the middle of it, although the aura as an old land with some cultural accents feels thick. Left and right of the road is decorated with views of Tongkonan’s house, combined with a paddy field when it was green. Uniquely in each paddy field, there are puddles the size of buffaloes or grown tedong(typical buffalo for ritual) for playing and bathing. The city of Makale is also quite busy, especially since it is the center of the life of the city of Tana Toraja Regency. Central government side by side with the business center. No doubt, many shops, stalls, and houses are lined up tightly. That is Tana Toraja. At first glance, their lives seemed to have no problems.

The scene also descends on those who inhabit Tana Toraja. They made Tana Toraja as a big house together because of the traditions and customs that they believed came from the same source. Culturally they are bound as AlukTodolo who believes in Puang Matua, Deata and ancestors. The similarity of customs, traditions, and culture has made them one unity as Tana Toraja people. Baturante (2019) wrote long and thick about the peaceful and peaceful life of the Tana Toraja people, one of whom was through Tongkonan. In this traditional house, life begins and equality is arranged. Not surprisingly, AlukTodolo people who now adhere to any religion can be united in the cultural container of Tana Toraja, although the presence of Christianity, Catholicism and Islam cannot be common but has a distinctive and different style from one another, but remains bound to one another. This situation is also recognized by a prominent AlukTodolo who adheres to Islam, H. ThamrinLodo’.

Mr.Thamrin currently works at the Islamic Community Guidance Office of the Ministry of Religion in the Tana Toraja Regency. He claimed to be a native of AlukTodolo and his family adhered to devout Islam. But he also still has another large family of Christians, Catholics, and Hindu Alukta. "Until now we have never had a problem with all family members, despite different beliefs", said Mr.Thamrin, stating that the traditional ceremonies and traditions of AlukTodolo had united them. Although not all of these traditions they do, mainly because somethingis not permitted in Islam, for example trusting ancestors who always exist in human life, the use of pork in ceremonies, or the use of alcoholic beverages. "If we have to donate the materials for the aluk ceremony in the form of pork, we can now replace it with money or other materials. Or if we eat together, we can now eat according to halal dishes. In this way we get along well together, "said Mr.Thamrin while saying that the similarity of the roots of life history and the guidelines for living together for a long time were the factors that made all Tana Toraja people united. Mr.Thamrin also said that sensitive issues such as beliefs had begun to fade, unlike in the 1970s and 1990s when AlukTodolo people were called animists or infidels. "To be honest, in the past the Alukta Hindus got the most banter, but now there is no more because besides joining with Hinduism they are also our brothers", said Mr. Thamrin who also regretted that there was still no change in behavior from Aluk people Todolo is of any religion who likes to drink and gamble.

What ThamrinLodo' said was also told by Baturante (2019: 253-268) that although the influence of Islam came later in Tana Toraja, they still respected the prevailing customs, besides most of them also came from AlukTodolo. The presence of Islam in Tana Toraja is inseparable from the influence of Islam that originated in LuwuPalopo in Madandan around 1876 and from TeteajiSidrap in Kampung Baru-Makale around 1897. These two directions of Islamic travel colored Islam as a whole in Tana Toraja. Although the influence of Islam between Madandan and Makale is different, the atmosphere of harmony that is built is the same. For example, in Madandan harmony was built through the phrase Siduppa-Rangga through a message in the form of a will which was forwarded by Laso 'Sombolinggi who sparked the MadandanDitulakTallu phrase which roughly meant that the one who built Madandan was AlukTodolo, Islam and Christianity. Various meaningful expressions come from the norms and functions of Tongkonan, such as Sikamali' (longing for each other, caring, and loving each other), Siangga' (respecting each other), naSingkaran (helping each other). These expressions are evident in the practice of the RambuTuka or Rambu Solo ceremonies.

Unlike the influence of Islam, the journey of Christianity in Tana Toraja even began when the zending spread Christianity. Not surprisingly, Christians now form the majority. Many churches have been established among traditional Tongkonan houses. Even to accommodate education, in Tana Toraja there are already State Christian Religion Colleges, there are also many teachers and secondary elementary schools. The rapid spread of Christianity is also acknowledged by Yohanes, a priest who has served 17 years in Tana Toraja, currently the Chair of the FKUB of Tana Toraja Regency. The following statement.

> "Like other mission religions, Christianity also opens itself to followers of AlukTodolo. Of course, after that, they could not carry out ceremonies that were not by Christianity, for example worshiping ancestors. But we (the church) still give them the freedom to carry out the customs and traditions of AlukTodolo because after all the roots of their lives come from that tradition, for example running pemali. After all, it's good norms and guidelines for life. Therefore, our duty to AlukTodolo people who enter Christianity is to re-educate, re-interpret, and re-actualize".

Pastor Yohanes also said that AlukTodolo people who adhere to Hindu Alukta received less attention, even the priest could rarely be presented at large meetings and often only represented by the Chair of the PHDI of Tana Toraja Regency. Muhammad, Head of the Office of

the Ministry of Religion in Tana Toraja Regency, who was met at his office stated that Christianity was very rapidly developing. He highlighted the position of Hindu Alukta which did not receive much attention from the central government, especially its leaders who did not provide much guidance, unlike in Islam which was carried out by ustadzand Christians through priest or Romo or Pastor.

In the perspective of harmony and effort to create a peaceful life, Christians provide the opportunity for the AlukTodolo people to carry out their traditions while at the same time transforming themselves. Baturante (2019: 269-282) tells that the entry of Christians in Tana Toraja had started since the early 1900s, apart from the missionaries (zending) also from Ambon, Manado, and Flores who "succeeded" in bringing Torajan figures such as PuangTempang and PuangSakkung to become Christians. Also, the Rantepao region has become a strategic location for Christian growth and development so that it is considered as the entrance of the gospel in Tana Toraja. In addition to actively conducting community development as stated by Pastor Yonahen informants, Christianity also enters traditional events, but if the event is liturgical AlukTodolo they usually become spectators and mingle while eating together. To reconcile AlukTodolo customs with Christians, an agreement was made in the form of syncretism so that the two were in balance. One form of syncretism is, for example, in the Rambu Solo ceremony. Although Christians carry out the ritual but the Christian element is also traversed (1) there is an opening service, (2) the shape and duration of the ceremony are adjusted to the Christian version according to the agreement of the two families, (3) about the tunuan (offering) of animals in the form of buffalo and pigs is also appropriate mutual agreement, (4) burials that begin with a service held in the afternoon.

The entry of Catholicism can be said together with Christianity. Baturante (2019: 282-285) states that the entry of Catholicism is somewhat similar to the way Christians do in Tana Toraja. The customs of AlukTodolo can still hold even though they carry out Catholic rituals. For example, if an adherent of AlukTodolo (Parengnge') enters as a Catholic, the position of Keparengngesan that he bears does not have to be released, only it is carried out according to the Catholic faith and teachings he follows. So, if he leads meetings in his village, he leads like a Catholic, if he prays according to Catholic procedures. But what distinguishes it a little from Islam and Christianity, Catholics carry out their inculturation, among others (1) the existence of a very clear structure of service and community formation among Catholics for the TorajaKevikepan, for example consisting of 12 Parishes serving 242 Stasis, under the leadership of the parish priest's ministry respectively, and so on. (2) The Parish Priest, as the Vikep who serves, fosters the place of Catholic fellowship within certain geographical boundaries carried out by the sons of Toraja.

2. The dynamics of Hindu Alukta

a. The bias of Hindu Alukta Names

"We must be courageous to state that Hinduism is an ancestral religion," said Hendra's informant. This statement is certainly rather harsh, but Hendra claimed to be tired of the doubts expressed not only by other people but by Hindus themselves. Hendra's doubt may have a point because not a few Alukta Hindus began to falter with the seduction of some people who wanted them to embrace the faithful by the decision of the Court. As is known, the decision contains several things that can make believers breathe freely.

There are at least three pillars that underlie the decision. First, the Constitutional Court's decision states that the word "religion" in Article 61 paragraph (1) & (2) and Article 64 paragraph (1) & (5) of the Adminduk Law is contrary to the constitution and is declared not has binding legal force, as long as it does not include "trust." The Court emphasized the initial idea of the term "belief" as an inseparable part of the term "religion" in our constitution. Second, the Constitutional Court's ruling emphasized the right to religion,

including trust, is the constitutional rights of citizens (constitutional rights) and is part of human rights. These rights are "natural rights," that is, the natural rights of every human being that cannot be reduced under any circumstances. The Constitutional Court emphasized the position of the state as the bearer of responsibility (duty bearers) to fulfill, protect, and respect every individual who received the trust as a rights holder, and thirdly, the Constitutional Court's decision laid the principle of legal certainty and equality before the law as a basis for testing the constitutionality of the Act Adminduk The Court tested the implementation of these principles substantively, namely that the emptying of the religious column for the followers of indigenous religion in the KK (family card) and the electronic ID Card gave unclear legal status in population administration. This regulation creates legal uncertainty, violates the principle of equality before the law, and is discriminatory.

Even so, according to Hendra, the belief in AlukTodolo to become a Hindu Alukta religion is also final, no doubt even the state through the Directorate General of Hindu Community Guidance has recognized it through the decree. "But if they want to convert or become followers of the faith, then each of us should not be asked to follow the seduction," Hendra said even more firmly. Hendra's rage is understandable because after the Constitutional Court's decision there was a kind of euphoria that religious adherents based on trust would return to their initial beliefs. It turns out that a phenomenon called Hendra is also sweeping Christians, Catholics, and Islam who previously adhered to the “local religion”AlukTodolo. This also makes the AlukTodolo people start to worry because on the one hand they have adopted an official religion that is legally recognized by the state, but they still practice the customs of AlukTodolo. Some customs have been forced to reduce because the official religion they hold, is now starting to feel inappropriate. Hendra suspects that their bodies are officially religious, but their conscience is AlukTodolo. Another uncertainty is that if they return to the “local religion”AlukTodolo may not necessarily receive the same service and recognition from the state. But again, Hendra did not care about that condition. According to him, now how does Hindu Alukta remain as part of Hinduism in Indonesia.

Even though Hendra and his friends remained enthusiastic, he also realized the name Hindu Alukta contained several problems, one of which was considered a generalization for people in Tana Toraja. That is also why Tana Toraja people are reluctant to unanimously acknowledge Hindu Alukta. So not all AlukTodolo or Tana Toraja people consider Hinduism as their ancestral religion. Also, AlukTodolo people have spread to all official religions. Finally, even though they have adopted an official religion, they can still practice AlukTodolo's customs. The decreasing number of followers of Hindu Alukta is felt because of this quite serious problem.

Responding to these problems, Hendra stated that the government’s decision was binding. If you have to change the name or term, according to him, it must take a very long time, and not necessarily right. Answering this problem, Hendra said it with confidence.

> “So, let this problem run naturally to distinguish there are some entities that live in Tana Toraja, namely AlukTodolo himself, Hindu Alukta, Christian, Catholic, and Islamic. We are also not comfortable being called Hindu Tana Toraja because not all Tana Toraja are Hindu. This term instead makes the primordial issue emerge because later it will appear Batak Hinduism, Javanese Hinduism, Hindu Ambon, etc. But we also don't want to be called just Hindus because our wealth is precisely the customs of AlukTodolo. The term Hindu Aluka will distinguish us from AlukTodolo Christians and Catholics who do not know ancestor worship and the use of ceremonial means, and with Islam besides not knowing ancestor worship and various offerings as well as the use of pig”.

Hendra's opinion was corroborated in the Decree of the Director-General of Hindu and Buddhist Community Guidance Number: Dd/M/200-VII/1969 which in the preamble reading on point (b) Declaration Letter from the Central Board of the Parandangan Ada 'Tana Toraja Regency Number: 17 TATOR/1969 dates July 1, 1969, about the entry of the AlukTodolo, abbreviated ALUKTA into Hinduism. This assertion is continued in the preamble considering in point (a) Since AlukTodolo's belief is abbreviated by ALUKTA, there are many similarities with Hinduism, and point (b) that followers of AlukTodolo, abbreviated as ALUKTA by their own will choose to enter Hinduism.

b. They Still Fight Stigma

"Just let people talk about us anyway, we don't want to talk about other religions anyway. I, in the forums, it is always hard not to speak ill of one another, because we can do the same thing by vilifying them, but for what?" But Hendra also told that in several activities he had experienced several unpleasant treatments.

It seems that the stigma against the Hindu Alukta followers is still felt even though it is faintly heard, for example, they—and including the beliefs of AlukTodolo in general—are still considered as godless animism. Hendra and other informants naturally reject this stigma. Paranta (2009: 18) is convincing by saying that the understanding and meaning of "aluk" can provide understanding, encouragement, and motivation for the Tana Toraja community especially Hindu Alukta in his life. The Hindu teaching of AluktaaboutKapatongan (belief) consists of three parts, namely believing in the Puang Matua as the source of all that exists, trusting the Deata as manifestations and Puang Matua, and believing in To MembaliPuang, a spirit that has reunited with Puang Matua.

According to Paranta, who was also an informant in this research, the three beliefs can be the basis for all activities and living arrangements of the Hindu Alukta, including the order of life. Belief in Puang Matua, the Deata and ToMembaliPuang are an inseparable unit. Deataor dewatais a manifestation of Puang Matua who has a certain power to protect and preserve the creation of Puang Matua for human survival, for example, PatalaLamma as a god of water, MakkeBuku as a god of rice, Patala Kila'as a god of fire, etc. Whereas, ToMembaliPuang is a spirit that is already pure and reunites with its origin, namely Puang Matua. As stated in Tomina's literature that "SangTondokmo Nene Tikunna, sang parampa'mo to manggaranganna", which means "has been with his ancestors, united with the creator (Puang Matua)".

By the teachings of Hindu Alukta, Penaa or Spirit comes from Puang Matua and will return to Puang Matua. The return of the spirit merges with Puang Matua if there is a separation of soul and body called death, not as is often said by people who claim that only their religion is accepted that is good and right before Puang Matua. According to Paranta, Hindu Alukta followers are often victims of harassment and are said to be To Kalillinan or worship DeataBulettuk. To Kalillinan (dark people) means people who do not worship Puang Matua and do not know the values of truth and when they die their spirits do not enter heaven.

Paranta (2009: 19) states that Aluk known and obeyed by the ancestors of Tana Toraja from the past until now is AlukMellao Langi'. PanggarangannaPuang Matua (alukdipondok to tangnganalangi'). It is very wrong and unethical what is said by certain people or groups who say that AlukTodolo or Hindu Alukta arekafirs, ie do not worship God or "Tokamlinan", ie people who are lost and have no religion. This is very unfortunate Paranta because certain groups only claim the truth only exists in their group.

Paranta (2009: 20-21) continues that people or groups who say Hindu Aluktais akafiror tokalillinanis a person who is blind eye and blind heart. They cannot see the real truth and do not appreciate the Aluk that has been sent down (AlukMellao Langi') by Puang Matua to be used as a guide and guide to human life. By not respecting what has been passed

down by Puang Matua, it means that they also do not appreciate Puang Matuathemselves, who is generating aluk. Events like this are often expressed in certain activities.

Also, according to Paranta (2009: 18) which states that one of the most important rituals in the AlukTodolo tradition is AlukRampanan Kapa' which is interpreted very broadly, first, as a religion in which Aluk means the same thing as the religion that regulates matters things related to human worship of Puang Matua along with various manifestations called Deata. Second, as a ceremony, which is a regulation related to religious ceremonies addressed to Puang Matua and its various manifestations (Deata). Third, as manner or behavior, namely things that are "Pessiparan" such as manners and courtesy that comes from Pemali, Sangka'and Salunna.

Based on this opinion, Hendra's informant further strengthened his belief that Hinduism is the religion of his ancestors. According to him, there may be limitations of Hindu figures to unravel in full the long history of Hinduism in Indonesia including in Tana Toraja. The second possibility is AlukTodolo is a local religion but has a touch to be glorified by Hinduism. Therefore, according to Hendra, the closeness of AlukTodolo with Hinduism cannot be denied. The Three Basic Frameworks of Hinduism which consist of tattwa, upacara, and susila which form the basis of Hinduism even though with different terms but are essentially the same.

Hendra who was accompanied by saint Nenek Sando stated that the Five Sraddha as five Hindu beliefs in Indonesia had been implemented through belief in Puang Matua, Deata and Ancestors. AlukTodolo people who died will unite with their ancestors. The five Yadnyais carried out through the ceremonies of AluknaRampana Kapa', AlukKalambunanAllo, AlukSipiakTallang and TomanurunDilangi Finally, ethics and norms are implemented through various pamali that govern the lives of AlukTodolo people. The practice of the Three Basic Frameworks is localized through the customs and traditions of AlukTodolo, something that can no longer be done by AlukTodolo people who have a religion other than Hindu Alukta.

c. The Role of Minor States

The temple which is located in the Makale area that afternoon is very quiet. Right on the edge of the road, with a gray penyengker (wall) surrounded by residential housing, while the backyard there is land owned by residents. At first glance, the building does not look like a temple as people know if they call a Hindu holy place. The temple wall accented with Balinese carvings may be the only sign that the building is a temple. To show that the temple belongs to the Hindu Alukta, a Tongkonan was built on the front door. It also appears that the temple became a joint secretariat of several Hindu social organizations and institutions. In the temple, there are also not many buildings, especially those that can accommodate many people for activities. According to Hendra, the temple was also always quiet, but for him, it was enough to show that Hinduism in Tana Toraja still existed with the symbol of the temple.

The existence of the temple is just one example of Hindu Alukta's religious activities not beating fast. In contrast to Hindus in Makassar or areas that are the basis of Hindu transmigration from Bali, such as Luwu, Palopo, etc. Fostering of Alukta Hindus is not as intensive as the Hindus mentioned, apart from the fact that Hindus from Bali can conduct religious activities independently. Even in Tana Toraja there is no place where they can study together, with adequate religious books both in temples and schools.

The existence of Hindu Community Guide Leaderwho is structurally embodied from the center cannot do more because the budget for guidance to Hindus in South Sulawesi Province cannot be made partially. For example, the formation of Hindu religious teachers cannot be done only on Hindu Alukta teachers who currently only number 7 people. They must follow the activity to the nearest area to be gathered with other Hindu teachers. If they

are forced, they along with other Hindu religious teachers must travel by land for approximately 8-10 hours to Makassar. In addition to their weak competence, the number of teachers is still small so that many Hindu students in one school are often taught in one class.

Besides, coaching by extension workers is also very limited, especially since there are not any civil instructor. With a very large built area, it feels hard for those with honorary status to reach the Hindu Alukta whose distribution is also sporadic. There is even one district that does not have Hindus. Hindu Alukta followers today also continue to experience a decline in quantity from year to year as well as an incomprehensible understanding of Hinduism. This is a problem in itself because Alukta Hindus do not have a complete understanding, but understanding Hinduism is only based on the AlukTodolo tradition. Moreover, Alukta Hindus who take Hindu education are also very limited. That is, coaching must be done by providing a complete understanding of Hinduism in general, that how they carry out according to the customs and traditions of AluktaTodolo will not be a big problem because it is precisely with the implementation according to local customs, Hindu Alukta finds its comfort. It is different if they embrace other religions which generally demand uniformity. Through Hinduism, they are not under pressure to carry out religious teachings uniformly according to Hindu norms in general.

Besides quantity, the quality of religious understanding and practice by Hindu Alukta is still inadequate. In addition to not having a similarity with the Hindu religion in general, especially Hinduism in Bali, they are more practicing local traditions and customs. This condition has never been a serious problem among Hindus because, in the Vedic scriptures, religious practice is carried out through desamawacara, lokadresta, anddesa-kala-patra. With the program as the source of Hindu law, harmony and uniformity are unknown. Not surprisingly, Hindus throughout Indonesia can carry out their religious activities flexibly following local traditions.

The minor role of the state seemed to ignore the long struggle of the traditional figures of AlukTodolo. Hendra and Alukta Hindus certainly hope more in the country, especially the Ministry of Religion to give more attention to communities like them. Especially for Alukta Hindus, they want to get the appointment of civil instructors, especially teachers and extension workers. Also, so that their saints are appointed as equal to the pedanda in Bali so that they can help the people and foster faith and pride as Hindu Alukta. Hendra's desire is understandable because in the Director General's decree it has also been explicitly stated so that the AlukTodolo people when they join Hinduism receive guidance. This can be read in the considerations considering in point (c) to provide Hindu Community Guidance from AlukTodolo, abbreviated as Alukta, it is necessary to appoint an officer who can help the community, and point (d) that until now in Tana Toraja area there are no special government officials help guide the Hindu community in the area.

In addition to the marriage factor, especially the women, at this time they are also faced with a belief dilemma, especially the younger generation. The followers of Hindu Alukta still stand strong only on the characters and elders, as well as their generation who have been educated in Bali, even though as time goes by, they are getting older and the numbers are also getting smaller. Another concern is the conversion of religion which could make customs and traditions begin to be abandoned. Also, there is no transformation of the meaning of each ceremony that is carried out mainly for young children, also because it is expensive. The existence of ceremonies that are supposed to be a tool to unite and defend religion and culture, as Durkheim (1972 [1879]) said, may experience a setback.

3. Hindu Alukta and its Future Projection

Based on the data and description above, it seems that religious life in Tana Toraja in one period seems sloping and stable, but in a long period can also experience dynamics. The local

religion of AlukTodolo continues to undergo a process of being changeable, as the identities expressed by experts can change (Barth, 1993; Comaroff&Comaroff. 2009; Dashefsky& Shapiro, 1975; Glazer & Moynihan [eds], 1975). Religion as the core of culture will also face such problems.

AlukTodolo, like the local religions of the archipelago that lived long before the arrival of the major religions, could not be classified with formalistic rules. Opinions of experts who study Dayak for example, firmly say that this religion does not meet any conditions to be called religion, as religion governs it. Even Dayak is considered a religion that will decay someday, and be abandoned (see more complete Mahin, 2009). Referring to the opinion of western experts about Dayak religion, it might be true if an entity such as AlukTodolo is structurally and culturally neglected. The emergence of Hindu Alukta also experienced problems like that. Some cases that have appeared on the surface, also at least start from reality as experienced by Hindu Alukta (see some cases in Ahmad, 2015; Noah, 2010).

Structurally, Hindu Alukta has not received adequate attention from the state, particularly the Directorate General of Hindu Community Guidance, Ministry of Religion. If you look at its history, in addition to the existence of a Hindu Community Guidance, Alukta Hindus want an official Hindu organizer in Tana Toraja Regency so that all aspects of Hindu religious life can be optimally served. The country has a large debt to AlukTodolo when he declared himself a part of Hinduism in Indonesia. They have the right to receive special training and services, like other Hindus based on local beliefs, such as Kaharingan, Merapu, Kei, Kejawen, etc. The same obligation is also asked of the local government to foster Alukta Hindus as an integral part of Hinduism in Indonesia. This is important because based on field data, Hindu Alukta is still suggested as a religion of animism, kafir, drinking and eating illicit food, including the Hindu Alukta name by the Tana Toraja people, followers of AlukTodolo and AlukTodolo who have embraced Christianity, Catholicism and Islam are still considered biased. Local governments must clean up this stigmatization.

Culturally, Hindu Alukta is still seen as a religion that just “sticks” with Hinduism so that it is different from other Hindus. This view not only descended on Hindus outside Tana Toraja but also Alukta Hindus themselves. Therefore, comprehensive guidance is given to them while at the same time giving freedom to practice the customs and traditions of AlukTodolo. Based on field data, their entry into Hinduism cannot be separated from several reasons. First, there are indeed similarities in almost all components of their beliefs with Hinduism, but the state "forces" them to choose one of the official religions available, even though the entry process takes place peacefully, both through traditional institutions and their leaders. Second, choosing Hinduism carries significant risk because, with the principle ofdesa-kala-patra, they can still carry out all the customs and traditions that have been carried down for generations by AlukTodolo, a comfort that they might not get if they embraced another religion. Third, with this freedom, they do not get pressure from the majority of Hindus as different adherents, deviating and even heretical from Hinduism in general.

In this era of freedom, including religious matters, the need for structural and cultural guidance and service becomes very important. This is a consequence of religious treatment which is formal and institutionalized, not merely ideological. In this perspective, Hindu Alukta together with Hindu Kaharingan, Hindu Kejawen, etc. require guarantees and recognition from the state. Then as an entity that moves actively and then can change, rational choices that can meet the needs of their lives in the present and the future can only be taken to determine the position, once again, in the context of statehood. Although entities can change, people are not passive even in hegemony (see Gramsci, 1977). But the most stringent projection of the various doubts and stigmas that surround Hindu Alukta is the construction of religion which they say as “insiders” (the others).

Following Bahktin (in Rudyansjah, 2009), that life is a dialogue, and since humans are never passive in the shell of their lives, they also can dialogue, as long as to meet the needs of life in the present. History is also responded in this way, so that history is not a dead artifact but something that continues to give life to those who believe it, including how they project it for the future. Based on this analysis, and supported by field data and informants, it seems that Alukta Hindus also can dialogue what they have lived for thousands of years, including wanting to go where they are going from the various dynamics they face.

First, they will remain as Alukta Hindus for several very rational reasons, namely (a) the historical factor between customary institution leaders and highly respected figures and the government in deciding the joining of AlukTodolo people into Hinduism is a long, reflective history. deep and shared awareness. In contrast to some cases the joining of a flow of trust because of coercion and or violence. This historical factor is important for them to continue to care for because they do not want to betray what their ancestors have decided, (b) by choosing Hinduism, they are still free to practice all the customs and traditions of AlukTodolo because in Hinduism there is no absolute uniformity, and (c) with that freedom too, they will not get pressure from mainstream Hindu religion which besides giving freedom is also not majority. But this choice also carries many risks, if (a) guidance and services are still minimal and access to be actively involved in development is not wide open, (b) followers of Hindu Alukta are increasingly shrinking in quantity followed by several components that are not steady as in the past when declaring themselves to be Hindu Alukta, and (c) customary elders and those who had received Hindu religious education outside Tana Toraja, especially Bali who were still firmly adhered to Hinduism. This fact occurs because the impact on point (a) is still very weak.

Second, they may choose to become majority religions such as Christianity, Catholicism, and Islam, but (a) they cannot practice AlukTodolo's traditions and traditions because according to them they tend to be uniform and dogmatic. For example, worshiping ancestors who in Christianity, Catholicism and Islam did not get a special place because after death there is no more life, let alone still interfering in the generation left behind in the world. They also cannot freely use the means of pigs (specifically in Islam) when performing aluk ceremonies, and (b) these various opinions according to them will be pressured by majority religions, for example, stigmatized as a splinter or deviant religion.

Third, the choice to become a supporter of trust as legally recognized in Indonesia. But for them, this choice is not necessarily acceptable because (a) the term believers who believe in Almighty God are too generic even though they explicitly refer to it as AlukTodolo who worships the Puang Matua and ancestors. According to them, this term is also too elitist because it is only known among the leaders of trust and not all local beliefs are accommodated, (b) they will not necessarily get the service as expected besides there is no structure to protect their existence and not in the Ministry of Religion which is generally considered as institutions of religious guidance and stewardship, and (c) it is difficult for them to break away from the stigma of being animists and even to be considered kafir.

The various choices are projections that experience weak tense depending on the momentum. As a formal religion, Hindu Alukta is final and legally recognized by the state, but as a cultural core, this religion will continue to experience a "process of becoming". They will remain strong, either as formal religions or AlukTodolo entities, or they are as perceived by western orientalists who view, one of them is Dayak Kaharingan religion as an example, like weathered wood which will one day die and be left behind or may also be swallowed up. era. Only time will test the existence of Hindu Alukta in the future.

Conclusion

Hindu Alukta as part of the Hindus in Indonesia is still not free from negative stigma, both internally AlukTodolo and externally. However, Alukta Hindus and other religious

communities can still maintain a harmonious life in Tana Toraja because they are united by customs originating from the beliefs of AlukTodolo. Nonetheless, the challenges of the Alukta Hindus remain challenging in the future given the fostering of especially the weak central government and governance structures that do not reach the Alukta Hindus to the lowest layer. This problem causes a comprehensive understanding of Hinduism cannot be maximally carried out.

The state, in this case, the Ministry of Religion, still plays a minor role even though religious people who depart from local beliefs such as Hindu Alukta should be a priority to be fostered and access to actualize themselves. Likewise, the relatively small supply of teachers and instructors influences the survival of their religion which in the future will be more severe, especially openness in embracing a particular belief. Another challenge is the existence of Alukta Hindus who are shrinking and leaving only parents who in the 1960s struggled to integrate with Hindus in Indonesia.

References

- Ahmad, Haidlor Ali (ed). 2015. Kasus-KasusAktualHubunganAntarumatBeragama di Indonesia. Jakarta: Badan Litbang dan Diklat, PuslitbangKehidupanKeagamaan, Kementerian Agama.
- Aziz, Ahmad Amir. "Islam Sasak: Pola KeberagamaanKomunitas Islam Lokal di Lombok". JurnalMillah. Vol VIII No 2 Februari 2009. Hal 241-253.
- Barth, Fredrik. 1969. Ethnic Groups And Boundaries "The Social Organization of Culture Difference". Little Brown and Company Boston.
- Baturante, Nurdin. 2019. Toraja, Tongkonan, dan Kerukunan. Makassar: Pustaka Al-Zikra.
- Comaroff, John L & Jean Comaroff. 2009. Ethnicity. Inc. The University of Chicago Press.
- Darmapoetra, Juma. 2013. Tolotang. KeteguhanMemegangTradisi. Makassar: Arus Timur.
- Darmapoetra, Juma. 2014. SukuBugis. PewarisKeberanianLeluhur. Makassar: Arus Timur.
- Dashefsky, Arnold & Howard M. Shapiro. 1975 dalamDashefsky (ed). Ethnic Identity in Society
- Durkheim, Emile. (1972 [1879]). The Elementary Forms of Religious Life. London: Allen-Unwin.
- Glazer, Nathan & Daniel P. Moynihan (eds.) 1975. Ethnicity Theory and Experience. Harvard University Press Cambiridge, Massachusetts, and London, England.
- Gramsci, Antonio. 1971. Selection from the Prison Notebooks. Q. Hoare, Q and G Nowel Smith, eds. New York: International Publishers.
- Hakim, Bashori A. 2010. "KepercayaanAluk To Dolo di Kabupaten Tana Toraja Sulawesi Selatan" dalam Wahid Sugiyarto (ed). DirektoriKasus-KasusAliran, Pemikiran, Paham dan Gerakan Keagamaan di Indonesia. Jakarta: Badan Litbang dan Diklat, PuslitbangKehidupanKeagamaan, Kementerian Agama.
- Mahin, Marko. 2009. "Kaharingan: Dinamika Agama Dayak di Kalimantan Tengah". Disertasi.Depok: ProgramPascasarjanaAntropologi, FISIP, UI.
- Nowak, Mafred. 2005. U.N. Covenanton Civil and PoliticalRight CCPR Commentary 2nd revisededition. Arlington USA: N.P. Angel Publisher.
- Nuh, Nuhrison M (ed). 2010. Aliran-AliranKeagamaanAktual di Indonesia. Jakarta: BadanLitbang dan Diklat, PuslitbangKehidupanKeagamaan, Kementerian Agama.
- Rasmianto. "InterrelasiKiai, Penghulu dan PemangkuAdatdalamTradisiIslamWetuTelu di Lombok". Jurnal el-Harakah. Vol. 11, No. 2, Tahun 2009. Hal 138-154.
- Ritzer, George & Douglas J. Goodman. 2008. TeoriSosiologi Modern. AlihbahasaAlimandandari Modern SociologicalTheory, 2003. Jakarta: KencanaPrenada Media Group.
- Rudyansjah, Tony. 2009. Kekuasaan, Sejarah, dan Tindakan. Sebuah Kajian Tentang Lanskap Budaya. Jakarta: Rajawali Press.
- Zuhdi, Muhammad Harfin. "ParokialitasAdatTerhadap Pola KeberagamaanKomunitas Islam WetuTelu di Desa Bayan Lombok". JurnalKontekstualitas. JurnalPenelitianSosialKeagamaan. Vol. 21 No. 2. Des 2006. Hal 71-94.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

SIMULATION OF A MATHEMATICAL MODEL OFMALARIA DISEASES TRANSMISSION DYNAMICSUSING INTERVENTION STRATEGY

Fekadu Tadege Kobe
College of Natural and Computational Science
Department of Mathematics
Wachemo University, P.O.Box-667 Hossana, Ethiopia

Tigabu Abera Nune
College of Natural and Computational Science
Department of Mathematics
Wachemo University, P.O.Box-667 Hossana, Ethiopia

Abstract
This paper proposes and analyses a basic deterministic mathematical model to investigate Simulation for controlling malaria Diseases Transmission dynamics. The model has nine non-linear differential equations which describe the control of malaria with three state variables for mosquitoes populations and six state variables for humans population and to introduce the new SPEITRS model for the transmission dynamics of malaria with four time dependent control measures in Ethiopia Insecticide treated bed nets (ITNS), Treatments,Indoor Residual Spray (IRs)and Intermittent preventive treatment of malaria in pregnancy (IPTP).The models are analyzed qualitatively to determine criteria for control of a malaria transmission dynamics, and are used to calculate the basic reproductionR_0. The equilibria of malaria models are determined. In addition to having a disease-free equilibrium, which is globally asymptotically stable when the $R_0 < 1$,the basic malaria model manifest one's possession of (a quality of) the phenomenon of backward bifurcation where a stable disease-free equilibrium co-exists(at the same time) with a stable endemic equilibrium for a certain range of associated reproduction number less than one. The results also designing the effects of some model parameters, the infection rate and biting rate. The numerical analysis and numerical simulation results of the model suggested that the most effective strategies for controlling or eradicating the spread of malaria were suggest to use insecticide treated bed nets, indoor residual spraying, prompt effective diagnosis and treatment of infected individuals.

Key Words: -Malaria diseases,Basic reproduction number, Next generation matrix, Backward bifurcation analysis, Routh-Hurwitz criterion.

1. Introduction

Malaria is an infectious disease and is life threatening for human beings worldwide. Parasite is an organism that lives on or inside a human body from which it gets its food. Malaria is caused due to a parasite called Plasmodium. Plasmodium parasite is transmitted into human body when an infected female anopheles mosquito makes bites. Plasmodium parasites making the human liver as their home multiply their population and start infecting red blood cells of the human. A variety of plasmodium parasites exist. Mainly four types of plasmodium cause malaria disease among the human viz., falciparum, vivax, ovale and plasmodium malaria [60].

Malaria is an infectious disease and is life threatening for human beings having a huge social, economic, and health burden. Malaria transmission occurs in all over the worldwide. Globally, an estimated 3.2 billion people are at risk of being infected with malaria and developing disease, and 1.2 billion are at high risk (>1 in 1000 chance of getting malaria in a year). According to the latest estimates, 198 million cases of malaria occurred globally in 2013 (uncertainty range 124-283 million) and the disease led to 584,000 deaths (uncertainty range 367,000-755,000).The burden is heaviest in the WHO African Region, where an estimated 90% of all malaria deaths occur, and in children aged under 5 years, WHO account for 78% of all deaths [45].

In our country Ethiopia is a major public health problem and has been reported the last five years (2002-2008) the proportion of malaria in outpatient department, admission and in-patient deaths has been increasing with the highest being recorded in 2003 and 2004. In 2008 malaria was still the first leading cause of health problem accounting for 48% of outpatient consultations, 20% admissions and 24.9% inpatient deaths. According to FMOH reports, approximately 70,000 people die of malaria each year in Ethiopia [10].
Malaria is a life threatening infectious disease caused by a parasite called Plasmodium which is transmitted through the bites of infected female
anopheles mosquitoes. There are four different species causing the human malaria disease plasmodium falciparum, plasmodium vivax, plasmodium ovale and plasmodium malaria ([44],[50]). The plasmodium parasite is injected into the human bloodstream in the form or stage or life cycle known as sporozoite. The parasites go through a complex life cycle inside the hosting human body and they live at various stages both in liver and red blood cells. From time to time the parasites pass through various stages of their life cycle and during which numerous human red blood cells are destroyed. From the listed four plasmodium parasites in our country Ethiopia are plasmodium falciparum and plasmodium vivax, accounting for 60% and 40% cases respectively present in country Ethiopia widely [11].

At this stage the disease generates and develops its symptoms in the infected human body. Eventually, the parasites become gametocytes which are in turn taken by mosquitoes that bite the human host. Inside the mosquito, the gametocytes mature, reproduce sexually, and migrate into the mosquito's salivary glands, at which stage the life cycle is repeated. For some species of Plasmodium, the parasites may persist in the liver for months or years, resulting in chronic and recurring eruptions of merozoites that correspond to episodes of fever and sickness.

The effect of malaria disease varies with the infecting variety species of Plasmodium and also with prior health and immune status of the individual. Typically malaria disease causes fever and chills together with headaches, vomiting and diarrhea. It may also cause long-term anemia, liver damage and neurological damage. The most dangerous falciparum parasite can cause cerebral malaria which causes frequently a fatal condition involving damaging the brain and central nervous system. The survived people from the cerebral malaria may too experience brain damage.

Now a days, although malaria deaths do not occur as often as previously, but still it remains a major public health problem and it is too early to reach any firm conclusion about the possibility of achieving MDGs, because of resistance of the parasite to antimalarial drugs, the complexity of disease, expensiveness of the control program, seasonal variability nature of the disease [44].

In the recent time, significant resources and control programs have been made available worldwide. The aim is to reduce malaria infected cases and prevalence or gain upper hand over the disease. Different strategies and programs with varying effectiveness and efficiency are being adopted to control malaria disease. Comparative knowledge of these existing programs is necessary to design and organize any new and useful and cost effective procedure to control malaria epidemic ([44],[52]).

The National Strategic Plan for Malaria Control and Prevention in Ethiopia (NSP) 2006-2010 aimed to rapidly scale-up malaria control interventions to achieve a 50% reduction of the malaria burden, in line with global Roll Back Malaria (RBM) [35] partnership objectives. The status of coverage of the major interventions was measured in the Malaria Indicator Survey (MIS) 2007.

The MIS 2007 results show tremendous achievements by Ethiopia's malaria control program. Thus, between 2005 and 2007, insecticide-treated net (ITN)coverage increased 15 fold, with ITN use by children under five years of age and pregnant women increasing to nearly 45% in malaria-endemic areas and to over 60% in households that owned at least one ITN. Overall, 68% of households in malaria-endemic areas were protected by at least one ITN and/or indoor residual spraying of households with insecticide (IRS). It is believed that the vector control interventions have contributed greatly to a reduction in the burden of the disease. More than 20 million LLINs have been distributed to 10 million households between 2005 and 2007. With respect to IRS activities, evidence shows that 30% of IRS-targeted areas were sprayed in 2007 and in 2008 the coverage increased to 50%. So far, the main vector control activities implemented in Ethiopia include IRS, LLINs and mosquito larval source reduction.

The Malaria Vector Control Guidelines also addresses vector control interventions found to be effective in past decades. The insecticides commonly used in the country include dichloro-diphenyl-trichloroethane (DDT), Malathion and deltamethrin. Due to resistance of malaria vectors to DDT, the use of this Insecticide for IRS has been discontinued in 2009. Deltamethrin is currently being used as an interim substitute insecticide for DDT in IRS operations. However, the selection of insecticides for IRS use in Ethiopia will be determined annually based on the insecticide resistance pattern of the vectors and other factors. Environmental management, supported by active participation of the community and use of larvicides are other preventive measures addressed in this guideline. The guideline incorporates the three major vector control measures, namely environmental management, IRS, and LLINs [11].

Efforts to reduce malaria transmission have led to the development of efficient vector control interventions, particularly insecticide treated nets (ITNs), indoor residual spraying(IRS),and larvicide ([53],[54]). The ITNs include conventional nets treated with a WHO recommended insecticide and long-lasting insecticidal nets. Note that larva is an immature form of an insect and larvicide is a chemical used to kill larvae. These interventions are used in malaria endemic countries especially those in sub-Saharan Africa and have led to reduction in malaria morbidity and mortality substantially. However, malaria epidemic continues to claim hundreds of thousands of lives every year, thus necessitating a continued control effort to fight against the disease ([55], [56]).
Malaria has been considered as a global issue. Epidemiologists together with other scientists invest their efforts to understand the dynamics of malaria and to control transmission of the disease. From interactions with these scientists, mathematicians have developed tools called mathematical models. These models are used significantly and effectively for giving an insight into the interaction between the humans and mosquito population, the dynamics of malaria disease, control mechanisms of malaria transmission and effectiveness of eradication techniques.

Mathematical models are particularly helpful as they consider and include the relative effects of various sociological, biological and environmental factors on the spread of disease. The models have played a very important role in the development of malaria epidemiology. Analysis of mathematical models is important because they help in understanding the present and future spreads of malaria so that suitable control techniques can be adopted.

The SEIR is a simplest mathematical model and has four classes or compartments Susceptible, Exposed, Infected and Recovered. Here we considered SEIR model and modified it by adding two more compartments, protected and treatment classes. The inclusion of the protected and treatment classes to SEIR model and extending it to SPEITR model is a technique used to control the spread of malaria disease. Thus, we presented the SPEITR model that describes the

dynamics and controlling mechanism of malaria disease. The effect of controlling technique in the spread of malaria is analyzed. This new model is an extension or modification of the existing mathematical models used to deal with malaria epidemic. Using these notations, eight classes of compartmental models are possible, SI, SIS, SEI, SEIS, SIR, SPITR, SIRS, SEIR and SEIRS ([14],[29],[57]). For example, in an SEIRS model, a fraction of the susceptible (S) population gets exposed (E) to infection, a part of which then becomes infectious (I). Some from the (I) class recover from the disease, and become part of the (R) class with temporary immunity. When immunity is lost, they become susceptible to pathogen attack again, and enter the (S) class. The simulation studies of the model with variable values of sensitive parameter of the spread of malaria are performed and the results are incorporated. The necessary conclusions have been drawn.

2. Current Malaria Models Main Conceptual Developments

In the three and a half decades since the publication of the Garki model, there have been many scientific technological developments that have directly and indirectly driven malaria modeling. Foremost among these have been advances in computers that have made once prohibitively expensive computations and simulations commonplace. Great progress has been made in our understanding of the biology of the disease, from the population level of transmission to the molecular level of the interaction of the parasites surface proteins with the human immune system. There have also beensignificant advances in the mathematical and statistical methods used to model and analyses physical and biological systems, including: the development of network theory, the progress in statistical methodologies and the creation of spatial statistics, and the development of individual-based models. These changes have led to new modeling techniques and types of models, and improvements to existing ones. Malaria modeling has continued in several directions, with models exploring different facets of biology and natural history, and the effects of interventions and their evolutionary consequences [35].

Figure 1:- malaria statistical data

3. The Plasmodium life cycle and vector feeding cycle

The Ross-Macdonald model is a basic quantitative description of the Plasmodium life cycle (Fig. 2) and the vector feeding cycle (Fig.3). The parasite enters the mosquito during a blood meal and the mosquito becomes infectious10-16 days later, after the parasite develops into sporozoites. In the meantime, the mosquito will have fed several times and most infected mosquitoes will die before they become infectious. Mosquitoes that survive to become infectious can then give several infectiousbites before they die.

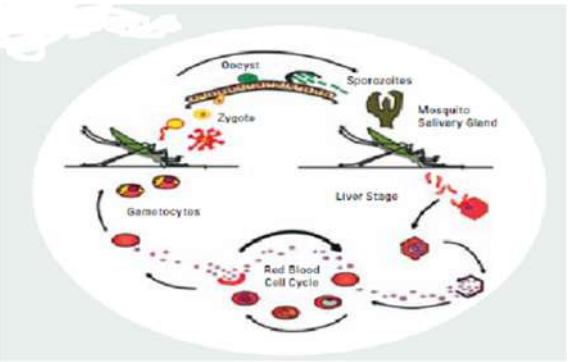


Figure.2The malaria life cycle

Human infections begin during the mosquito blood meal when sporozoites enter the skin. Parasites are not obvious in the blood until about 11 days later. A human with a P. falciparum infection is not infectious until a fraction of the blood-stage parasites become gametocytes and then mature, 8-10 days later. Untreated or improperly treated infections last about 200 days on average, though some infections can last more than a year. As long as the blood-stage parasites persist, some gametocytes will be produced. The number of mosquitoes that will become infectious depends in part on the number of mosquitoes that bite humans the rate at which parasites develop and the longevity of the mosquitoes.

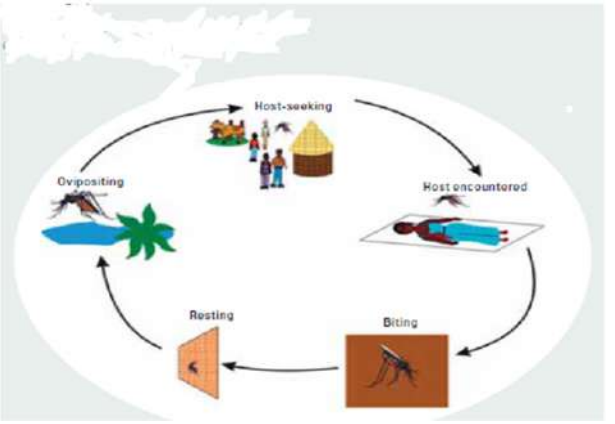


Figure.3the feeding (or gonotrophic) cycle of the female mosquito vector

4. Mathematical Formulation of SPEITR Model

we considered the protected class denoted by P(t) and treatment class denoted by T(t), added to human population of SEIR model(1)and extended to SPEITR model. These classes have been included due to the use of insecticide treated bed nets (ITN) and indoor residual spraying (IRS) as the preventive measures, and treatment as a control measure. In the SPEITR model all the humans are divided into six classes or compartments and they exhibit the following properties: We consider that the transfer rates between the subclasses are composed of several epidemiological parameters as it is. The fraction of γ the susceptible natural birth of individuals noted in the system model (1), are taken to be under preventive control and join the protected class. The likelihood or probability of infection is expected to be reduced by a factor of η. We can note that the protection is effective if $\eta = 0$ and in effective if $\eta = 1$. This is true just because this parameter is defined as the reduction of likelihood or probability of infection by

protection. For the protection to be effective there should be no passage of individuals from the protected class to the exposed individuals. This happens when $\eta = 0$. Having a protected class, we have a proportion $g\ (0 \leq g \leq 1)$representing susceptible individuals who migrate to malaria free-region, and thus become partially protected, but become exposed once they return to the malaria endemic areas by the force of infection α_{hp} . This happens when the prevention measures are relaxed or less strict. We assume that $(g + \gamma\psi) > 0$ in order that there is a non-zero flow of humans into the protected class. The transfer rate of g is due to the use of the protected mosquito bed nets and indoor residual spray.

The exposed individuals as explained in the system (1) progress to infected class at a constant rate β_h individuals who have experienced infection may be treated at a constant rate τ and they enter a treated class. After a successful treatment, they recover temporarily at acquired immunity rate ϵ since disease-induced immunity due to malaria is temporary, a fraction φ of individuals leave the recovered state to the susceptible state while the combining in such a way as to form a complete whole fraction $(1 - \varphi)$ move to the protected class with out any capacity of a material for treatment. They did not accomplish fully or meet specified standards and their recovery is temporal. The rate of infection of susceptible individual α_h and the rate at which the infected individuals infect the susceptible mosquito isα_m. Further, it is assumed that the susceptible mosquitoes get infected with a rate of θ_{hm} when they bite infected humans and assumed that the infected mosquitoes transfer infection with a rate of $\theta_{mh}$when they bite susceptible humans. The flow-diagram of the model is shown in Figure (4) below. The malaria model with intervention strategies has additional state variables in Table 1 and parameters in Table 2 which satisfy the system of equations (1).

Table 1 Variables of the basic malaria model

Variables	**Description**
$\mathbf{S_h(t)}$	Number of humans insusceptible compartment at time t
$\mathbf{E_h(t)}$	Number of humans in exposed class at timet
$\mathbf{I_h(t)}$	Number of humans in infected compartment at time t
$\mathbf{R(t)}$	Number of humans in recovered compartment at time t
$\mathbf{S_m(t)}$	Number of mosquitoes in susceptible compartment at time t
$\mathbf{E_m(t)}$	Number of mosquitoes in exposed class at time t
$\mathbf{I_m(t)}$	Number of mosquitoes in infected class at time t
$\mathbf{N_h(t)}$	Total human population at time t
$\mathbf{N_m(t)}$	Total mosquito population at time t
$\mathbf{P_h(t)}$	Number of protected humans host at time t
$\mathbf{T_h(t)}$	Number of treated humans host at time t

Table 2 Parameters and their interpretations for the malaria model

Parameter	**Description**
ψ	Natural birth rate of humans
$\boldsymbol{\rho}$	Natural birth rate of mosquitoes
$\boldsymbol{\alpha_h}$	Transfer rate of humans from susceptible to infected compartment
α_m	Transfer rate of mosquitoes from susceptible to infected compartment

μ	Natural death rate for humans
δ	Death rate of humans due to disease-induced
ω	Death of mosquitoes caused by natural death rate and insecticides
β_h	Transfer rate of humans from the exposed class to the infected class
τ	Transfer rate of humans from Infected to recovered class
φ	Transfer rate of humans from recovered to susceptible compartment
η	Reduction of likelihood or probability of infection by protection
ϵ	Recovery rate of humans from the treated compartment to recovery compartment
$\gamma\psi$	Rate at which newly born humans enters into protected compartment
$(1-\psi)$	Rate at which newly born humans enters intosusceptible compartment
$(1-\varphi)$	The fractional probability of temporary recovered humans enters into protected compartment
λ	Transfer rate of humans from infected to treated compartment
γ	Transfer rate of humans from treated to recovered compartment
g	Transfer rate of humans from susceptible to protected compartment
θ_{mh}	Probability of transmission of infection from an infectious mosquito to a susceptible human
θ_{hm}	Probability of transmission of infection from an infectious human to a susceptible mosquito
$\alpha_h = \left(\frac{\theta_{mh}\emptyset I_m}{N_h}\right)$	Transfer rate of humans from susceptible to infected compartment
$\alpha_m = \left(\frac{\theta_{hm}\emptyset I_h}{N_h}\right)$	Transfer rate of mosquito from susceptible to infected compartment
$\alpha_{hp} = \left(\frac{\theta_{mh}\emptyset\eta I_m}{N_h}\right)$	Transfer rate of humans from protected individuals to infected by infected mosquitos
β_m	Transfer rate of mosquitoes from the exposed class to the infected class
$\emptyset$	Susceptible mosquitoes bite infected humans with this rate. Also, infected mosquitoes bites susceptible humans with the same rate

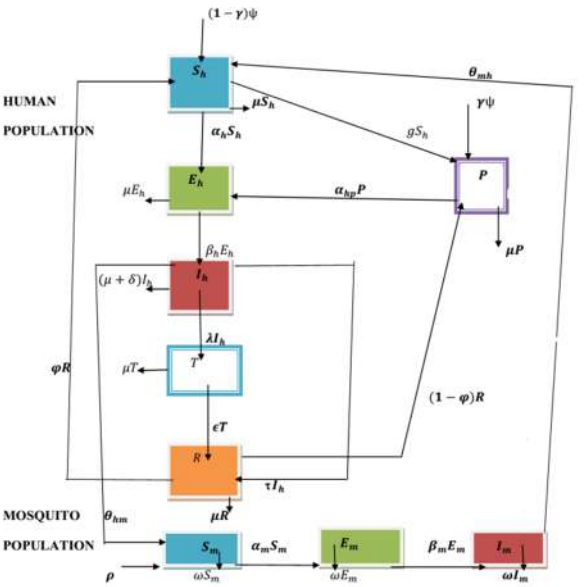


Figure 4 The flow chart for transmission of malaria disease

Applying the assumptions, definitions of compartmental variables and parameters described in tables 1 and 2, the system of non-linear differential equations which describe the dynamics of malaria transmission with controlling measures are formulated and presented in this section.

$$dS_h/dt = (1-\gamma)\psi - \alpha_h S_h + \varphi R - (g+\mu)S_h$$
$$dP/dt = \gamma\psi + gS_h + (1-\varphi)R - \alpha_{hp}P - \mu P$$
$$dE_h/dt = \alpha_h S_h + \alpha_{hp}P - (\beta_h + \mu)E_h$$
$$dI_h/dt = \beta_h E_h - (\lambda + \tau + \mu + \delta)I_h$$
$$dT/dt = \lambda I_h - (\epsilon + \mu)T$$
$$dR/dt = \epsilon T + \tau I_h - (1-\varphi)R - (\varphi + \mu)R \quad (1)$$
$$dS_m/dt = \rho - \alpha_m S_m - \omega S_m$$
$$dE_m/dt = \alpha_m S_m - (\beta_m + \omega)E_m$$
$$dI_m/dt = \beta_m E_m - \omega I_m$$

The initial conditions of the system of equations (1) are given by $S_h(0) = S_{h0}$,$E_h(0) = E_{h_0}, P(0) = P_0,\ I_h(0) = I_{h0}, T(0) = T_0$,$R(0) = R_0$, $S_m(0) = S_{m0}$, $E_m(0) = E_{m_0}$ and $I_m(0) = I_{m0}$ ([18], [60]).

4.2 Analysis of SPEITR model

We now analyze the **SPEITR** model in order to show the two controlling methods considered here have substantial impact on controlling the transmission dynamics of malaria disease. In fact, the disease will be completely eradicated if the controlling methods are implemented effectively. The two controlling mechanisms proposed here have such a big potential. We consider now the solutions of the system of non-linear differential equation (1). We understand that the interpretations of these solutions must be biologically meaningful. Hence it is easy to

identify that the feasible region of system (1) is $\mathbb{R}_+^9$. The nine dimensional solution space shows that all the solutions are positive. Hence, the feasible region containing all the solutions of the system of equations (1) is given by the set $\Omega = \{(S_h, P, E_h, I_h, T, R, S_m, E_m, I_m) \in \mathbb{R}_+^9\}$. Here the quantities $S_h, P, E_h, I_h, T, R, S_m, E_m, I_m$ are all non– negatives. Further the total human and mosquito populations are represented by N_h and N_m they have the upper asymptotic values (ψ/μ) and (ρ/ω) respectively. Therefore, the region Ω is positively invariant i.e. solutions remain positive for all the temporal values. Thus, the model (1) is biologically meaningful and mathematical well-posed or well present in the domain Ω.

On summing up all the individual equations from (1) of the system (1), it is straight forward to get $(dN_h/dt) = (\psi - \mu N_h - \delta I_h)$. Here the notation $N_h = (S_h + P + E_h + I_h + T + R)$ represents the total human population contained in all the five compartments. We consider the solution of the system of equations (1) when the term $\delta_h I_h$ vanishes. In case if the death rate of humans due to malaria disease is considered to be free, i.e., $\delta_h = 0$ then we obtain $(dN_h/dt) = (\psi - \mu N_h)$. The solution of this differential equation is found to be $N_h(t) = (\psi/\mu) + [N_{h0} - (\psi/\mu)]\ e^{-\mu t}$ showing that $N_h(t) \to \psi/\mu$ as $t \to \infty$. The term N_{h0} denotes the initial total human population. It can be interpreted that the total human population grows and asymptotically converges to a positive quantity given by (ψ/μ) under the condition that humans do not die due to malaria infection. Thus ψ/μ is an upper bound of the total human population $N_h(t)$ i.e. $N_h(\infty) \leq \psi/\mu$. Whenever the initial human population starts off low below (ψ/μ) then it grows over time and finally reaches the upper asymptotic value (ψ/μ). Similarly, whenever the initial human population starts off high above (ψ/μ) then it decays over time and finally reaches the lower asymptotic value (ψ/μ)[3].

Similarly on summing up all the individual equations from the system (1), it is straight forward to get $dN_m/dt = \rho - \omega N_m$. Here the notation $N_m = (S_m + E_m + I_m)$ represents the total mosquito population contained in all the two compartments. The solution of this differential equation is found to be $N_m(t) = (\rho/\omega) + [N_{m0} - (\rho/\omega)]\ e^{-\omega t}$ showing that $N_m(t) \to (\rho/\omega)$ as $t \to \infty$. The term N_{m0} denotes the initial total mosquito population. It can be interpreted that the total mosquito population grows and asymptotically converges to a positive quantity given by (ρ/ω). Thus (ρ/ω) is an upper bound of the total mosquito population $N_m(t)$ i.e. $N_m(\infty) \leq (\rho/\omega)$. Whenever the initial mosquito population starts off low below (ρ/ω) then it grows over time and finally reaches the upper asymptotic value (ρ/ω). Similarly, whenever the initial mosquito population starts off high above (ρ/ω) then it decays over time and finally reaches the lower asymptotic value (ρ/ω) [26].

Hence all feasible solutions set of the human population and mosquito population of the model (1) enters the region.

$\Omega = \{(S_h, P, E_h, I_h, T, R, S_m, E_m, I_m) \in \mathbb{R}_+^9 ; (S_h, S_m) \geq 0, (E_h, I_h, R, E_m, I_m) \geq 0, N_h \leq \psi/\mu, N_m \leq (\rho/\omega)\}$.

Therefore, the region Ω is positively invariant (i.e solutions remain positive for all times t) and in the model (1) is biologically meaningful and mathematically well-posed in the domain Ω.

5. Disease free equilibrium point E_o

Disease free equilibrium points are steady state solutions when there is no malaria in the human population and there is no plasmodium parasite in the mosquito population. That is, absence of malaria causing infections occurs in both populations at the disease free equilibrium point. The disease free equilibrium point is denoted by $E_0 = (S_h^*, P^*, E_h^*, I_h^*, R^*, T^*, S_m^*, E_m^* I_m^*)$. The equilibrium point is obtained on setting the right-hand side of the non-linear system (1) to zero. Thus, at the equilibrium point the quantities satisfy the condition $E_h^* = I_h^* = R^* = E_m^* = I_m^* = 0$, and $S_m^* = (\rho/\omega)$ which is defined as the asymptotic capacity of the mosquito population. Computing S_h and P from the following equations (1)

$0= (1-\gamma)\psi - \alpha_h S_h + \varphi R - (g+\mu)S_h$
$0 = \gamma\psi + gS_h + (1-\varphi)R - \alpha_{hp}P - \mu P$ (2)
We get

$$S_h = \frac{(1-\gamma)\psi}{g+\mu} = y_{1\psi}$$

From first equation of (2) where
$y_1 = \frac{1-\gamma}{g+\mu}$ We substitute in the second equation (2) the result is $0 = \gamma\psi + gy_1 + (1-\varphi)R - \alpha_{hp}P - \mu P$

$$P = \frac{(1+gy_1)\psi}{\mu} = y_2\psi$$

Where
$y_2 = \frac{(1+gy_1)}{\mu} = \frac{\gamma\mu+g}{\mu(g+\mu)}$ Hence $\frac{\psi(\gamma\mu+g)}{\mu(g+\mu)}$ and $\frac{\rho}{\omega}$
Therefore, the diseases free equilibrium point is given by
$E_0 = \left(\frac{1-\gamma}{g+\mu}, \frac{\psi(\gamma\mu+g)}{\mu(g+\mu)}, 0, 0, 0, 0, \rho/\omega, 0, 0\right)$ (3)

6. Basic Reproduction Number R_0

Reproduction number, denoted by R_o , is the threshold or a level for many epidemiological models. It determines whether a disease can attack the population or not. The threshold quantity R_0indicates the number of new infected individuals is produced by one infected individual. When $R_0 < 0$ each infected individual propagates the infection and produces on average less than one new infected individual so that the disease is expected to die out completely over time. On the other hand if $R_0 > 1$,each individual produces more than one new infected individual so we would expect the disease to spread more and grow in the population. This means that the value of threshold quantity R_0 in order to eradicate the disease must be reduced by less than one.
The following steps are followed to compute the basic reproduction number R_0. The basic reproduction number cannot be determined from the structure of the mathematical model alone, but depends on the definition of infected and uninfected compartments. Assuming that there are n compartments of which the first m compartments to infected individuals. That is the parameters may be vary compartment to compartment, but are the identical for all individuals within a given compartment. Let
$X_i = (x_1, x_2, \ldots\ldots x_n)$, $X_i \geq 0$ for all, $i = 1,2,\ldots\ldots m$
Be the vector of human and mosquito individuals in each compartment. Let us sort the compartments so that first m compartments infected individuals.
Let $F_i(x)$ be the rate of appearance of new infections in compartment i.
$V_i(x) = V^-_i(x) - V^+_i(x)$ Where $V^+_i(x)$is rate of transfer of individuals into compartment i by all other means and $V^-_i(x)$is the rate of transfer of individual out of the i^{th} compartment.
It is assumed that each function is continuously differentiable at least twice in each variable. The disease transmission model consists of non-negative initial conditions together with the following system of equations:
$\frac{dx_i}{dt} = f_i(x) = F_i(x) - V_i(x)$, $i = 1,2,3\ldots..n$
Where $\frac{dx_i}{dt}$ is the rate of change of x.The next is the computation of the square matrices F and V of order(mxm), where m is the number of infected classes, defined by $F = [\frac{dF_i(x)}{dxj}(x_0)]$ and $V = [\frac{dV_i(x)}{dxi}(x_0)]$ with $1 \leq i,j \leq m$, such that F is non- negative, V is non-singular matrix and x_0 is the disease-free equilibrium point (DFE). Since F is non-negative and V is non-singular,

then $V^{-1}$is non-negative and also FV^{-1} is non-negative. Hence the ofFV^{-1} is called the next generation matrix for the model. Finally the basic reproduction number R_0 is given by

$$R_0 = \gamma(FV^{-1})$$

Where $\gamma(A)$ denotes the spectral radius of matrix A and and the spectral radius is the biggest non-negative eigenvalue of the next generation matrix. Rewriting model system (1) starting with the infected compartments for both populations; S_h , E_h, I_h , R, S_m, E_m, I_m and then following by uninfected classes; S_h , R, $S_m$also from the two populations, then the model system becomes

$$dE_h/dt = \frac{\theta_{mh}\emptyset\, I_m S_h}{N_h} + \frac{\theta_{mh}\emptyset\eta\, I_m P}{N_h} - (\beta_h + \mu)E_h$$

$$dI_h/dt = \beta_h E_h - (\lambda + \tau + \mu + \delta)I_h$$

$$dE_m/dt = \frac{\theta_{hm}\emptyset\, I_h S_m}{N_h} - (\beta_m + \omega)E_m$$

$$dI_m/dt = \beta_m E_m - \omega I_m$$

$$dT/dt = \tau\lambda - (\epsilon + \mu)T \qquad (4)$$

$$dS_h/dt = (1-\gamma)\psi - \frac{\theta_{mh}\emptyset\, I_m S_h}{N_h} + \varphi R - (g + \mu)S_h$$

$$dP/dt = \gamma\psi + gS_h + (1-\varphi)R - \frac{\theta_{mh}\emptyset\eta\, I_m P}{N_h} - \mu P$$

$$dR/dt = \epsilon T + \tau I_h - (1-\varphi)R - (\varphi + \mu)R$$

$$dS_m/dt = \rho - \frac{\theta_{hm}\emptyset\, I_h S_m}{N_h} - \omega S_m$$

Since $\alpha_h = \left(\frac{\theta_{hm}\emptyset\, I_h}{N_h}\right), \alpha_m = \left(\frac{\theta_{mh}\emptyset\, I_h}{N_h}\right)$ *and* $\alpha_{hp} = \frac{\theta_{mh}\emptyset\eta\, I_m}{N_h}$(1) malaria model. From the system of equation (3) F_i and V_i are defined as

$$F(x) = \begin{bmatrix} \frac{\theta_{mh}\emptyset\, I_m S_h}{N_h} + \frac{\theta_{mh}\emptyset\eta\, I_m P}{N_h} \\ 0 \\ \frac{\theta_{mh}\emptyset\, I_m S_h}{N_h} \\ 0 \\ 0 \end{bmatrix} V(x) = \begin{bmatrix} (\beta_h + \mu)E_h \\ (\lambda + \tau + \mu + \delta_h)I_h - \beta_h E_h \\ (\beta_m + \omega)E_m \\ \beta_m E_m - \omega I_m \\ (\epsilon + \mu) - \tau I_h \end{bmatrix}$$

The partial derivatives of (4) with respect to (I_h, I_m) and the jacobian matrix of $F_i$at the disease-free equilibrium point (3) is:-

$$F = \begin{bmatrix} 0 & 0 & 0 & A & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & B & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

Where $A = \theta_{hm}\phi + \frac{\theta_{mh}\emptyset\eta}{\frac{\gamma\mu+g}{\mu(1-\gamma)}}$ and $B = \frac{\theta_{mh}\phi\rho(g+\mu)}{\omega\psi(1-\gamma)}$

Similarly, the partial derivatives of (3) with respect to (E_h, I_h, E_m, I_m, T) and the jacobian matrix v is:-

$$v = \begin{bmatrix} (\beta_h + \mu) & 0 & 0 & 0 & 0 \\ -\beta_h & (\lambda + \tau + \mu + \delta) & 0 & 0 & \\ 0 & 0 & (\beta_m + \omega) & 0 & 0 \\ 0 & 0 & -\beta_m & \omega & 0 \\ 0 & -\tau & 0 & 0 & (\epsilon + \mu) \end{bmatrix}$$

$$v^{-1} = \begin{bmatrix} \frac{1}{(\beta_h+\mu)} & 0 & 0 & 0 & 0 \\ \frac{-\beta_h}{(\lambda+\tau+\mu+\delta)(\beta_h+\mu)} & \frac{1}{(\lambda+\tau+\mu+\delta)} & 0 & 0 & 0 \\ 0 & 0 & \frac{1}{(\beta_h+\mu)} & 0 & 0 \\ 0 & 0 & \frac{-\beta_m}{\omega(\beta_m+\omega)} & \frac{1}{\omega} & 0 \\ \tau\beta_{h/(\lambda+\tau+\mu+\delta)(\beta_h+\mu)(\epsilon+\mu} & & \frac{-\tau}{(\epsilon+\mu)(\lambda+\tau+\mu+\delta)} & 0 \quad 0 & 1/(\epsilon+\mu) \end{bmatrix}$$

From Fv^{-1},we can determine the eigenvalues of the basic reproduction number R_0 by taking the spectral radius (dominant eigenvalue) of the matrix Fv^{-1}. Thus it is calculated by $|A - \lambda A| = 0$. We determine the expression for R_0 using the next generation matrix approach [18] as $R_0 = \sqrt{\frac{\beta_m\beta_h\ \theta_{mh}\theta_{hm}\ \emptyset^2\rho\mu[g(1+\eta)+\mu(1+\gamma\eta)]}{\omega^2\psi(g+\mu)(\beta_h+\mu)\ (\tau+\lambda+\mu+\delta)(\beta_m+\omega)}}$. Further, it can be verified that the disease free equilibrium pointE_0 given by (4) is locally asymptotically stable if $R_0 < 1$ and unstable if $R_0 > 1$.

7. Existence of Backward Bifurcation

We intend to determine the stability of the endemic equilibrium and to carry outthe possibility of the existence of backward bifurcation due to existence of multipleequilibrium and reinfection. As a disease attacks it reduces the number of susceptibleindividuals in the population, which tends to reduce its reproductive rate. For abackward bifurcation to occur, this means that when $R_0 < 0$ the endemic equilibrium point can exist as well as when $R_0 > 1$.

we would expect the disease to be able to attack at $R_0 = 1$ in the case of a backward bifurcation with the properties of unstable equilibrium bifurcating from the disease-free equilibrium when $R_0 < 1$,giving rise to multiple stable states. But not in the case of a forward bifurcation, in which in the absence of a low-level unstable equilibrium when $R_0 < 1$ and a stable equilibrium bifurcating from the disease-free equilibrium when $R_0 > 1$ arise naturally when the disease does not attack when $R_0 = 1$. A simple criterion for a backward bifurcation, then, is one in which the disease can attack when $R_0 = 1$. This implies that the disease-free equilibrium may not be globally asymptotically stable even if$R_0 < 1$.

8. Numerical simulation

In this section we consider the simulation study of the system of differential equations given in (1). As stated earlier these equations describe the dynamics of human and mosquito populations of the malaria model that includes intervention strategies. The simulation study is performed using ode45 solver of MATLAB software. The Runge-Kutta fourth-order method based on a variable step-size is used for the purpose. The parametric values have been collected from the literature and used here. Those were not available were not obtained from literatures published by researchers in malaria endemic countries which have similar environmental conditions. we present the numerical analysis of the model(1). Those were not available were not obtained from literatures published by researchers in malaria endemic countries which have similar environmental conditions. we present the numerical analysis of the model(1) and (60). The initial conditions used were $S_{h(0)} = 47186$, $E_{h(0)} = 16987 P(0) = 600, I_h(0) = 47473, T(0) = 1300, R(0) = 47470, S_{m(0)} = 17500, E_m(0) = 8750, I_m(0) = 26{,}250$. The time- axises in all the phase portraits.. We simulate the basic malaria model in the absence of any intervention and the malaria model without intervention strategies, and find out the effects of varying each intervention parameter [60],[59]

8.1 Estimation of Parameters

Table.3 We estimate that it will take 3 times a day for 7 days to recovery from malaria infection through Chemotherapy and the incubation period of malaria in humans was considered [9],[39]and [59].

Symbol	Values	Source
γ	0.111	Mwamtobe, 2009 [24]
ψ	0.000027	Calculated
$\boldsymbol{\rho}$	0.0655	Fekadu.etal, 2015 [60]
$\boldsymbol{\alpha_h}$	0.07143	Estimated
α_m	0.0909	Estimated
$\boldsymbol{\mu}$	0.0000548	Calculated
$\boldsymbol{\delta}$	0.00000071	WHO malaria report,2014 [45]
$\boldsymbol{\alpha_{hp}}$	0.00000247	Estimated
$\in$	0.00722	Gumel,2008 [12]
$_g$	0.78	Mwamtobe, 2010 [34]
$\boldsymbol{\lambda}$	0.01	Miranda, 2009 [30]
$\boldsymbol{\eta}$	0.457	[59] and [46]
$\boldsymbol{\omega}$	1/25	Blayneh, 2009 [4]
$\boldsymbol{\beta_h}$	1/14	FMOH,2004 [9]
$\boldsymbol{\tau}$	1/7	FMOH,2004 [9]
$\boldsymbol{\varphi}$	1/121	Estimated
θ_{mh}	0.42	Niger, 2008 [24]
$\boldsymbol{\theta_{hm}}$	0.0655	Estimated
$\boldsymbol{\beta_m}$	1/11	Chitnis, 2005 [24]
$\emptyset$	0,40	Chitnis, 2005 [24]

8.2 The System of the Human Populations Variables of the Model with Intervention Strategies

We simulated the malaria model with intervention strategies to find out the dynamics of the human state of variables. Then, after we will compare the protected and treated classes to find out the influence of these interventions if they are combined.

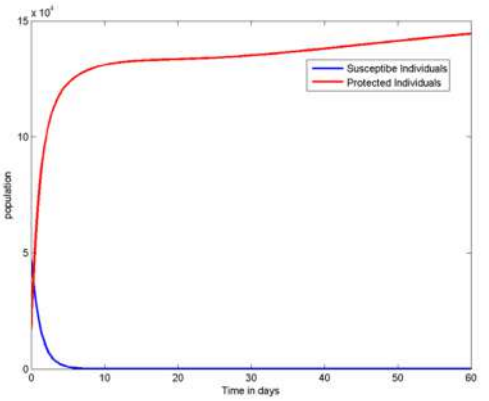


Figure.5 Comparative diagram for the changes in the susceptible and protected human individuals of the malaria

The Figure 5 as shown below that contains the susceptible and protected population's diagram. There is a transmission decrease in the susceptible population and an increase in the protected population. This shows that most recruited individuals join the protected class. Therefore the exposure of the recruited individuals to malaria is reduced. This highlights the effectiveness of preventive measures in controlling malaria transmission.

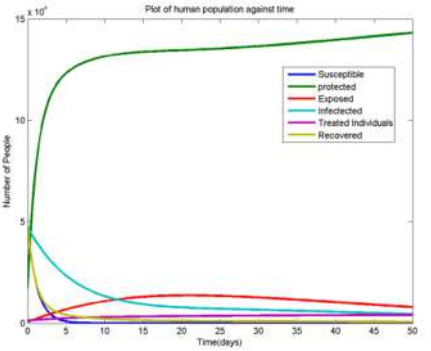


Figure.6 The system of human population's variables of the model with intervention strategies

Figure 6 as shown below the comparative population sizes of six human compartments. Here we have considered two intervention strategies. INTs and IRS to protect the human individuals of the protected compartment. As a result (i) the population size of the protected compartment increases, (ii) the population sizes of susceptible, infected, treated and recovered compartments decrease and (iii) the population size of the exposed class rises slightly for some time and then falls. Further, the comparative study promises that the filing of protected compartment leads to emptying the remaining compartments and nullifying the malaria disease among the population. The control measures ITNs and IRS reduce the availability of hosts and kill mosquitoes. The spread of malaria disease is reduced as the mosquitoes that are attempting to feed themselves from human hosts is reduced. There is an increase in the infection when the protection is low and decrease in the infection when the protection is high. That is, the infection and protection are inversely proportional to each other. The two preventive measures recommended here to protect humans from mosquitoes are effective and economical and hence can be implemented. The netting also acts as a protective access to against bites, making it an ideal prevention method in low level areas where mosquitoes are found more in size.

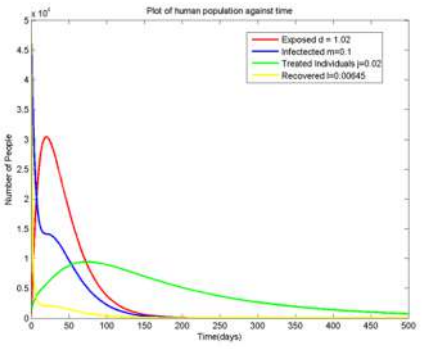


Figure .7A phase portrait illustrating the changes in the four state variables of the malaria model with interventions strategies showing the system with time, of exposed humans, infected humans, and treated humans shows the system of recovered humans

8.3Phase Diagrams of Human, Mosquito Populations and Prevalence

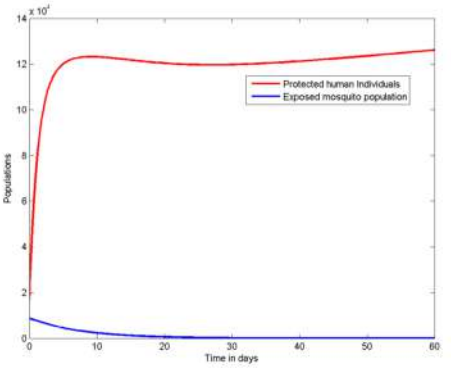
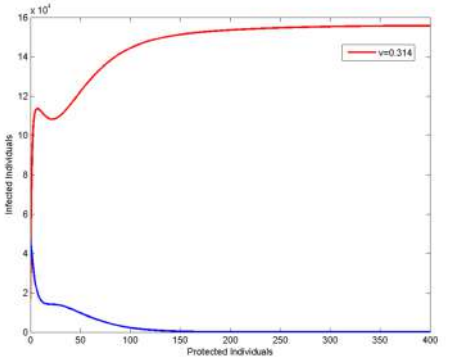
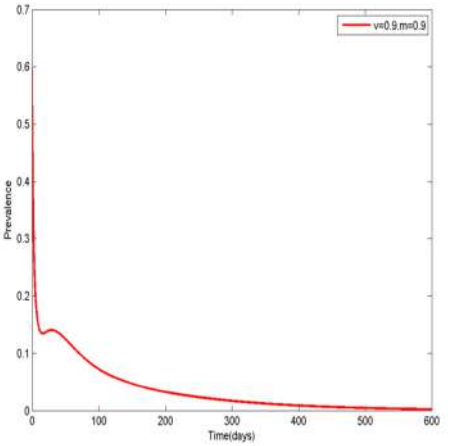


Figure.9 illustrates the system of protected human population and exposed mosquito population

Exposed mosquito population and protected human population graph, Figure 9 shows the decreasing existence probability of a mosquito as more humans are covered by ITNs and IRS. These control measures reduce the availability of hosts, and kill mosquitoes that are attempting to feed, in such way reducing malaria spread.



The Figure10 shown above the dynamics of proportion of infected individuals. There is an increase in the infection when the prevention was low, and with time the infection decreases with the increase in the protection, inspire of changing the infection rate β_h. ITNs as a preventive measures are effective and economical method to disappear the mosquitoes. The netting also acts as a protective barrier against bites, making it an ideal prevention method in poor areas.



The prevalence shown in Figure 11 of the model with intervention strategies indicates that with time the disease is reduced asymptotically. When there is variation in the treatment parameters. The variation of the infection rate λand $\beta_h$showed that the prevalence is reduced asymptotically to zero with time. This means the infection is reducing with time.

8.3 Simulation of Protected and Treated Human Populations

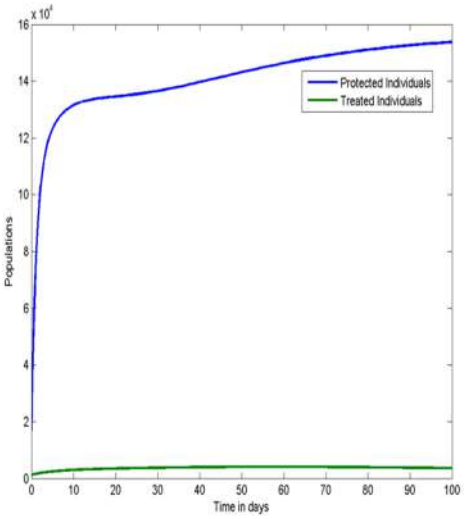


Figure.12 shows the comparative diagram of the protected human individuals and treated human individuals with time

The Figure 12 contains the diagram of the protected and treated individuals. It has been shown that at the beginning stage of the treatment has more effective compared to prevention. But with time, the prevention measure plays a bigger part in reducing the spread of malaria disease.

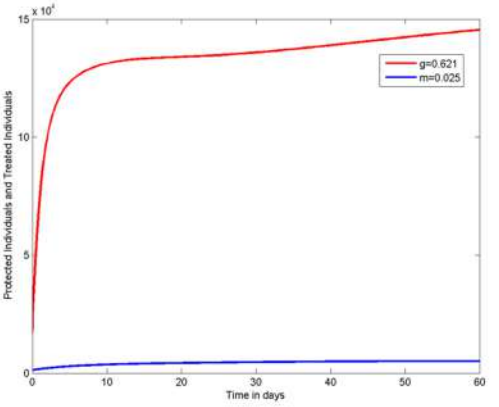


Figure.13 Shows the comparative diagram of the protected and treated human population with time as we vary rates λ and g

9. Conclusion

More evidence has been shown further with the variation in the prevention rate g and the treated rate λ Figure 13. There is no change in the prevention diagram. This explains that the effect of prevention remains constant provided it has positive impact to the reduction of the spreading of the diseases. The pattern for the treated graph remains the same even though there are some differences in the gradient as we vary the treated rate. In perspective, one could conclude from the controls in Figure 13 that should give full prevention effort in the beginning of emergence of the disease while giving full treatment effort in the middle of time interval when control efforts are practiced. This means that prevention is more important in the beginning of the disease outbreak. On the other hand, treatment is more important while the disease prevails. Hence, in such events the treatment programs must be complemented with other interventions (such as vector reduction strategies and personal protection) to have a accurate chance of effectively controlling the disease spread. Our conclusion from this is that intervention practices that involve both prevention and treatment controls outcome a relatively better result. It shows that the combination of this intervention can play a positive role in reducing or eradicating the disease. Therefore, control efforts aimed at minimizing the infectiousness of infected individuals to the mosquito vector will contribute greatly to the minimizing of the malaria transmission and this will eventually minimize the prevalence of malaria and the incidence of the disease. This can be achieved by prompt provision of effective prevention measures and antimalarial drug for treatment to reduce transmission and morbidity.

Analysis of the model showed that there exists a domain where the model is epidemiologically and mathematically well-posed. The important parameter in our model, the basic reproduction number, R_0as a improved control intervention measure was computed. The model was then qualitatively analyzed for the existence and stability of their associated equilibria. It was proved that under the condition that $R_0<1$ the disease-free equilibrium E_0 is locally asymptotically stable. The model exhibits the phenomenon of backward bifurcation where a stable disease-free equilibrium co-exists with a stable endemic equilibrium for a certain range of associated reproduction number less than one. The malaria model with intervention strategies indicates the impossibility phenomenon of backward bifurcation, since it has no endemic equilibrium point when $R_0<1$ a stable equilibrium bifurcating from the disease-free equilibrium when $R_0>1$ arise naturally when the disease does not attack when $R_0=1$.

References

[1] Aron, J.L (1988),"Mathematical modeling of immunity to malaria,Non-linearity in biology and medicine (Los Alamos, NM, 1987)",Math.Biosc.,Volume 90,pp385396.
[2] A. Hurwitz, "On the conditions under which an equation has only roots with negative real parts," MathematischeAnnelen, vol.46,pp.273-284,1895.
[3] Birkhoff, G and Rota, G.C (1982), Ordinary Differential Equations, Ginn.
[4] Kbenesh, Cao Yanzhao, and Kwon Hee-Dae (2009), "Optimal Control of Vector-borne Diseases: Treatment and Prevention",Discrete and Continuous Dynamical Systems Series B, Volume 11, No.3, pp 1-xx.
[5] Bupa UK (2009), Malaria symptoms, causes and treatment of disease, http://hcd2.bupa.co.uk/fact sheets/html/malaria disease retrieved on Friday,19th June, 2009.
[6] Carr J (1981),Applicationscentremainfold theory, Springer-Verg, New York.
[7] Chavez-Castillo C and Song B (2004), "Dynamical models of tuberculosis and their applications", Math.Biosci.Eng., No. 2, pp 361-404
[8] E. Danso-Addo (2009), "Mathematical Model for the Control of Malaria", MPhil Thesis,University of Cape Coast, Cape Coast, Ghana.
[9] Federal Democratic Republic of Ethiopia Ministry Of Health Ethiopia National Malaria Diagnosis and Treatment Guidelines for Health Workers in Ethiopia 2nd Edition Addis Ababa, 2004
[10] Federal Democratic Republic of Ethiopia Ministry Of Health Ethiopia National Malaria Indicator Survey, Addis Ababa, 2008.
[11] Federal Democratic Republic of Ethiopia Ministry Of Health Ethiopia National Malaria Guideline Third Edition Addis Ababa, 2012.
[12]Flores J.D. (2011). Math-735: Mathematical Modelling, Routh-Hurwitz criteria. Department of Mathematical Sciences, The University of South Dakota, jflores@usd.edu.
[13]Garba S.M, Gumel A.B and Abu Bakar M.R (2008),"Backward bifurcation in dengue transmission dynamics",Math.Biosci, Volume 215, pp 11-25.
[14] G.A. Ngwa and W.S.Shu (2000),"Mathematical Computational Modeling", Vol. 32, Pp.747-763.
[15] G. A. Ngwa, Modelling the dynamics of endemic malaria in growing populations, Discrete Contin.Dyn.(2004),pp.1173?1202.
[16] Greenwood B, and Mutabingwa T (2002) ,Malaria in 2002 ,Nature, Volume 415 ,pp 670-672 .
[17]Gimnig J, Ombok M, Kamau L, Hawley W (2003) Characteristics of larval anopheline (Diptera: Culicidae) habitats in Western Kenya. J. Med. Entomol. 38: 282-288.
[18]J.Y.T.Tumwiine, Mugisha and L.S.Lubobi (2007),"Applied Mathematics and Computation", Vol.189, Pp. 1953-1965.
[19] K. Dietz (1993), "The Estimation of the Basic Reproduction Number for Infectious Diseases", Statistical Methods in Medical Research, Vol. 2,Pp. 23?41.
[20] Killeen G.F, Mckenzie F.E, Foy B.D, Bogh C and Beier J.C (2001), "The availability of potential hosts as a determinant of feeding behaviors and malaria transmission by African mosquito populations", Trans. R. Soc. Trop. Med.Hyg., Volume 95, pp 469-47
[21]Lalloo D.G, Shingadia D, Pasvol G, Chiodini P.L, Whitty C.J and Beeching N.J(2008), UK malaria treatment guidelines, J. Infect 2007, Volume 54, pp 111-121.
[22] L. Perko,Differential Equations and Dynamics Systems in Applied Mathematics,vol.7,Springer, Berlin, Germany, 2000.1
[23] N. Chitins, J. M. Cushing and J.M.Hyman(2006),"Bifurcation Analysis of a Mathematical Model for Malaria Transmission", Submitted: SIAM Journal on Applied Mathematics.
[24] N. Chitnis, J.M. Hyman and J.M. Cushing (2008), "Determining Important Parameters in the Spread of Malaria through the Sensitivity Analysis of a Mathematical Model", In Preparation
[25] O.Diekmann and J.A.P. Heesterbeek (1999), "Mathematical Epidemiology of Infectious Diseases: Model Building,Analysis and Interpretation", Wiley-Blackwell.
[26] Namawejje H.(2011). Modeling the Effect of Stress on the Dynamics and Treatment of Tuberculosis. M.Sc.(Mathematical Modelling) Dissertation, University of Dares Salaam,Tanzania.
[27] Niger Ashrafi M and Gumel Abba B (2008),"Mathematical Analysis of the Role of Repeated Exposure on Malaria Transmission Dynamics",Differential Equations and Dynamical Systems,Volume 16, No. 3, pp 251-287.

[28]Ngwa G.A (2004), Modeling the dynamics of endemic malaria in growing population, Discrete and Continuous Dynamic System. Ser.
B, Volume 4, pp 1173-1202.
[29] Nita. H.Shah and Jyoti Gupta (2013),"SEIR Model and Simulation for Vector Borne Diseases", Applied Mathematics,
Vol. 4, Pp. 13-17.
[30] Martens P, Kovats R.S, Nijhof S, Vries P. de, Livermore M.T.J, Bradley D.J, Cox J and McMichael A.J (1999),Climate change and future populations at risk of malaria, Global Environmental Change, Volume 9, pp S89-S107.
[31] Miranda I. Teboh-Ewungkem, Chandra N. Podder and Abba B. Gumel (2009),"Mathematical Study of the Role of Gametocytes and an Imperfect Vaccine on Malaria Transmission Dynamics", Bulletin of Mathematical Biology DOI 10,Volume 1007, No. S11, pp 538-009-9437-3.
[32] O.J. Diekmann (1990), "Mathematical Biology",Vol.28,Pp. 365-382.
[33] O. Diekmann, J. A. Heesterbeek, and J. A. Metz, "On the definition and the computation of the basic reproduction ratio R_0 in models for infectious diseases in heterogeneous populations," Journal of Mathematical Biology,vol.28,no.4,pp.365-382,1990.J
[34] P.M.M. Mwamtobe (2010), "Modeling the Effects of MultiIntervention Campaigns for the Malaria Epidemic in Malawi",M. Sc. (Mathematical Modeling) Dissertation, University of Dar es Salaam, Tanzania
[35]RollbackMalaria. What is malaria? http://www.rollbackmalaria.pdf.(2010-05-10).
[36]SandipMandal, Ram Rup arkar and SomdattaSinha (2011), "Mathematical Models of Malaria A Review", Malaria Journal, Vol. 10, Pp.
[37]SamwelOsekoNyachae, Johana K. Sigey, Jeconiah A. Okello, James M. Okwoyo and D. Theuri (2014),"A Study for the Spread of Malaria in Nyamira Town - Kenya, TheSIJ Transactions on Computer Science Engineering and its Applications (CSEA), The Standard International Journals (The SIJ), Vol. 2, No. 3 (1), Pp. 53-60.
[38] Smith R.J and Hove-Musekwa D.S (2008), "Determining effective spraying periods to control malaria via indoor residual spraying in sub-Saharan Africa", Appled Math and Deci Sc., doi:10, Volume 1155, No. 745463, pp 1-19.
[39]Turuse, E.A., et al. (2014) Determinants of Delay in Malaria Prompt Diagnosis and Timely Treatment among Under-Five Children in ShashogoWoreda, Hadiya Zone, Southern Ethiopia: A Case Control Study. Health, 6, 950-959.
[40] Van den Driessche, P., and Watmough, J. (2002).Reproduction numbers and sub-threshold endemic equilibria for compartmental models of disease transmission Mathematical Biosciences, 180, 29-48 http://dx.doi.org/10.4236/health.2014.610120.
[41] WHO (1993), Implementation of the global malaria control strategy. Reports of the World Health Organization Study Group on The Implementation of the Global Plan of Action for malaria control 1993-20002, WHO Technical Report Series, Number 839.
[42] WHO (1999), The WHO Report1999Making a difference, Geneva.
[43] WHO/UNICEF: World malaria report 2008, Report series:WHO/HTM/MAL/2008.1102
[44] WHO (2009), "Global Malaria Programme: Position Statement on ITNs".
[45] World Malaria Report (2014)(www.who.int/malaria).
[46] FekaduTadege et.al controlling the spread of malaria with intervention strategies 'the book was released by LAP LAMBERT Academic Publishing in 2016 and ISBN 978-3-659-77730-1.
[47] M. Gatton, W. Hogarth, A. Saul and P. Dayananda (1996),"A Model for Predicting the Transmission Rate of Malaria from
Serological Data", Journal of Mathematical Biology, Vol. 84, Pp. 878-888.
[48] J. Nedelman (1983), "Inoculation and Recovery Rates in the
Malaria Model of Dietz, Molineaux, and Thomas", Mathematical Biosciences, Vol. 69, No. 2, Pp. 209-233.
[49] R. Ross (1911),"The Prevention of Malaria",John Murray, London.
[50]WHO Global Malaria Programme (2010),World Malaria Report 2010.
[51] Macdonald G. The epidemiology and control of malaria. London: Oxford University Press; 1957.
[52] WHO (2007) Insecticide treated mosquito nets: a WHO position statement. Technical report, World Health Organization.

[53]Bayoh MN, Mathias DK, Odiere MR, Mutuku FM, Kamau L, et al.. (2010) Anopheles gambiae: historical population decline associated with regional distribution of insecticide-treated bed nets in western Nyanza province, Kenya. Malaria Journal 9.
[54] WHO (2004) Global strategic framework for integrated vector management. Technical report, World Health Organization, Geneva.
[55] WHO (2011) World Malaria Report. Technical report, World Health Organization, Geneva.
[56] RBM (2013) Minutes of roll back malaria vector control working group 8th annual meeting.Technical report, Roll Back Malaria. Available: http://www.rollbackmalaria.org/mechanisms/vcwg.html.
[57] Hethcote HW. In: Frontiers in mathematical biology. Lecture notes in Bio mathematics.Simon A Levin,editor. Vol. 100.Springer; 1984.A thousand and one epidemic models; pp. 504-515.
[58]Chitnis N. (2005), "Using Mathematical Models in Controlling the Spread of Malaria",Ph.D.Thesis, Program in Applied Mathematics,University of Arizona, Tucson, AZ.
[59]Fekadu Tk. et al(2015) "a mathematical model to control the spread of malaria with intervention campaigns in ShashogoWoreda, Hadiya zone, Southern Ethiopia," Mscunpublished Thesis, program in computational mathematics, Hawassa university
[60] FekaduTadege Kobe and PurnachandraRaoKoya, "Controlling the Spread of Malaria Disease Using Intervention Strategies" Journal of Multidisciplinary Engineering Science and Technology (JMEST) ISSN: 3159-0040 Vol. 2 Issue 5, May 2015, pp 1068-1074. www.jmest.org JMESTN4235074567

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

COMPARATIVE MODELING, EVALUATION AND STUDYING THE INTRINSIC DYNAMICS OF NITROGENASE IRON PROTEIN OF STREPTOMYCES SP

Febina Bernice Sharon
Department of Food Science and Nutrition
Sarah Tucker College, Palayamkottai
Tirunelveli, Tamilnadu, India

Abstract
Nitrogenase was an enzyme used by Streptomyces sp.to fix atmospheric nitrogen. Nitrogenase iron protein of Streptomyces sp. was retrieved from NCBI and the template was found to be Azotobactervinelandii. Physico-chemical characterization interpreted properties such as pI, molecular weight, extinction coefficient, GRAVY, instability and aliphatic index provided information about the nitrogenase iron protein. The present study was to create a three dimensional structure of a protein and a comparative study was done between the models created by three homology modeling programs. The three dimensional structure of nitrogenase iron protein modeled by ModWeb was found to be the best reliable model based on ProSA, PROVE, ERRAT VERIFY3D and PROCHECK. The result of the PROCHECK revealed that the modeled nitrogenase iron protein had 96.3% residues in the allowed region. CASTp analysis revealed the presence of eleven pockets for ligand interaction for nitrogenase iron protein.WEBnm@ and elNemo was performed to study the structural dynamics of the protein which signified that the model contained rigid regions and was less flexible. LG score by ProQ revealed that the three dimensional nitrogenase protein model was good and it was visualized by Rasmol.

Key words: ModWeb, Nitrogenase iron protein,Streptomyces sp.

Introduction

Actinobacteria represented one of the largest taxonomic unit among 18 major lineages recognized within the bacterial domain whichincluded 5 subclasses and 14 suborders [1]. This gram positive actinomycetes exhibited wide variety of morphologies including coccoid, rod-coccoid, fragmenting hyphal forms or highly differentiated branched mycelium. The genus Streptomyces was classified under the family Streptomycetaceae which includedgram positive aerobic members of the order Actinomycetales and suborder Streptomycineaewith high G+C content in their DNA[2,3].

Nitrogen was a stable inert element comprising 78% of the Earth's atmosphere but only 0.001% of nitrogen present in the biosphere. Nitrogen was an essential component in protein required byall living organisms including human beings[4]. Nitrogenase was the most important enzyme associated with the nitrogen fixing mechanism and it was relatively complex biological molecule that reduceddinitrogen to ammonia at suitable temperature and pressure [5]. NifHwas one of the structural gene for iron protein which

formed the core of nif genes. The nif genes (nifH, nifD, nifK, nifB, nifE, nifN, nifX, nifU, nifS, nifV, nifW and nifZ) were required for nitrogenase synthesis and catalysis [6,7,8].

Homology modeling was a reliable technique that could consistently predicted the three dimensional structure of the protein with precision similar to one obtained at low-resolution by experimental means [9]. In view of the fact that the study of three dimensional structure of the protein was helpful in recognizing the detail of the protein [10] andthis method was increasingly becoming wide spread use in the field of bioinformatics. The genome sequences of three Frankia strains [11] unlocked the possibility of using computational techniques to predict three dimensional structure of NifH protein in other bacteria. Nevertheless in absence of X-ray crystallographic structure of NifH in Frankia, the theoretical model provided a foundation for investigating functional importance of nitrogenase system in this bacterium[12]. The three dimensional structure of nitrogenase iron protein of Streptomyces sp. was not found in Protein Data Bank therefore in the present study we modeledand evaluated the three dimensional structure of nitrogenase iron protein of Streptomyces sp.using computational methods.

Methodology

Retrieval of target sequence

Protein sequence of nitrogenase iron protein of Streptomyces sp. was retrieved from National Center for Biotechnology Information and used for further analysis.

Physico-chemical characterization

The protein sequence of nitrogenase iron protein of Streptomyces sp.was submitted in Expasy'sProtParam. Theoretical isoelectric point (pI), molecular weight, total number of positive and negative residues, extinction coefficient, instability index, aliphatic index and grand average hydropathywere computed using Expasy'sProtParam [13, 14,15].

Secondary Structure Prediction

The protein sequence of nitrogenase iron protein of Streptomyces sp. was submitted in Self optimized prediction method with alignment (SOPM). Consensus Secondary structure was predicted by SOPM Secondary structure prediction method [16].

Template selection and alignment of the target

In homology modeling technique, the first mission was tosort out the protein structure related to the target sequence and the template selection was made [17]. BLAST was carried out against Protein Data Bank and asuitable template was selected

Construction of the models

In Swiss model server, homology modeling for the nitrogenase iron protein sequence was done by alignment mode. The aligned sequence was taken as the target sequence

and a template was taken from the PDB library. The server built a model based on the given alignment of target and template. GENO3D was an automated modeling tool for protein three dimensional structures [18]. The nitrogenase iron protein sequence was submitted in the GENO3D server and it performed the modeling by identifying identical protein using PSI-BLAST.ModWebwas a comparative protein structure modeling server and it depended on ModPipe for its functionality. The protein sequence of nitrogenase iron protein of Streptomyces sp. was submitted in the ModWeb. The ModPipe had a collection of non-redundant protein chains which were chosenfrom the protein structures in Protein data bank. The alignment which had E-value greater than 1.0 and covering at least 30 amino acids were selected for modeling and the model wasconstructed by sequence-structure similarities using comparative modeling and satisfaction of spatial restraints as similar in Modeller. The resulting model was evaluated usingmodel assessment patterns and the finest scoring model was sent.

Evaluation of the constructed model

The Protein Structure Analysis (ProSA)was done to assess the accuracy and reliability of the modeled structures. Structural Analysis and Verification Server (SAVES)was used to carry out the verification of the models with PROVE and ERRAT. The overall qualities of the modeled structures were evaluated using ERRAT. Root mean square and Z score mean value were assisted by PROVE PLOT. The packing quality of the refined protein structures were calculated by the PROCHECK quality control value. Verify3D was used to validate the refined structure. The three dimensional structure of the nitrogenase iron protein was submitted and it was compared with its own amino acid sequence taking into consideration a three dimensional profile calculated from the atomic coordinates of the structure of correct proteins. Using a Ramachandran plot,the constructed models wereassessed for its backbone conformation. The stereochemical quality of the modeled protein was assessed byRamachandran validation score for favoured and unfavoured regions.

Pocket and Binding site prediction of a protein

Binding sites and active sites of proteins were often associated with structural pockets and cavities. Presence of pockets in the structure of the protein was predicted using CASTp server [19]. The three dimensional structure of nitrogenase iron protein of Streptomyces sp. was submitted in CASTp. For shape dimensions, CASTp server used weighted delaunay triangulation and alpha complex [19]. The volume and area wascalculatedfor every singlecavity and pocket in solvent accessible surface (Richards' surface), molecular surface (Connolly's surface) and circumference of mouth lips, number and area of the openings in solvent accessible surface and molecular surface for each pocket by analytical methods [19].

ASA View

The three dimensional structure of nitrogenase iron protein of Streptomyces sp. was submitted in ASA View.The graphical representation of solvent availability of amino acid residues in proteins with known protein structures were obtained by ASA view

[20]. The result was presented in the form of Spiral Plot which helped to identify the surface residues in the protein.

Studying intrinsic dynamics of the protein model and visualization of the modeled protein

Understanding structural dynamics of protein was essential to gainbetter insight about their biological functions. The three dimensional structure of nitrogenase iron protein was submitted in WEBnm@ and elNemo. This study was performed by WEBnm@ to calculate the slowest modes and its related deformation energies and elNemo was done to calculate the normal mode analysis of nitrogenase protein contributed to the corresponding protein movement [21]. Normal mode analysis forecasted the probable movements of the proteins and explored the slowest activity of choice in proteins [22]. Structural visualization of the modeled protein was performed by RasMol.

Protein Quality Prediction

The three dimensional structure of nitrogenase iron protein of Streptomyces sp. was submitted in ProQ. It was a neural network based predictor which was based on a number of structural characters calculatedand it was optimized to find correct models to find native structures [23].

Results and Discussion

Retrieval of target sequence

Protein sequence of nitrogenase iron protein of Streptomyces sp. was retrieved from National Center for Biotechnology Information (Accession number:JF776688 Protein Id:AET12084.1). The nitrogenase protein sequence was retrieved in FASTA format and was saved as ".txt" file.

Physico-chemical characterization

ProtParam computed various physico-chemical properties that could be deduced from the protein sequence.The pH at which a certain molecule carried no net electrical charge was known as isoelectric point (pI). The isoelectric point was 4 (pI<7) indicated that the nitrogenase iron protein was acidic in nature.The computed isoelectric point (pI) would be suitable for developing buffer system for the purification of proteins by isoelectric focusing method [14]. The nitrogenase iron protein sequence had more negative residues than positive residues which may change the orientation of the protein.

The extinction coefficient indicated the quantity of light,the protein absorbed at a certain wavelength [13]. Although Expasy'sProtParam computed the extinction coefficient at 276, 278, 279, 280 and 282nm wavelengths, the proteins absorbed light strongly at 280 nm while other substances normally in solutions did not. Extinction coefficient of nitrogenase iron protein at 280nm was $5960M^{-1}cm^{-1}$. The instability index provided an estimate of the stability of the protein in test tube [13]. When the instability index of the protein was smaller than 40 then the protein was predicted as

stable and when the index value exceeded 40 it was predicted as unstable [13, 24]. The protein had instability index 24.80 therefore it was astable protein.

Table 1.The result of Expasy'sProtParam server for the nitrogenase iron protein

pI	Molecular Weight	Number of positive residues	Number of negative residues	Extinction Coefficient $M^{-1}cm^{-1}$	Instability Index	Aliphatic Index	GRAVY
4.18	10314.6	7	17	5960	24.80	106.33	0.079

The relative volume in the protein occupied by aliphatic side chains such as alanine, valine, leucine and isoleucinewas defined asthe aliphatic index[13]. The aliphatic index of the protein was 106.33 and the very high aliphatic index indicated that the nitrogenase iron protein might be stable for a wide range of temperatures.The Grand average of hydropathyvalue for the protein was calculated as the total of hydropathy valuesof all the amino acids divided by the number of residues in the protein sequence [25]. TheGRAVY index of the nitrogenase iron protein was 0.079 and the index indicated the chance for better interaction with water.

Secondary Structure Prediction

The result for the secondary structure of nitrogenase iron protein revealed that thebeta strand dominated the alpha helix among the secondary structure elements followed by random coils and beta turn.

Table 2.Secondary Structure Prediction of Nitrogenase iron protein

Alpha helix (%)	Beta Strand (%)	Beta Turn (%)	Random coils (%)	Ambiguous states (%)
28. 57	30.61	16.33	24.49	0.00

Template selection and alignment of the target

The BLAST search found the crystal structure of Azotobactervinelandii iron protein (1NIP) to be the best template with an E value of 2e-69. The nitrogenase iron protein of Azotobactervinelandii revealed 79% sequence similarity with nitrogenase iron protein of Streptomycessp.

Construction of the models

The modeling of the three dimensional structure of the protein was performed by three homology modeling programs GENO3D, Swiss model and ModWeb. Swiss model was the fully automated protein structure homology modeling server. In the alignment mode, nitrogenase iron protein of Streptomyces sp. was taken. Azotobactervinelandiiwas selected as the best template. QMEAN Z score provided an estimate of the degree of nativeness of the structuralfeatures seen in the protein model

and examined whether the model was ofcomparable quality to experimental structures [26]. The Z score of theindividual term of the scoring function indicated which structuralfeatures of model exhibited significant deviations from the expected native behaviour[26].0.46 was the Z score QMEAN for nitrogenase iron protein ofStreptomycessp.

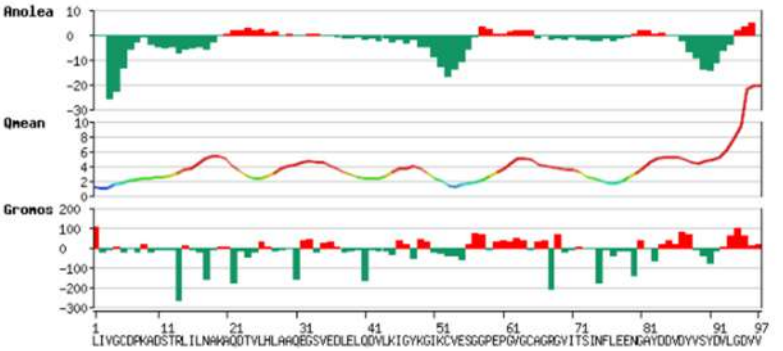


Fig. 1Gromos and Anolea of Streptomyces sp. nitrogenase iron protein 3D model

The GROMOS empirical force field energy of each amino acid in the protein was given in the figure 1. The atomic empirical mean force potential ANOLEA was used to assess packing quality of the protein model. The program executed energy calculations on the protein chain and calculated the Non local environment of each heavy atom in a molecule. The ANOLEA in the figure 1 represented the energy of each amino acid in the protein. The negative energy values in green colour represented the favourable energy environment and the positive values represented the unfavourable energy environment for the amino acid in red colour.

GENO3D used distance geometry, simulated annealing and energy minimization algorithms to build the three dimensional protein models [18]. The GENO3D created ten models and out of which the best model was selected (the model in which the e value was low). ModWeb was the comparative modeling server. The template for the nitrogenase iron protein had more than 30% of sequence identity and all the models were reliable model. The atomic distance dependent statistical potential was derived from the sample of native structures that did not depend on any adjustable parameters by means of probability theory. Discrete optimized protein energywas based on an improved reference state that corresponded to non-interacting atoms in anidentical sphere by means ofthe radius dependent native structure on the protein therefore it accounted for the finite and spherical shape of the native structures [27].During the template search, thepercentage of identical residues in the alignment between the target and the template was 80% for the nitrogenase iron protein.TheModPipe Protein QualityScore (MPQS) was the composite score comprising sequence identity to the template coverage. The MPQS score for nitrogenase iron protein of Streptomyces sp. was 1.816 and the value of MPQS was greater than 1.1 therefore the model created by ModWeb was reliable.

Evaluation of the constructed model

ProSA was widely used to check the three dimensional model ofthe protein for potential errorin experimentallydetermined structures, theoretical models andprotein engineering [28].The Z score of Streptomycessp. nitrogenase iron protein models created by Swiss model, Geno3D and ModWeb were -3.84,-4.36 and -4.49 respectively. The energy plot of residue scores exhibited local protein model quality by plotting energyat the same time asthe function of amino acid sequence position and the positive values corresponded to problematic or erroneous parts of the input structure [28]. A plot of single residue energies generally contained large fluctuations and it was of limited value for the protein model evaluation. The energy plot for nitrogenase iron protein showed negative values in the three models. This proved that the created models were good and reliable.

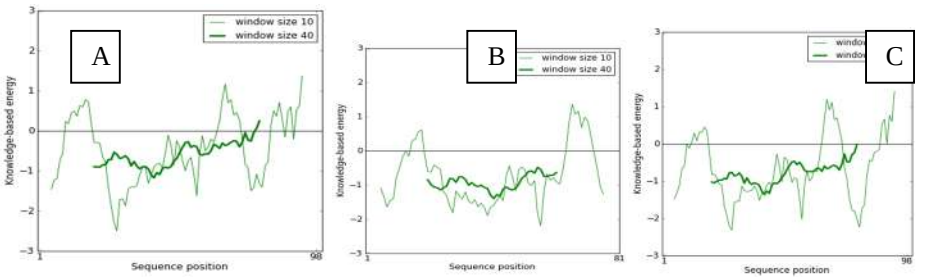


Fig. 2A- Streptomyces sp. nitrogenase iron protein model qualitycreated by Swiss model

B - Streptomyces sp. nitrogenase iron protein model quality created by Geno3D

C - Streptomyces sp. nitrogenase iron protein model quality created by ModWeb

ERRAT was the protein structure verification algorithm that was used for evaluating the progress of crystallographic model building and refinement. ERRAT analysis revealed the overall quality factor of nitrogenase iron protein modelofStreptomycessp. created by Swiss model, Geno3D and ModWeb were 80.519, 83.562 and 69.663 respectively. The result implied that the nitrogenase iron protein model's overall quality was good.VERIFY3D was used to validate the refined structure. The three dimensional structure of the protein was compared to its own amino acid sequence taking into consideration thethree dimensional profile calculated from the atomic coordinates of the structure of correct proteins [29].VERIFY3D revealed that 70.71%, 71.95% and77.78%of the residues had an average score 3D-1D>0.2 for nitrogenase iron protein created by Swiss model, Geno3D and ModWebrespectively. PROVE calculated the volume of atoms in macromolecules using an algorithm which treated the atoms like hard spheres and calculated a statistical Z score deviation for the model from highly resolved and refined PDB deposited structures. The Z score mean for the nitrogenase iron proteincreated by Swiss model, Geno3D and ModWeb were 0.509, 0.544 and 0.266 and the Z score RMS were 1. 617,1.644 and 1.764.The analysis revealed Root mean square Z score were almost equal to 1 signifying the protein model

was of high quality. The PROVE Z score revealed the nitrogenase iron protein created by ModWeb and Geno3D were good and the protein model created by Swiss model was fairly good.

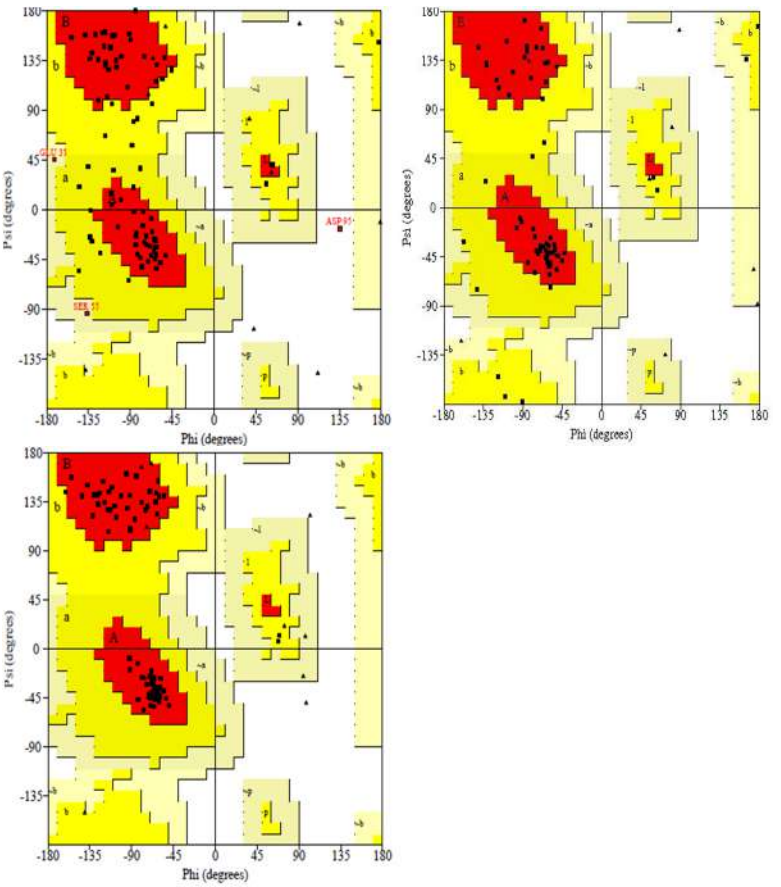


Fig. 3A- Ramachandran plot for nitrogenase iron protein model created by Swiss model

B - Ramachandran plot for nitrogenase iron protein model created by Geno3D

C - Ramachandran plot for nitrogenase iron protein model created by ModWeb

Table 3.Ramachandran plot calculation and comparative analysis of the models from Geno3D, Swiss model and ModWeb computed with the PROCHECK program

Server	Nitrogenase iron protein	Residues
Geno3D	Residues in the most favoured region	80%
	Residues in additionally allowed region	19%

	Residues in generously allowed region	2%
	Residues in disallowed region	0%
Swiss model	Residues in the most favoured region	69.1%
	Residues in additionally allowed region	27.2%
	Residues in generously allowed region	2.5%
	Residues in disallowed region	1.2%
ModWeb	Residues in the most favoured region	96.3%
	Residues in additionally allowed region	3.7%
	Residues in generously allowed region	0%
	Residues in disallowed region	0%

The accuracy and stereo chemical quality of the predicted nitrogenase iron protein models were evaluated after the refinement process using Ramachandran map calculations computed with PROCHECK [30,31]. In the Ramachandran plot analysis, the residues were classified according to its regions in the quadrangle [30]. The red regions in the graph indicated the most allowed regions, Glycine was represented by triangles and other residues were represented in squares [30,32]. The result revealed that the modeled nitrogenase iron protein of Streptomyces sp. created by Swiss model, Geno3D and ModWeb had 69.1%, 80% and 96.3% residues respectively in allowed region. The allocation of the main chain bond lengths and bond angles were found to be inside the limits for the nitrogenase iron protein modeled by ModWeb. The protein model created by ModWeb was found to be the most excellent model when comparing with the other two models based on the above evaluation methods. The predicted nitrogenase iron protein structure produced by ModWeb conformed well to the stereochemistry indicated that it was of good quality. Therefore the nitrogenase iron protein of Streptomyces sp. created by ModWeb was considered for further study.

Pocket and Binding site prediction of a protein

Computed Atlas of Surface Topography of proteins was used to identify the active site of the protein. Binding sites and active sites were often associated with structural pockets and cavities. The cavities on the protein surface as well as specific amino acid positioning within it created the physic-chemical properties needed for the protein to perform its function [27]. CASTp analysis revealed the presence of elevenpockets for ligand interaction for nitrogenase iron protein ofStreptomycessp.

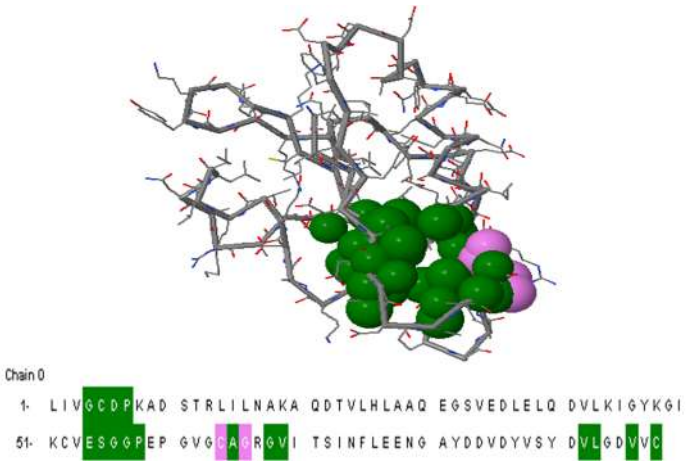


Fig. 4 Visualizing pockets in nitrogenase iron protein byCASTp

Table 4.Pocket information of nitrogenase iron protein

Number	Area	Volume
1	1.9	2
2	4.1	6.8
3	31.1	16.1
4	11.2	15.5
5	45.5	23.3
6	31.1	16.1
7	38.2	20.6
8	41.7	27.1
9	77.7	73.5
10	86.7	65.1
11	243.1	278

ASA View

The Spiral plot was generated by sorting all residues by their relative solvent accessibility. The radius of the sphere represented each residue was proportional to the accessible surface area of that residue thus enabled a visual estimate of more accessible residues. These amino acid residues were arranged in the form of the spiral such that the inner residues in the spiral represented buried residues and more and more exposed residues came nearer to the outer ring of the spiral. For the nitrogenase iron protein, majority of the negatively charged amino acid residues and polar uncharged amino acid residues were present on the outermost surface of the spiral plot whereas hydrophobic amino acid residues were restricted to the inner rings of the spiral plot. Possible active sites potentially lied in the higher accessibility region [20]. Charged residues on the surface of the protein will fall on the outermost ring of the spiral plot and therefore the plot suggested potential binding sites of the protein automatically [20].

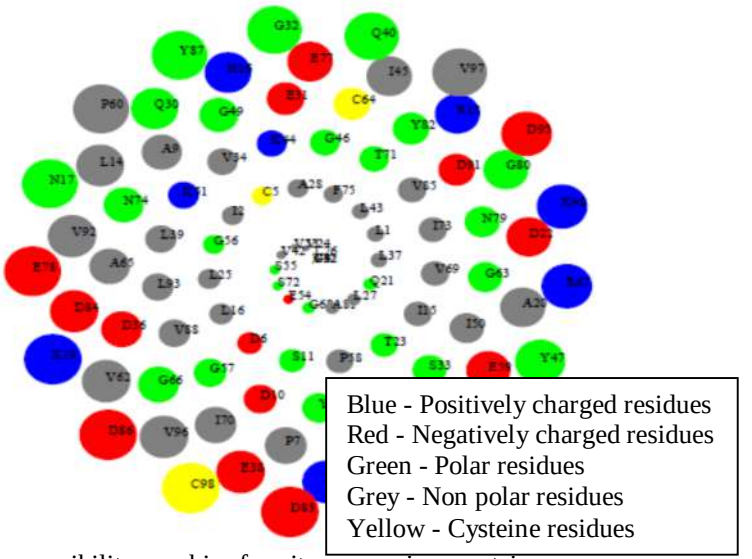


Fig. 5 Solvent accessibility graphics for nitrogenase iron protein

Studying intrinsic dynamics of the protein model and visualization of the modeled protein

In Normal mode analysis (NMA) first six modes identical with global rotary motion and translation of the system were generally ignored [12,22] and hence lowest frequency mode of concern was the seventh one. It implied that the seventh mode with large rigid regions had a superior probability of describing domain motions [12]. Normal Mode Analysis of the NifH protein from Frankia sp. demonstrated that low deformation energy was associated with relatively rigid regions in that protein [12]. Likewise the nitrogenase iron protein ofStreptomycessp. had lowest deformation energies of 1238.72 in the seventh mode.

B factor calculated from elNemo analysis based on the first 100 normal modes and they were scaled to match the overall B factor [12]. The B factor had got very low negative correlations for the C-alpha atoms of the nitrogenase iron protein between the computed and observed B factors. It signified that the model contained rigid regions and was less flexible. The correlation value was -0.023 for 98 C-alpha atoms.

Table 5. Deformation Energies

Mode Index	Deformation energy
7	1238.72
8	2400.48
9	3467.28
10	2891.60

11	5098.58
12	5459.51
13	7023.95
14	7843.28
15	9086.87
16	7093.72
17	10796.30
18	9897.19
19	10258.53
20	10438.25

Protein Quality Prediction

LG score predicted the quality of the nitrogenase iron protein model. LG score of nitrogenase iron protein of Streptomycessp. was 3.525 and it was concluded asa very good model.

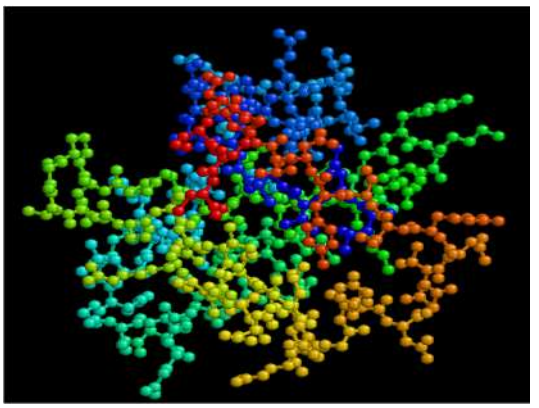


Fig. 6 Three dimensional structure of nitrogenase iron protein

Conclusion

To understand the molecular mechanism and function of the protein one need to know it's three dimensional structure. In the current study, structural analysis of nitrogenase iron protein (NifH) was done using three molecular modeling programs and the models were verified by PROSA,ERRAT, Verify 3D, Prove plot, Ramachandran plot, webnm@, elnemo and ProQ. It helped to optimize the protein model and found correct model in its native structure. The result revealed the rigidity and quality of nitrogenase iron protein model. The modeling of the three dimensional structure of the nitrogenase iron protein of Streptomyces sp. showed that the model generated by ModWeb were more acceptable in comparison to that of Geno3D and Swiss model. The postulation made in this model may be confirmed experimentally using X ray crystallography or NMR spectroscopy or dual polarisation interferometry for greater understanding of the biochemistry of Streptomyces sp.nitrogenase iron protein and opening newer

possibilities for exploring the molecular mechanism of nitrogenase activity in Streptomyces sp.

References

1. Annaliesa SA and WellingtonEMH. The taxonomy of Streptomyces and related ErkoS, Schumann P. Introduction to the taxonomy of Actinobacteria in The prokaryotes (Eds., Dworkin M, Falkow S, Rosenberg E, Schleifer KH and Stackebrandt E, Springer) 2006;3:297-321.
2. Annaliesa SA and Wellington EMH. The taxonomy of Streptomyces and related genera. International Journal of Systematic and Evolutionary Microbiology. 2001;1:797-814.
3. Erko S, Rainey FA and Ward-Rainey NL. Proposal for a new hierarchic classification system, Actinobacteria classisnov. International Journal of Systematic Bacteriology. 1997; 47:479-491.
4. Rosswall T. The internal nitrogen cycle between microorganisms, vegetation and soil, Ecological Bulletins. 1976; 22:157-167.
5. John WP andSzilagyiRK. Exploring new frontiers of nitrogenase structure and mechanism. Current opinion in Chemical Biology. 2006; 10:101-108.
6. Luis MR andLuddenPW. Biosynthesis of the iron molybdenum cofactor of nitrogenase. Annual Reviews of Microbiology. 2008; 62:93-111.
7. Ray D and Kahn D. Genetic regulation of biological nitrogen fixation. Nature Reviews Microbiology. 2004: 2:621-631.
8. Yilin H, Fay AW, Lee CC andRibbe MW. P-cluster maturation on nitrogenase MoFe protein. Proceedings of the National Academy of Sciences USA. 2007; 104:10424-10429.
9. Marc AM, Stuart AC, Fiser A, Sanchez R, MeloF. andSaliA. Comparative protein structure modeling of genes and genomes. Annual Reviews of Biophysics and Biomolecular Structures. 2000; 29:291-325.
10. Paramsivasan R, Ramamoorthy S, Jegadeeswaran DK, VelayuthamT. and Kishore TB. Prediction of 3-dimensional structure of salivary odorant-binding protein-2 of the mosquito Culexquinquefasciatus, the vector of human lymphatic filariasis. In Silico Biology. 2006; 7:1-6.
11. Philippe N, Lapierre P, Tisa LSet al. Genome characteristics of facultatively symbiotic Frankia sp. strains reflect host range and host plant biogeography. Genome Research. 2007; 7:7-15.
12. Arnab S, SurS,Tisa LS, Bothra AK, Thakur S and Mondal UK. Homology modelling of the Frankia nitrogenase iron protein. Symbiosis. 2010; 50:37-44.
13. Gasteiger E, Hoogland C, GattikerA.et al. Protein identification and analysis tools on the Expasy server in The Proteomics Protocols Handbook (Eds., J.M. Walker, Humana Press), New York. 2005; 571-607.
14. Roy S, Maheshwari N, Chauhan R, Sen NK and Sharma A. Structure prediction and functional characterization of secondary metabolite proteins of Ocimum. Bioinformation. 2011;6(8):315–319.
15. Ramadevi M. andVenugopalS. Computational structural and functional analysis of hypothetical proteins of Staphylococcus aureus. Bioinformation. 2012; 8(15):722-728.
16. Geourjon C and. DeleageG.SOPMA: Significant improvements in protein secondary structure prediction by consensus prediction from multiple alignments. Computer Applications in Biosciences. 1994; 11(6):681-684.
17. Nuria BC, Planas-Iglesias J andOlivaB. Comparative modelling of protein structure and its impact on microbial cell factories. Microbial Cell Factories. 2005; 4(20):1-11.
18. Combet C, Jambon M, Deleage G andGeourjonC. Geno3D: Automatic comparative molecular modeling of protein. Bioinformatics Applications Note. 2002; 1(18):213-214.

19. Dundas J, Ouyang Z, Tseng J, Binkowski A, Turpaz Y, Liang J. CASTp: computed atlas of surface topography of proteins with structural and topographical mapping of functionally annotated residues. Nucleic Acids Research.2006;34.
20. Shandar A, Gromiha M, Fawareh H andAkinori S.ASAview: Database and tools for solvent accessibility representation in proteins.BioMed Central Bioinformatics. 2004; 5(51):1-5.
21. Karsten S and SanejouandYH. ElNemo: A normal mode web server for protein movement analysis and the generation of templates for molecular replacement. Nucleic Acids Research. 2004; 32:610-614.
22. Siv MH, Salensminde G and Reuter N. WEBnm@: A web application for normal mode analysis of proteins. BioMed Central Bioinformatics. 2005; 6:1-8.
23. Bjorn W andElofssonA. Can correct protein models be identified. Protein Science. 2003; 12:1073-1086.
24. Kunchur G, Reddy BVB and PanditMW. Correlation between stability of a protein and its dipeptide composition: A novel approach for predicting in vivo stability of a protein from its primary sequence. Protein Engineering. 1990; 4:155-164.
25. Jack K and DoolittleRF. A simple method for displaying the hydropathic character of a protein. Journal of Molecular Biology. 1982; 157:105- 132.
26. Benkert P, Marco B andTorstenS. Toward the estimation of the absolute quality of individual protein structure models. Bioinformatics. 2010. 27(3);343–350.
27. Shen MY and Sali A. Statistical potential for assessment and prediction of protein structures. Protein science: a publication of the Protein Society. 2006; 15(11): 2507–2524.
28. Markus W andSipplM.J.ProSA-web: Interactive web service for the recognition of errors in three-dimensional structures of proteins. Nucleic Acids Research. 2007; 35:407–410.
29. Eisenberg D,Luthy R and Bowie JU. VERIFY3D: Assessment of protein models with three-dimensional profiles. Methods in Enzymology. 1997; 277:396-404.
30. Archna S andShakyaM. In silico analysis and homology modeling of antioxidant proteins of Spinach. Journal of Proteomics and Bioinformatics. 2010; 3(5):148-154.
31. Raghunath S, GuruR. andBeheraR. Computational QSAR analysis of some physiochemical and topological descriptors of Curcumin derivatives by using different statistical methods. Journal of Chemical and Pharmaceutical Research. 2010; 2(6):344-350.
32. Raghvendra PS, Singh RN, Srivastava MK.et al. Structure prediction and analysis of MxaF from obligate, facultative and restricted facultative methylobacterium.Bioinformation. 2012; 8(21):1042-1046.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

MOVEMENT OF SCHEDULED CASTE WOMEN IN TAMIL NADU

Dr.M.Sankar
Assistant Professor
PG & Research Department of History
V.O.Chidambaram College
Thoothukudi, Tamil Nadu

Introduction

The position of Dalits, in particular Dalit women in Tamil Nadu is pathetic as historically they are subjected to all types of discriminatory practices and they are treated as inferior human beings. Dalits generally live in colonies with no electricity, far away from the nearest water source, and segregated from all non-Dalits. They are forbidden by higher caste persons from entering places of worship, drawing water from public wells, or from wearing shoes in the presence of higher caste persons. They dig the graves, dispose of dead animals, and clean human waste with their bare hands. They are deemed polluting and therefore "untouchable." Any attempt to defy the social order is met with violence or economic retaliation. According to a report, in 120 villages in Villupuram district, Tamil Nadu, all 120 villages have segregated Dalit colonies.[1]

According to R. Balakrishnan, Chairman, Tamil Nadu Commission for Scheduled Castes and Scheduled Tribes, the caste system is an economic order, which prevents someone from owning land or receiving an education; it is a vicious cycle and an exploitative economic arrangement; landowning patterns and being a high-caste member are coterminous and also there is a nexus between [being] lower-caste and landlessness... Caste is a tool to perpetuate exploitative economic arrangements.[2]

Lack of access to land makes Dalits economically vulnerable and their dependency is exploited by upper and middle caste landlords, subjecting them to many abuses that go unpunished. Economic liberalization has adversely affected Dalits and their livelihood as the public sector shrinks due to privatization and the jobs reserved for them are drastically reducing. Globalization has also led to lands increasingly being acquired for industrialization, which throws them out of jobs. In India, powerful interest groups and political parties, who ruled states, emerged among middle and low caste groups. Dalits could not get the benefit although a Dalit was elected as the President of India in the year 1997. Although the rise of Mayavati in Uttar Pradesh is a milestone for the Dalit movement in sharing power, in Tamil Nadu, Dalit interest groups and political parties could not play any significant role.

According to the National Commission for Scheduled Castes and Scheduled Tribes, whenever Dalits tried to organise themselves or assert their rights, there has been a backlash from the feudal lords resulting in mass killings of Dalits, gang rapes, looting and arsoning, etc. of Harijan (Dalit) basties (villages).[3] As Dalit men migrate to cities in search of jobs, women are left to work as agricultural laborers in rural areas. Women bear the brunt of attacks because they are stuck in these feudal arrangements. As a result of escalating caste clashes, attacks on Dalit women, by state and private actors, have also escalated.

The Brahmanical literature degraded Dalits and talked about the pre-birth theory. The Dalits are described as varna-sankara i.e., people "outside the system"; therefore, inferior to other castes and they are deemed polluting, therefore, "untouchable." Dalits have generally been confined to the occupations of the caste into which they were born. The emergence of British rule brought relief to the downtrodden people. They brought a sense of liberty for the marginalized communities. Pune's Chtpawan Brahmins did not allow any Dalit and backward to join schools. Women and particularly of Dalit community could never dream of going to school. Jyoti Ba Phule realized that unless the community gets educated they would not be able to emancipate themselves. So he started a movement to impart education to Dalits by starting various schools in and around Pune. The Brahmins opposed education movement among Dalits which they had denied for years.

A report published by the National Commission for Scheduled Castes and Scheduled Tribes in the year 1997 states that "untouchability" – the imposition of social disabilities on persons by reason of their birth in certain castes – was still practiced in many forms throughout the country. The discrimination prevailing in the 1990s were, scheduled-caste bridegrooms were not permitted to ride a horse in villages, they could not sit on their charpoys (rope beds) when persons of other castes passed by, they were not permitted to draw water from common wells and hand-pumps and in many teashops and dhabas (food stalls), separate crockery and cutlery were used for serving them.[4]

The early centre of the Dalit movement in India was Maharashtra, since the pre- Independence period. Ambedkar and the Maharashtra Movements were the source of inspiration for the Dalit movements elsewhere. Taking inspiration from Phule, Ambedkar also highlighted the importance of education for the upliftment of Dalits. In Tamil Nadu, The founder of the Self- Respect Movement and the Dravidar Kazhagam, 'Periyar' E.V.Ramasami Naiker was among the early champions of the Dalit cause. He laid emphasis on educating the downtrodden, including Dalits.

When India became a democratic republic in the year 1950, under constitutional provisions and various laws, the state granted Dalits a certain

number of privileges, including reservations (quotas) in education, government jobs, and government bodies. The Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989 was enacted to prevent abuses against members of scheduled castes and scheduled tribes and punish the offenders. In the 1990s, the Dalits started to resist the discrimination by organizing peaceful protests and also by arms struggle. Dalit organizations started organizing marches against human right violations suffered by them, which was not liked by the higher caste groups, who saw in it economical and political threat to them. In some states like Bihar, groups such as Naxalites which attracted the support of a section of Dalits started attacking and killing landlords and seized their property. The caste Hindus by organizing private war groups such as Ranvir Sena started attacking the Dalits.

The Dalit movement in Tamil Nadu has long history. Iyothee Thass, Erattaimalai Srinivasan, M.C.Rajah, N.Sivaraj and L.Elayaperumal Vai, Balasundaram are some of the leaders associated with the movement at various stages.[5] The plight of Dalits in the modern days in the state is highlighted by the incident that happened on 25th December, 1968, in which 44 Dalits were burnt to death by upper caste landlords in Kilavenmani village, in the then undivided Thanjavur district for demanding higher wages.

Dalit women face the triple burden of caste, class and gender. Sexual abuse and other forms of violence against Dalit women are inflicted by landlords and the police. Dalits are kept away from their land and employment during social boycotts, Dalit women face physical attacks, and the Scheduled Castes and the Scheduled Tribes including reservations (quotas) in education, government jobs, and government bodies.The Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989 was enacted to prevent abuses against members of scheduled castes and scheduled tribes and punish the offenders.

In the 1990s, the Dalits started to resist the discrimination by organizing peaceful protests and also by arms struggle. Dalit organizations started organizing marches against human right violations suffered by them, which was not liked by the higher caste groups, who saw in it economical and political threat to them. In some states like Bihar, groups such as Naxalites which attracted the support of a section of Dalits started attacking and killing landlords and seized their property. The caste Hindus by organizing private war groups such as Ranvir Sena started attacking the Dalits.

Dalit Movement in Tamil Nadu

The Dalit movement in Tamil Nadu has long history. Iyothee Thass, Erattaimalai Srinivasan, M.C.Rajah, N.Sivaraj and L.Elayaperumal Vai, Balasundaram are some of the leaders associated with the movement at various

stages.[5] The plight of Dalits in the modern days in the state is highlighted by the incident that happened on 25th December, 1968, in which 44 Dalits were burnt to death by upper caste landlords in Kilavenmani village, in the then undivided Thanjavur district for demanding higher wages.

Dalit women face the triple burden of caste, class and gender. Sexual abuse and other forms of violence against Dalit women are inflicted by landlords and the police. Dalits are kept away from their land and employment during social boycotts, Dalit women face physical attacks, and the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989 is rarely enforced. According to a Tamil Nadu Government official, the raping of Dalit women exposes the hypocrisy of the caste system as 'no one practices untouchability when it comes to sex'.[6]

According to one report, in rural areas, women are induced into prostitution (Devadasi system), which is forced on them in the name of religion. The prevalence of rape in villages contributes to the greater incidence of child marriage. Early marriage between the ages of ten years and sixteen years persists because of Dalit girls' vulnerability to sexual assault by upper-caste men. If once a girl is raped, she becomes un-marriageable; therefore, early marriage is resorted to, which also gives parents greater control over the caste into which their children are married.[7]

In some cases Dalit women are raped as a matter of retaliation. Women of scheduled castes and scheduled tribes are raped as part of an effort by upper-caste leaders to suppress movements to demand payment of minimum wages, to settle sharecropping disputes, or to reclaim lost land. They are raped by members of the upper caste, by landlords, and by the police in pursuit of their male relatives who are wanted by them.[8] One of the earliest organized Dalit movements in Madras Presidency started with a memorandum submitted to the Governor of Madras Presidency in the early 1890s on the horrifying living conditions of Paraiyars, one of the two principal social groups among Dalits, in the then Chengalpat district. Following this, Paraiyars and other sections of Dalits were given certain lands known as 'Panchama land'. Over the years, this land was changed into the hands of higher caste Hindus in violation of the stipulation against the transfer of its ownership. In the year 1994, a movement was launched in Chengalpat district for restoration of the land to Dalits. This agitation, in which two people died in police firing, marked the beginning of the present phase of the Dalit movement in the state.

In the southern districts of Tamil Nadu, clashes between Pallars (a community of Dalits) and Thevars (a marginally higher-caste non-Dalit community) have started occurring in the rural areas since 1995. New found wealth among the Pallars, whose male family members could go to work in Gulf states and elsewhere abroad, has triggered clashes from the Thevars as the

Pallars have been able to buy their own lands or look elsewhere for employment. At the same time, a growing Dalit political movement has provided the Pallars with a platform for resisting the still-prevalent norms of "untouchability." Some Dalits have joined militant groups in Tamil Nadu and such groups have started engaging in public protests and other political activities. The Thevars have responded by assaulting, raping, and murdering Dalits. The role of local police, drawn predominantly from the Thevar community have come under cloud for their anti-Dalit activities. During the raids the local police have assaulted residents, particularly women, and detained Dalits under preventive detention laws. With the tolerance or connivance of local officials, police have also forcibly displaced thousands of Dalit villagers. During one such raid, Guruswamy Guruammal, a pregnant, twenty-six-year-old Dalit agricultural laborer, was stripped, brutally beaten, and dragged through the streets naked before being sent to jail.[9]

Since 1960s, Dalits have taken part in struggles against the state and the upper caste to claim their rights. During this period, the Dalit Panthers, and several groups with a Marxist/Leninist or Maoist orientation, emerged outside the framework of recognized political parties. The Dalit Panthers were formed in the state of Maharashtra in the 1970s, ideologically aligning themselves to the Black Panther movement in the United States. Dalit Panthers visited places in which atrocities were committed against Dalits, organized marches and rallies in villages, and raised slogans of direct militant action against the upper caste. In Tamil Nadu, the Dalit Panthers of India have thrived since the 1980s as a nonviolent awareness-raising and organizing movement concentrating primarily on women's rights and issues related to land and claims. They are currently led by Tirumavalavan under the banner of a political party of the nomenclature Viduthalai Chiruthaigal.

Conclusion

The present day Dalit movement in the State centres around K.Krishnasamy and Thirumavalavan, who have given leadership to the Dalit Movement in the State. Dr. K. Krishnaswamy leads Devendra Kula Vellalar Federation (DKVF), which later in 1998 was converted into a political party with the name Puthia Tamizhagam. These Dalit movements have provided a platform for the growing resistance of Dalits to the still prevalent "untouchability" in the state. Dalits in Tamil Nadu demanded equal treatment in temple festivals, refused to carry out menial tasks, demanded greater access to public water sources, and claimed an equal share of public and village properties.

Between July 1995 and June 1996, clashes between Thevars and Pallars resulted in large-scale destruction of property, loss of life on both sides, and the

arrest of many Dalit youths under preventive detention laws like the Tamil Nadu Goondas Act and the National Security Act, 1980.
In April 1997 the Tamil Nadu government announced the creation of a new transport corporation in Virudhunagar district in the name of the Veeran Sundaralingam Transport Corporation (VSTC), a Pallar community member. Thevars opposed the proposal. On May 2, Dalit leader Dr. Krishnaswamy was arrested and accused of recognized political parties.

Notes and References

1. Human Rights Watch, Broken People: Caste Violence Against India's "Untouchables", 1 April 199, also available at http://www.unhcr.org/refworld/docid/3ae6a83f0.html.
2. Ibid.
3. National Commission for Scheduled Castes and Scheduled Tribes, Highlights of the Report for the Years 1994-95 & 1995-96, 1997, p. 2.
4. Ibid.
5. R. Sivakumar, A Study on Dalit Women Movement in Tamil Nadu http://www.articlesbase.com/womens-issues-articles/a-study-on-dalit-women-movement-in-tamilnadu-753088.html.
6. Human Rights Watch, Broken People: Caste Violence Against India's "Untouchables", 1 April 1999, also available at http://www.unhcr.org/refworld/docid/3ae6a83f0.html.
7. Ibid.
8. Ibid.
9. People's Union for Civil Liberties, "Final Report of the PUCL- Tamil Nadu Team that inquired intoCaste Disturbances in Southern Districts of Tamil Nadu", 1997, pp. 3 - 4.
10. Human Rights Watch, Broken People: Caste Violence Against India's "Untouchables", 1 April 1999.
11 Asia Watch, Punjab in Crisis: Human Rights in India, 1991, p.36.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

AWARENESS AND IMPACT OF MAHATHMA GANDHI NATIONAL RURAL EMPLOYMENT GUARANTEES ACT

Dr.M.Gopi
Guest Faculty
Department of Public Administration
Government Arts College (Autonomous)
Salem, Tamilnadu, South India

Introduction

The National Rural Employment Guarantee Act was notified on September 7, 2005. The objective of the Act is to enhance livelihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work.[i] In the following pages an attempt has been made to analyze the guidelines in the implementation of Mahathma Gandhi National Rural Employment Guarantee Act. The goals of National Rural Employment Guarantee Act are to provide strong social safety net for the vulnerable groups by providing a fall-back employment source, when other employment alternatives are scarce or inadequate; and to ensure growth engine for sustainable development of an agricultural economy. Through the process of providing employment on works that address causes of chronic poverty such as drought, deforestation and soil erosion, the Act seeks to strengthen the natural resource base of rural livelihood and create durable assets in rural areas. Effectively implemented, National Rural Employment Guarantee Act has the potential to transform the geography of poverty; to guarantee empowerment of rural poor through the processes of a rights-based Law and to ensure new ways of doing business, as a model of governance reform anchored on the principles of transparency and grass root democracy. Thus, National Rural Employment Guarantee Act fosters conditions for inclusive growth ranging from basic wage security and recharging rural economy to a transformative empowerment process of democracy.[ii] So far, no attempt has been made to analyze the awareness and impact of the Act. A research study on this topic could help the authorities to make suitable amendment in the Act so that the goals of National Rural Employment Guarantee Act to provide strong social safety net for the vulnerable groups by providing a fall-back employment source could be achieved.

Review of Literature

The literatures reviewed by the researcher are reported below:

IIM Lucknow has scrutinized the Quick Appraisal of 5 Districts under National Rural Employment Guarantee Scheme in the Districts of Gorakhpur, Jalaun, Jhansi, Khushinagar and Bareilly.[iii]

Gandhi Gram University, Gandhigram has monitored the Performance of National Rural Employment Guarantee Scheme in Kerala in the Districts of Palakkad and Wayanad.[iv]

Central Institute of Fisheries Education, Mumbai has reported A Study Report on Appraisal of Mahathma Gandhi National Rural Employment Guarantee Act Programme in the Districts of Thane and Akola.[v]

IIT Chennai has assessed the Evaluation of Mahathma Gandhi National Rural Employment Guarantee Act in the Districts of Cuddalore, Dindigul, Kanchipuram, Nagai and Coimbatore .[vi]

Nagaland University has evaluated the Mahathma Gandhi National Rural Employment Guarantee Act Impact Assessment.[vii]

Centre for Rural Research and Industrial Development, Chandigarh has monitored the Mahathma Gandhi National Rural Employment Guarantee Act Impact Assessment in the Districts of Hoshiarpur, Sirmaur and Sirsa.[viii]

Action for Food Production has analyzed the Infrastructure Development & beyond Exploring the Scope for Sustainable Livelihood Support under Mahathma Gandhi National Rural Employment Guarantee Act in the District of Gumla.[ix]

Indian Institute of Science, Bangalore has looked at the Environmental Services, Vulnerability Reduction and Natural Resource Conservation from Mahathma Gandhi National Rural Employment Guarantee Act Activities in the District of Chitradurga.[x]

Indian Institute of Public Administration has elucidated the Impact Assessment.[xi]

Indian Institute of Forest Management has monitored the Indian Institute of Forest Management.[xii]

Research Gap

The literatures reviewed by the researcher clearly indicate that a number of research studies have been attempted to analyze Mahathma Gandhi National Rural Employment Guarantee Act. But so far, no attempt has been made to analyze the awareness and impact of the Act in providing social security to the vulnerable sections of the population living in rural areas. Therefore, the researcher thought it appropriate to prepare a paper on the awareness and impact Mahathma Gandhi National Rural Employment Guarantee Act from the point out of view of stakeholders in Coimbatore District.

Objectives of the Study

The objectives of the study are to analyze the awareness of the respondents about the Act and the impact of the Act in realizing the goals of the Act and to suggest suitable measures to design the wage employment programme more effectively.

Methodology of the Study

The main focus of the study is to analyze the awareness and impact of Mahathma Gandhi National Rural Employment Guarantee Act. Social survey method has been made use of in this study as the data for this study has been mainly collected from the respondents of Coimbatore District. The data for this study have been collected from primary and secondary sources. The secondary sources of data are collected from the Books, Articles, Reports, Acts and Monographs. The primary sources of data have been collected from the schedules furnished to the respondent beneficiaries of the Coimbatore District. There are twelve Blocks and 229 Village Panchayats in Coimbatore District. The researcher has selected 120 respondents from 12 Village Panchayats located in 12 Blocks at the rate of 10 respondents from each Village Panchayats. Personal interview with the help of the structured interview schedule was

the main method used for the collection of primary data from the respondents. Having prepared the interview schedule, pre testing was done in order to ensure that the interview schedule yielded the required data. Descriptive, analytical and empirical methods have been made use of to analyze the data. The researcher also made use of statistical tools in the analysis of the data. After processing and analyzing the raw data the report writing work was undertaken. Sufficient care was taken to present the report as per the requirement of the study designed earlier.

Analysis of the Study

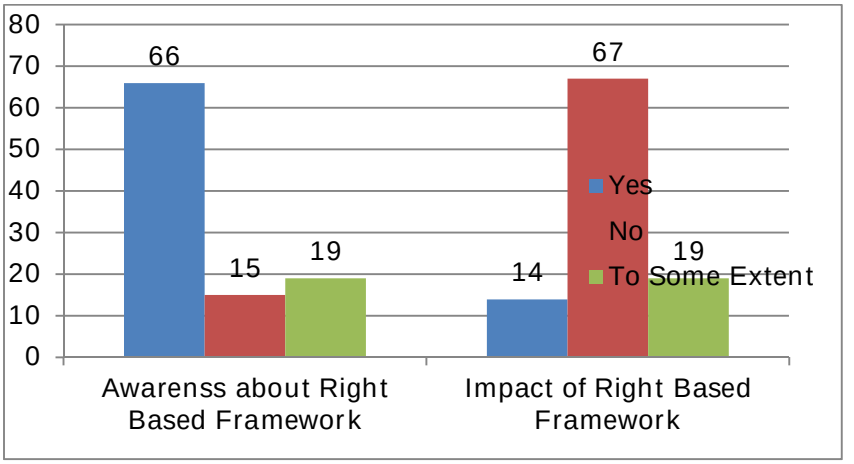
The analysis of the awareness and impact of Mahathma Gandhi National Rural Employment Guarantee Act from the point of view of the respondent stakeholders in Coimbatore District are reported below:

Right based Framework

The Act guarantees for adult members of a rural household willing to do unskilled manual work. The respondents were asked whether they were aware about right based framework and whether this provision of the Act has enhanced the livelihood security in rural household. The responses of the respondents are provided in the following chart 1

Chart 1

Right based Framework



The above chart reveals that 66% of the respondents have awareness about right based framework; and 67% of the respondents felt that the right based framework has not enhanced the livelihood security in rural household.

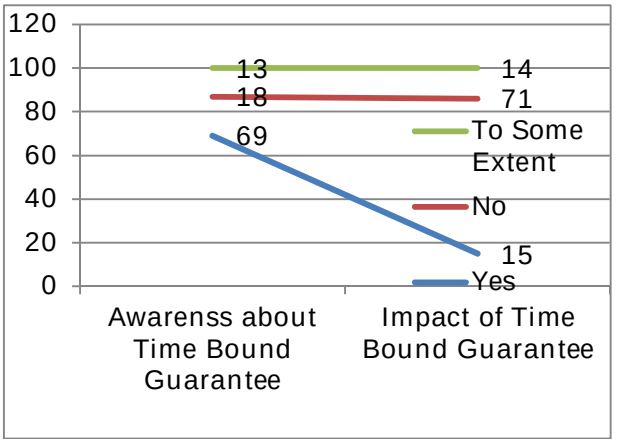
Time bound Guarantee

The Act provides employment within 15 days of application or else unemployment allowance up to 100 days in a financial year per household, depending on the actual demand. The respondents were asked whether they were aware about time bound guarantee and whether this provision of the Act has enhanced the livelihood

security in rural household. The responses of the respondents are provided in the following chart 2

Chart 2

Time bound Guarantee



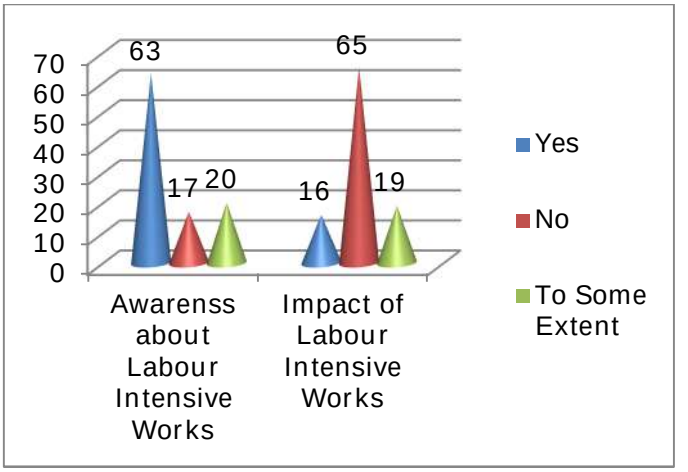
The above chart reveals that 69% of the respondents have awareness about time bound guarantee; and 71% of the respondents (67%) felt that the time bound guarantee has not enhanced the livelihood security in rural household.

Labour Intensive Works

The Act ensures 60:40 wage and material ratio for permissible works. In order to ensure labour intensive works no contractors or machinery shall be used. The respondents were asked whether they were aware about labour intensive works and whether this provision of the Act has enhanced the livelihood security in rural household. The responses of the respondents are provided in the following chart 3

Chart 3

Labour Intensive Works

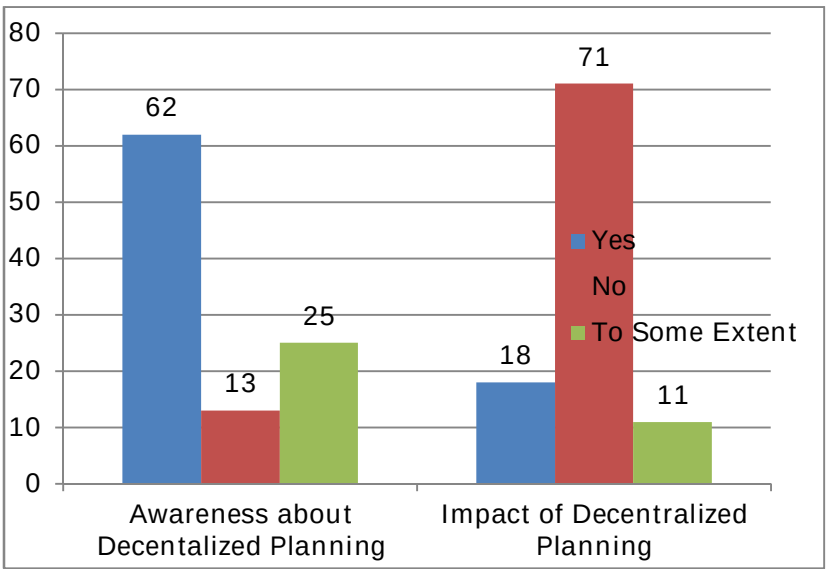


The above chart reveals that 63% of the respondents have awareness about labour intensive works; and 65% of the respondents felt that the labour intensive works has not enhanced the livelihood security in rural household.

Decentralized Planning

The Act provides for decentralized planning. Gram Sabhas shall recommend works; at least 50% of works by Gram Panchayats for execution; and principal role of the Panchayati Raj Institutions in planning, monitoring and implementation. The respondents were asked whether they were aware about decentralized planning and whether this provision of the Act has enhanced the livelihood security in rural household. The responses of the respondents are provided in the following chart 4

Chart 4
Decentralized Planning



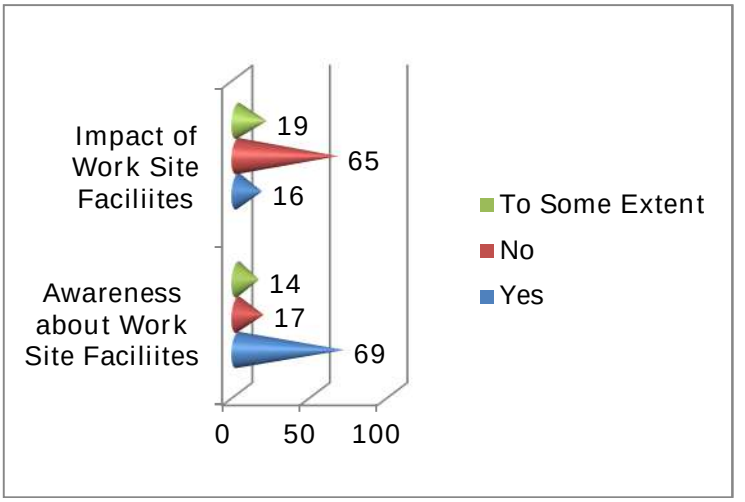
The above chart reveals that 62% of the respondents have awareness about decentralized planning; and 71% of the respondents felt that the decentralized planning has not enhanced the livelihood security in rural household.

Work Site Facilities

The Act provides work site facilities for crèche, drinking water, first aid and shade provided at worksites. The respondents were asked whether they were aware about work site facilities and whether this provision of the Act has enhanced the livelihood security in rural household. The responses of the respondents are provided in the following chart 5

Chart 5

Work Site Facilities

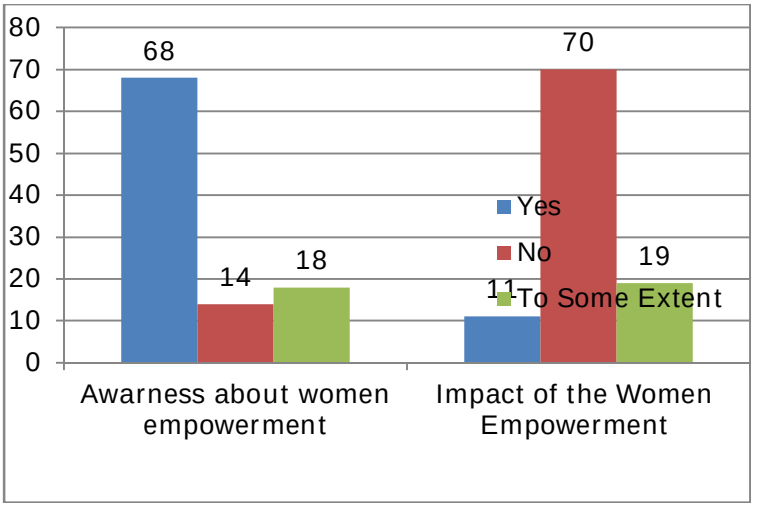


The above chart reveals that 69% of the respondents have awareness about work site facilities; and 65% of the respondents (67%) felt that the work site facilities has not enhanced the livelihood security in rural household.

Women Empowerment

In order to empower women the Act ensures at least one-third of beneficiaries should be women. The respondents were asked whether they were aware about women empowerment and whether this provision of the Act has enhanced the livelihood security in rural household. The responses of the respondents are provided in the following chart 6

Chart 6-Women Empowerment



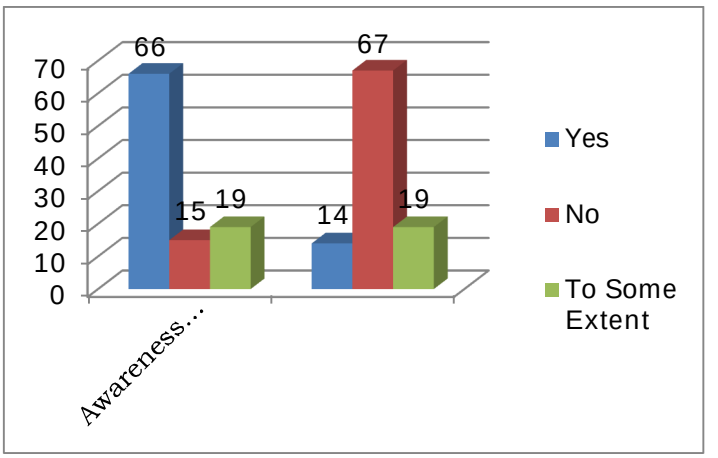
The above chart reveals that 68% of the respondents have awareness about women empowerment; and 70% of the respondents felt that the women empowerment has not enhanced the livelihood security in rural household.

Transparency and Accountability

The ensure transparence and accountability the Act provides proactive disclosure through Social Audits and Grievance Redressal Mechanism. The respondents were asked whether they were aware about transparence and accountability and whether this provision of the Act has enhanced the livelihood security in rural household. The responses of the respondents are provided in the following chart 7

Chart 7

Transparency and Accountability

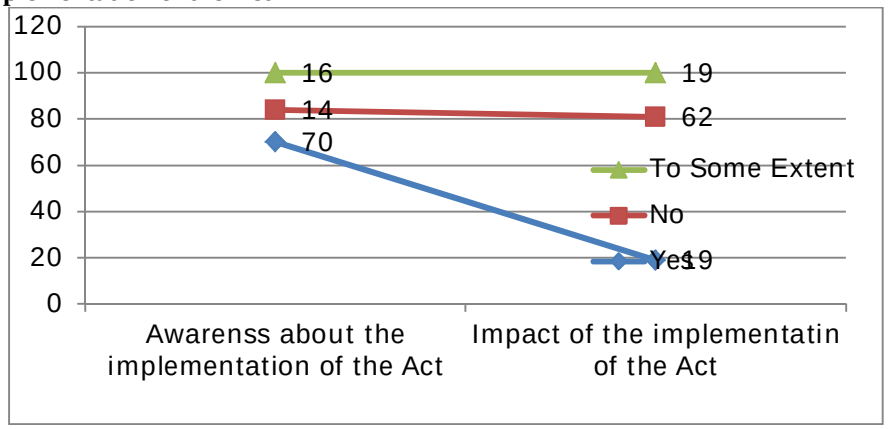


The above chart reveals that 66% of the respondents have awareness about transparence and accountability; and 67% of the respondents (67%) felt that the transparence and accountability has not enhanced the livelihood security in rural household.

Implementation of the Act

Under Sec 3, States are responsible for providing work in accordance with the Scheme. Under Sec 4, every state government is required to make a scheme for providing not less than 100 days of guaranteed employment in a financial year, to those who demand work. The respondents were asked whether they were aware about implantation of the Act and whether this provision of the Act has enhanced the livelihood security in rural household. The responses of the respondents are provided in the following chart 8

Chart 8
Implementation of the Act

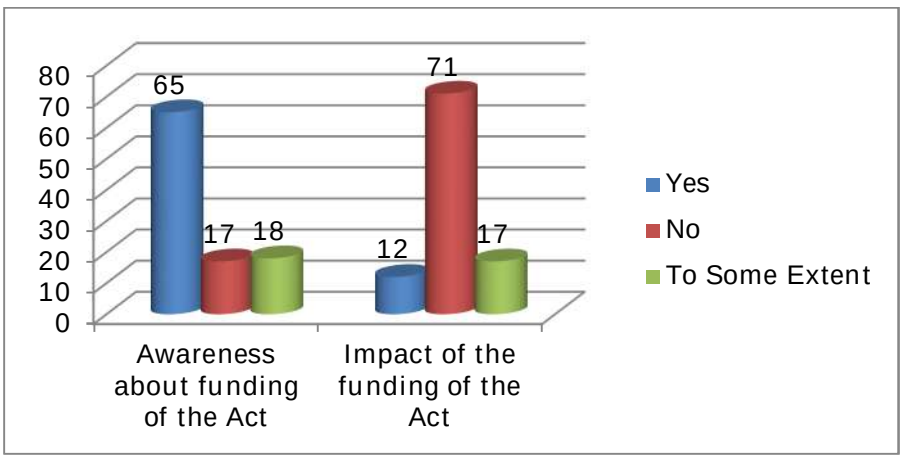


The above chart reveals that 70% of the respondents have awareness about implantation of the Act; and 62% of the respondents felt that the implantation of the Act has not enhanced the livelihood security in rural household.

Funding of the Act

The Central Government shall pay 100% of wages for unskilled manual work, 75% of material cost of the schemes including payment of wages to skilled and semi skilled workers. The State Government shall pay 25% of material including payment of wages to skilled and semi skilled workers cost and 100% of unemployment allowance by state government. The respondents were asked whether they were aware about funding of the Act and whether this provision of the Act has enhanced the livelihood security in rural household. The responses of the respondents are provided in the following chart 9

Chart 9
Funding of the Act



The above chart reveals that 65% of the respondents have awareness about funding of the Act; and 71% of the respondents felt that the funding of the Act has not enhanced the livelihood security in rural household.

Findings, Conclusion and Suggestions

The analysis of the study makes it clear that majority of the respondents have awareness about the Act but they felt that the Act has not enhanced the livelihood security in rural household. Mahathma Gandhi National Rural Employment Guarantee Act has the potential for sustainable development and it may be worthwhile considering implications of going beyond unskilled labour. The big question is whether Mahathma Gandhi National Rural Employment Guarantee Act should remain a guarantee of unskilled hard labour. There are reasons that it is not desirable to limit the instrumentality of employment to unskilled manual labour. With the large investments that the Act will require, the issue will be whether such investments should not be used for more sustainable employment opportunities stimulating both growth and equity. Confining Mahathma Gandhi National Rural Employment Guarantee Act to unskilled manual labour will only be a means to coping with poverty, not of ameliorating it. Unskilled manual labour was meant to make it self-targeting so that only the very poor would seek work as a last resort. Limitation of choice to only unskilled work, ironically, undercuts the principle of rights, inclusion, and equity, as the legal design of work does not make the terms of inclusion equitable. It offers bottom–of-the-scale tasks with no chance of up gradation of skills to those with least opportunities. The unemployed and deprived will continue to be engaged in conditions of work that despite a legal guarantee and considerable financial resources perpetuate their lack of opportunities and capabilities. This will further reduce their ability to access any other opportunity of employment that lifts them out of intergenerational deprivation. Meanwhile, those with historical advantages will continue to access higher employment opportunities adding value to their skill and knowledge. A safety net creates the possibility of immediate relief but is not designed to address issues of the quality of equity. Quality and equality of opportunity are necessary conditions for any serious commitment to securing livelihood. If Mahathma Gandhi National Rural Employment Guarantee Act continues in the way it is, as unskilled manual labour with large funds and a quick fifteen day time-bound work allocation, it tends to become a major employer in the market. Even without a guarantee incentivising the choice of unskilled labour, exigencies of poverty often force skilled artisans to stone-crushing. De-skilling rural workforce will run counter to the need for value addition in the employability of the workforce. All the more, the Act should be sensitive to the needs of sustainable employment, so that its direct intervention in the market develops skills relevant to market demand and enables higher bargaining powers among the workers. This will create a design of sustainable employment that backed by a legal guarantee and budget support is also a safety net.

References

[i] The National Rural Employment Guarantee Act, 2005, Operational Guidelines 2008, 3rd Edition, Ministry of Rural Development, New Delhi, p.1, para 1.1.

[ii] The National Rural Employment Guarantee Act, 2005, Operational Guidelines 2008, 3rd Edition, Ministry of Rural Development, New Delhi, p.1, para 1.2.

[iii]Quick Appraisal of 5 Districts under NREGS, IIM Lucknow, 2008-09.

[iv]Performance of NREGS in Kerala, Gandhi Gram University, Gandhigram, 2009-10.

[v]A Study Report on Appraisal of Mahatma Gandhi NREGA Programme, Central Institute of Fisheries Education, Mumbai, 2008-09.

[vi]Evaluation of Mahatma Gandhi NREGA, IIT Chennai, 2008-09.

[vii]Mahatma Gandhi NREGA Impact Assessment, Nagaland University, 2008-09.

[viii]Mahatma Gandhi NREGA Impact Assessment, Centre for Rural Research and Industrial Development, Chandigarh, 2009-10.

[ix]Infrastructure Development & Beyond: Exploring the Scope for Sustainable Livelihood Support under Mahatma Gandhi NREGA, Action for Food Production, 2009-10.

[x]Environmental Services, Vulnerability Reduction and Natural Resource Conservation from Mahatma Gandhi NREGA Activities, Indian Institute of Science, Bangalore, 2009-10.

[xi]Impact Assessment, Indian Institute of Public Administration, 2009-10.

[xii]Impact Assessment, Indian Institute of Forest Management, 2009-10.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

LEVEL OF SELF PERCEPTION AND MENTAL HEALTH AMONG LEARNING DISABLED CHILDREN IN THE SCHOOLS OF KERALA

Dr. Veni. R.K
Assistant Professor
Dept. of Psychology
Jyoti Nivas College Autonomous
Bangalore, Karnataka

Abstract

The present study mainly aimed at gauging the level of self perception and mental health of learning disabled children in the schools of Kerala. Normative method using survey as a technique was adopted for collecting data relevant for the study. A representative sample of learning disabled (LD) children (N = 225) were selected for the study. The data were collected using standardized tools like (i) A scale of self perception and (ii) mental health profile. The data were analysed using appropriate statistical techniques like computation of statistical indices like mean, standard deviation and percentage analysis. Findings revealed that the learning disabled children have a moderate level of self perception and mental health.

Keywords: Learning Disabled Children, Self Perception, Mental Health

Introduction

The last two decades saw an increasing attention on the problems of learning disability. In India, it is estimated that atleast five students in every average-sized class has Learning Disabilities (Thomas, Bhanutej, & John, 2003). But these students are often unrecognized in the crowded schools due to the invisible nature of the disability unlike other visible disabilities.

In India there is no correct statistics available about the exact percentage of children affected with the specific learning disability, but few studies over the years noted that approximately 10-15% children in India have Specific Learning Disability (Choudary, Jain, Chahar, & Singhal, 2012; Dhandha & Jagawat, 2013; Krishnakumar, 1999; Mehta, 2003; Krishnan, 2007; Mogasale, Patil, Patil, & Mogasale, 2012). Dyslexia is one of the most common Learning Disabilities, affecting 80% of all those identified as Learning Disabled (Karande, Sawant, Kulkarni, Galvankar, & Sholapurwala, 2005).

Children with learning disabilities are found to be as smart as or smarter than their peers, but they have difficulty in reading, writing, spelling, and reasoning, if taught in conventional ways (Maanum, 2009). Such academic challenges faced by the LD children will eventually lead to low

self-esteem, withdrawal and behaviour problems. A child with Learning Disability (LD) appears to exhibit emotional problems due to adjustment difficulties resulting from academic failure and sometimes they even have trouble in expressing their feelings, calming themselves down and reading nonverbal cues, which can lead to difficulty in the classroom and with their peers (Neeraja & Anuradha, 2014).

Children with LD have to deal with negative self-image as most of them are teased and taunted all their lives, and they feel so bad about themselves that even when they succeed, they are not comfortable with themselves. Usually, children with learning disability as early as in kindergarten are smart enough to figure out that their peers are able to recognize letters and play with symbols successfully, while they are not, and they may feel inferior compared to their peers (Smith, 1994).

Self perception is defined as "an awareness of the characteristics that constitute one's self - self-knowledge". **Self-perception refers to the way in which people come to understand their own attitudes and beliefs based on their behaviour in given situations (**American Heritage dictionary, 2016**).** It is an important determinant of behaviour in many settings that are characterized by imperfect self-knowledge (Ertac, 2005). People construct their own perception by seeing themselves through others eyes, and self-perception is formed directly through the perception of other's perceptions of them (Mead, 1934).

Theorists such as Covington and Beery (1976), and Bloom (1976) consider a positive self-perception of ability as essential for academic success. During middle childhood, some of the most powerful and enduring self-perceptions are shaped, and these perceptions are dependent on one's experiences in the primary school (Markus, 1980).

Self Perception is one of the important factors which may influence child's development and achievement. It also affects a child's relationship with others. Children with positive self-concepts may find it easier to get along with peers, classmates and teachers. Children with poor self-concepts may find it difficult to make and keep friends because of their negative attitudes. It has been seen that children with learning disabilities have a negative self-concept of their abilities and academic skills than that of their peers (Zyoudi, 2010). They also perceived themselves as less competent than did the normal children in the areas of intelligence, academic skills and social acceptance (Smith & Nagle, 1995) and these learning disabled children also have lower self-perceptions of scholastic competence and moral conduct than normal achieving children (Clever, Bear, & Juvonen, 1992).

'Mental Health' includes emotional, social and cognitive attributes of well being. Mental health is a state of well-being in which the individual

realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully and is able to make a contribution to his or her community (WHO, 2001). The concept of positive mental health is all the more important as regards adolescence, the period of storm and stress to capture the sense of conflict and confusion that accompanies the individual's growing sense of self and society (Muuss, 1975). Mental healthrefers to what people think and how they feel about their lives in terms of their cognitive and affective conclusions when they evaluate their existence (Diener, Lucas, & Oshi, 2002).

Well-being can be defined as the realization of a child's rights and the fulfilment of the opportunity for every child to be in the light of a child's abilities, potential and skills. The degree to which this is achieved can be measured in terms of positive child outcomes, whereas negative outcomes and deprivation point to the neglect of child's rights (Bradshaw, Hoelscher, & Richardson, 2007).Young people with LD are significantly more at risk of confronting mental health difficulties than their non-disabled peers (Taggart, Cousin, & Milner, 2007).

It is seen that social comparison processes play an important role in the formation of LD student's perceived academic competence. LD children's perception of stigma is related to negative social comparisons in terms of low self-esteem and high symptoms of psychological distress (Paterson, 2007). So they perceive themselves as less academically competent than normally achieving students in their regular classes (Renick & Harter, 1988). Though students with learning disabilities are often partly accepted by peers, they are found exhibiting deficiency in positive social behaviour as compared to their non- handicapped counterparts (Bryan, 1974).

Since, self perception and mental health are two most important psychological construct among any age groups especially among school children with learning disability (LD), the present study assessing the level self perception and mental health among LD children in the schools of Kerala was undertaken. It's hypothesised that, 'the level of self perception and mental health of majority of learning disabled children in the schools of Kerala will be low'

Method

Participants

The sample for the present study constituted a representative group of 225 learning disabled children from the different schools of Kerala with mainstreaming /inclusive education facilities. The sample was selected on the basis of 'Purposive Sampling Technique'.In the present study learning

disabled children refers to the pupils with learning disability of standards IX to XII in the schools of Kerala.

Instruments

A scale of self perception

A Scale of Self Perception was developed by Veni and Merlene (2013) to measure the Self Perception of students. Self Perception refers to the way students perceive themselves based on different factors like moral and behavioural conduct, peer acceptance, social competence, physical appearance, scholastic competence, self- efficacy and self worth.

Reliability

The Pearson's product moment correlation coefficients were computed employing the split half method (Odd verses Even) for each of the seven dimensions. This correlation gives the reliability of only a half-test. Spearman brown prophecy formula was used to obtain the reliability coefficients for the whole test using the formula

$$R = \frac{2r}{1+r}$$

The correlated coefficients (Rs) for each of the seven dimensions were calculated. Reliability indices were worked out by computing the square root of 'Rs'. The details of 'r', 'R' and √R computed are presented in Table 3.4 dimension-wise.

Details of 'r', 'R' and √R of a scale of self perception

Dimensions	r-values	R-value	√R
Moral and behavioural conduct	0.70	0.82	0.91
Peer acceptance	0.72	0.84	0.92
Social competence	0.71	0.83	0.91
Physical appearance	0.79	0.88	0.94
Scholastic competence	0.82	0.90	0.95
Self- efficacy	0.69	0.82	0.91
Self-worth	0.76	0.86	0.93

Since the reliability indices computed for the seven dimensions are high the tool is considered to be highly reliable one.

Validity

The Item selection procedure may be interpreted as a proof of internal validity of the scale. The face and content validity were established in the form of modification and refinement of the prepared items, based on the reactions of the experts in the field of Psychology and Education. Item validity was established in terms of the items significantly discriminating higher self perception group from lower self perception group at 0.01 level.

Administration and scoring

The test can be administered individually or in a group. The instructions given in the test were read out to the subjects. There is no time limit. For the positive items of the scale the scores of 5, 4, 3, 2 and 1, were given for the responses, strongly agree, agree, undecided, disagree, and strongly disagree, respectively. For the negative items, the scores were reversed in order, for the same responses strongly agree, agree undecided, disagree, and strongly disagree, respectively. The scores of the items for the 7 dimensions are summated to obtain the total score of self-perception. As the scale consists of 70 items, the total score can range from 70 to 350.

Mental health profile (for psychological wellbeing)

In the present study, the mental health profile (the revised version of section 1 of healthy personality profile) developed by Sananda Raj & Rakhee, 2003was used. The scale consists of 60 items under five dimensions, viz. attitude toward the self, integration, autonomy, perception of reality and environmental mastery with 12 items in each dimension. Instructions given in the manual has been followed for the administration and scoring of this tool. For positive items, the scores of 5, 4, 3, 2 and 1, were given for the responses, strongly agree, agree, undecided, disagree, and strongly disagree, while it was reversed for negative items.

Reliability and validity

The reliability has been established in two ways; viz., test-retest method and split half method by comparing 'r' applying Spearman –Brown prophecy formula. The reliability coefficient for attitude toward the self is 0.84; integration, 0.88; autonomy, 0.89; perception of reality, 0.86; and environmental mastery, 0.83. All these indicate that the scale is reliable. The concurrent validity of the tool was established by computing 'r' between the score of the current tool and the score of the standardised tool used as external criteria. The coefficients of the dimensions are; attitude toward the self-0.89; integration-0.86; autonomy-0.88; perception of reality-0.87; and environmental mastery-0.83.

The study being descriptive in nature, 'survey' was used for collecting data for the present study from learning disabled children from the mainstreamed schools. As the first step to data collection, the lists of

mainstreamed schools with LD children were collected from the Department of Public Instruction (DPI).The principals of the schools included for the present study were contacted and the details regarding the nature of investigation, time required for administration of the tools and nature and extent of cooperation expected from the authorities and participants were explained. The tools used for the study were administered following the conventional procedures. After completion of the data collection process, the response sheets were scrutinized to ensure their appropriateness for inclusion in the study. Computation of statistical indices like percentages, mean and standard deviation was used for the present study.

Results

To assess the level of self perception of learning disabled (LD) children at the school level (high school & higher secondary), data were collected from a representative sample of LD children (N = 225) from the different schools of Kerala, namely Thiruvananthapuram,Kollam and Calicut using the tool, A scale of self perception. The responses thus collected were analysed appropriately and the details of which are presented in Table 1.

On assessing the level of Self Perception of LD children, data presented in table 1 indicates that only 14.67% of the learning disabled children in the schools of kerala have a 'high level of self perception', where as the rest of the sample under study, have either 'moderate' (75.56%) or ' low'(9.78%) level of self perception. Thus, the majority of the learning disabled children have a moderate level of self perception.

To assess the level of mental health among the LD Children, data were collected from a representative sample of 225 LD children from different schools of Kerala, using the mental health profile. The responses thus collected were analysed appropriately and the details of which are presented in Table 2.

Data presented in Table 2 shows that only 16.44% of the learning disabled children in the schools of Kerala have a 'high level of mental health, where as the rest of the sample under study, have either 'Moderate' (68.89%) or low (14.67%) level of Psychological Well-Being. Thus, only a minority of learning disabled children seem to have low level of level of mental health.

Hence the hypothesis that 'The level of self perception and mental health of majority of learning disabled children in the schools of Kerala will be low' is rejected.

Discussion

The present finding that 'Self Perception' of majority of the LD children in the schools of Kerala is moderate seems to contradict with the

popular notion and the findings of Alesi, Rappo & Pepi (2014) who reported that, children with learning disabilities have lower rated self-esteem at school. The present finding does not lend support to the previous observations of research studies by Cooley & Ayres (1988), Lewis & Lawrence-Patterson (1989) and Smith & Nagle (1995), who noted that self-perception, is lower for learning disabled students in intellectual/academic areas and that of Clever, Bear & Juvonen (1992) who reported that LD children have lower self-perceptions of scholastic competence and behavioural conduct.

Finding with regard to 'mental health' revealed that, LD children have moderate level of mental health which is contrary to the hypothesis that LD children will have low level of mental health, this could be because of the better awareness among parents, teachers, and the peer groups in the recent times about LD and the remedial practices which may in turn facilitate a better environment for such children. Earlier LD has been seen just as retardation but recent changes in the field may be a relief to these children as they receive more support from their peers and close ones which may have enhanced their overall well being to moderate level.

Implication

The present finding clearly implies that self perception and mental health of the learning disabled children need to be enhanced to a higher level using appropriate strategies. It also implies the need to avoid labelling as much as possible since labelling conveys the stigma of being considered deficient which will in turn disturbs their self perception and mental health, as labelling makes the teachers , parents and peers behave differently toward these children. These changes in behaviour will affect these children negatively which may affect their overall well being.

References

- Alesi, M., Rappo, G., & Pepi, A. (2014) Depression, anxiety at school and self-esteem in children with learning disabilities. Journal of Psychological Abnormalities Child, 3,125.
- Bloom,B.S.(1976). Human Characteristics and School Learning. New York: McGraw Hill.
- Bradshaw, J., Hoelscher, P.,& Richardson,D. (2007). An Index of Child Well-being in the European Union, Social Indicators Research, 80, 133–177.
- Bryan, T.H. (1974). An observational analysis of the classroom behaviors of children with learning disabilities. Journal of Learning Disabilities,7, 35–43.
- Choudhary, M., Jain, A., Chahar C., & Singhal, A.K. (2012). A case control study on specific learning disorders in school going children in Bikaner city. Indian Journal of Pediatrics,79,1477-1481.
- Clever, A., Bear, G. G., & Juvonen, J. (1992). Discrepancies between competence and importance in self-perceptions of children in integrated classrooms. Journal of Special Education, 26, 125-138.

- Cooley, E. J., & Ayres, R.R. (1988). Self-concept and success-failure attributions of nonhandicapped students and students with learning disabilities. Journal of Learning Disabilities, 21, 3, 174-78.
- Covington, M. C. & Beery, R. G. (1976). Self-worth and school learning. New York: Holt, Rinehart and Winston.
- Dhanda, A., & Jagawat, T. (2013). Prevalence and Pattern of Learning Disabilities in School Children. Delhi Psychiatry Journal, 16, 386-390.
- Diener, E., Oishi, S., and Lucas, R. E. (2003). Personality, Culture, and Subjective Well-Being: Emotional and Cognitive Evaluations of Life. Annual Review of Psychology, 54, 403–425.
- Ertac, S.(2005). "Social comparisons and optimal information revelation: theory and experiments", Working paper. Retrieved from: http://levine.sscnet.ucla.edu/archive/refs4782713000000000020.pdf
- Karande, S., Sawant, S., Kulkarni, M., Galvankar, P., & Sholapurwala, R. (2005). Comparison of cognition abilities between groups of children with specific learning disability. Indian Journal of Medical Sciences, 59, 95-103.
- Krishnakumar, A. (1999) .Coping with a disability, Frontline, April Retrieved from //http://www.frontline.in/static/html/fl1608/16081140.htm.
- Krishnan, B. (2007). Effective Special Needs Education. Education World. Retrieved from www. educationworldonline.net/index.php/page-article-choice-more-id-834 .
- Lewis, S. K., & Lawrence-Patterson, E. (1989). Locus of control of children with learning disabilities and perceived locus of control by significant others. Journal of Learning Disabilities, 22, 225-256.
- Maanum,J.L. (2009). The General Educator's Guide to Special Education (3rd ed.). Corwin Press.
- Markus, H. (1980) The self in thought and memory. In D.M. Wegner and R.R. Vallacher (Eds) The Self in Social Psychology. New York: Oxford Univ. Press.
- Mead, G. H. (1934). Mind Self, and Society. Chicago: University of Chicago Press.
- Mehta, M.(2003). Learning Disabilities in India: Willing the Mind to Learn. Retrieved from: http://www.highbeam.com/Search.aspx
- Mogasale, V.V., Patil, V.D., Patil, N.M., & Mogasale, V. (2012). Prevalence of specific learning disabilities among primary school children in a south Indian city. The Indian Journal of Paediatrics, 79, 342–347.
- Muuss, R. E. (1975). Theories of Adolescence (3rd Edition). New York: Random House.
- Neeraja,P., & Anuradha ,K.(2014). Adjustment problems faced by children with learning disabilities impact of special education. Indian Journal of Scientific Research, 5,77-81.
- Paterson,L. (2007). Stigma, social comparison and psychological distress in adults with a learning disability, Retrieved from: https://www.era.lib.ed.ac.uk/handle/1842/2630
- Patil,M.,Saraswathi.G.,& Padakannaya,P.(2009). Self-esteem and adjustment among children with reading and writing difficulties, Stud Hom ComSci, 3, 91-95. Retrieved from http://www.krepublishers.com/02journals/S-HCS/HCS-03-0-000-09-Web/HCS-03-2-.091-101-Patil-M/HCS-03-2-09-09-101-Patil-M-Tt.pdf.
- Renick, M. J., & Harter, S. (1988). Manual for the self-perception profile for learning disabled students. Denver, Co: University of Denver.
- Smith, S.L. (1994). How Not to Feel Stupid When You Know You're Not: Self-Esteem and Learning Disabilities, Summer News Letter, 1, 1.
- Smith,D.S., & Nagle,R.J. (1995). Self-perceptions and social comparisons among children with LD. Journal of Learning Disabilities, 28, 364-371.

- Taggart,L., Cousins,W., & Milner,S. (2007). Young people with learning disabilities living in state care: Their emotional, behavioural and mental health status. Child Care in Practice,13, 401-416.
- The American heritage dictionary (2016). (5th ed.). Boston, MA: Houghton Mifflin Harcourt.
- Thomas, S., Bhanutej, K., & John, S. (2003). Dealing with Dyslexia. The Week, 21, 36-42.
- WHO (2001). Mental health: new understanding, new hope. The World Health Report. Geneva, World Health Organization.
- Zyoudi,M.A.L. (2010). Differences in self-concept among students with and without

Table 1
Level of self perception of learning disabled children

Level of Self Perception(SP)	N	Percentage
High level	33	14.67%
Moderate level	170	75.56%
Low level	22	9.78%
Total	225	100%

Table 2
Level of mental health of learning disabled children

Level of Mental Health(MH)	N	Percentage
High level of MH	37	16.44%
Average/Moderate level of MH	55	68.89%
Low level of MH	33	14.67%
Total	225	100%

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

PRESENT SCENERIO OF DISTRICT PUBLIC LIBRARY JALANDHAR IN PUNJAB: A STUDY

Harpreet Kaur
Librarian
PCM S.D College for Women
Jalandhar

Abstract
Public libraries are the worldwide phenomenon. They occur in a variety of societies in different cultures and at different stages of development. An attempt has been made to assess the current status and infrastructure of District Public library, the total collection of the books, magazines and newspapers, strength of the staff and their designation. The major findings have been out and given appropriate recommendations for the further improvement of the library.

Keywords: Libraries, Public Libraries, District Public library, Jalandhar

Introduction

Library performs a vital role to enlighten the knowledge and to help the people around intellectual development. It helps to accelerate the knowledge of reader. Libraries are the backbone of community. Moreover a library requires number of peoples, financial assistance and stability for their survival infrastructure. The place of peace where the population exist none other than libraries.

Libraries itself have various purposes and aims for the community. The main purpose of the library is to create, store, process and disseminate information and knowledge at local, regional, national and international level.

Dr. S.R Ranganathan "Father of Library Science" defines the term Library as "A Library is a public institution of establishment charged with the care of a collection of Books and the duty of making them accessible to those who require use them and task of converting every person in its neighbourhood into a habitual library goes and a regular reader".

Public Libraries

Public Libraries are service institution for the public. Public libraries play an important role in man's life as a source of knowledge and information. One of the basic functions of public libraries to upgrade the knowledge of readers by books, magazines and other competitive materials for them to read and use. Public libraries are the focal point of information through learning facilities and materials for the help of general public. They are meant to provide free service or charge a nominal fee or its services without any distinction of

caste, creed, age, sex, language, nationality and status. Public libraries are developed for the long term process of learning.

"The public library, the local gateway to knowledge, provides a basic condition for lifelong learning, independent decision making and cultural development of the individual and social groups". (IFLA/UNESCO Public library manifesto, 1994)

Guru Nanak Dev District Public Library, Jalandhar

Guru Nanak Dev District public library was established by Punjab Government in 1957, Guru Nanak Dev District Public Library was located in the centre of Jalandhar city of Punjab. In the beginning, a rented building housed its collections which were located in the Model Town area of the Jalandhar City. The Library was shifted to its present location, Bhagat Namdev Chowk in 1980. It is a fountain head of knowledge where the native people come to read the books of their interests.

HISTORY OF THE PRESENT BUILDING

Present building of the library is inaugurated by Sardar Balwant Singh, then Finance Minister of Punjab Government, in 4th December, 1970. Its founder librarian was Pritam Singh Bedi. Presently Mrs. Surinder Kaur is working as a librarian from July since 2005.

The existing building has three floors situated on Government land having the area of 3.9 acre including a children park and Virsa Vihar (Government Letter No. 3364/L.S.A).

The building is airy, ventilated and circular in shape surrounded by shady trees. The main entrance of the library started with its motto **"Let noble thought come to us from every side."**

AUDITORIUM OF THE LIBRARY

There is an auditorium beside the library which was built up by the Grant worth 7.50 lakhs sanctioned by S. Kartar Singh Duggal (Then M.P of Rajya Sabha). The construction of circular-shaped auditorium was started on 10th June, 2002 and on 30th November, 2002, it was completely built up to be served within a short period of time. The purpose behind its construction was to promote education, social and cultural activities through meetings and seminars. It is having the seating capacity of 200 persons. So far it has held 49 meetings from 1st January 2018 to 31st March 2019.

Objectives of the study

- To study the current status of District Public Library Jalandhar
- To study the availability of collections
- To acertain findings and give relevant recommendations

Research Methodology

The present study is based on literature search to find out the materials relevant to the study scheduled, interview and observation methods are used to collect data for the study.

Data Analysis and Discussion

T.1 Collection of Library

S.No.	Type of Documents	Numbers
1.	Books	90861
2.	Refrence Books	5000
3.	Newspapers	10
4.	magazines	03

In the above given table the number of books much more than 90,000 whereas Ref. books are followed by general books. The number of newspaper is ten and magazines are three.

T.2 Language and mode of acquition of Magazines and Newspapers

Category	Language	Mode of Acquition
Magazines	English	Paid
Newspapers	English-2 Punjabi-3 Hindi-4 Urdu-1	Paid-6 Free-4

In the above distribution table one and only English magazine which is paid mode . Total number of newspapers is four types from different languages and there are only four free newspapers while rest of them is paid.

T.3 Development of collection from last five years

2014-15	419
2015-16	454
2016-17	1386
2017-18	1605
2018-19	1123
Total	4987

The above table shows the five years regularly circulation with development in the collection of the library books from the year 2014-19. In the year 2017-18 having the more acquition as copare to other years and the least among them was in the year 2014-15.

T.4 Strength, Designation and Qualification of Staff

Designation	Numbers	Qualification
Librarian	01	M.A, M.Lib
Lab Attendent	03	+2(two), 10^{th} (one)
Gardener	01	6th
Total	05	

The staff strength plays vital role in the smooth functioning of library. There is only librarian who is most qualified with the degree of M.A, M.Lib . Three lab attendant and it has only one gardener who is least educated.

Findings

On the basis of the data collection following findings has come into light:

- ✓ Vilgi,K.S and George, Joshi(2017). The Present scenario of the Public Libraries in the Thrissur District of Kerala. International journal of Library and Information Science. Vol.6 (1), p88-94.
- ✓ Kamble, Shivanand D. and Kumar,B.D(2018). The present scenario of Public Libraries in india:Challenges and Oppurtunities. Journal of International Academic Research Multidisciplinary.
- ✓ The library is functioning in concreted building on govt. land. It has sitting capacity of 58-60 all together.
- ✓ The current registered members of the library are 136. Membership fee is Rs.500 taken as security, a refundable amount. Each member enjoys the facility of two cards of the library.One book has been issued on one card, so each member can get issued two books for 14 days.
- ✓ RRRLF is the main support for book collection in the library. Another funding agency is DPI colleges of Punjab, which provides the grants for purchase of the books. Other source of books in the library is donors donating books from time to time.
- ✓ The library has huge collection of books whose total numbers are 90861. The books are available in four languages i.e. English, Punjabi, Hindi and Urdu. There is scarcity of Punjabi Literature. From last few years no book of Punjabi literature has been acquired in the library.
- ✓ The daily visitors of the library are approx.60.usually students appearing competitive exams are the frequent visitors. They usually bring their own study material.the basic reason to come to the library is its silent and natural environment.
- ✓ There is no quality assessment committee to check and monitor the service and collection of the library.
- ✓ Public library is lagging behind in computerization and government support and internet facility.
- ✓ It seems that the infrastrutcture of the library was being neglected by authorities. There is dust all around. Books are not properly arranged. Moreover most of books are without accession number on the cover pages. Staff crunch is the main reason behind it.

✓ There is a globe in the library, which is just for namesake because not used from last two years. If we see the infrastructure of the library there is dire need to renovate the whole building includind auditorium.

✓ Insufficient staff, lack of funds and new arrivals is the matters of great concern.

Recommendations

The following suggestions are made from the study:

✓ New editions of books should be added.

✓ Acquire multiple copies of heavily demand books.

✓ Library professional should be trained to help students use the library services.

✓ Cartographic material should be acquired

✓ Alternate arrangement for electricity such as an electric generator/inverter should be provided in the library.

✓ The library should have a suggestion box to solicit the views of persons interacting with the library.

✓ It is suggested that this library must have audio-visual section, educational and motivational cassettes for children. A regular video show may be arranged by the library. It will definitely attract the public to visit the libarary.

✓ The active participation of the readers to district public library maintains the standard of the library. The user can take the initiate by donating books, periodicles and other study materials.

✓ Public library must provide all types of information to all type of users and it should be a source of information to all its citizens.

✓ It must also give modern technological services through coputers and interner and photocopying.

✓ The extension services should be conducted to create library awareness among the people.

Conclusion

Library is a developing institution. Number of new arrival material increases the number of collection. The library usually having reading materials in abundance, beeside this there should be reference materials which have their own importance. The good library also has books, non book material etc. such material is not frequently used by the users but if it is available in the library it may be used seldom. Library without staff has no value of its own. There is only

member who comes under the category of professional while Non- professional members are four in number.

References

- Gursharan Kaur(2008).District libraries in punjab and Haryana: a comparative study(Ph.D. thesis). Patiala: Punjabi university.
- Padmalatha(2010). Performance and finaces of public libraries in chittoor district: A case study(M.Phil. dissertation). Anantpur: Sri Krishnadevaraya University.
- Christiana, E. Vasanthi(2011). Assessment and evaluation of public libraries in Kanyakumari district(Ph.D.thesis). Tamilnadu:Manomaniam Sundarangar University.
- Neha(2018).A critical study of M.M. Central State library,Patiala(Ph.D project report). Patiala:Punjabi University.
- Amritpal Kaur & Payare Lal(2018). Challenges in library automation of District libraries of of Punjab.international journal of information movement. Vol.2,p275-282.
- Rupinder Singh(2012). Status and challenges public libraries automation in Punjab.international journal of information dissemination and technology.Vol.2, p146-152.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

JAYEE RAJGURU: A HERO OF THE PAIK REVOLT OF 1804

Dr.Akhaya Kumar Mishra
Lecturer in History
Balugaon College
Balugaon,Khordha

Abstract
The Paik revolt of 1804 was a landmark in the freedom struggle of India. It was against the intricate web of conspiracy, deceit, and manipulation of colonial administration and after all in defence of country's honour. As his prime object was to protect the Independence of the state of Odisha, Jaya Krushna Rajguru, popularly known as Jayee Rajguru looked towards both the political and religious fronts. He dedicated all his time and efforts for the interest of the mother country. Before Harcourt, he proclaimed with elan that " he had caused the disturbance, that the Raja was a child and what had been done, had been done by him." This courageous statement of Jayee Rajguru speaks the volumes of his character, his honesty, integrity and commitment. For the sake of the Kingdom and for the prestige of the Gajapati he had taken all risks to his life and became the martyr.
Though there were numerous revolts occurred in India against the British, yet the Paik revolt was unique one and had its far reaching consequences because it led the foundation of the first freedom movement in Odisha soil with large scale and Jayee Rajguru was the first martyr in Indian. Hence, the Park rebellion of 1804 A.D can be regarded as the first struggle for independence against the British in the Odisha province under the courageous leadership of Jayee Rajguru. The Paik revolt took place in four phases-the first one under the leadership of Jayee Rajguru in 1804, the second one led by Buxi Jagabandhu in 1817, Madhab Chandra Rautray of Tapang led the revolt of 1827 and Sharan Singh with Krutibas Patsani led the last phase of Paik revolt of 1836.

Key Words: Paiks ,Patriotic, Courageous, Freedom, Martyr

Objectives
1. To know the causes of the resistance movement in the 19th century in Odisha.
2.To enable the students, researchers and people of Odisha about the causes of the British occupation of Odisha
3.Understand the British occupation of Puri and capture of Cuttack by the British.
4.Understand the circumstances leading to the Paik rebellion of 1804-05
5.Evaluate the causes and results of the Paik rebellion of 1804.
6.Trace about the role of Jayee Rajguru in the Paik rebellion of 1804.
7. To infuse the sense of nationalism in the minds of students and others so that they will feel pride as they are the successors of such ancestors. As a result it will help them to go ahead for the betterment of the motherland.

Born on 29th October, 1739 in a cultured Brahmin family of Bira Harekrishnapur near Puri,[1] Jayee Rajguru showed his sharpness of mind and brilliant sportsmanship in his early life. Jayee Rajguru not only displayed his mastery over martial activity but also he had good command over Shastras and Tantras[2]. He was also a wise statesman. After the death of his father Chand Rajguru, Jai Rajguru due to his versatile quality was appointed as the Rajguru and the minister in the court of Gajapati Divyasingh Deva in 1780 at the age of 41.[3] After the death of Gajapati Divyasingh Deva, his son Mukunda Deva II occupied the gaddi of Khurda with the help of Jayee Rajguru in 1798. As the king was minor, Jayee Rajguru became his regent i.e. guardian ruler in the year 1798 A.D. [4]
Khurda no more a vast kingdom 'extended Mahanadi to the border of Khimedi. It was confined only to the killa of Khurda, the paraganas of Rahang, Serai, Chabiskud and Lembai including Puri or Purusottam Kshetra. Jayee Rajguru, being the regent & religious preceptor of the king, he took up as his moral responsibility to safeguard the interest of the new king.

AS A MASTER OF MARTIAL ART:

Jayee Rajguru was not only a great scholar but also possessed superior warfare skills, and knowledge of weaponry. He had knowledge in the art of guerilla warfare too. Probably for the first time in India he used the tactics of guerilla warfare to counter the British fire power. He encouraged the development of firearms in villages and tried to popularize this experimentation by various means. He personally moved from village to village to encourage the moral strength of the Paiks (Foot soldiers) and trained the Paiks in the art of warfare. As a master warfare he organized the village youths and trained them in military practices, and making arms and ammunition. Moreover, when he became the regent of the minor king Mukunda Deva-ll and took the actual control of the state of affairs into his hands in 1798 A.D., he introduced many changes in the administrative system and uplifted the sagging morale of the Paiks and the local militia.[5]
Staying at Khurda, Jayee urged the people to protest against acts of injustice and tyranny. As a stalwart and resplendent leader, he organized Paik Akhadas in every corner of Khurda kingdom where people were given training in martial arts.[6] Due to his efforts that Paik Akhadas grew up almost in every village and an awakening was generated among the Paiks.[7] Many old Paik Akhadas were also revived and reorganized by his efforts. Today, if we see Paik Akhadas even after two hundred years in Khurda region, it was chiefly the contribution of Jayee Rajguru. Indeed, Digambar Bhuyan the Buxi of Rodhanga and Balisundar etc. were such prominent warriors and disciple of Jayee Rajguru, who extended whole-hearted support to the Paik movement led by their master, the stout—hearted General.[8]
In order to strengthen the army, strict rules were followed for recruitment. Persons with physical fit and above twenty years of age were only recruited for the purpose. The army was generally divided into three brigades, the foot soldiers (infantry), cavalry and the elephant-mounted soldiers. The total number of forces during this period was about 15,000.[9] Along with the traditional weapons, they were using fire arms and cannons also. Specially in the Sasan villages the fire arms were prepared and were used for experiment during the festive occasions. As a commemoration of that great martial tradition, the fire-works are displayed in the Sasan villages even today on the

ceremonial occasions. Over and above, the three categories of forces, Jayee Rajguru organised four more divisions namely (1) Pahadi (2) Banua (3) (Dhenkiya) and (4) Gorrilla.[10] The Pahadi division used to be deployed in hilly region and weapons like Dhala (Shield),Barchha (Spear), Khanda (Sword), Chhura (Dagger) etc. were used by them; the Banuas were proficient in fighting with the enemies from a distance by using weapons like Vajra and bombs, photakas (fire-works), haveli etc. They also used bows and arrows, Mudgar and Trisula; the Dhenkiyas, tall and well-built in appearance were engaged as bodyguards of the King and high civilian and military officials. They were also deployed at strategic locations like palace, treasury, jail etc. as security personnel; and the Gorrilla division (Chheka), constituted of heavily built men of aggressive demeanour. They were trained to fight in the forest and hilly regions with sudden attack on the enemy camps.

Jayee Rajguru took great care to make the espionage system effective. The enrolment of businessmen in the organization proved beneficial for the government as they used to carry information not only from the interior areas but also from the neighbouring states. At the time of need, they used to extend financial support to the King.[11] Since they dealt with passage of the secret information (Veda), they were called Vedua. A man known as Sambhu Bharati worked as the head of this secret spy organisation.[12]

Jayee Rajguru's anti-imperialist attitude was distinctly felt in 1797 when he received the news of the Company's approach to the Maratha Ruler, Raghuji Bhonsle for a safe passage of the English army through Odisha to Madras.[13] He smelt the conspiracy behind it and wanted to oppose the proposal. For that reason, he felt it necessary to visit Nagpur personally to prevail upon the Maratha authorities for refusing permission to the British. So, he arranged a horse for his Nagpur trip from one Somaji, a Maratha gentleman of Puri in exchange of his house site which was situated in Kundhei Benta Sahi of Puri town near Buxi Naara.[14] He also borrowed some money from one Narottam Dash for his expense during the visit to Nagpur.[15] But before reaching Nagpur, the Britishers were able to obtain permission of the Marathas. Hence he came back with disappointment, but this effort testified his commitment to save the Khurda Kingdom.

Preparation of British for Occupying Odisha

The Company had captured the entire area between the river Godavari and Chilika from the Nizam of Hyderabad in 1765 and a fort, now famous as Potagarh was built at Ganjam . [16]

Before starting the operation, the Governor General asked Colonel J. Campbell and J. Melville, Civil Commissioner for the settlement at Cuttack to open negotiations with the chieftains, who were tributary to the Marathas. This was a tactic to win over them, so that the cause of the Marathas might be weakened.

There were compelling reasons for opening negotiations with the Raja of Khurda. It was found that four-fifths of the road through which the British detachment would have to pass belonged to the Raja of Khurda. Lt. Colonel Harcourt in charge of Ganjam forces and J. Melville decided to request the Raja to provide logistic support to the British forces and three thousand fighting men for assistance in the mission of expulsion of the Marathas. It was further suggested that the Raja should be paid rupees one lakh as a quid-pro-quo for the service. The Collector of Ganjam sent the Vakil (an agent or

attorney) for the purpose to Khurda. Since, the Raja of Khurda Mukunda Deva II was very young then, Jayakrushna Rajguru was acting as the regent of the King and directing the affairs of the country. He smelt a conspiracy and ill-intention of the British. So,he warned the Raja of the danger of having an alliance with the Commander of the Company's troops and was against granting them a safe passage through Khurda. But, there were other considerations which seemed weighty at that moment. The necessity for recovery of the four valuable paraganas of Lembai, Rahanga, Serai and Chabiskud mortgaged to the Marathas by Birakeshari Deva, was a great. Accordingly, a Vakil was sent to Ganjam to carry on the negotiations. The British offered one lakh rupees on the condition that the Raja would provide every support for driving out the Marathas. Finally, it was agreed that the four Mahals and a lakh of rupees in cash should be given to the King of Khurda, provided that he should form no alliance with the Marathas. Colonel Harcourt and the Magistrate of Ganjam had consented to fulfil these conditions. It was evident that on the basis of the twin conditions, the Ruler of Khurda acceded to the proposal of the British, that (i) the British would pay rupees one lakh and (ii) they would transfer the four parganas of Rahanga, Limbai, Serai and Chabiskud of Purusottam Kshetra after the occupation of Cuttack. The British in their anxiety to gain the support of the King of Khurda agreed not only to restore those parganas to him but also to pay rupees one lakh in cash inaddition to it.

The British forces under Lt. Colonel Campbell began its march from Ganjam on 8th September, 1803. But on the way only after three days, Campbell was replaced by Lt. Colonel Harcourt due to illness. Harcourt was accompanied by a civil officer, John Melville for organizing the settlement after the occupation of Cuttack. They reached Mithakua on 13th September. Manikpatna was captured on 14th September. Harcourt then marched to Narasimha Patna from where they proceeded towards Puri. He faced no opposition from the Marathas on the way and took possession of Puri on 18th September, 1803 without any fighting or bloodshed.

Then the British forces proceeded to Cuttack through Batagaon, Dandamukundapur and Pipili and captured the fort of Barabati on 14th October, 1803.[17]. According to the agreement, a sum of rupees ten thousand out of the promised one lakh of rupees was paid to Mukund Deva II.[18] Finally on 17th December 1803, the treaty of Deogaon was signed by which the Bhonsle Raja ceded to the Company the coastal belt which was mentioned as the province of Cuttack in the treaty.[19]

Disappointment of the Raja of Khurda

According to the agreement, the Raja of Khurda expected the restoration of the parganas of Limbai, Rahang, Serai and Chabiskud, which had come under British control after the occupation of the province. But, just after the capture of Barabati fort and the fall of Marathas did not return these paraganas. Instead, the British administration issued circulars to all the Rulers and chieftains of the smaller states and zamindars asking them to acknowledge the British authority and to pay a fixed amount of tribute as a mark of their subordination. There was no mention of the independent status of Khurda or the restoration of the parganas as promised earlier. So the Raja became very upset.

The Commissioners in their correspondence of 29th November, 1803 requested the Raja of Khurda to send his Vakil (Agent) in connection with the execution of the treaty

agreement.[20] But, the Raja did not respond. Again, the Commissioners a letter on 16th December, 1803 to execute the agreement and return the papers after signature. But, Mukunda Deva II preferred to keep mum. Now the Commissioners applying different tactics despatched a letter to Govind Ray Mahasay, the Kanungo (Revenue officer) asking him to meet the Raja and to persuade him-to come out of the clutches of Jayee Rajguru.

They also tried to entice the Raja by offering that a sum of rupees fifty thousand had been deposited in his favour and that, he would get it, only if he would remove his ill-advisor. The Raja was also asked to return the papers of agreement in case, he did not want to sign them. Side by side, a note of warning was issued that the Raja would incur the displeasure of the British government for such recalcitrant attitude.

When all the tactics failed, the Company's administration in a fresh bid in their letter of 20th February, 1804 again asked the King to come out of the clutches of the ill-adviser and to send Jayee Rajguru to Cuttack with an assurance that he (Jayee Rajguru) would not be treated badly. On the same date, they wrote another letter to Jayee Rajguru asking him to meet them for consultation on the private affairs of the Raja. He was assured of fair treatment.

But, Jayee Rajguru could not reconcile to the changed stand taken by the British. He proceeded to Cuttack on 11th March, 1804 with two thousand armed soldiers and met Lt. Colonel Harcourt there. He submitted a petition to him requesting for the restoration of the parganas. He also requested for payment of the balance of the agreed amount. Further, he also appealed for the reduction of the annual peshkash. But, the British refused flatly to return these parganas and rejected the request for reduction in the peshkash. As regards money, he agreed to pay a further sum of forty thousand rupees. It was paid to Jayee Rajguru there. The rest was promised to be paid at some future date. Rajguru returned to Khurda with disappointment and narrated the attitudes of British authority. Mukunda Deva II was totally bewildered at this news of the British attitude towards him. The money amounting to forty thousand rupees which Jayee Rajguru received was spent on the salary of the troops in his (Jayee Rajguru's) service.[21]

In a state of despondency and anger, the King, therefore, defaulted in payment of his annual peshkash (tribute). On the other hand to curb the influence of Jayee Rajguru over the young Raja, the British sent Golan Amin to Khurda with a directive to the Raja to appoint him as his adviser.[22] However, Jayee Raj guru advised to the Raja not to obey the orders of the British and prepared himself to fight against the British.

Confrontation with the alien power became imminent. The valiant people of Khurda Kingdom lost their patience to tolerate this kind of perfidy any more. It was but natural that the King of Khurda became terribly vexed with the British approach. The betrayal also infuriated Jayee Rajguru, who was determined to give a dogged resistance to the British. A man of conviction and indomitable courage, Jayee Rajguru now seized the situation and made all out preparations to meet the impending show-down.

Resistance to British expansion

Though the native forces were no match for the enemy, yet the indomitable will of Jayee Rajguru inspired and emboldened the people and the paikas to join the fray. As an astute

diplomat, he rightly realized that it would be very difficult to fight singlehandedly against the mighty British. So, he opened negotiations with the Raja of Berar to make a common cause with the Marathas against the colonial forces. However, Raghuji Bhonsle was sympathetic to the cause of Khurda. The services of Antaji Nayak, an officer of the Nagpur government stationed at Raipur had been utilized and he met the Raja of Khurda for-the purpose, Negotiations seemed to be successful. The existence of some understanding between the Raja of Khurda and the Raja of Berar for a common cause was beyond doubt. This was also confirmed by the Zamindar of Raigarh and by Elphinstone, the Resident of Nagpur. However, by the pre-emptive action of the British, the Raja of Khurda could not get any help.[23]

The King also had opened the channels of communication with other tributary chiefs of Odisha exhorting them to unite in common cause with him against the British. Sambhu Bharati, an influential gosain (a religious mendicant in the eyes of the British), who was disaffected with new British revenue system, was engaged by the Raja for this purpose.[24] In reality, Sambhu Bharati was the head of the espionage outfit, who was entrusted with the secret task of negotiating with the native states on behalf of the Khurda administration. The Rulers of Kanika and Kujang readily accepted the proposal and made a common cause with the Raja of Khurda against the British. The Zamindars of Bishnupur, Harishpur, Marichpur etc. also joined the confederacy.

Jayee Rajguru took steps for the organization of the militia and kept them in readiness for the possible fight with the British. The war strategy was formulated with the help of Jagannath Harichandan, the UttarKabata (a title conferred on the basis of strength and skill) of Khurdagarh, Ramakrushna Mangaraj of Khurda, Bauribandhu Harichandan, the Behera Pradhan of Baghei Tangi etc.[25] Baghei Tangi was made the rendezvous, where these people used to meet and took all out efforts to mobilize the paikas and the landed gentries of the Kingdom under the leadership of Jayee Rajguru to protect Khurda from the clutches of the imperialist menace. During the period, the Behéra Pradhan of Padanpur, the Bisoi of Haridamada garh, the Samantarai family of Mendhasala etc. who were comparatively rich people threw-in their lot with the nationalists.[26] The Dalabeheras of Gangapada, Jamukholi, Rameswar, Panchangara, Haladia and Harirajpur, Samanta of Khurkhi garh, the Samantaray of Khudupur, the business and trading community of Khurda etc. extended their wholehearted support and cooperation to the nationalist cause. Within a very short period, Jayee Rajguru was able to chalk-out the strategy for the inevitable anti-British hostility.

As a part of the strategy, it was decided to divide the forces into two groups. A large contingent was deployed at Gangapada to resist the British forces and the other to resort to guerilla warfare to protect the fort from the hands of the British forces. At this critical juncture, the Paikray of Kural, who was known as Kandha Raja offered his services to participate personally in the war and to send trained soldiers adept in guerilla warfare (Chheka).[27]

After making elaborate preparation for the war at Khurda, Jayee Rajguru, then rushed to Puri to take necessary steps for the protection of Jagannath temple from the clutches of the foreigners in case of an eventual war. There, he convened a meeting of the Sahi-Nayaks (headmen of different residential units) and asked them to take necessary precautions in the matter. The duty of protection of the temple was entrusted with

"Chhatisha-Niyog Nayak Pattajoshi Mahapatra", who shouldered the responsibility with the help of five Sahi-Nayaks. Guards were posted at the main entrance of Puri. The eastern frontier was guarded by the forces of Balisundara. After performing the necessary majana (invocation to God for help and protection) in the temple, a small contingent of forces undertook a symbolic march from the temple and on the way took rest at a place in the grand road, which became known as "Majana-Chhauni Jaga". Jayee Rajguru also made necessary arrangements for the collection of provisions for the Khurda army.

Jayee Rajguru, then undertook the last minute preparation for the final act. He increased the deployment of troops at different points and appointed some Maratha sardars to train and increase the competence level of the paikas. The internal defence of the country was improved by repairing the roads and stationing troops at strategic places like Dampara and Banapur. Troops were deployed at Delanga in the east, Taratua in the west and Gangapada in the north as the first line of defence against the attack on the fort.[28] Two hundred soldiers were also stationed at the gate of Khurda and they were reinforced by an additional three hundred guards and two pieces of cannon. Lastly, the Raja of Khurda withdrew his Vakil from Cuttack.

When Such preparation by Jayee came to the notice of the British, Harcourt was afraid that the example of Khurda might be followed by the other tributary Rulers. So, he took all possible steps to thwart the efforts of the Rajas of Kanika, Kujang and Khurda for a combined action against them. Accordigly, as a precautionary measure against the possible unity of the tributary chiefs behind the cause of the Raja of Khurda, Harcourt imprisoned Sambhu Bharati who carried messages on behalf of the Raja of Khurda from one tributary state to another.[29]

Harcourt also demanded the removal of Jayee Rajguru from the office. A messenger was sent in advance to request the Raja to receive Blunt, an officer of British. On the following day, the Rajguru informed the messenger that the Raja had changed his mind and accordingly the messenger was ordered to leave Khurda immediately and was threatened with dire consequences in case he attempted to stay any longer. So the messenger left Khurda for Cuttack and the negotiation between Raja and British was failed forever.

Assertion of authority

Jayee Rajguru was much enraged after the futile meeting with Harcourt at Cuttack and the Company's perfidious attitude. Mukunda Deva II was also by then, determined to assert his right by force. Soon after, Jayee Rajguru mobilised the troops to those four mahals (Limbai, Rahanga, Serai and Chabiskud) in defiance of the British authority. In these mahals, the troops of Rajguru fought and skirmished with the Company's force, who were stationed there.[30] In March, 1804 Mukunda Deva II, the Raja of Khurda had sent a parawana to Morar Pandit, the Tehesildar of Chabiskud to supply two thousand coolies and carpenters for the construction of the cars of Lord Jagannath. He had even threatened him that he would procure them by force, if not voluntarily supplied. In July 1804, Mukunda Deva II appointed Achyuta Barik as Maquaddam to collect rents from Batagaon village near Pipili. In September, he sent Dharamu Harichandan to collect revenue from the villages of Barapada, Kharad and Matiapara. In the process, the

collection of two hundred and fifty Kahans of cowries was actually made. In the same month also, Khurda administration sent a letter to Morar Pandit demanding the supply of sheep and goats from the parganas of Rahanga, Serai and Chabiskud. In October, 1804, the Raja 's troops conducted a raid on the villages in the vicinity of Pipili and carried off all the cattle and other movable property.

The British could no longer remain as a passive spectator to all these activities of the Khurda administration. The action of Mukunda Deva II was strongly objected by the British.

On being sought instruction by the Collector of Puri about the settlement, the Commissioners in their letter of 10th November, 1804 directed Hunter (the Collector of Puri) to make settlement of the parganas of Rahanga, Limbai, Serai and Chabiskud and Purusottam (the area claimed by the Raja of Khurda) directly with the Padhans and Bhois.[31] The Commissioners again in their letter of 3rd December, 1804 informed the Khandaits and Watandars of Kotdesh that they should provide paikas and dandawasir to the dakrunners who were being harassed by the Raja.[32]

In the meantime, the victory against Maratha confederacy encouraged the British. Harcourt, then with added vigour decided to settle the issue with Khurda decisively. The Commissioners in their proclamation of 7th December, 1804 declared that the Raja Mukunda Deva II had been deposed owing to his ill treatment towards the British government with effect from 5th December, 1804. All the subjects were required to submit to the British government and carry out their orders. Further, in another proclamation of 7th December, 1804 addressed to the subjects, Zamindars and Sarbarakars, the Commissioners declared all the debts contracted by the Raja as illegal. They also directed Morar Pandit, the head Parichha of Jagannath temple, not to invoke the name of the Raja at the time of the worship of Lord Jagannath as he was the greatest foe of the British government.

As a subsequent action, the Dalbeheras of Rameshwar and Panchgarh the Khandaits of Mendhasal, the Khandaits and the Zamindars of Garh Haldia and Damodar Pattanaik, the rebel leader of Dandimahal were forced not to help the Raja of Khurda. [33]

Final Battle at Barunei

Jayee Rajguru was at Puri when he got the news of the deposition of the Raja. Though he became agitated initially, he was by then mentally prepared for the final show of strength with the British. After being informed of this unfortunate development of the deposition of the Ruler, he hurried back to Khurda with a small detachment of "Majana paikas" accompanied with Pattajoshi Khurshana Chandra. On the way, he met with the British forces stationed at Pipili. A fierce battle was fought at Dandamukundapur village and consequently there was large number of casualties of British forces and seizure of vast quantity of arms and ammunition. After the initial success, Jayee Rajguru reached Barunei Gada through Gada Beguniapada. There, he gave a final touch to the preparation for the impending confrontation. The Raja felt jittery at that critical moment and remained confined to the fort. Jayee Rajguru alone took up the responsibilities and forged ahead to challenge the British forces.

Restrictions were imposed on the entry of the outsiders into the territory of Khurda by deploying guards on the banks of the river Mahanadi who attempted to seize all goods

and properties coming from Cuttack. The King ordered that nothing belonging to the British would pass through it.[34] A company of two hundred fifty Cavalry and nine hundred Barkandazes were sent to the Charmahal area (four parganas of Rahanga, Limbai, Serai and Chabiskud) for the maintenance of law and order to the greatest dissatisfaction of the British. They also disarmed a small detachment there in the service of the Company. After that, they posted themselves in and near the village Delang.

British retaliation was prompt. Their plan was to demolish the Raja 's concentration at Delang. So, Hunter and Harcourt with a contingent of troops marched towards Delang and camped in the vicinity. Further on being instructed, John Hickland (Captain, 5th Bengal Native Infantry) who was posted at Pipili, marched with reinforcements of one hundred twenty Sepoys and a six pounder at the dead of the night and reached Delang at 5 O' clock in the morning of 22nd November, 1804. Soon after, in a pre-dawn swoop on the fort near the village, they almost routed the Rajah forces and more than one hundred casualties were reported. The British loss was minimal. But while returning to Pipili, they were obstructed on the way by about fifty cavalry from the near-by hills. A fierce encounter took place. The local paikas fought valiantly causing the retreat of the British soldiers. They were forced to take shelter at Pautpur.

Another contingent of the British force under the command of Major Fletcher proceeded towards village Tangiapara. A small detachment of the Raja under the command of Mustafa Khan of Kerang was deployed to oppose the British advance and a pitched in-conclusive battle was fought.[35] The nature of the country rendered speedy communication and rapid concentration impossible.

Then, Harcourt with a contingent moved from Cuttack and confronted with the Raja 's forces on the way, who were trying to take control of the adjacent Mughalbandi area. Scuffle broke out between them, the Raja's forces retreated and took shelter in the fort of Khurda. Harcourt chased them and reached near the fort.

A detachment was also sent under Captain Storey to Gangapara village which was reported to have been blocked by bamboos, trees etc. and sentries were posted on the strategic points. When, the British detachment came nearer, the sentries opened fire.[36] Baishnab Bharati, one of the able Commanders of the Raja and Mustafa Khan, gave a stout resistance to the British advance. There was a large scale casualty of the British soldiers. In the meantime, reinforcements from Bengal reached and the superior skill and weaponry of the British forces weighed heavily on the local militia. As a result the paika contingents posted at different strategic locations shattered and the Company's troops forged ahead towards the fort of Khurda. At that time Harcourt issued a proclamation that whoever protected and promoted British interests would be suitably rewarded. Seikh Wyaz Muhammad, a resident of Cuttack offered his services for the same. He was appointed as the Amil of the pargana Banpur.

Major Fletcher with a command of one hundred and twenty men of Madras European regiment and two companies of the 7th Bengal Native Infantry along with an artillery regiment and two more companies of the 19th Madras Infantry surged ahead with operation. They were stoutly resisted by the forces of Khurda and could not make rapid strides because of the sustained opposition. There was heavy casualty of British forces as they were subjected to attack with bows and arrows from above. But after a particular point, it became impossible on the part of the paikas to persist. A fierce fighting

continued for a period of three days near the fort. At last the fort of Khurda was besieged and the brothers and one son of Mukunda Deva II were taken captive.[37] The combined forces of Khurda and other allied states could not withstand the pressure of the British army. The nephew of Major Fletcher was killed in the encounter.[38] Finally, the outer wall of the fort was broken open by heavy mortar firing. Major Fletcher and others with the help of a ladder succeeded in climbing the wall and entered inside the fort. After an intense confrontation, the fort was captured. But, Mukunda Deva II sneaked out with his family and other trusted lieutenants and "took the road into the jungles".[39] Then whole of his (Mukunda Deva II) property and possessions was plundered.[40] But, Jayee Rajguru resisted the British forces inside the fort bravely. He practised severe austerity and homo torture by way of invoking Goddess Barunei. But, that did not fructify and after twenty three days of seizure Khurda garh came under the control of the British.[41] Finally, Jayee Rajguru was overpowered and captured.[42] Along with him also Digambar Bhuyan and the Buxi of Talamala were arrested from the vicinity of the temple.

Capture of the Raja of Khurda

After escaping from fort, the King along with his trusted followers camped secretly for sometime at the mansion of Bishnu Charan Paikray, a loyal Samanta (commander) of Khudpur. It is known from Sadasiba Rath Sharma's book, 'Jayee Rajguru'(1955)that Jayee Rajguru had made all arrangements to send the King to Gangamata Matha at Puri. The King of Khurda, Mukunda Deva II in fact had escaped to Gangamata Matha, Puri and stayed there in disguise to avoid capture by the British. After staying there some days, Mukunda Deva II escaped to the jungle. But, Fateh Muhammed, a servant of the Company treacherously informed the hide-out of the Raja. As a result, the king was arrested in the jungle, thirty miles away from Khurda on the night of 3rd January, 1805.[43] Raja Mukunda Deva II and Jayee Rajguru, were at first kept in confinement at Khurda. But, there was severe public reaction and unrest against this action of the British Government. Then, they were sent to Barabati Fort in Cuttack and afterwards Jayee was shifted to Medinapore.

With the defeat and capture of the Raja of Khurda, the Zamindars of Marichpur, Harishpur and Bishenpur had lost their morale to withstand the British pressure.[44] Raja of Kujang, Chandradhwaja Sendha, Raja of Kanika, Balabhadra Bhanja, were arrested in May, 1805.[45] So, the paik revolt was suppressed.

Execution of Jayee Rajguru

As the mastermind behind the Paik revolt of 1804, Jayee Rajguru was treated as the arch-enemy of the British. On being presented before Harcourt, he proclaimed with elan that " he had caused the disturbance, that the Raja was a child and what had been done, had been done by him."[46] This couragious statement of the person speaks volumes of his character, his honesty, integrity and commitment. What he did, was for the sake of the Kingdom and for the prestige of the Gajapati dynasty of Khurda. He did it at all risks to his life.[47]

The British had taken stringent action against Jayee Rajguru. He was taken off to the far off Midnapore for the so-called trial for committing offence against the British

Government. The trial conducted at a place called Baghitota in Midnapore.[48] On the basis of the averment of Mukunda Deva II and by his own assertion, Jayee Rajguru was convicted and was ordered to be hanged to death.[49] Thus on 6th December 1806 at Baghitota (i.e. Baghi -grove) of Midnapur, the two legs of Jayee Rajguru were tied to two separate and opposite branches of a Banyan tree and the branches were let off splitting his body into two parts. Thus, he was made First Martyr of Odisha in a brutal manner.

Conclusion

From the above discussion it is known that the Paik revolt of 1804 was the first freedom struggle in the province which inspired and encouraged the paiks of Odisha to raise their revolt in subsequent years like 1817, 1827 and 1836. Therefore the Paik revolt of 1804 cannot be ignored. It should be included in the main Paik Revolt of 1817 led by Buxi Jagabandhu,. As a scholar If we evaluate on him, Jayee Rajguru was no doubt a man of fearless spirit and indomitable courage in the colonial era of India. The only object of his adoration and worship was his motherland for whose liberation he considered no sacrifice too great. He had remained bachelor all his life for the cause of his motherland. His incessant fight against the mighty British regime had a brutally end. The word 'defeat' did not touch him till his last. In spite of the failure in the revolt, he remained Jayee – the victorious both during his life and after death. The supreme sacrifice of him is still cherished with great reverence by millions of his countrymen. Not only the people of Odisha, but also the whole lndian sub-continent had already tested the patriotic zeal of Jayee Rajguru in the "Battle of Barunei" fought against the British in the first week of December 1804. Thus, his hold of patriotic flag is flying high even today after two hundred years in the annals of the history of Indian Freedom Movement. Really he is an unforgettable hero of Paik Revolt. Being an Odia, I am proud of him. But it is a regretful thing that though we are well known about contribution of Jayee Rajguru towards freedom struggle, still then we are reluctant to accept the Paik revolt of 1804 as a part of 1817 revolt. In this regard I request our state and central government as well as people of Odisha to accept the revolt of 1804 as a part of the Great Paik revolt of 1817 and give equal importance as Buxi Jagabandhu is given.

Reference

1.Prahallad Chandra Naik, Date of 'birth' of Jayee Rajguru in Jatadhari Mishra, Odisara Pratham Saheed Jayee Rajguru (Puri, 2002), p. 65.
P.C Naik, a physicist has calculated the birth date (29th October, 1739) of Jayee Rajguru by following the principle propounded by Robert Swell and Sankar Balakrushna Dikshit.
2.R.C.Misro, Jayee Rajguru: The Unparallel Freedom Fighter of Khurda Paik Rebellion (1804 A D) in the Odisha Province - A Study,Historical Research Journal,(Vol.LVI No.3&4,Bhubaneswar,2017,p.2
3. Bijay Chandra Rath, 'Jayee Rajguru and Anti-colonial Resistance in Khurda', Bhubaneswar, 2017,P.61
4.Narayan Rao, 'Jayee Rajguru-Aprofile of a great patriot of Odisha',Gopabandhu Sahitya Mandira,Cuttack,p.27.Bijay Chandra Rath, 'Jayee Rajguru and Anti-colonial Resistance in Khurda', Bhubaneswar,2017,P.63
5.R.C.Misro,Orissa Historical Research Journal,(ed)Vol.LVI No.3&4,Bhubaneswar,2017,p.3 & 4.
6.T. Mohanty, "Jayee Rajguru (1739-1805)", in : Orissa Review, vol. LIX, no.1, August 2002, p.27.
7.Utkala Prasanga (in Odia), vol. 54, no.1, August 1997, p.67.
8.Sadasiba Rath Sharma, 'Jayee Rajguru' Cuttack,1955,P.5
9. Jatadhari Mishra, Odisara Pratham Saheed Jayee Rajguru (Puri, 2002), p. 65.

10.Jatadhari Mishra, Odisara Pratham Saheed Jayee Rajguru (Puri, 2002), p. 26.
11.Jatadhari Mishra, Odisara Pratham Saheed Jayee Rajguru (Puri, 2002), p. 28.
12.ibid.
13.Sadasiba Rath Sharma, 'Jayee Rajguru' Cuttack,1955,P.8
14.ibid.
15.ibid.
16. Bijay Chandra Rath, 'Jayee Rajguru and Anti-colonial Resistance in Khurda', Bhubaneswar, 2017,P.77
17. Bijay Chandra Rath, 'Jayee Rajguru and Anti-colonial Resistance in Khurda', Bhubaneswar, 2017,P.84
18.G. Harcourt and J. Melville to Government, 1 October, 1804.
19. Bijay Chandra Rath, 'Jayee Rajguru and Anti-colonial Resistance in Khurda', Bhubaneswar, 2017,P.84
20.H.K. Mahtab & S.C De (ed.),History of the freedom movement in Orissa, Vol.I, op.cit, p. 73.
21.'Petition of the Raja of Kharda to British Government for mercy', op. cit, OSA.
22.Monalisa Jena, "Jayi Rajguru : A Profile of Courage", in : Orissa Review, vol. 1.1V, no.1. August 1997. p.41.
23. Harcourt to Shawe, 19 September, 1804, Add. Mss 13610, p. 64.
Same to same, 6 October, 1804, Add. Mss. 13610, p. 82, Same to same, 1 November, 1804, Add. Mss, 13610,p. 114.
24. Harcourt to Shawe, 6 October, 1804. Add. Mss, 13610, pp 80-81.
25. Sadasiba Rath Sharma, Jayee Rajguru (Odia), Cuttack, 1955, p. 11.
26.ibid.
27. ibid
28.ibid.
29.Harcourt to Shawe, 6 October, 1804, Add. Mss, 13610, p. 81.
30.Petition of the Raja of Khurda to British Government for mercy.OSA
31.J. Hunter to G. Hartwell, 12 September, 1804. Board of Revenue Archives, Vol. II.
32.ibid.
33. Sadasiba Rath Sharma, op. cit. p.16.
34. G. Harcourt to Captain Armstrong 20 November, 1804 (encl) Bengal Secret and Political Consultations, 4 April,1805, No. 27.
35. P. K Pattnaik, op cit, p. 134.
36. Storey to Harcourt, 2 December, 1804. Bengal Secret and Political Consultations. 4 April, 1805; No. 31. (B.C. Ray, op cit, p 64).
37.Encl: lmpey to Government, 21, October, 1815 . Bengal Criminal Judicial Consultations L.P, 31 October, 1815, No.18. (B.C. Ray, op. cit, p. 66.)
38.P.K. Pattanaik, op. cit, p. 135.
39.Petition of the Raja of Khurda to the British Government for mercy (A true translation) Accession No. 296, Board of Revenue Proceedings. Judicial. Odisha State Archives, Bhubaneswar.
40.ibid.
41.Sadasiba Rath Sharma, op cit, p. 25.
42.Surendra Kumar Mishra, Aaitihasika Pattabhumire Saheed Jayee Rajguru, Saheed Jayee Rajguru Sandarbha Samhhar (Puri, 2000), p. 52.
43. (i) Harcourt to Government, 4 January, 1805. Bengal Secret and Political Consultations, 4 April, No. 40.
(ii) Turner to Government. 10 October, 1806. Board's Collections, Vol. 318, 7244, p.6. (Quoted from B.C. Ray, op.cit, p. 68).
44. Harcourt to Government, 29 January, 1805. Bengal Secret and Political Consultations, 2 May, 1805 , No. 448. (Quoted from B.C. Ray, p. 69).
45. S.C. De (ed.),Guide to Orissan Records, vol. II,Orissa State Archives,Bhubaneswar, 1961,p. XI.
46.Chakradhar Mahapatra, Jayee Rajguru in Banaphula (Odia monthly), February, 1971, p. 65.
47.H.K. Mahtab and S.C. De (ed.) History of freedom movement in Orissa, Vol. 1, op. cit, p. 79.
48.Chakradhar Mahapatra, Banaphula, op. cit, p. 65.
49.A.B. Mohanty, Madala Panji. op. cit, p. 82.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

PRELIMINARY PHYTOCHEMICAL ANALYSIS OF MORINDA CITRIFOLIA L

Hiba Habeeb, M.Phil Botany,University of Calicut, Theniphalam, Kerala
Dr. Anjana S. Assistant Professor, Government College, Madappally, Vatakara, Kozhikode

Abstract

Plants have bioactive compounds which are used for curing various human diseases with an important role in healing. Phytochemicals have two categories namely primary and secondary constituents. Primary constituents have chlorophyll, proteins sugar and amino acids. Secondary constituents contain terpenoids and alkaloids.
Preliminary screening of phytochemicals is an essential step, in the detection of the bioactive compounds present in plants that may lead to drug discovery and development. In the present study, chief phytoconstituents of MorindacitrifoliaL.of Rubiaceae were identified.
In this study the presence of phytochemicals like alkaloids, saponins, phytoserols, flanoids and phenols that are made useful in pharmaceutical industries.

Keywords: Preliminary, screening, phytochemical, Rubiaceae, leaf extracts , Morindacitrifolia.

Introduction

India is known for its rich diversity of medicinal plants and From ancient times these plants were utilized as therapeutic agents. Today's research is mainly focused on medicinal plants because the bioactive compounds and medicinal power mainly depends on phytochemical constituents that have great pharmacological significance. Phytochemical constituents are classified into two major groups such as primary constituents and secondary constituents etc. The former includes amino acids, sugars, proteins, chlorophyll etc. while latter includes alkaloids, essential oils, flavonoids, tannins, glycosides, terpenoids, saponins and phenolic compounds.

All secondary metabolites have specific functions-like Saponins have antifungal activity, Alkaloids are useful against HIV infection, Flavonoids have strong anticancer activity and Tannins have antimicrobial activity.

Noni also known as Indian mulberry with the botanical name Morindacitrifolia.It has been used as nutritional food supplement and as

medicinal plant worldwide from ages. In Ancient Ayurveda is cited as 'Ashyuka', which in Sanskrit means 'longevity'.

Noni has its distribution from Indo- Malaysia to Australia. It is an evergreen shrub or small tree of 3-8m tall, with simple opposite leaves. It possesses large stipules between nodes and internodes, which is a unique characteristic of members of Rubiaceae. It bears bisexual flowers arranged in globose heads, opposite to normally developed leaves. The Noni fruit is oval and fleshy with an embossed appearance. It is slightly wrinkled, semi translucent and ranges in color from green to yellow to almost white at the time of picking. The ripe fruit exhales a strong butyric acid like rancid smell. The seeds of such a fruit have hard albumen and distinct air chambers. Noni can tolerate very acidic, infertile, alkaline soil.

Taxonomical classification of MorindacitrifoliaL.

Kingdom	Planteae
Division	Magnoliophyta
Class	Magnoliopsida(dicot)
Order	Rubiales
Family	Rubiaceae
Genus	Morinda
Species	citrifolia

Various components were identified in noni plant with the help of advanced experimental methods. Medicinal properties of noni are well portrayed in ancient literature. Polynesia traditional healers used noni for treating cuts, bruises and wounds. Unripe fruit is used for mouth sores, gingivitis, toothaches and abscesses. Indian mulberry fruit is used in the treatment of various health problems such as high blood pressure, arthritis, ulcers, depression, sprains, menstrual cramps, pain relief, inflammation, burns, fever, food poisoning, intestinal worms and joint problems. Its root is used as dye and helps in lowering blood pressure and cholesterol. Its decoction of bark is effective against jaundice, (Yanine C, 2006). In traditional plant based medicines, the flower, fruit, leaves, bark and roots of Morindacitrifoliahave all been used for diverse medicinal purposes.

Noni leaves have greater importance than other parts. It reduces inflammation and has been typically used for arthritis. It is also known to invigorate the blood and speeds the healing of wounds and strengthens bones. Hawaiians and other island communities traditionally prescribed noni leaves to ease skin inflammation and heal bruises and sprains. Noni leaves act as an inevitable source of essential and conditional amino

acids. An ethnobotanical study on Noni reveals that fresh preparation of leaves is used to wrap and flavor meat for cooking, as livestock fodder and silkworm food.

About 160 phytochemical compounds have been already identified from noni plant and the major ones are phenolic compounds, organic acids and alkaloids. Phenolic compounds include anthraquinones and also Aucubin, Asperuloside and Scopoletin (Wang and Su, 2001). Organic acids include caproic and caprylic acid (Dittmar,1993) while alkaloids include xeronine. Vitamins were also reported such as Ascorbic acid (Morton,1992. Shivolk and Whistler, 2001) and Provitamin A (Dixon et al, 1999).

M. citrifolia contains phytochemicals that own antibacterial, antiviral, antifungal, analgesic, antitumor, hypotensive, anti-inflammatory and immune enhancing powers. Its fruit is most valuable in numerous applications such as poultice on wounds, boils, pimples; as a purgative; as a blood purifier; in the treatment of tuberculosis, diabetes, heart ailments and high blood pressure. In addition, its immunostimulant potential has led to its use in the prevention of AIDS, prevention of Epstein-Barr virus activation and as an anti- cancer agent. This makes noni popular as a dietary supplement, a food functional ingredient or as a natural enhancer throughout the world. Modern industries use it as green insecticidal as well as chemical reagents.

In this project the phytochemical constituents of leaf extracts of Morindacitrifolia are identified through preliminary phytochemical screening techniques.

Review of Literature

Selviet al (2011) conducted a study to investigate the phytoconstituents, acute oral toxicity and anti-ulcer profile of the ethanol extract of Morindacitrifolia leaf extract in albino rats.Ethanol extract gave positive results for the alkaloids, reducing sugars, triterpenoids, and flavonoids. This indicated the ethnomedical use of plant in treating gastric ulcer.

Karimullaet al (2011) conducted a study to evaluate the anti-diarrhoeal effects of ethanolic (90%) extract of leaves of MorindacitrifoliaL. against castor oil-induced-diarrhoea model in rats, substantiated the folklore claim as an anti-diarrheal agent.

Devi et al (2013) conducted a preliminary screening for antimicrobial and antihelmintic activity in the petroleum ether and alcoholic extract of the stem of Morindacitrifolia. The alcoholic extract exhibited significant anti-bacterial and antifungal activity, comparable to the standard drug tetracycline. The alcoholic extract produced more significant. Antihelmintic activity than petroleum ether

extract and the activities were comparable to the reference drug piperazine citrate.

Arunaet al (2013) performed a study on Morindacitrifolia to illustrate its potential therapeutic effects such as antibacterial, antiviral,immune enhancing effects etc.The review mainly focuses on its phytochemical, ethnobotanical and pharmacological uses.

Zoleta, et al (2014) conducted a study to determine the effect of Morindacitrifolia on blood glucose level in mice which were induced with alloxan. The study reported a minimal hypoglycemic activity in Noni extracts.

Wang et al (2002) conducted a study to reveal the nutritional and medicinal value of noni plant and to summarize scientific evidence along with the recent advances in Noni research.

Srikanthet al (2009) conducted a study to investigate the antiulcer activity of ethyl acetate extract of the fruits of Morindacitrifolia using different models of gastric and duodenal ulceration in rats. The ulcer index in the M. citrifolia treated animals was found to be significantly less in all the models compared to standard drug treated cases. The results suggest that Noni possesses significant antiulcer property which could be due to cytoprotective action of the drug.

Serafiniet al (2011) conducted a study to investigate the antioxidant, anti-inflammatory, nociceptive behavior, and antibacterial properties of the aqueous extract from M.citrifolialeaves. Antioxidant activity was observed against lipid peroxidation, nitric oxide, and hydroxyl radicals while nociceptive effect was observed in the acetic acid–induced writhing test at the higher dose.

Sultan Ahmad et al(2012) conducted a study on cancer preventive effect of Morindacitrifolia fruit juice against the AflatoxinB1-induced genotoxicity in human peripheral lymphocytes in vitro.They used chromosomal aberration (CA), sister chromatid exchange (SCE) and cell cycle kinetics (CCK).The results suggest that Noni Juice act as a potent anti carcinogen that may contribute to the cancer prevention.

West et al (2012) conducted a study to evaluate the antibacterial activity of Iridoids in Morindacitrifolia fruits. An iridoid rich extract from noni fruits was prepared and incubated with cultures of Candida albicans, Escherichia coli and Staphylococcus aureus. The results suggest that deacetylasperulosidic acid and asperulosidic acid, the major phytochemical constituents of Noni fruit, possess antibacterial activity.

Kakadet al (2015) conducted a study to evaluate phytochemical, antibacterial and antifungal activities of leaf extract of Morindacitrifolia. The antibacterial activity was tested against gram positive bacteria Bacillus subtilis, Escherichia coli, Pseudomonas fluroscence and Salmonella typhi using disc diffusion method. The antifungal activity was tested against Aspergillusniger, Candida albicans and Daedaleaflavida. Methanol extract showed highest zone of

inhibition against B. subtilis and A. niger. The leaf extract showed the presence of phytochemicals such as tannin, phenol, alkaloid, flavonoids, glycosides, steroids and terpenoids.

Nagalingamet al (2012)conducted a study to investigate the phytochemical screening of three different extract of Morindacitrifolia.The crude extracts obtained from the fruit of Noni in different solvents ethanol, methanol and aqueous extract were subjected to phytochemical study. Alkaloids, saponins and reducing sugars were predominantly found in all the three tested extracts followed by steroid, phenol, tannin and terpenoids. Cardiac glycoside, carbohydrate and flavanoids were found in all the tested solvents and aqueous extract of the fruit while protein was found in aqueous and ethanol extract only and absent in methanol extract.

Materials and Methods

Collection of Plant Material

Leaves of Morindacitrifoliawere collected from Farook College, Calicut. It was identified and authenticated by Dr. K. Kishore Kumar, Assistant professor, Department of Botany, Farook College.

PREPARATION OF PLANT EXTRACTS

The leaves were washed under running tap water to remove the dust particles and were shade dried at room temperature. It was then powdered using an electrical blender and stored in sterile bottles, sealed tightly to prevent microbial attack, until use. 10g of the powder was transferred into a clean conical flask and dissolved in 100 ml each of a series of solvents successively. The powdered leaf samples were subjected to successive extraction with Petroleum Ether, Chloroform, Acetone and Water.Initially, the sample was dissolved in petroleum ether and kept in orbital shaker for 24hrs. The solutions obtained were filtered using a filter paper. The filtrate obtained was kept open for evaporation. Once the filtrate has completely evaporated, it was sealed tightly labeled and kept at 4^0C. The extracts thus obtained were used for phytochemical screening.

Phytochemical Screening of Extracts

Petroleum Ether, Chloroform, Acetone and Water extracts were used for preliminary phytochemical analyses using standard procedures.The following qualitative tests were done as follows:

1) **Test of Alkaloids**

.**Mayer's test**: The extract was treated with Mayer's reagent (Potassium mercuric iodide). The appearance of yellow colored precipitate indicates the presence of alkaloids.

Wagners's test: The extract is treated with Iodine in Potassium iodide. A reddish brown precipitate indicates the presence of alkaloids.

2) Test for Flavonoids

Alkaline reagent test: The extract was treated with Sodium hydroxide solution. The formation of an intense yellow color in the resultant solution that becomes colorless on addition of a dilute acid indicates the presence of Flavonoids.

3) Test for Phenols

Ferric chloride test: To the extract3-4 drops of Ferric chloride solution is added .The development of a bluish black color indicates the presence of Phenols.

3) Test for Phytosterols

Salkowski's test: The extract is dissolved in 2ml of chloroform and filtered using Whitman's filter paper .The filtrate is then treated with a few drops of concentrated Sulphuric acid and allowed to stand. The appearance of a golden yellow color indicates the presence of Phytosterols.

4) Test for Saponins

Froth test: The extract is taken in a testube and diluted with 20ml of distilled water. It is shaken for 15 minutes. The formation of a layer of foam indicates the presence of Saponins.

Foam test: The extract is shaken with 2ml of water. The development of a foam that persists for 10 minutes indicates the presence of saponins.

5) Test for glycosides

The extract is treated with dilute hydrochloric acid.

Modified Borntrager's test: To the test solution ferric chloride solution is added and it is immersed in boiling water for 5 minutes. After cooling, equal volume of benzene is added to the testube. Then the benzene layer that appears at the top is separated and treated with ammonia solution. The formation of a rose pink color indicates the presence of glycosides.

Result and Discussion

Phytochemical analysis is of paramount importance in identifying new sources of therapeutically and industrially valuable compounds in medicinal plants. Preliminary phytochemical screening of Morindacitrifolia leaf extracts revealed the presence of various bioactive compounds and results are summarized in Table1.

In the present study Noni leaf extracts in Petroleum ether, Chloroform, Acetone and Water were used.

Table 1: Phytochemical Screening of Noni leaves

Sl.no	Plant constituent	Extracts			
		Petroleum ether	chloroform	Acetone	
1	Alkaloids	_	_	+	+
		+	_	_	_
2	Flavonoids	+	+	+	_
3	Phenols	_	+	_	_
4	Phytosterols	+	_	_	+
5	Saponins	+	+	_	+
		+	+	_	+
6	Glycosides	_	_	_	_

The results revealed that the leaf extracts of Morindacitrifolia in different solvents depict a significant variation in the presence of various phytochemicals such as alkaloids, flavonoids, phenols etc.

Alkaloids were found in acetone and water extracts but also showed presence in petroleum ether extracts. Glycosides are completely absent in all the extracts. Petroleum ether, Chloroform and Water extracts show present of Saponins. Phytosterols are present in Petroleum ether and Water extracts. Phenols are reported only in Chloroform extracts while flavonoids are absent in Water extract.

Modern civilization has led to a rapid decline in the resources of medicinal herbs. It is also accepted that the medicinal value of plants depends on its bioactive phytocomponents,associated to antibacterial activities and that also have a curative property against pathogens. Therefore the need to review through the traditional medicines which can serve as novel therapeutic agents has become essential.

Conclusion

The phytochemical analysis of Morindacitrifolia shows the presence of all major phytochemicals of alkaloids, saponins, phytosterols, flavonoids and phenols. Preliminary phytochemical surveys and the knowledge of chemical constituents of plants are essential to understand aboutherbal drugs and their preparations.Therefore, the phytochemical investigation(M.citrifolia leaf) in the present study reveals the presence of various potential phytochemical constituents which can be made useful by pharmaceutical industries. Environmental factors like climate, altitude, rainfall etc. have a great influence on variation in contents of Noni plant. It also contains some biologically active constituents worthy of further investigations. With an expanding efficacy noni seems to be a miracle medicinal herb and is a pioneer in phytotherapy.

HABIT

FRUIT AND FLOWER

FRUIT AND FLOWER

FLOWER

LEAF

LEAF ON TWIG

FRUIT (YOUNG)

FRUIT (MATURE)

References

1. PandiSelvi.A, Rajkumar.S, and Sandhya.G, 2011. Anti-ulcerogenic effect of Morindacitrifolia in various experimental models. International Journal of Pharmacy Review &Research 1:9-14.

2. Karimulla.Sk, PavanKumaR.B, 2011. Pharmacological studies on anti-diarrhoeal activity of Morindacitrifolia (l.) in experimental animals. International Journal of Experimental Pharmacology 1: 12-16.
3. Kethani Devi.CH and GopalaKrishna.D, 2013. Phytochemical screening, antibacterial, antifungal and anthelmintic activity of Morindacitrifolia stem. Journal of Pharmacognosy and Phytochemistry 2:115.
4. SrideviNagalingam, ChangamSheelaSasikumar* and KotturathuMammenCherian, 2013. Morindacitrifolia (Noni) –a detailed review. International Journal of Universal Pharmacy and Bio Sciences 2(6): 494.
5. SanthoshAruna.M, Rama Rao.N, Deepthi.B, Lakshmi Prasanna.J, Surya Prabha.M, 2013. International Ashyuka: A hub of medicinal values. Journal of Biological & Pharmaceutical Research 4(12): 1043.
6. Judy Marie r. Zoleta, 2014.Effects of crude extracts of Morindacitrifolia leaves to blood glucose level of alloxan-induced male mice. Advancing Pharmacy Research 1:47.
7. Sultan Ahmad.Md, Sheeba, Afsar Ali and Kanchan B. Rai, 2012. Cancer preventive effect of Morindacitrifolia(Noni) fruit juice against the aflatoxin B1-induced genotoxicity in human peripheral lymphocytes in vitro. IOSR Journal of Pharmacy 2(2): 228-234.
8. Muralidharan.P and Srikanth.J, 2009. Antiulcer activity of MorindaCitrifolia fruit extract. Journal of Scientific Research. www.banglajol.info/index.php/JSR. J. Sci. Res. 1 (2): 345-352.
9. Yanine Chan-Blanco, FabirceVaillant, Ana Mercedes Perez, Max Reynes, Jean-Marc Brillouet, Pierre Brat, 2006. The noni fruit (MorindacitrifoliaL.): A review of agricultural research, nutritional and therapeutic properties. Journal of food composition and Analysis 19: 645-654.
10. Brett J. West, Stephen K. Palmer, Shixin Deng and Afa K. Palu Research and Development, Tahitian Noni International,2012. Antimicrobial Activity of an iridoid rich extract from Morindacitrifoliafruit. Current Research Journal of Biological Science 4(1): 52-54.
11. Kakad.S.L, Pise S. S and Dhembare A. J, 2015. Evaluation of phytochemical, antibacterial, antifungal activities of leaf extracts of Morindacitrifolia .Pelagia Research Library. Der pharmaciasinica 6(4):9-12.
12. SrideviNagalingam, ChangamSheelaSasikumar* and KotturathuMammenCherian. 2012. Extraction and preliminary phytochemical screening of active compounds in Morindacitrifolia fruit. Asian Journal of Pharmaceutical and Clinical Research 5: Suppl 2.
13. Mairim Russo Serafini et al, 2011. Morindacitrifolia leaf extract possesses antioxidant activities and reduces nociceptive behavior and leukocyte Migration. Journal of medicinal food j med food 14 (10): 1159–1166.
14. WANG.M.Y, Brett J West, C Jarakae Jensen, Diane Nowicki, Su Chen, Afa k Palu, Gary Anderson,2002. Morindacitrifolia (Noni): A literature review and recent advances in noni research1 .Actapharmacologicasinica 23 (12): 1127-1141.
15. Kochuthressia K.P* and Jaseentha M.O,2015. Phytochemical investigation of active compounds in Morindacitrifolia leaves. Asian Journal of Biochemical and Pharmaceutical Research 5: 98-103.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

JOINT RELEVANCY OF PERSONALITY, VALUES AND RISK TAKING CAPACITY ON DECISION MAKING

Dr. Santosh Kumar Arsiya
Assistant Professor
Dept. of Business Management
MGCGV, Chitrakoot, Satna (MP)

Abstract

The result of Decision Making is very uncertain. It is based on individual's preferences behaviors and psychological and cultural aspects. Decision making includes so many other factors like personal interest, affection, individual behavior, fear, organizational goals, mission & vision, experience, innovative mind setup and creativity, etc. In this connection an important factor is creativity. A distinction can be made between creativity and innovation. The term creativity usually refers to the ability and power to develop new ideas. Innovation, on the other hand, usually means the use of these ideas. In an organization, this can mean a new way of doing things. Although this discussion centers on the creative process, it is implied that organizations not only generate new ideas but also translate them into practical applications. On the basis of above background a scientific study had been done to understand the joint role and relevancy of selected variables (i.e., Personality, Values and Risk taking capacity of decision maker) on decision making.

Keywords: Decision making, Personality, Values & Risk.

Introduction:

Decision making is an important factor of management process. The executives see decision making as their central job because they continuously choose what is to be done, who is to do, when to do, where to do, and how to do. It is managerial function as well as organizational process. It's an act of projecting one's own mind upon an option or a course of action. In the entire perspective of decision making, the three major components of human behaviour i.e. cognition, conation and affection are involved.

According to Kuzgun (1992), decision-making can be defined as an inclination to overcome the current problem when more than one way exists to lead us to an object that is thought to be the satisfier of a requirement. Decisions that have several alternatives reveal more different cultures for individuals and this situations causes stress.

- **Risk Taking Behaviour and Decision Making :**

Every decision has some risk. In a situation involving certantity, people are reasonably sure about what will happen, when they make a decision. The information is available and is considered to reliable and the case and effect relationship are known where as in uncertainty people have only a meager data base, they do not know whether or not the data are reliable, and they are very unsure about weather or not the situation may change. More over they can not evaluate the interactions of the different variables. In a risk situation factual information may exist, but it may be incomplete. To improve decision making, one estimate the objective probabilities of an out come by using mathematical models. All intelligent decision makers dealing with uncertantity like to know the size and nature of risk they are taking in choosing a course of action (Koontz & Weihrich 1990).

- **Effects of Values on Decision Making**

Value is one of the most important factor of making decision, which effects the organisational goal and objectives. Every decision maker having a different types of values and one of these values have the prominent level, which governs on decisions and organization vision and mission. Organizational values varies organisation to organisation ether it is government organisation or private organisation.

Personality factors affect the choice of an alternative in two ways. First, the choice is an ordering of a kind of personal preference, and a decision maker cannot eliminate his personal preference altogether. Second, choice depends on various qualitative information and its interpretation is likely to be personalized. This is the reason why major organisational decisions are changed when a new chief executive with different personality features takes over the charge of an organisation.

Review Of Literature:

Arsiya S. K. (2013) in his research 'A Behavioral Study of Decision Making in Govt. and Private Management Institutions' has found that Risk, Personality and Values individually plays an important role on decision making.

Tversky, A., & Kahneman, D. (1974) in their book "Judgment under uncertainty: Heuristics and biases". Suggested that the Partial debasing of errors in judgment typically classified as the result of "biases and heuristics" has also been achieved by having groups rather than individuals make decisions, training individuals in statistical reasoning, and making people accountable for their decision.

Ritov, I., & Baron, J. (1992) in their paper "Status-quo and omission biases". Suggested that maximize the odds that decision makers will make wise choices given known decision biases. For example, a bias towards inaction creates a preference for default options

Tacconi (1996) in his paper "Dissent from choice theory: implications for environmental decision making", had said that Consequently, contemporary perspectives on decision-making increasingly acknowledge a socially constructed reality that emphasizes the context unlined nature of decision-making and the important role played by values in driving decision-making processes.

Tebes et al. (2004) examined the relationship between cognitive transformation and indicators of resilience bereaved comparison group. Individuals often report positive, transformative changes in response to adversity. Findings strongly supported the hypothesis that transformation predicts resilience, and may reduce one's risk trajectory to enhance adaptation.

Scott et al. (2007) investigated the role of negative cognitive style in predicting the occurrence of negative life events. Results showed that the individuals with negative (dependent events and interpersonal events, but not more independent or achievement-related events) than individuals with more positive cognitive styles. **A**

Rowe and Mason (1987), decision style is primarily a cognitive process that combines the mental activities of perception, information processing or cognition, making a judgment, and coming to closure of the problem. An essential ingredient of high resilience is the belief that one has control over what is transpiring in one's life. To acquire this attitude of ownership, an individual needs opportunities to learn and apply decision-making and problem solving skills.

Keast, D.A. (1996) in his paper "Values in the Decision-Making of CEOs in Public Colleges", Examined the relationship between values and the decision-making of 10 CEOs in public schools in Greenland. Using a qualitative research design, the study showed that values played an important role in the decision-making process. It found that a degree of similarity appears to exist in the frequency with which the same values reoccurred in the decision-making of all ten CEOs.

Gamble and Gibson (1999) in their topic "Executive Values and Decision-Making: The Relationship of Culture and Information Flows", argued that values develop as individuals are exposed to layers within a social system (family, work, employment) and a range of these external factors must also be taken into account in examining causal relationships.

Against the above background effort has been made to assess the behavioural aspects of decision making which are much crucial in modern era for education institutions. For this purpose the following objectives have been made to conduct study.

Objectives of the Study :

The following objectives have been formulated for the Present

- To examine the joint role of selected independent variable (i.e. Personality, Risk Taking behavior and Values) in dependent variable (i.e., decision making).

Hypotheses :

The following hypotheses have been framed for the purpose of the present investigation-

- There will be no significant variance noticed about decision making on the basis of predictor variables.

Research Methodology:

The purpose of the present study is to examine the joint role of personality, values & risk taking capacity on decision making style in government management education institutions of Jablapur and Rewa divisions of Madhya Pradesh State.

1. Data Collection and Research Area:

The primary data, which was collected Personally in two divisions i.e., (1) Jabalpur and (2) Rewa of MP State.

2. Sample :

The sample for research was depend upon the size of population. The purposive and random sampling was adopted for entire research.

3. Population and Sample selection :

The population of entire research was vice-chancellors, administrators, Deans, Directors, Registrar, Dy. Registrar, Astt. Registrar, Principals, HODs, Course In-charges, Officers and teachers of Government (State Govt. Universities) management education institutions of research area, who take decision in their daily job. On the basis of overall responses of above respondents, analysis of data have been made.

The total sample size for Government/Semi-government management institutions was 80. Only those institutions were incorporated for population and sampling which was in the list of Vyavashayik Pariksha Mandal (VYAPAM) Madhya Pradesh Bhopal and other management education institutions not added in the list of VYAPAM but running in university campus(university teaching departments) with proper approval of the university. List of Government/Semi-government management education institution of research area, listed in the list of VYAPAM and other Institutions of university teaching department.

4. Tools of the research and data analysis process

Four well structured and Pre-tested scales and test were adopted for the present investigation used tools are as follows:

4.1 DMSS (Decision making style scale) : DMSS was developed by Dr. Noor Jahan N. Ganihar, Dharward (Karnataka); Which covers three major style of decision making i.e., Routine, Compromising & Heuristic.

There are 48 items classified in 4 problem areas i.e. entrepreneurial problems, administrative, academic problem and personal problems.
The overall reliability of the questionnaire was 0.86 and overall validity of the questionnaire was 0.92.

4.2 DPI (Dimensional Personality Inventory) : DPI was prepared by Dr. Mahesh Bhargav, (Chairman), Harprasad institute of behavioural Studies Agra (U.P.), which analyse the six dimensions of personality.

The six dimension of personality i.e., Activity-Passivity, Enthusiastic – Non enthusiastic, Assertive – Submissive, Suspicious – Trusting, Depressive – Non-depressive and Emotional Instability Emotional Stability.

4.3. Value Scale : The value scale originally was prepared by All port Vernon and Lindzey which measures dominate interest in personality. This scale was revised modified and adapted by Kulshrestha (1998).
This value questionnaire comprises of two part i.e. part (A) & Part (B)
Part (A) consists of 30 questions with multiple choice to response.
Part (B) consists of 15 questions with choice to response. Respondents have to value them numerically (i.e. 1,2,3,4). It is a forced-choice instrument and it aims to measure the relative of six basic interests or motive of personality. Total 45 questions/statements are contained in the questionnaire.
The sum of final score for every respondents is same i.e. 90 for part (I) and 150 for part (II). Thus it is necessary that every question is to be answered. It may that questions have been omitted, equal scores to the alternative answers is to be given thus:-

4.4. Risk Taking Behaviour : To measure the risk taking ability in an executive or in a person, risk taking questionnaire (RTQ) was prepared by Dr. N.L. Mishra (Reader) MGCGV, Chitrakoot and S.K. Arsiya (May, 2008) M.G.C.G.V.,Chitrakoot.

This questionnaire consists of 20 questions in single part with the alternatives Yes, No and Uncertain. 2, 0 and 1 mark have been provided for Yes, No and uncertain responses respectively for question number 1 to 5 and 14 to 20. and 0,2,1 marks have been provided for Yes, No and uncertain response respectively for question number 6&13.

5. Data Analysis Procedure :

In this study in order to objective and hypothesis of research the regression analysis ANOVA was conducted. Scoring for each measure was done on the basis of scoring methods/techniques which is given with each questionnaire. After scoring, data tabulation had been done by the obtained score. For the analysis, micro-soft excel was utilized to perform all the analyses. The 0.05 and 0.01 alpha level was accepted as a criterion of statically significance for all statically procedures.

5.1 Regression Analysis : To identify relationship among the variables and in order to able to compare the relative importance of each of the three variables i.e. value, personality and risk in predicting decision making style the regression analysis have been conducted, stepwise regression was also done. Stepwise regression is used to identify the subset of independent variable that has the strongest relationship to a dependent variable. Lastly researcher conducted a multiple regression analysis to investigate the variance in decision making, which can be attributed to personality, value and risk.

Result:

The results are presented according to the objectives, hypothesis and nature of scales. Three types of analysis has been done i.e. multiple regression. Group difference and ANOVA analysis have been used to know the joint role of personality traits, values and risk taking behaviour to predict the decision making by all predictor variables (i.e., personality, risk and values) for the respondents of government management education institution . Several other angles have also been seen during entire research. The results of the multiple regression analysis are presented to test the hypothesis "There will be no significant variance noticed about decision making on the basis of predictor variables.

Table : 1 Regression Analysis for Government Management Education Institution

Sl. No.	Regression Statistics	
1	M R	0.4850
2	R S	0.2352
3	A R S	0.0846
4	S E	7.1939
5	Observations	80

Where, M R = Multiple Regression
R S= Regression Square
ARS= Adjusted R Square
S E= Standard Error

Table ; 2 ANOVA

Sl. No.	*Regression/Residual*	*df*	*SS*	*MS*	*F*	*Significance F*
1.	Regression	13	1050.6660	80.8204	1.5616	0.1195
2.	Residual	66	3415.7214	51.7533		
3.	Total	79	4466.3875			

Where, MS= Mean Square
F= Frequency
df= Degree of freedom
SS=Standard Square

Efforts have been made to assess the role of selected variables i.e. risk taking behaviour, personality traits of respondents, and various human's values in decision making of managers, executives and other related officers of the academic institutions. For this purpose the multiple regression analysis has been applied. It is found that all independent variables or predictors have predicted the decision making style of the respondents. The value of multiple regression analysis is .485 but Obtained F-value is not found statistically significant (df. 13-66-1.56).

It is seen that R square value of the multiple regression analysis has obtained .235. It's denoted that all predictors have jointly explained decision making style of the respondent with 24 percent variance which is not so important and this is the reason that F value has obtained insignificant. So, it can be stated that personality traits, Values and risk-taking behaviour were not proved dominant factors for decision making for the respondents of state Govt. Management institutions of Jabalpur and Rewa divisions of Madhya Pradesh.

- **Impact of Regression on decision making on the basis of predictor variables :**

Researcher has framed an other hypothesis that "There will no significant variance noticed about decision making on the basic of predictor variables." Obtained results clearly shows that risk taking, values, and different types of personality traits as a joint predictors does not significantly predict the decision making for the respondent of government management education institutions. Thus, it can be said that framed hypothesis partially accepted and partially rejected.

Interpretation of Finding and Conclusion:

Although it is believe that Risk, Personality and Values jointly plays an important role on decision making but in the research it is found that all these predictors jointly does not significantly explain the role on decision making in the case of state government university management education institutions.

On the basis of entire analysis it can be said that decision is not an independent concept, it depends on several other psychological, cultural, environmental and implicit factor of an individual or group.

Final conclusion is not possible at present on this topic because it has been a source of much controversy. Prasad (2008) advocated that there is considerable agreement on desirability of rationality in decision making; there is much less agreement on what rationality really means. Simon (1976) has described different types of rationality. Generally the concept of rationality is defined in terms of objective and intelligent action, it is usually characterized by behavioural nexus between ends and means. If the appropriate means are chosen to reach the desire ends, the decision is rational. This means-ends relationship is commonly referred to as 'means-ends chain or hierarchy.'

Presenting these difficulties in the means-ends chain as a test of rationality, Simon considers rationality as "the selection of preferred behaviour alternatives in terms of values where by, the consequence of behaviour can be evaluated." However, value is attached to the concept of rationality, and action may be rational form one point of view and non-rational from another point of view.

References

- Arsiya S. K. (2013) 'A Behavioral Study of Decision Making in Govt. and Pvt. Management Education Institutions' pp 1-156
- Gamble P.R. and Gibson D.A. (1999). "Executive values and decision-making : The Relationship of Culture and Information Flows" Journal of Management Studies, vol. 36 (2), pp.217-240.
- Hartmann, L.C. & Patrickson, M. (1998) "Individual Decision-Making : Implications for Decision Training in TQM" International Journal of Quality & Reliability Management, Vol. 15 (6), pp.619-633.
- Herbert A. Simon (1976). "Administrative Behaviour" New York. Free Press, p.65.
- Koontz H., Weihrich H. (1990 Vth Ed.). "Essentials of management" McGraw-Hill Publishing Company, pp. 16, 116, 307-317.
- Koontz Harold & Weihrich Heinz (1990). "Essentials of Management" (Vth edition) McGraw-hill publishing company New Delhi. pp.308.309.
- Mishra N.L. & Arsiya S.K. (May, 2008). "Risk Taking Questionnaire (RTQ)" MGCGV, Chitrakoot, Satna (M.P.) pp.1-2.
- Prasad, L.M. (2008)."Principles and Practices of management Sulton Chand & Sons" New Delhi. pp.164-309.
- Ritov I. & Baron J. (1992)." Status-quo and omission biases" Journal of Risk & Uncertainty, 5(1), pp. 49-61.
- Simon K, Houghton S.M. & Savelli, S. (2003). "Out of the Frying Pan... ? Why small business managers introduce high-risk products" Journal of Business Venturing, 18, pp. 419-440.
- Tacconi L. (1996). "Dissent from choice theory : implications for environmental decision making" International Journal of Social Economics, Vol. 23 (4), pp.331-345.
- Tebes J.K., Irish J.T., Puglisi V.M.J., Perkins D.V. (2004). "Cognitive transformation as a marker of resilience" Substance Use Misuse, 39(5) : pp. 769-88.
- Tversky A. & Kahneman D. (1974). "Judgment under uncertainty : Heuristics and biases" Science, 185 (4157), pp. 1124-1131.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

STRATEGIES FOR MANAGEMENT OF EXISTING LAND USE AND FLOOD IN BARNADI RIVER BASIN, ASSAM

Dr. Niranjan Bhattacharjee
Dept. of Geography
Pandu College
Guwahati

Abstract

While landforms in a drainage basin have been the basic ingredient for land use, floods in some basins are seen to act partly as boons in the midst of their many faceted problems as well as anthropogenic actions and results. The impact of flooding is becoming increasingly pressing worldwide for several reasons (Kundzewicz, Takeuchi, 1999). Floodplain landscape morphology and roughness represent the governing factors of flood flow propagation dynamics (Pena and Nardi 2018). The Barnadi river basin in middle part of the north bank of the Brahmaputra below the loftiest Bhutan Himalaya has since the last 4-5 decades been observed to create flood havocs to not only human habitation but also to other kinds of land uses under the river's domain. The basin has its peculiar landform characteristics that can be well counted through surficial relief, slope, drainage net, vegetational cover along with soil types and their capabilities yielding characteristic combination of land uses. The basin being flooded frequently due to high storm rainfall along with other factors in its catchment uses to cause high damage to land including river plan form, people and environment. An investigation of the basin characteristics in terms of landform patterns and dynamics and evaluation of the existing land use in the basin by using geo-spatial tools may lead to formulate strategies will help to take various adjustment measures relief and rehabilitation, insurance, warning system, technological aids and land use management (Oruonye,2013)

Key words: Land use, Flood and flood problems, Relief, River planform, Erosion, Strategies.

Introduction

River-basins have their unique character sustaining ecological balance that eventually helps to develop a healthy relationship in between the man and the environment as the rivers are recognized as the life line of living beings and the cradle of human civilization. A drainage basin being the best unit for hydro-physical studies among many (Horton, 1945, Chorley,

1969), bears a great significance in today's fluvio-geomorphological investigation of channel network and drainage morphology along with flood events and their relationship with land, water and man (Chorley,1969b). Floods, river bank erosion and many other abrupt actions associated with running water cause adverse effects on man, land and environment and their relationships. A river when flows crossing the levels of its banks with rushing of heavy waters creates natural calamities like flood, bank and basin erosion and sedimentation. A flood is an usually high stage in a river, normally the level at which the river overflows its banks and inundates the adjoining area (Subramanya, 2009). Erosion, transportation and deposition are the main functions of a river flood to modify the bed, bank and basin surface concerned. As there are adverse effects of the above mentioned geomorphically significant natural events and phenomena in the floodplain, there have been problems of adjustments of man with fluvio-geomorphic events. Naturally all streams are subjected to flooding in both the hydrological and geomorphic sense of inundation. While landforms in a drainage basin have been the basic ingredient for land use, floods in some basins are seen to act partly as boons in the midst of their many faceted problems as well as anthropogenic actions and results. As such management of floods has always been imperative in the riverine areas for substantially sustainable growth and development of crops, human habitation etc. The Barnadi river basin in the middle part of the north bank of the Brahmaputra below the high standing Bhutan Himalaya has since the last 4-5 decades been observed to create flood menace to not only standing crops, human habitation but also to other kinds of land uses in the area under the rivers domain. The basin being flooded frequently due to high storm rainfall in its catchment uses to cause high damage to land including river planform, people and environment. Even as the government has taken a number of steps to mitigate the flood problems, the land users are yet to get conducive relief from the flood problems. An investigation of the basin characteristics of landform patterns and dynamics and evaluation of the existing landuse in the basin by using geo-spatial tools may, therefore lead to formulate strategies to fulfill the aim and objectives.

Objectives

The following are the main objectives for the study

1. to examine and identify the landform and land use characteristics causing and enhancing flood menace in the basin,
2. to identify the flood zones, the areas of floods of different intensities and duration, their causes and pattern of enhancement,
3. to formulate the strategies of flood management on the basis of landform and land cover investigation,

4. to make strategies for control and mitigation of floods and their associated problems

Methodology and Database

The entire basin area is identified from survey of India toposheets numbering 78N/10, 78N/11, 78N/12, 78N/13, 78N/14, 78N/15 and 78N/16. The whole basin area is digitized using Arc-view GIS software. To find out the basin area and the length of the channels NRSA IRS IC LISS-III digital data of 2008 are used. From the modified map various types of thematically significant parametric maps covering relief, slope, dissection, drainage maps etc. are drawn. For hydrologic details flood hydrographs and flood zonation maps are drawn and analysed. Land use and land cover map based on satellite image are prepared to categorize various kinds of coverage's and uses.

The Study Area

The Barnadi river basin is a tributary system of the Brahmaputra river in the western margin of the middle portion of the Brahmaputra valley below Bhutan Himalaya in the north of the basin. It comprises a geographical area of 496.62 $Km^{2.}$ extending latitudinally from 26^0 $14^{/}$ $30^{//}$N to 26^0 $49^{/}$N and longitudinally from 91^0 $45^{/}$E to 91^0 $53^{//}$E (Fig.1). It has been characterised by low relief both absolute and relative, having been occupied by 3,60,319 persons (as per 2011census) over as many as 289 villages. The basin has been regularly washed by the Brahmaputra in the south and the Barnadi along with its tributaries like Kalpani, Dimila, Ranganadi, etc. in the basin itself. The basin being dominated by incessantly occurred storm rainfalls during the summer season all over the basin, more specifically on the foothills, creates often flood havocs of low to very high intensities and durations. The basin has been entangled with topographic peculiarities under geomorphic, hydrologic, edaphic and anthropogenic domains suffers from problems like soil erosion, floods, channel shifting, abandonment of channels, drainage congestions etc. which bear a strong negative impact on landform and land uses (Bhattacharjee,2009). On the rationale behind such a feature in the Barnadi basin, the author have intended to investigate some of the vital determinants to manage the flood problems by using geospatial tools and techniques covered by remote sensing and GIS.

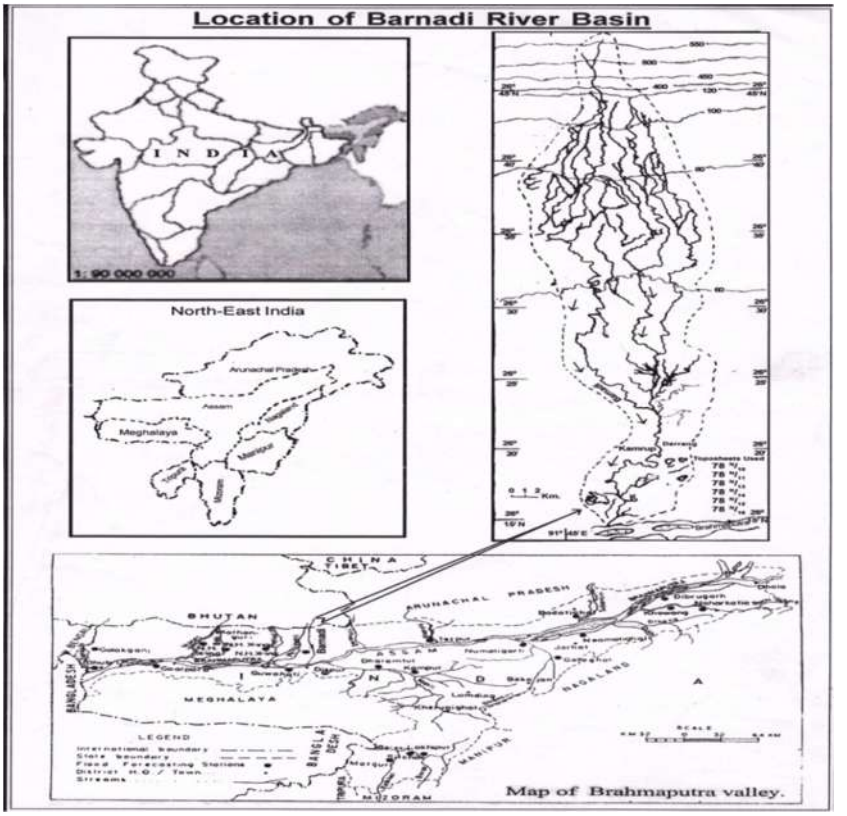


Fig.1Location of Barnadi

Morphometric Characteristics

The resultant morphometric developments and assemblages of basin landforms (F) in the Barnadi basin have been caused by the dynamic process (P) on the characteristic material composition (M) of the basin since the inception and coming under geomorphic processes till date (dT). As such the whole geomorphic phenomenon can be contained in the Gregorian geomorphic process model of F=f (M.P) dT (Gregory, 1976). While going to examine the morphometric determinants it is observed that in the hill and foothill portion in north of the basin for a very constricted area there lie the geological structure and rock composition akin to Himalayan origin. In the plains below the hills alluvial deposits carried from the Himalayan region by fluvial agents have formed material base. In the upper part of the plain there is the dominance of old alluvium in the Bhabar and Tarai zone while in the built up and floodplain areas recent and sub-recent alluvium composed of fine sand, silt, and clay dominate.

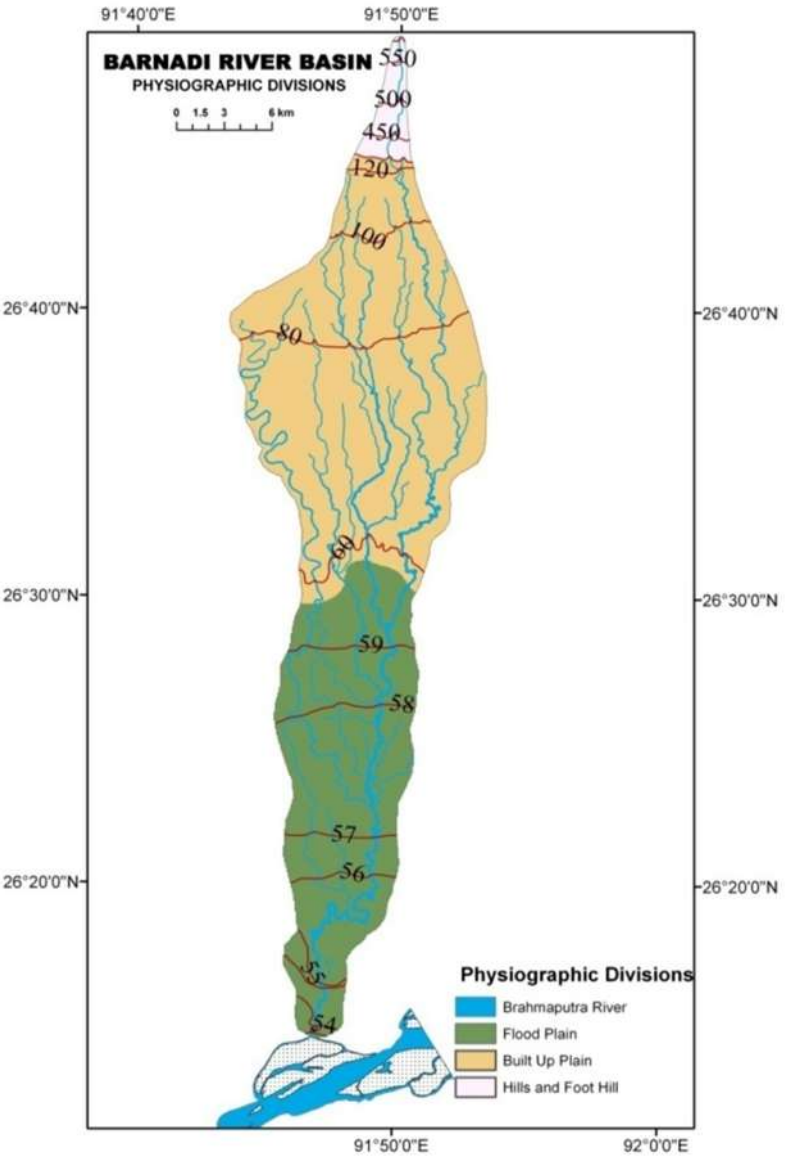


Fig.2 Physiographic Divisions

The micro physiographic disposition having been the product of development of fluvio-geomorphologically significant landforms indicates that three zones, viz. foothills, built-up plains and floodplains act differently in deciphering landform entities (Fig.2) leading to micro unitary differences in land use and land cover.

The entire basin as revealed by the GIS based map and ground truths has been characterised by differential relief. The absolute relief of the basin is such that it ranges within more than 550m in the hill top to about 54m in the floodplain areas. On the other hand, the relative relief of the various micro physiographic or geomorphic units ranges around 50m in the hills and foothills areas, around 20m in the upper built-up areas around 12m in the lower built-up areas and around 7m in the flood plain areas. The slopes, of the basin landform largely range from 41.04 and 47.94 degrees in the hill slopes, 3.68 to 8.08 degrees in the foothills, 0.37 to 0.56 and 0.19 to 0.56 degrees respectively in upper built up and lower built-up areas. The floodplains which is still in the process of alluviation in the neighborhood of the river Brahmaputra and the Barnadi channel itself has slopes ranging between 0.19 and 0.56 degrees as indicated by table.1and figs.3a and 3b.

Table1: Morphometric Details of Barnadi Basin

Physiographic Unit	Contour (m)	Slope (Degree)	Area (km2)	Percentage of basin's total area	Slope Gradient (m/km)
Hills and Foothill	>550 to <400 400 to 120	41.04 - 47.94	18.20	3.66	133.43 - 604.50
Builtup plain upper built up	120 to about 80	0.56 - 0.37	279.56	56.29	133.43 – 62.42
Lower built up	80 – 60	0.19 – 0.56			
Floodplain	60 – 52	Do	198.86	40.05	47.41 – 62.42

Source: Based on maps drawn

The map (Fig.3a) indicates that there is quite anomalous absolute as well as relative relief within the micro geomorphic units. Such a dispositional pattern of geomorphic topography contains very high to high slope gradient of 604.51m to 133.43m per km in the hill top and foothill areas, 133.43m to 62.42m in the built up areas and 62.42m to 47.41m in the floodplain areas (Table.1, fig.3b). It is thus best observed that the anomalous rather the stressed geomorphic situations in respects of rocks and topographic bases have developed dominantly fluvio-geomorphic processes of more hydraulic influences to smoothen the geomorphic surface and development of differential morphometric behaviour. Even as the pattern of absolute and relative relief and the slopes in degrees and gradient are mostly observed along the basin there are quite perceptible differences in them across the basin also. Topography and land use played an important role in the distribution of flood damages. The gently sloping landscape resulted in an inundation of large geographic areas (Ahmed, John and Bolten, 2018).

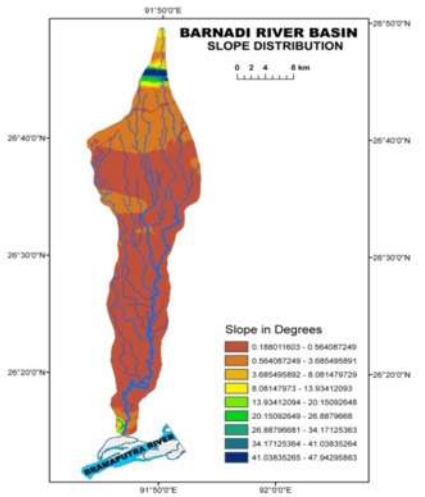


Fig.3a

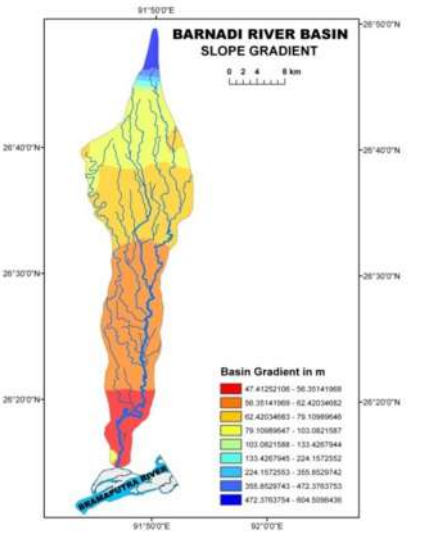


Fig.3b

Hydrologic Characteristics

The drainage basin contains a coarse network pattern in all the geomorphic units except the hills location. There are only 29 first order streams, 8 second order streams and 2 third order streams contributing waters to the master stream Barnadi (4^{th} order stream) totaling altogether 40 streams identified by using Strahler's technique of stream ordering (Strahler, 1952). The bifurcation ratios are 3.62, 4.00 and 2.00(the average being 3.2 for the whole basin) substantiating that the basin comprises a coarse textured drainage net on flat plains. The length ratios of the drainages of different orders range between 8.83 and 3.69 (Table.2) which indicate that the basin drainage planform varies largely from place to place. The drainage density and frequency in the basin are 0.78km/km^2 and 0.08 number /km2 having slight differences depending on topographic differentials of the physiographic units. Such a hydrologic pattern of stream networks and related values indicate that the basin is quite reliefless having far more hydraulic control than the topographic one. Accordingly various morphometric details and fluvio-geomorphic landforms are encountered. The bifurcation ratios reveal a very significant point of hydraulic and fluvio-geomorphic development in the sense that the streams in the basin fall abruptly from the hills to the plains through the alluvial fan and cone. Such a phenomenon is providing with a congenial condition for rushing out of huge volume of water to cause high to medium floods acclaimed to be detrimental to the drainage net and its planform, crop, human habitation and overall environment of the basin.

Table 2: Stream Network Pattern

Order of Stream	Number of Stream	Bifurcation Ratio	Length	Length Ratio	Density
1st order	29	3.62	175.99	-	Foothill slope >12
2nd Order	8	4.00	133.30	1.32	Built up around 1.5
3rd Order	2	2.00	36.05	3.69	Flood plain >1
4th Order	1		43.14	0.83	

Source: Based on maps drawn

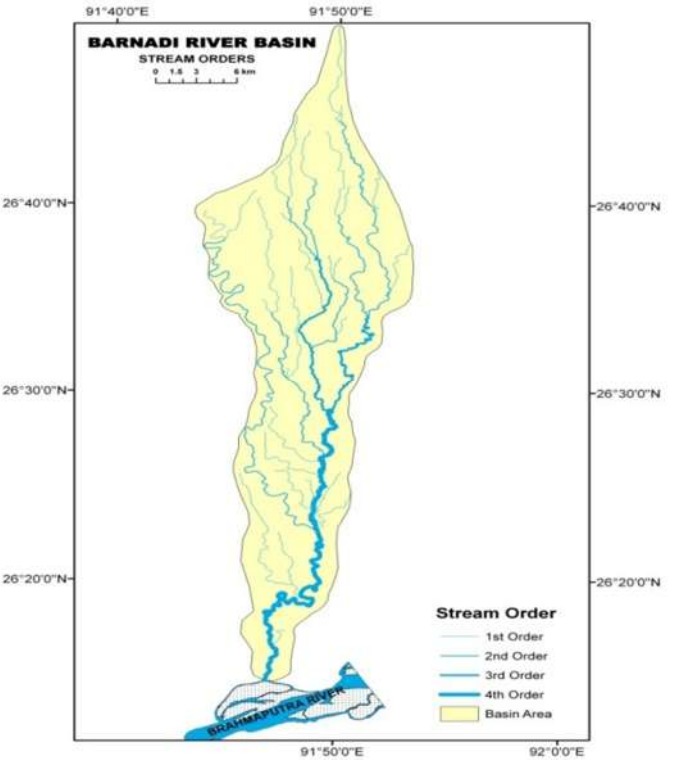


Fig.4 Stream Order

Table 3 indicates that the average of the maximum annual discharge in case of Barnadi during 1988 to 2003 was 85.72 cumecs, while the average of the minimum discharges during the same period was 1.29 cumecs. The average of the maximum water levels during the same period is 52.00 meters above the mean Sea level, while the average of the minimum water levels was recorded at 48.09 meters. The river then carried sediments on the average of 323 tons/km^2 per year.

Table 3Hydrological Characteristics 1988-2003

Chanel Length	74 Km
Basin Area	750 Sq.Km.
Maxi. Channel Relief	450 m
Overall Channel Gradient	5.40 m/km
Mean Rainfall of 11 years	2356. 99mm
Mean Mini. Discharge 16 years	1.29 cumecs
Mean Maxi. Discharge 16 years	85.72 cumecs
Mean Mini. Water level 16 years	48.09 m
Mean Maxi. Water level 16 years	52 m
Specific Sediment yeild	323 ton/sq.km/year

Source: Water Resource Department, Govt. of Assam

That amount of discharge when passing over the channels and basin areas flood waters make erosion on the land surface when the force provided by the flood exceeds the resistance of the soil over which the flood waters use to flow (Leopold, Miller and Wolman, 1964). It has direct impact on the geomorphology, hydrology including engineering hydrology, economy and geo-ecology of the area.

Land use Pattern

The pattern of land use identified and mapped by using GIS technique as the tool reveals a quite good and effective approach of finding out areas under different physiographic units. The table 4 reveals that the vegetation cover really exists for a very small area, only 2.59% of the basin area scattered all over the basin. Such a dispositional characteristic of the forest cover has only a very limited impact on the infiltration of water in the basin resulting in more surface flow of water and sediment in the basin. As the other parts of the forest cover are being degraded (41.34% of the basin's area), they have always their tendencies to be equipped with more soil and river bank erosion due to dominant surface flow of flood waters. The wetlands and marshlands having altogether only 11.11percent of the basin's total area have high topographic influence on fluvial processes including flood processes. The rivers of the various wetlands are more susceptible to erosion. Moreover, sand and silt carried by the flood waters are deposited here to gradually eliminate such wetlands in the basin.

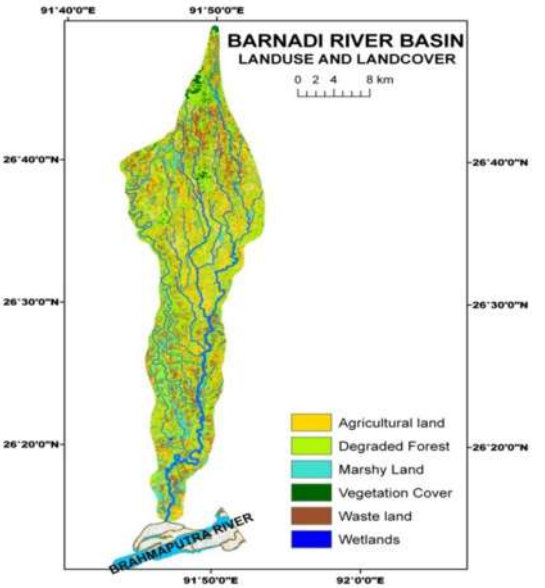


Fig.5 Landuse and Land Cover Distribution

Table 4 Landuse and Land Cover Distribution

Landuse and land Cover	Area Km2	%	Physiographic Unit
Vegetation	12.89	2.59	Scattered over Upper built up and foothill areas
Degraded Forest	205.31	41.34	Scattered various in all the basin
wetlands	1.05	0.22	Scattered mainly over the flood areas in the neighbourhood of the river channel
Marshy land	54.08	10.89	
Agricultural land	128.12	25.79	Scattered mainly in the built up and partly in the floodplain areas
Wasteland	95.17	19.17	Mainly in the upper built up and floodplain areas

Source: Based on maps drawn and field observation

The sheet erosion on the basin's surface has also caused such a phenomenon. Sometimes flood waters become so strong that they mixed with heavy amount of sand and silt come to fall on the bed of the river, many a time causing damage to free flow of flood water along the channel.

Flood Scene

Floods in the Barnadi basin have their quite peculiar dispositional characteristics in response to climatic, topographic and hydraulic controls in the basin and its surroundings. As such the hazard and vulnerability of floods have been of differential magnitude, intensities and duration in different micro geomorphic units. The upper built up areas are having low floods due to comparatively high slope gradient of lands and rivers leading to free pass of down flow of waters within a very short duration of time. The lower built up zone having river

meandering, ox-bow lakes, marshes etc. has been marked by floods of low to medium intensity. On the other hand, because of more flatness of topographic and high hydraulic control, the vicinity of the river Brahmaputra (forming the active floodplain) has been marked by back water effect and flood havocs of medium to very high magnitude, intensity and duration. Sometimes the floods of 1.2 to 2 meter thickness above the general ground exist for about 10 to 15 days at a stretch in this low-lying and flood plain areas. It is again observed that a number of flood waves ranging from 3 to 4 do occur in this part of the basin. Since the early times flood have been of major aspects of man's interaction (Ward,1978). The occurrences of high to medium floods in the flood prone river basins have been a rule rather than an exception. The steeply falling hill slopes in the northern part of the basin below the abruptly rising Bhutan Himalaya has quite clearly accentuated the congenial condition for the abrupt rush of storm rainfalls to cause flash flood in the plains up to the bank of the river Brahmaputra in the south of the basin. It has been observed that the channelized waters as well as the surface runoff being accumulated in the low lying part of the basin cause flood havocs of low to high magnitude, intensity and duration. The heavy damage of river planform caused after the great earthquake of 1897(Gait, 1905) and specially after another disastrous earthquake of 1950(Barman, 1986) has resulted in the continuous siltation processes and lateral erosion along the river banks enhancing the flood menace and damage of land and crops in the basin. Two hydrographs drawn each for stage(Fig.6) and discharge (Fig.7) of waters along the river Barnadi (following the principles of V.T.Chow, 1964) clearly indicate that the average level of water during a period of 16 years from 1988 to 2003 stands at 52m above the mean sea level against the average discharge 85.72 cumecs during the same time period.

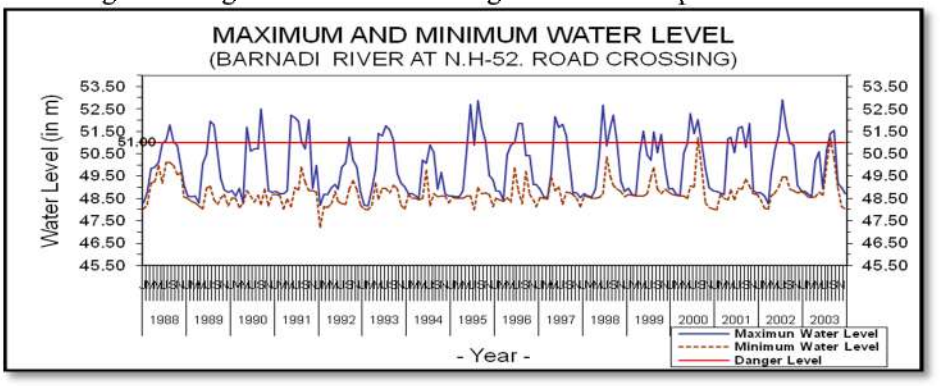


Fig.6 Water Level Hydrograph

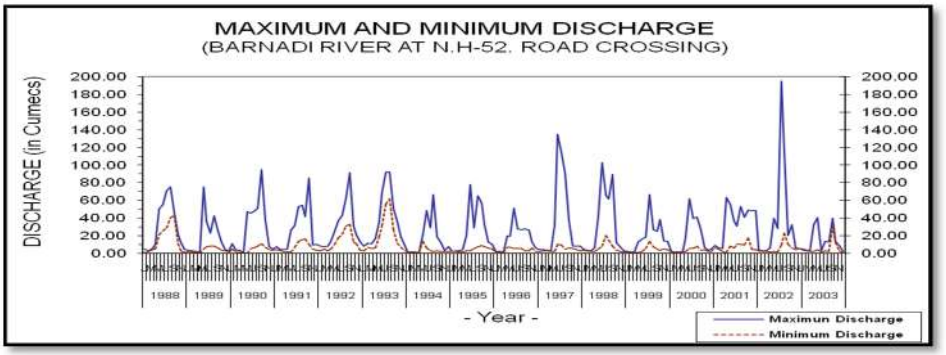


Fig.7 Discharge

It is furthermore observed that there occurred the highest flood in 2002 (July) at the level of 196.20 cumecs of discharge of water against the maximum water level of 52.90m in the same year measured at the 52 National Highway Crossing gauge site. Such a height of flood level of 2002 has a flood lift of 1.90m over the danger level, which is considered as a very high flood. Crops, human habitat, agricultural land were largely damaged by that flood. It is again observed that out of the 16 years of flood peaks during 1988 to 2003, as many as 15 years have been marked by substantial floodwater lifts over the danger level of 51 m. The river Barnadi at the National Highway 52 Road Crossing site has the peak floods marked at very high stages above the danger level though most of such floods are not devastating in nature.

The Log Pearson Type III method adopted on the same series of peak floods reveals that the peak flow estimated at 53.05m has a 200 year recurrence interval with a probability of only 0.5 percent (Table 5.). The flood at this stage having a lift of 2.05m above the danger level (marked at 51.00m) is recognized as one of the rarest floods in the basin. The minimum peak flood level marked at 50.35 m shows the recurrence interval of 1.10 years with a probability of 99 percent.

Table 5. Flood Frequency of Barnadi River, Using Log Pearson Type-III Method

Recurrence Interval	Probability of Return Period (%)	CSK	Mean Log	SD	K Value Frequency Factorial	K.S.D.	Log = K.S.D.+ $\bar{x}$	Anti log
1.0	99%	-0.91154009	1.71628986	0.0048095	-2.957	-0.014221	1.702068	50.3579
1.05	95%				-1.858	-0.005936	1.707353	50.9745

1.11	90%				-1.339	-0.00644	1.709849	51.2684
1.25	80%				-0.769	-0.003698	1.712591	51.5930
2.00	50%				0.148	0.000712	1.717001	52.1196
5.00	20%				0.854	0.004107	1.720397	52.5287
10.00	10%				1.147	0.005516	1.721806	52.6994
25.00	04%				1.407	0.006768	1.723057	52.8514
50.00	02%				1.549	0.007459	1.723739	52.9346
100.00	01%				1.660	0.007984	1.724274	52.9997
200.00	0.5%				1.749	0.008411	1.724702	53.0519

Source: Calculated from the Data Collected from Water Resource Deptt, Govt. of Assam

The 50 percent probability level of flood occurrence lies at an estimated peak flood stages of 52.12 m above the mean Sea level having a lift of 1.12 m above the danger level. Such a flood in the river occurs at a recurrence interval of 2 years. It is observed on the table 4.19 that 81.81 percent of the occurrences of peak floods (estimated) lie above the danger level. It is again observed on the plots of actual and estimated values on Log normal probability paper that the deviation of the plots of the actual floods peaks from the estimated ones are quite perceptible ranging from 2.77m to 0.15m.

Flood Zonation

Recent studies have offered a number of innovative strategies in order to support the derivation of flood quantiles (Durocher, Chebana, Ouarda, 2016) to provide large scale flood mapping with simplified procedures applicable also in data scarce environments. Evidently the floods in the basin may be identified to have zonal characteristics in their various kinds of status and impact (Fig.8). A GIS based map taking the consideration of satellite image supplemented by field observation are used to improve flood monitoring with new remote sensing algorithms or exploiting social media (Rosser, Leibovici, Jackson, 2017). All these topics are crucial to advance our capacity to cope with floods in a changing environment.

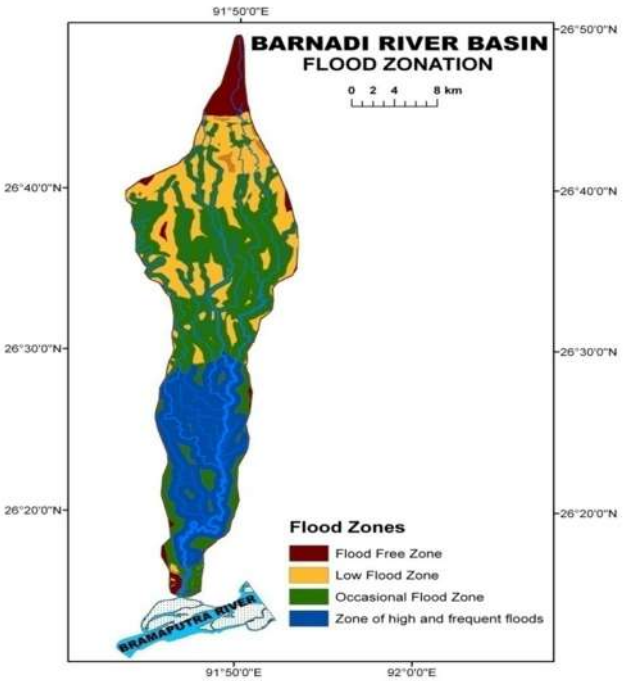


Fig.8 Flood Zonation

Table.6: Flood Zonation

Flood Zone	Physiographic Unit	Area (Km2)	Percentage (basin total area)
Flood free	Dominantly hill slope and foothill slope	38.67	7.80
Low flood	Dominantly upper part of the built up	111.47	22.44
Occasional flood	Dominantly lower part of the built up zone	215.04	43.30
High or frequently occurred flood	Floodplain zone	131.44	26.46

In all kinds of floods in the scene and problem analysis, it is observed that floods have become great problems in the basin specially in the floodplains and built-up areas covered by even the small streams contributing waters to the master stream Barnadi.

Strategies for Flood Management

Floods are not unmanageable aspect of environment even though sometimes in some vulnerable rivers it is too difficult. For sound management of floods a number of factors and parameters are to be dealt with. Relief, slope, drainage net, channels and basin characteristics, including seasonal supply and flow of surface waters, ground water levels and pattern of human interference with land, water and resource regimes, options and opportunities for livelihood at micro

zonal domain are to be considered. The historical fact of topographic disturbance and floods including their magnitudes and flood paths are needed. In this context planning plays an important role for evolving and executing strategies for mitigation of flood problems and safe and sound land use, human habitation and environment.

The following strategies may be formulated in order to mitigate flood problems in the basin.

i) As the season and spatial distribution of rainfall, geomorphic details of the landform and hydrologic characteristics as physical factors of the basin play an important role in the genesis, development and enhancement of flood problems in the basin, a comprehensive stock of knowledge of them definitely help in understanding, identifying and evaluating the real facts of flood problems and their impact on landform, land use, and society in the basin.

ii) The nature and dimension of human habitation including settlement in the present day high growth of population in the basin have rendered low to high risk of flood problems, damage of landform and land uses at alarmingly high rate in the basin. Strategic steps are therefore, to taken to investigate all the sort of activities rendered by human stock towards creating risk of floods.

iii) Due to two major earthquakes of 1897 and 1950, it is observed, much of the drainage planform in the basin has metamorphosed causing hindrance to free pass of flood waters along the channels. The human interference has added a more dimension to it. It has, therefore, been the need of training or regulating the channel direction or making channel diversion to mitigate the flood problem and protect the land use potentials and practices.

iv) Various structural measures such as dams, reservoirs, levees, flood walls may be constructed specially in the areas of low slope gradient and water congestion to fulfill the long term aim of flood control/amelioration, etc. As construction of reservoirs will help the growth and development of agricultural potentials and practices in the river plains and flood plains in a systematic way a number of such reservoirs can be spotted in the interfluves of even the small streams. The beels, wetland, marshes, swamps, abandoned channels may fulfill such objectives. They may be interlinked with rivers to check floods and enhance land use potentials and practices.

v) Appropriate measures are to be taken to increase the capacity to pass the excess discharge of water along and across the Barnadi and its tributaries considering the basin catchment, drainage net, channel configuration and supply of water to the basin.

vi) As the agricultural practices and types of crops have their far-reaching impact of landform and run-off generation processes, there should be appropriate soil drainage system in terms of availability and design tranches, ditches, or pipes in the soil to control their soil water content, ground water

level on agricultural land to check soil erosion and to avoiding sediment deposits on river bed. Soil tillage and choice of crops to be planted should be befitting the river catchment and the function of it to check rapid run-off and erosion processes.

vii) Embankment cum roads can be constructed along the banks of the big or more vulnerable streams. At the same time, trees can be planted to serve purposes of flood abatement and resources raising, checking soil erosion and ultimately making flood control.

viii) Afforestation specially in the upstream and more flood vulnerable spots and areas, is to be executed to mitigate heavy down-flow of water, slope wash and sedimentation on the channel bed from check and flood menace and damage ultimately leading sustainable productive land uses in the river bank areas.

ix) As there have developed most up-to-date tools and techniques in the arena of co-existence of man with nature including the flood problems, the flood plain dwellers in the Barnadi basin do follow the same. Lowering of channel results the deplation of groundwater aquifers which is caused by the suppression of the sessional flood cycle, is damaging the forests downstream of the dam (De Georges and Reilly,2006)

Conclusion

It is seriously observed that as the drainage basin has been identified as one of the most resourceful areas for new order of production and sustainable development of land, water and man, the basin needs serious investigation in the contexts of hydrologic, geomorphic, ecologic , environmental, economic, and even the social significances exist or felt in the face of a drainage basin. The Barnadi basin even though a small one has been the source of potential resources related to diverse capability for land use, human habitation etc. The basin being fed with a number of big and small streams carrying much water including the flood waters creates flood havocs differentially at different locations. The floods in the basin are always recongnised as the curse not the boon. If the access water carried by the flood is stored somewhere in the basin the basin may grow up substantially in the arena of land use and development of progressive human society and sound environment. Unless the multifaceted behahaviours of landforms, landscape, and the pattern of human habitation and activities, and the human need as well are investigated properly the real facat of flood and its associated problems could never be understood. At the present juncture of use of high technology in investigation, evaluation and management many things can be done in order to contain flood problems in the basin. The above work is actually a very preliminary step to understand a number of basin parameters including the floods and land use.

References

Barman, R.,(1986) : Geomorphology of Kamrup District: A Morphometric and Quantitative Analysis, An unpublished Ph.D. Thesis, Gauhati University.

Bhattacharjee.N.,(2009): "Flood and Bank Erosion Problems in Darrang District, Assam:A Fluvio-geomorphological Study", An unpublished Ph.D. Thesis, Gauhati University

Chorley, R.J., (1969) : 'The drainage Basin as the Fundamental Geomorphic Unit' in Chorley, R.J. (edit) , Introduction to Fluvial Process, Mathuen and Co. Ltd. London.Pp56,87

Chow, V. T. (1964) : 'Hydrologic studies of floods', The US International Association of Science Publication.pp82

De Georges and Reilly,(2006) Dams and large scale irrigation the Senegal river, impacts on man and the environment, International Journal of environment Studies, 63(5) Pp633-644

Durocher, M.; Chebana, F.; Ouarda, T.B. (2016) On the prediction of extreme flood quantiles at ungauged locations mwith spatial copula. J. Hydrol., 533, 523–532.

Francisco Peña and Fernando Nardi (2018) Floodplain Terrain Analysis for Coarse Resolution 2D Flood Modeling Published Hydrology, 2018 Pp1

Gait,E.,(1905) : 'A History of Assam,' Lawyers Book Stall, Guwahati. (Rep. 1984), Pp42-43

Gregory,K.J.,(1976) : "Channel Network Metamorphosis in Northern New South Wales" in ed. River Channel Changes, john Wiley and Sons, New York, Pp98-99

Horton, R.E., (1945) : "Erosional Development of Streams and their Drainage Basin- Hydro-physical Approach to Quantitative Morphology", Drainage Basin Morphology, (edt) Schumm, S.A. 1969.

Kundzewicz, Z.W.; Takeuchi, K. 1999 Flood protection and management: Quo Hydrol. Sci. J., 44, 417–432.

O. Perry C., A. Aakash and John Bolten, D. (2018) Socioeconomic Impact Evaluation for Near Real-Time Flood Detection in the Lower Mekong River Basin, Published in Hydrology, 2018 Pp5

Leopold, Miller and Wolman, 1964 "Fluvial processes in Geomorphology, Eurasia Publishing House (Pvt) Ltd., New Delhi " Fluvial Processes in geomorphology,

Rosser, J.F.; Leibovici, D.G.; Jackson, M.J(2017) . Rapid flood inundation mapping using social media, remote sensing and topographic data. Nat. Hazards, 87, 103–120.

Oruonye,E.D.(2013) An Assesment of flood risk perception and response in Jailingo Metropolis, Taraba State, Nigeria, International Journal of Forest, Soil and erosion, vol. 3 No.4 pp-113-117

Strahler, A.N.,(1952) : 'Dynamic Basis of Geomorphology"Bull. Geological Society of America, No. 63, pp 923-38

Subramanyia,K., (1994) : "Engineering Hydrology" 2nd edition, Tata McGraw Hill, Publication Company Limited, 20th Reprint, 2005, Pp23

Ward, R.C., (1978) : Floods- A Geographical Perspective, McMillan, London.Pp12-13

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

INDUSTRIAL SICKNESS IN INDIA: CAUSES AND CONSEQUENCES

Dr. Md. Moazzam Sulaiman
"Sulaiman House", Chhoti Quazipura
P.O. Lal Bagh, Darbhanga
Bihar, India

Abstract
Industrial sickness acts as a notable problem for economic progress. It is considered as a disease that can convert a strong unit into a sick or weak unit with minimal productivity. It is a sluggish poison that can make an economy paralyzed. The incident of industrial sickness not only lean towards to aggravate the problem of unemployment but also melt down movable capital investment and mostly creates an unpleasant climate for further industrial growth. The problem of industrial sickness has presumed very significant extents over the previous years. The rapid development and significance to industrial sickness are fighting issues not only for the present time but also for all time to come; especially for India all through the next century. It has become a difficulty of critical concern for all; concerned directly or indirectly as not only, crores of rupees choked up in some of the sick units but also have an effect on the national growth. Industrial sickness has been growing in India day by day because of growing competition and the changing economic, political, social, cultural, legal and global environment. Sickness in the industrial units is not a new occurrence as is noticeable in the developing nations. Industrial sickness (industry not in operation) in our nation is a general phenomenon, which has existed along with strong industrial enterprises. The number of companies is increasing in India every year. With the increasing number of companies, sickness in industries is also flowed by it. Sickness as a key problem was initially noticeable in India in the early 1970s. The accountability to prevent industrial sickness is mostly vested with the management of the respective unit itself. The paper highlights the causes and consequences of industrial sickness in India.

Key Words: Industrial Sickness, India, Industry, Economy, Sick, Unit, Problem, Company.

Introduction

A sick unit is one that does not earn a reasonable return on capital employed and that does not perform its normal functions and activities of production of goods and services at an equitable rate of profit on a sustained basis. Industrial sickness does not occur all of a sudden in the life history of an industrial unit. In fact, it is a gradual process with distinct stages taking to oxidize the health of a unit. A major symptom of Industrial sickness is a steady fall in debt-equity ratio and an imbalance in the financial position of the unit. It sets in and gradually debilitates the normal functioning of the unit over a period of time. The setting of sickness can be diagnosed on the basis of such danger signals or symptoms as slow-down in the production and sales cycle, erosion of net working capital, frequent resort to outside sources of funds for meeting short-term needs, difficulty in housing bills and loans payable as also taxes, interest, and even wage and salary payment commitments, problems in stock up raw materials inventory, excessive stock of finished goods and so on. The symptoms of industrial sickness also include failure to pay statutory liabilities like the Provident Fund (PF), Employees' State Insurance (ESI) contribution and failure to pay timely payments of principal and interest on loans received from financial institutions and through public deposits. An increase in inventories with a large number of slow-moving items, a high rate of rejections of goods manufactured, low capacity utilization and frequent industrial disputes are among the causes of industrial sickness. It does not develop at once except due to accidents, natural disasters or other external factors causing heavy irrecoverable loss to the industry. Mostly, sickness is raised up within the unit itself. Thus, a sick unit may not work to its

full capacity, may not earn a reasonable profit, may not pay fair wages and dividends and may face financial, marketing and other problems in a continuous manner. Industrial sickness is the important incident of the modern industrial era; and prevalence of sickness has been increasing in such large proportions that in the wake of industrial progress, a large number of new units (cover all type of units in small, medium and large sectors) have been added up in this category.

Industrial sickness is a global phenomenon not a special for Indian industry. At the same time in industrially developed countries, there are plentiful cases of bankruptcy or liquidation. This incidence in the developed countries of the world may be low as compared to the less developed countries like India, where industrialization, as a result of a low capital base and low level of technological and managerial expertise, has not been an exhilarating experience. India, in particular, has suffered from this disease and during the last decade, industrial sickness has expected out of control magnitudes and there is no sign of reduction. Industrial sickness (industry not in operation) in our country is a general trend, which has existed along with healthy industrial enterprises. Sickness has registered a dramatic jump in India with the arrival of the new economic order, ushered in by liberalization and globalization. Industrial sickness can be found in any state of India as well as all over the world.

Sickness in industries has become a very penetrating problem in India. It is creating an adverse problem for industrial health and the economy as well. Fast industrialization gives positive as well as a negative impact on the economy. It is a phenomenon shows an unfavorable influence on employment, accessibility of goods and services and the price of those things soaring up. The stockholder loses their hard-earned savings, creditors lose their cash and future prospects of business turn out to be completely dark. The growing industrial sickness in the country is made happen great concern to the government and financial institutions as it pulls on the blood of the industry slowly and reducing economic strength and thereby perplexing all the useful programs of economic development. In fact, industrial sickness pervades all around and is posing a very serious problem for different sectors of the economy.

Definition of Industrial Sickness

The Indian government for the first time hold up a significant notice of the incident of the industrial sickness in the Statement of Objects & Reasons of Industries (Development & Regulation) Amendment Act, 1971 and experienced the need for action to rehabilitate such undertakings by capital spending of public funds and managerial skill. But, no formal definition of industrial sickness was given in the Amendment Act or in the main Act viz., the Industries (Development & Regulation) Act, 1951 (as amended).

The banking industry was given the first formal definition of industrial sickness in India since they were worst affected financially due to the growing phenomenon of sickness. In 1975 the study team of the State Bank of India on small scale industries defined as “One which fails to generate as internal surplus on a continuing basis, and depends for its survival upon frequent infusion of external funds".

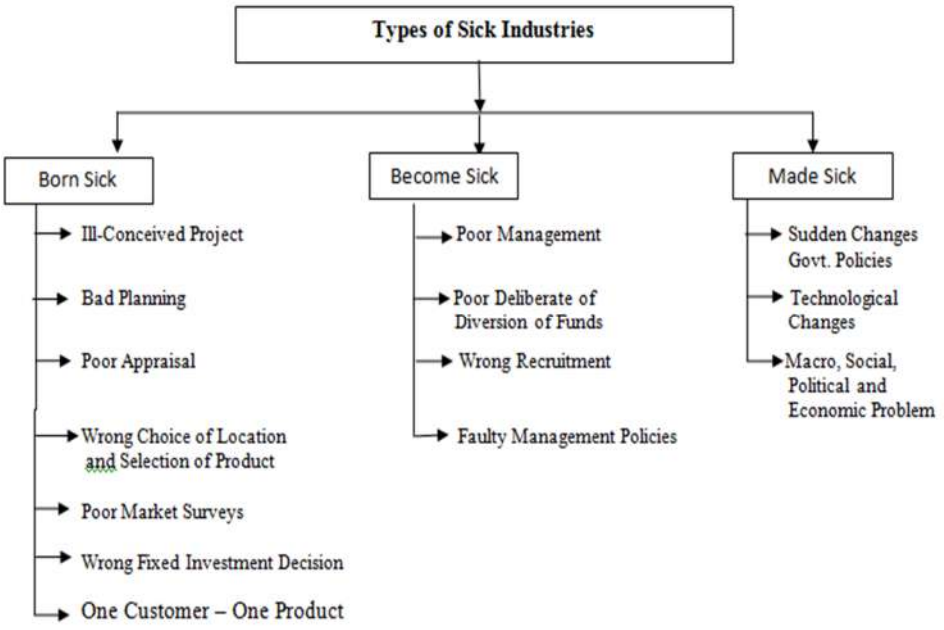
The most popular definition of sickness defined by RBI in the ‘Report on Trend and Progress of Banking in India’ (1977-’78) as “a unit is considered sick if it has incurred cash losses for one year and in the judgement of the financing bank is likely to incur cash losses for the current as well as following year and/or there is imbalance in the units financial structure, that is when the ratio of current assets to current liabilities is less than 1:1 and debt equity ratio (total outside liabilities as ratio of net worth) is worsening”.

This definition given by the RBI is broadly recognized in the banking industry itself and also in other organizations for the identification and rehabilitation of sick units.

Term-lending financial institutions classify a unit as sick after taking into account any of the following symptoms:

i) Continuous defaults in meeting four consecutive half-yearly instalments of interest or principal in respect of institutional loans.
ii) Continuous cash losses for a period of two years or continued erosion in the net worth, say by 50%.
iii) Mounting arrears on account of statutory and other liabilities for, say, a period of 1 or 2 years.
Prior to the enactment of the Sick Industrial Companies (Special Provisions) Act, 1985 there was no unanimity regarding the definition of industrial sickness. Reserve Bank of India, term lending institution and State Bank of India all defined sick industries in different ways. However, enactment of the Sick Industrial Companies (Special Provisions) Act (SICA), 1985, settled the issue of the definition of industrial sickness in India and a sick unit was defined as "An industrial company (being a company registered for not less than seven years), which has at the end of any financial year accumulated losses equal to or exceeding its entire net worth and has also suffered cash losses in such financial year and the financial year immediately preceding such financial year".
Revival and Rehabilitation of Sick Industrial Companies was incorporated in the Companies Act, 1956 by the Companies (Second Amendment) Act, 2002 and defines Sick Industry as "Sick Industrial Company' means an industrial company which has
i) The Accumulated losses in any financial year equal to 50 percent or more of its average net worth during four years immediately preceding such financial year; or
ii) Failed to repay its debts within any three consecutive quarters on demand made in writing for its repayment by a creditor or creditors of such company."

Types of Sick Companies
According to nature of sick unit, it can be categorized under three groups viz., Born Sick, Become Sick and Made Sick.



1. Born Sick: Industrial units born sick are those which are intended for tragedy right from their start due to various causes. More or less of the industrial projects are born sick from the very beginning because due to ill-conceived projects, bad planning, and poor appraisal, the wrong choice of location and selection of products, poor market surveys, wrong fixed investment decisions, and one customer-one product type situation, etc. Generally, the units set up by the government under the social welfare scheme come in this category.

2. Become Sick: Industries that achieve sickness are those which fail after becoming operational due to internal causes. They are established in certain circumstances i.e., poor management, poor deliberate diversion of funds, wrong recruitment and faulty management policies are liable for the sickness.

3. Made Sick: Sickness may be caused by external factors of external causes beyond the control of the management of an industrial unit. They may be sudden changes in government policies, technological changes, and macro, social, political and economic problems. A further reason for made sick is the entrepreneur's inefficient management policy.

Causes of Sickness

It is well-known fact that the nature and causes of sickness differ from industry to industry, area to area, size to size – small, medium and large units, and because of a host of other factors. The sickness of industry, in general, starts with the slow loss of its liquidity due to cash losses on a continuing basis, and in that way a decline in debt, equity, and current ratios. The root cause is poor management and the secondary cause in finance. Causes of industrial sickness have to be observed from the overall personal history of an industrial economy which experiences riches and falls over a period of time. At any point in time, the problems of industries are not uniform. Industrial units may turn into sick caused by several reasons. However, issues mainly accountable for the problems can be divided into –

(A) Internal Causes

Internal Causes i.e., Avoidable (Mostly, under control) the internal factors include which originate within the unit and can, therefore, be said to be under the control of the unit.

The major internal factors responsible for the widespread sickness in Indian industries are discussed below:

1. Financial Bottlenecks

Finance is the main constraint in running at all organizations. It is also one of the major reasons for the closure of any industry. To operate any industry finance is the most important factor. Every industry needs finance to manage their day-to-day operations such as purchasing raw materials, salary payouts, purchasing goods for office use, etc. Inadequate amount of capital, incompetent finical planning and control, poor management of working capital, cash flows, and capital expenditures, fatuity dividend policy, weak equity base, poor utilization of current and fixed assets, inefficient working capital management, absence of costing & pricing, lack of proper financial planning and budgeting and inappropriate utilization or diversion of funds, etc., may ultimately spell doom for an industrial unit. Therefore finance is the most important reason responsible for the sickness of any industry. If finance is not put in order properly the industry may lead to closure.

(a) The Absence of Proper Financial Planning/ Control and Budgeting

Financial planning/control and budgeting are very important for an industrial unit to meet its day to day financial indebtedness. Non-appearance of these methods unfavorably has an effect on the status of a unit and finally leads to sickness.

(b) Unproductive Working Capital Management

Management of the working capital portfolio in an effective way by a unit regulates its smooth functioning. Working capital management consists of inventory and receivable management and liquidity management. A firm/company be unsuccessful to manage its working capital portfolio

efficiently faces problems in meeting its day-to-day requirements and in fostering supplementary funds for instant neediness

(c) Inappropriate Use of Assets

The strength of an industrial unit is reliant on the proper use of assets detained by it. Insufficient use shows that the concern is not achieving the highest turnover with its current assets. This leads to unused slowdown capacity and ultimately to the sickness of the unit.

(d) Inadequate Alteration / Draw off Funds

A financially sound firm/company meets its long-term necessities by raising long-term loans and short-term requirements are met through short-term loans. As this financial mix (short and long-term) is not the best potential, the unit possibly will have to redirect long-term funds to short-term uses and vice-versa. This would disturb the economic feasibility of the company and may lead to sickness.

(e) Poor Collection of Bad and Doubtful Debts

Recollect of bad and insecure debts is a long and problematic process. When such debts turn into considerable, it will destroy a part of the capital and contingency fund of the enterprise and may possibly lead to failure.

(f) High Rate of Capital Gearing/ Financial Leverage

The word 'capital gearing' represents the volume of long-term fixed interest effect securities as a percentage of total capital utilized. The funds of a company/firm can be raised from different sources that contain several types of long-term debts including bonds, debentures, and preference shares. The rate of interest of long-term debts is fixed even though of profits. On the other hand, equity dividends differ totally on the profits of the company/firm. As a result, loans are preferred to equity when a company/firm goes into bankruptcy. In spite of this, the use of loans moving a fixed rate of interest is helpful until the capital gearing/financial leverage is useful. However, a company works for more on its total capital retained than the fixed rate of interest on loans or vice versa, capital gearing is said to be constructive. Thus the use of long-term fixed interest-bearing loans away from several levels or limits forces the company/firm into a liquidity crisis. This will, in turn, lean on the company to borrow still more from the banks and financial institutions and accordingly increase its problem of high gearing.

(g) Lack of Ploughing Back of Profit

It is a very economical starting place in finance. It also assistances an industrial unit to stand-up fight as opposed to depression and seasonal variations. However, failure to pay attention to this basis by the industrialists leads to the financial crisis in the get up of economic decline or demand recession.

2. Production Problems

The internal causes in production that cause sickness are the wrong layout, absence of appropriate looking after of plant and machinery, the uselessness of machinery, defective production program, non-existence of proper material control and quality awareness, implementation of incorrect or inappropriate technology and lack of research and development. An inappropriate plan deprives the economic flow of materials. Poor maintenance of plant and machinery increases the number of breakdowns. An unproductive production program causes the idling of plant and machinery at several stages.

(a) Faulty Initial Planning

At the planning stage, some defects can happen. The first fault could relate to the setting of the unit. If the unit is placed in such a place where basic infrastructure facilities do not exist, it is likely to face problems. Moreover, if the unit may not undertake a proper market analysis for their product and start production without finding out its market potential. Such a unit may face problems in the long run to sustain their product in the market. Furthermore, the unit may make a wrong estimate of project cost and may indulge in wasteful expenditure in the initial stages. Several industries start with an out of order capital structure and some spend lavishly on

unproductive assets. Lack of ability to bring up adequate finance to hold out operational losses is a severe constraint.

(b) Wrong Location of Site/Improper Selection of Site

Inappropriate selection of location may create problems for an industrial unit and may lead to industrial sickness at an early stage. If the place of industrial location lacks infrastructural facilities, the industry is bound to face difficulties. It is important to take into care a few factors such as availability of different infrastructural facilities like energy, water, transport apart from skilled labor, climate, etc. before the selection of the site of a particular industrial unit is selected. Any mistake in respect of any one of the factors would definitely lead to industrial sickness at an early stage. Therefore, advance technology-based organizations are started in areas without skilled labor on backup infrastructure facilities industries based on imported raw materials that are started in areas without proper transport and the communication service adversely has an effect on the operation of a unit and can cause sickness.

(c) Improper Choice of Technology

Technological factor also plays an important role in industrial sickness. Small entrepreneurs cannot have enough money to take technical assistance from experts to pick out proper machinery. Adoption of inappropriate technology, obsolete technology, substandard machinery, wrong technological collaboration unsuitable product mix, and single product technology contribute to industrial sickness. Technological changes also lead the industries to sickness, this happens when the proper modification of technology is not done. That is industry follows the outdated technology in production or any other link up work. Therefore a change in technology is also an important reason for industrial sickness.

(d) Defective Production Program

Production planning helps an industrial unit in getting available resources at every stage of production and thus ensures full utilization of plant, equipment, and labor. In a faulty production program, the unit has to stop its production operations because of the non-availability of essential materials and types of machinery at the appropriate time. Accordingly, the plant and labor have to remain idle at various stages on one hand while the accumulation of material increases on the other.

(e) Inappropriate Plant and Machinery

A wrong selection of plant and machinery can also cause sickness to an industry. Many entrepreneurs do not seek professional and technical guidance from competent authorities in choosing the correct machinery. If the plant and machinery finally selected and installed by them turn out to be defective, their units are bound to suffer losses and will in all probability, turn sick. If the plant and equipment are also uneconomical, obsolete and inefficient, both the quality and quantity of output of the unit will decline and the cost will go up. The absence of modernization, i.e., the new techniques and methods of manufacture will also demolish the productivity of the unit and raise the cost. All these ultimately lead to the failure of the industrial units.

(f) Poor Maintenance of Plant and Machinery

Proper maintenance of plant and machinery is essential for keeping machinery free from out of order and too much wear. Inadequate maintenance leads to frequent break down of machinery and thus disrupts the entire production program. A World Bank Team pointed out that the maintenance program of Indian textile mills was very poor and far below the West-European standard.

(g) Lack of Product Diversification

The growth of an industrial enterprise is contingent on a great amount on diversification of products. Lack of product diversification moves forward an enterprise in the tract of sickness. An enterprise depends on a single product encounter several problems such as the shortage of raw materials, competition, the decline in demand, the rise in prices of raw materials, etc.

3. Problems of Personnel

The manpower workings in an economic enterprise are of vital importance and any malfunctioning can jeopardize its overall functioning. The crucial internal factors directly or indirectly responsible for sickness in personnel field are bad industrial relations, improper selection, and recruitment, lack of adequate training, absenteeism or high labor turnover and overstaffing, lack of behavioral approach causes dissatisfaction among the employees and workers. Problems of industrial relations and unrest chiefly emanate from ineffective wage and incentive structure.

(a) Bad Industrial Relations

A well-balanced relationship between labor and management is very essential for a healthy industrial unit. Bad labor-management relations and labor disputes cause low productivity, poor quality of products, inadequate maintenance of plant and machinery, an increase in wastage and often lead to demonstrations, strikes, lockouts, etc. Gheraos, lock-outs, strikes, etc. result in the loss in man-days and thus reduces the production of the industries. If such a situation exists for a longer period, it will lead the units to sickness.

(b) High Absenteeism and Labour Turnover

High absenteeism and labor turnover which are generic features of various industrial units may cause sickness. The machines and types of equipment would remain idle and continuous working of the units would be disturbed.

(c) Overstaffing

Different skilled and trained persons are generally needed for operating different machines and types of equipment in an industrial unit. From time to time in some enterprises, it is detected that there are more men than jobs available to them. The reason is that persons with appropriate skills and training are not employed in the unit and the lack of such persons is made up by employing more unskilled and un-experienced persons. The absence of manpower planning is the most important cause of such a problem. Overstaffing not simply slow down production but also leads to wastage in money paid to the extra staff of the unit. In such situations, the enterprises face the financial crisis and hence fall sick.

(d) Inappropriate Wage and Salary Administration

An industrial unit paying wages and salaries lower/ higher than the predominant wages in the industry, in general, it faces some serious problems. If it pays less, it would lose experienced workforces and as a result, suffers from a decline in productivity. In the same way, the payment of high wages increases the cost of production. Incorrect wage and salary administration is also a cause of industrial sickness.

4. Marketing Constraints

The scarcities in the market function generally rise on account of wrong demand forecasting, absence or incorrect product mix, lack of market research and poor sales promotion activities.

In general, a business enterprise regulates its production level through demand forecasting, the projected or feasible future demand for the product. However unclear estimate of its future demand and the market share of the product make problematic to push its products in the market. If the supply of the product is not properly in the market as well as the product is not marketed in a proper way then there is a possibility of customer switch to substitute product which is easily available in the market. If this issue of supply is not sorted out quickly the industries may lose their customers and it can be the major reason for its sickness.

(a) Inept Demand Forecasting

The quantity of production of an industrial unit is determined by making an estimate of the future demand of their product, thus proper demand forecasting for the products to be sold is necessary. If any industries start production of their product without making a market survey and fall into difficulties later. Inept forecasting of demand can cause several difficulties in an industry. If the unit miscalculates his future demand, it may perhaps turn sick as the product produced will not

find a ready market. Incorrect demand forecasts unexpected arrival of competing for alternates in the market, drastic and sudden change in the tastes of people as the production of a commodity is being taken up may all cause industrial sickness.

(b) Selection of Inappropriate Product-Mix

An industrial unit can manufacture different products with various combinations of the same resources. The profit of the unit is contingent upon the sales of the quantities of several products, i.e. the product-mix. The enterprise would be suffering at the same time if its production and sales both are increasing but the sales of profitable items are declining and those products where the margin of profit is inadequate are increasing.

(c) The absence of Proper Product Planning

Proper product planning is essential for an enterprise in order to maximize its profitability. Sometimes certain old products of an enterprise may become out-dated or inappropriate in the long run. Therefore, proper planning for the development and marketing of a new product is essential, if the firm wants to maximize profit. The absence of such planning may lead to sickness.

(d) Lack of Market Research / Survey

Market research plays an important role in getting ideas about customers' needs, desires, and habits appropriateness of different products. Thus, research helps an industrial unit in setting up an effective and strong marketing policy. Lack of proper research flops to meet the consumers' requirements in this fast-changing world and may, therefore, cause failure to industrial enterprises.

(e) Inappropriate Sales Promotion

Policy for an appropriate sales promotion is essential for the smooth functioning of an industrial unit. There are several factors on which the sales promotion of a specific product of an enterprise depends, such as its nature, use, market segment, the habits of the customers, etc. Flop to prepare a suitable sales promotion policy disturbs the functioning of the unit and may cause sickness.

(f) Lack of Experience of Promoters

From time to time promoters are new and they don't have appropriate knowledge about the product due to lack of experience. Wrong selection of the project and faulty project planning and wrong guidance given by the promotional agencies of the government may also lead to the birth of a sick unit. In order to make quick money, these consultancies supply the wrong picture of investment or capital which makes the sick for the firm.

(g) Reliance on a Few Customers

The industries which place too much reliance on the demand indicated by their few customers are continuously disposed to sickness. The reason is that uncertainty the customers change their demand or the product becomes out-dated, the industries would be in dire financial crisis.

5. Corporate Management

The poor management of an industrial enterprise is the main cause of the sickness of any firm/company. Poor management is the type of management of a firm and enterprise which absences required personnel, expertise skills and adequate information and reporting systems of enterprise at the top level of the management. Sometimes it is found that poor management of an industrial enterprise is not capable of managing the organizational activities. This may be due to several causes such as poor work knowledge, unexciting job profile or inappropriate education fit with the job profile. If these kinds of trials are done in the industry they may face the closure. The unpleasant conceptualized plans, an interval in action, incapability to frame the modern attainable goals, unfriendly well-designed policies are responsible for the sickness of the industry.

(a) Improper Project Planning

For the healthy functioning of an industrial unit, proper project planning is essential. But in several cases, due to the lack of managerial talent and capability, project planning is not done properly. A lot of projects are born sick because of incorrect demand forecasting for the products, faulty choice of technology, improper selection of financial requirements, etc. As a result, the

various stages in project progress are not accomplished as per the schedule and get delayed. Poor implementation of project planning is a common feature in the Indian environment because of the shortage of appropriate resources which sometimes is real and quite often manipulated. The management of the project has to be alert to the key materials required for the project, the lack of which can hold up the project progress.

(b) Poor Managerial Talent

In any industrial enterprise, managers should possess certain qualities such as maturity, decisiveness, intelligence, supervisory ability, etc. Lack of managerial talent generates sickness in all fronts of operation of the organization. The managers with poor talent are incompetent to resolve the various problems faced by the company during several periods leading to the failure of such a company. There is a tendency to take into employment various relatives and friends, who by their training and performance are not proficient to perform their functions, which has been assigned to them.

(c) Mismanagement

In most cases, the management of an enterprise cautiously indulges in mismanaging the affairs for its personal advantages. This wilful mismanagement and duplicity may lose the profits of the enterprise and may lead to business collapse.

(d) Inability to Respond

Another key internal factor accountable for sickness is the failure of management to respond effectively to changes. In the present-day economic world, an industrial unit cannot operate in isolation. It has to execute and react to a constantly changing environment of business. Some of these changes take place slowly and thus predictable in nature, even though others arise suddenly and cannot be predicted. If the firm/company fails to predict such invents in time and estimates their impact, it would eventually face a crisis. The changes may link up to competitive, political, economic, social and technological changes taking place.

(e) Infighting

Infighting among the different units of management, i.e., partners of a firm or directors of a company has been one of the main causes of industrial sickness. On account of these oppositions, most of the resources go waste, there is a general air of financial strictness. In such a situation, the enterprise is forced to face severe end result and hence falls sick.

(f) Poor Reporting

Lack of proper information and reporting system particularly accounting information is a new important cause of industrial sickness. Various deficiencies have been noticed relating to the information and reporting system that contribute to sickness. The important deficiencies are: (a) no or inadequate budgeting control, (b) no or poor costing a system to calculate the current cost of each product, (c) no or poor cash flow planning and (d) inadequate reporting of defects, breakdowns and sales in the industry. The lack of adequate information and reporting system makes incredible for the management to analyze the growing problems and to take proper steps for its timely solution.

(B) External Causes

External Causes i.e., Unavoidable (Mostly, not under control) the external factors which start outside the unit and can, therefore, be said to be not under the control of the unit.

The major external factors responsible for the widespread sickness in Indian industries are discussed below:

1. Financial Bottlenecks

External causes are resource crunch in the money as well as capital market, imposition of stringent terms and conditions for granting credit by commercial banks and financial institutions resulting in inordinate delay in sanctioning of funds, unfavorable investment climate limiting the fund raising capacity of industries, siphoning off of funds for other purposes in the face of constant threat of nationalization leave the units hard-pressed for finance and sickness enters.

(a) Lack of Sufficient Industrial Credit

Both short and long-term finance is important for an industrial unit for its smooth operation. The non-availability of enough finance may start vital operational problems and begin sickness.

(b) Delay in Disbursement of Loans

Delay in payment of loans by banks and financial institutions has been one of the main causes of delaying industrial development in certain sectors. Mostly, the small-scale industries suffer from the problem of late availability of bank finance and thus fall sick.

(c) Poor Investment Climate

As soon as the investment climate in the country is not useful, a unit will not be able to bring up funds by fluctuating shares and debentures in the market as people may not like to invest in the companies in such time.

(d) The Policy of Credit Limitations

The policy of credit restraint followed by credit institutions at a time when the industrial units are in the urgent necessity of funds may possibly cause sickness.

2. Production Problems

The environmental constraints which affect the production of an industrial unit are termed as production constraints. An example of external causes is a shortage of essential inputs like shortage of energy, power, fuel or other infrastructural inputs that prove to be disastrous for industrial undertakings and consequently cause sickness.

(a) Shortage of Energy

Energy and coal shortages have caused sickness among industrial units due to the increase in the price of energy-related material, shortage of power may begin the sickness of an industry. It reduces the capacity utilization and may be a major reason for the hold up of its production. When this situation carries on for a long period, the unit may turn sick. Non-availability of inputs, particularly power has been a major factor hampering the progress of many Indian industries. A large number of industrial units also face power cuts from time to time. These power cuts are forced by the state government as the production of power is significantly less than its actual requirements. Scarcity condition for the duration of some years in a number of states more annoyed the problem and critical power scarcity resulted in frequent power cuts.

(b) Raw Materials

The scarcity of raw materials can also cause a serious setback to some industrial concerns. The absence of a regular supply of raw materials and other inputs disturb the production schedule make happen losses to the unit. This is mainly the case of units depending upon the supply of imported inputs as well as raw materials. Inadequate accessibility of transport services can also disturb the supply schedule of inputs.

(c) Restrictions on Imports

Sudden and un-favorable changes in government policy regarding export and import can turn viable units into sick units. The government at times imposes heavy restrictions on the import of some materials and types of machinery. As a result, most of the units especially engineering and electric goods-producing units encounter the problems of shortage of materials and types of equipment which ultimately lead these units to sickness. The government's policy on import, e.g. restriction on the import of critical inputs, affects the production function adversely. Further, the government's restraint on diversification and expansion affects the industrial units adversely.

3. Marketing Constraints

External causes are certain environmental constraints which affect the marketing function adversely. An excessive liberal licensing policy of the government often leads to the creation of excess capacity in a particular industry which in turn makes the units sick. The government policy on purchases by bulk purchasers also burdens units operating with difficulties. Export-oriented industries face severe crises when changes occur in the international market. Besides, a high taxation policy of the government and general recession or inflation is also the factors of sickness.

(a) Demand Recession

The demand recession leads to a decline in sales of the enterprise. It hampers the effective operation as huge unsold stockpiles up continuously. When this recession continues for a longer period, it results in underutilization of the installed capacity of the concern and may lead to a situation of prolonged ailment.

(b) Heavy Taxes

The introduction of too much taxation policy particularly in respect of excise and import duty by the government continues is increasing the cost of production. This further leads to a hike in the prices of the products and accordingly the firms/company faces a problem of reduction in the demand for the products.

(c) Restriction of the Purchases by Bulk Purchasers

A few industries sell a major portion of their goods to particular government departments. Limitation of purchases by these departments for some reason creates a crisis and causes sickness. Again delay in the payment of government the purchase may also land the industry into financial stringency. Besides these, liberal licensing of the industrial enterprises, the inability to keep pace with the changes in the international market, etc. are some of the causes of sickness in this category.

4. Problems of Personnel

The external constraints which affect the personnel function of an industrial unit are termed as personnel constraints. These personnel constraints are the result of some adversities like non-availability of skilled manpower, high turnover of staff and labor, wage disparity in the similar industry, volatile labor conditions in a particular area, inter-union rivalry, etc. These seriously hamper the productivity of the units and causes sickness.

(a) Non-availability of Skilled Manpower

Industries located in the backward areas suffer from the scarcity of skilled manpower though there is an abundant supply of unskilled labor. Lack of availability of skilled labor not only decreases production but then again also slows down the overall progress of the industries.

(b) Labour Unrest

Labour unrest such as strikes, lock-outs, etc. leads to low productivity or less utilization of available resources, loss of man-hours and consequently decline in the profitability of the industrial units.

(c) Wage Disparity in Identical Units

An efficiently managed and organized unit can offer better salaries and other facilities than mismanaged units. A skilled employee always wishes to shift to an organization that can offer better salaries and conveniences. In such a situation, an inefficient unit copes with problems in retaining skilled and efficient personnel. The scarcity of qualified and skilled employees possibly will lead to a unit to demolition.

(d) Inter-union Rivalry

If there are multiple unions within an industrial unit, the inter-union rivalry may also sickness.

Consequences of Industrial Sickness

It is clear that the sick industrial unit unless they are revived and restored to health by sound financial measures and managerial upgrading, is likely to close down sooner or later. In the case of shutting down such units, whose number may continue to swell year after year, the worst affected sections are the working classes, i.e. the laborers working in these industries that face unemployment and the loss of means of living. Industrial sickness also represents the work of capital resources locked in them, which by no means is necessary for a capital-poor country. Industrial sickness also increases from one industry to another through input-output correlation and thus threatens to overcome many industries. It normally creates an unfavorable investment climate for the domestic as well as foreign investors. In advances countries where there are sufficient social security welfares, this is accepted as a normal feature of the industrial scene. But

such sickness has much more serious economic consequences in a country where unemployment is the main problem and financial resources are scarce.

1. The loss to Employment Opportunities

India is a labor surplus economy where avenues of employment are very much restricted in relation to the number of people seeking employment. One of the serious consequences of industrial sickness has been the loss of employment to workers associated with sick units. This aggravates the most dangerous socio-economic problem of unemployment in a labor surplus economy like India.

2. Losses to Banks and other Financial Institutions

Banks and other financial institutions lend substantial funds to industrial units to set up their plant and machinery and commence production. When these units become sick, they cause substantial losses to the lending institutions which had given loans to them. Definitely, the release of considerable funds in the sick industrial units imposes on the future lending capacity of the banks and the financial institutions. Further, recovery of overdue takes an excessively extensive period of time and in several cases, only a small percentage of the outstanding amount finally gets back. Consequently, these assume an adverse effect on the financial health of the banks and financial institutions.

3. Adverse Effect on Prospective Investors and Entrepreneurs

The closing or bankruptcy of large sick units creates a psychology of hopelessness among investors. They may feel demodulated to invest. Thus, the whole industrial development of the economy slows down automatically. The share price of that unit will fall down and the prevalence of gloomy market conditions can adversely affect the entire stock market of the country. Not only this, failure of a unit acts as a discouragement to other entrepreneurs who were planning to launch production in the same lines. Such industrial conditions are not helpful for industrial development.

Further, the failure and closure of a unit act as an unhappy example of a disincentive to the prospective entrepreneurs who are planning to plunge into the same lines of production. Overall, the industrial climate becomes non-conducive for the industrial development of the country.

4. Wastages of Scarce Resources

If a unit in which significant investment has been formulated in plant and machinery turns sick, it recourse in a waste of scarce resources. This type of problem is particularly serious for large-scale sick units where substantial investments have been made in plant and machinery. In an under-developed economy like India, the resources are already scarce. If these limited resources are locked up in sick units, it becomes the waste of scarce resources that otherwise invested would have given up substantial returns to the economy. Industrial action of production in these units not only results in a failure in the production of the industry together, but it also indicates the stopping up of beneficial savings and capital equipment.

5. Loss of Revenue to the Government

In India, the government brings up a significant percentage of its revenue from industrial units through various taxes and duties imposed on them. However, when a large number of industrial units turn out to be sick, the prospects for setting up considerable revenue from the sick units by way of numerous taxes are significantly cut down. As a result, industrial sickness results in loss of revenue to the government also. The shortage of revenue ultimately affects the functioning of the economy altogether.

6. The Emergence of Industrial Unrest

The closing of sick units causes not only unemployment although clues to industrial unrest too. At any time the workers are cut back and rendered out of jobs, the trade unions oppose it as an alternative to industrial strikes. The trade unions (of both sick and non-sick units) may resort to strikes opposing the cost-cutting of the labor of the closed units and as such disturb industrial

peace in the country. Such disturbances threaten the peace and coordination of the industrial environment. This results in the setback to industrial production in a number of units.

7. Adverse Impact on Related Units

Industrial units mostly linked up with a number of other industrial units across the backward and forward links. Therefore sickness in one unit is likely to affect adversely a number of other related units. Such as an iron and steel industry brings together with numerous other industries by back and forth links. Thus, sickness in a large unit manufacturing iron and steel is likely to have unfavorable effects on a number of other units.

The Planning Commission (1983) remarking on the consequences of industrial sickness mentions: "The phenomenon of industrial sickness not only tends to aggravate the problem of unemployment but also renders in capital investment and generally creates an adverse climate for further industrial growth.

While in advanced countries where there are adequate social security benefits, this is accepted as a normal feature of the industrial scene. But such sickness has much more serious economic consequences in a country where unemployment is a major problem and resources are scarce clearly the problem of industrial sickness is an area to which the government must give priority."

Conclusion

Industrial sickness is a global phenomenon through its incidence in the developed countries of the world may be low as compared to the less developed nations where industrialization, as a result of low capital base and low level of technological and managerial know-how, has not been a frightening practice. Recognization of sickness symptoms gives way to solve the problem of the nations. The number one contributor to sickness is the unit's management, although the conditions in the unit's industry and the errors of omission and commission by the government and the financial institutions are significant contributory factors. The accountability to stop industrial sickness is primarily vested with the management of the particular unit itself. The management team should have enough skills to make a proper decision at the right time. Among the discussed factors are the most common reasons for industrial sickness and it shows a significant impact on the economy of the nation. Banks, business people, government, and other financial institutions must be alert to deal with the thought of industrial sickness. The increasing industrial sickness in the economy is affecting remarkable interest to the government and financial institutions because it is sucking the blood of the industry gradually and weakening economic strength and in that way baffling all the useful programs of economic development. Actually, industrial sickness passes through all around and is posing a very serious problem to different sectors of the economy.

The government certainly cannot overlook the adverse consequence of industrial sickness on the economy and thus adopts many preventive as well as rehabilitative measures to put these industries back on the rails. In nutshell, whatever may be caused, the consequence is always the same for industrial sickness in the Indian economy.

References

1. Argenti, J. (1976). Corporate Collapse: The Causes and Symptoms. Mc Graw Hill Book Co., London.
2. Bidani, S.N., & Mitra, P.K. (1983). Industrial Sickness: Identification and Rehabilitation. Vision Books (P) Ltd., New Delhi, India.
3. Business India, (November 22 - December 5, 1982), p. 47.
4. Chand, Smiriti. Causes of Industrial Sickness in India. Retrieved from http://www.yourarticlelibrary.com/industries/causes-of-industrial-sickness-in-India/23451
5. Datta, L.N. (1988). Industrial Sickness - A Challenge to Professional Managers. Gemini Book House, Calcutta, India.
6. Dixit, V. (1984, Sept 16). Need to Identify Early Symptoms. The Economics Times, New Delhi, India.
7. Dikshit, J.R., Basak, P.C., and Vagrecha, Kamal. (2013-14, Winter). Sickness in Indian Industries. NIET Journal of Management, 9-18.
8. Gupta, L.C. (1988). Controlling Corporate Sickness. Oxford University Press, New Delhi, India.

9. Khan, Nafees A. (1990). Sickness in Industrial Units. Anmol Publications, New Delhi, India.
10. Kumari, Parveen. (2014, January). Industrial Sickness and Role of Board of Industrial and Financial Reconstruction (BIFR). International Journal of Research in IT & Management, 4(1).
11. Lal, Sudarshan. (1987). How to Prevent Industrial Sickness: Symptoms and Rehabilitation. Navrang, New Delhi, India.
12. Malhotra, Sam. What is Industrial Sickness? (With Special Reference to India). Retrieved from http://www.shareyouressays.com/knowledge/what-is-industrial-sickness-with-special-reference-to-India/112166
13. Mini Steel Plant in a Bind. (1992). From Special Correspondent, The Hindu Survey of Indian Industry, 1991, 263.
14. Mishra, D.P., Raut, K.C., & Sahu, P. K. (1990). Industrial Sickness - A Study of the Problems and Strategies for the 21st Century. In P.K, Sahu (Ed.). Industrial Sickness, Concepts, Cases and Remedies. Discovery Publishing House, New Delhi, India.
15. Misra, S. K., & Puri, V. K. (2015). Indian Economy (33rd ed.). Himalaya Publishing House, Mumbai, India.
16. Mukherjee, S. (1982, April 17). Industrial Sickness: Reasons and Remedies. The Economic Times. Bombay, India.
17. Pandey, Mahendra K. (1991, August 15). Industrial Sickness: Tackling on Priority Basis Nessary. Yojana. India.
18. Navulla, Durgaprasad., & Sunitha, G. (2016, February 27). A Study on Industrial Sickness in India. 3rd International Conference on Recent Innovations in Science Engineering and Management. Sri Venkateswara College of Engineering and Technology, Srikakulum, Andhra Pradesh, India.
19. Puri, V.K . & Mishra, S.K . (2016). Economic Environment of Business (9th ed.). Himalaya Publishing House, New Delhi, India.
20. Reserve Bank of India. Report on Trend and Progress of Banking in India, 1977-78, p.25.
21. Sahu, P. K. (1990). Some Conceptual Issues on Industrial Sickness. In P. K, Sahu (Ed.). Industrial Sickness: Concepts, Cases and Remedies. Discovery Publishing House, New Delhi, India.
22. Siddiqui, Niaz Ahmed. (2016). Rehabilitation of Sick Industrial Units. International Journal of Scientific and Innovative Research, 4(2), 63-72.
23. Singh, Navneeta. (2011, November - December). Industrial Sickness: Causes & Remedies. Annals of Management Research, 1(2).
24. Srivastava, S.S. & Yadav, R. A. (1986). Management and Monitoring of Industrial Sickness. Concept Publishing Company, New Delhi, India.
25. Report of the Study Team of the State Bank of India (1975), p.16.
26. Yenireddy, Ankireddy., & Seethamahalakshmi, M. (2016, December). Impact of Industrial Sickness on Indian Economy. International Journal of Business Management and Scientific Research, 24.
27. **Sinha. D. K. Various Consequences of Industrial Sickness.** Retrieved from http://www.yourarticlelibrary.com/industries/various-consequences-of-industrial-sickness/41204
28. Singhal, Nitin. (2013, November 22). External and Internal Causes of Industrial Sickness in India. Retrieved from https://www.importantIndia.com/8437/causes-of-industrial-sickness/
29. http://www.tutorhelpdesk.com/homeworkhelp/Entrepreneurship-/Consequences-of-Industrial-Sickness-Assignment-Help.html
30. www.rbi.nic.in
31. www.india.gov.in
32. https://en.wikipedia.org/wiki/Industrial_sickness
33. www.economicsdiscussion.net/industries/causes-of-industrial-sickness-in-india
34. www.researchersworld.com
35. www.google.co.in

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

THE MECHANISM OF GOLDEN MEAN AND MIDDLE PATH: THE PURSUIT OF HAPPINESS

Dr.Kabita Das
Assistant Professor
P.G. Department of Philosophy
Utkal University
VaniVihar, Bhubaneswar

Abstract
In the beginning of mankind people have always been in pursuit of two important things that are good conduct and moral values. However leading a good and meaningful life is very much complicated task for human being in the society. A meaningful life sustained happiness and life satisfaction. Knowledge and understanding of each other's cultural traditions, beliefs and practices will contribute to a positive reception of collective values and aspirations, as well as an appreciation of each other's differences, thus contributing to the development of mutual respect and tolerance. Learning to Live together in peace and harmony is a dynamic, holistic and lifelong process through which mutual respect, understanding, caring and sharing, compassion, social' responsibility, acceptance and tolerance of diversity among individuals and groups are internalized and practised together to solve problems and to work towards a just and free, peaceful society. This process begins with the development of inner peace in the minds and hearts of individuals engaged in the search for truth, knowledge and understanding of each other's cultures and the appreciation of shared common values to achieve a better future. Human beings also practised the virtue to lead a happy and peaceful life in the society.There are many formal equivalents between the ideal of human perfection conceived by the Buddha and that envisaged by Aristotle in spite of their different social and cultural contexts. Both observe human nature as a composite of intellectual and expressive aspects. It has the potential and believes that the full development of inner character lies to reach human being to his final goal. Therefore, in the present study an attempt has been made to elucidate Buddha's middle path linked interpedently to contemplation and insight or wisdom to reach the final goal that is Nirvana and on the other hand Aristotle's concept of Golden mean the middle way which is the key concept to attain virtue and happiness (eudemonia). This happiness is the final goal for Aristotle. This paper explicates the question of What kind of choices human being have with respect to make the better the society and why?What our virtues are? Do we have practice virtue or find any middle path to lead a good life or happy life?

Key words: Aristotle, Golden mean, virtue, Practical wisdom, Buddha, Middle path, Nirvana, happiness,

Introduction:

To live a moral life, we need virtues like wisdom, courage, temperance, emotions, love, and justice etc. This stems from an understanding that virtue is in general way beneficial. Human beings do not get on well without them. For instance, it is difficult

for anyone to live a happy life without courage and without a measure of temperance and wisdom. Communities where justice and charity are lacking are definitely wretched places to live in. "The virtues to us are the moral virtues where asarête and virtues refer also to arts and even to the excellences of the speculative intellect whose domain is theory rather than practice. And to make things more confusing we find some dispositions called moral virtue in translations from the Greek and Latin, although the class of virtues moral does not exactly correspond with our class of moral virtues" [1].

Virtues as we may see them today vary from person to person. Virtue in modern day is perhaps simply an action, however just because a person who does a 'virtuous act' does not make him a virtuous person. For Aristotle, one must practice virtues till it becomes second nature to do so. It is only then that someone truly becomes virtuous. In fact, virtue can only come into existence in a person through constant repetition till it becomes a habit. In short, he did not believe that one can simply turn virtuous overnight, nor could one be born with virtue. One had to practice virtue in order to perfect it. A virtue lies between two vices – a defect and an excess both of which are extremes as explicate by Aristotle. To cite an example, courage lies between cowardice and rashness. It is also to be noted that just because the virtue is a mean, this does not necessarily imply that it is at the middle of the two vices; rather it refers to a healthy balance [2].Almost two centuries before Aristotle, the Buddha (563-483 BCE) held that morality had its source in human nature [3]Aristotle's dualist view of human nature and his belief in the superiority of mind over body led him to see morality as dependent largely on reason. The Buddha, on the other hand, saw morality as linked interdependently to meditation and insight or wisdom. One cannot be good without also being mindful and insightful. Similarly, according to the Buddha, in order to meditate, one must learn to be good and to seek wisdom. Wisdom for the Buddhist always includes knowledge of the inner mind (as distinct from scientific knowledge) and, in striving for it, one has to both observe the ethical precepts and learn to meditate.

Research question:

- What kind of choices human being have with respect to the society and why?
- What our virtues are? Do we have practice virtue or find any middle path to lead a good life or happy life?
- Does practice of virtue create a better society for the sake of human beings living in the world today, for humans living in the future?
- Does Buddha's ethics and Aristotelian golden mean make bridge between a better society with a good life concept?

Objective of the study:

To evaluate the necessity of individual choices on the basis of virtue based system.
To solve the problems of conflicting society through practical wisdom

Methodology:

The present study based on normative and critical methods and analytical methods.

- To analysis the normative aspect of golden mean with regarding to virtue with respect to the human- societal harmony. It is a new model of thought in ethical enquiry for the sustainability development of the future generation.
- Analytical method analyses the concept like virtues, golden mean , good life and happiness to construct a better societies.

- Critical method analyses best possibility of human virtue which enhance the entanglement of present and future societies.

Discussions:

Comparative reflections on Aristotle and Budhist thought

To construct a theory of moral life on the idea of virtue is interpreted in terms of certain dispositions towards human well beings. Aristotle is interested in the concept of virtue or excellence of character because he wants to articulate what kind of character best suits a person to live and gain happiness as much as possible. He characterizes that virtue is something which is best "at the right times, with reference to the right objects, towards right people, with the right motive and in the right way [4]. Aristotle distinguishes two kinds of virtue: a) Intellectual comprising of wisdom, understanding, judgement and prudence, b) Moral consisting liberality, courage, temperance, etc. and justice as a fundamental virtueto represent the all to get the Eudaimonia.The correct way to follow something called 'the doctrine of the mean', it is the practical wisdom or Phronesisthe golden mean between the excess and the deficiency of all kind of virtue as used by Aristotle that we can possibly vindicate an action to be just and thereby derive the notion of justice [5].There is a teleology involved in all the virtues in general and justice in particular. The aim of justice is to attain eudaimonia[6]. Aristotle emphasizes on traits, disposition, which makes a person virtuous. Heis emphasis on character and its proper development and being responsible for action. So responsibility is a big part in Aristotle's philosophy without which justice cannot be function. The ethics begins with the question "what is good for man?"[7]. After analysing the whole virtuous processAristotle says it is based on eudaimonia (human flourishing). Happiness is the end and then defined as an activity of the soul in accordance with rationality and virtue with human excellence. Each moral virtue is a mean or lies between extremes of pleasure or of action doing or feeling too much or too little. The absolute mean is different from the mean as it is relative to the individual. Morality, like artwork, requires that one neither under do nor overdo. One must hit upon the right course (steering between too much and too little). This requires practice. Virtues are good habits or dispositions to do the right thing developed by means of particular virtuous acts. Means themselves do not admit of excess and deficiency (one cannot have too much courage, etc.). Good judgment requires that one find the mean between extremes. In order to do that, one must have both general knowledge and particular experience.Practical wisdom is the intellectual virtue (intellectual virtues are higher than moral virtues), which governs reflection and action. Here are some examples of the golden mean taken from Aristotle's,Nichomachean Ethics (Book II): Vice (Defect), Virtue (Mean) Vice (Excess), Cowardice (too little confidence) Courage Rashness (too much confidence) Foolhardiness (too little fear) Courage Cowardice (too much fear) Insensibility (too little pleasure) Temperance Self-indulgence (too much pleasure) Meanness or Stinginess (too little giving) Liberality Prodigality or Wastefulness (too much giving) Stinginess (in giving out large sums of money) Magnificence Tastelessness and Vulgarity (giving out large sums) Undue Humility (too little honor) Proper Pride Empty Vanity (too much honor) Inirascibility(too little anger) Good Temper Irascible (too much anger) Shamelessness (too little shame) Modesty Bashfulness (too much shame) Surliness Friendliness Flattery.

Aristotle opens the first book of his Metaphysics, which will provide the foundationalbasis of his ethics and politics, with the sentence: 'All men by nature desire to know'[8].Inhis Nichomachean Ethics and his Politics he understands likewise that there is the sameinnate desire in human nature for the goods of justice, friendship and community as thereis for the goods of knowledge. It is to the inbuilt human proclivity for association withothers that Aristotle attributes his description of man as a 'social animal.' In a similarvein, the arête, excellences or virtues, the presence or absence of which decide whether ornot the individual and the polis or community enjoy the moral and intellectual goods,arise from human nature. David Carr argues that:The question about whether ethical reflection should start from the facts of humannature is not simply a conceptual question, but a normative one: it is not a questionof theory to be addressed by appeal to logical consistency or supporting empiricalevidence, but one about how we ought – practically or morally – to conduct ouraffairs [9].Aristotle is far from imagining that human nature provides us with readymadedispositions for morally appropriate behaviour from the outset; he stresses the need fortraining and habituation from earliest childhood, if dispositions are to be developed,which will, in time, become spontaneous.

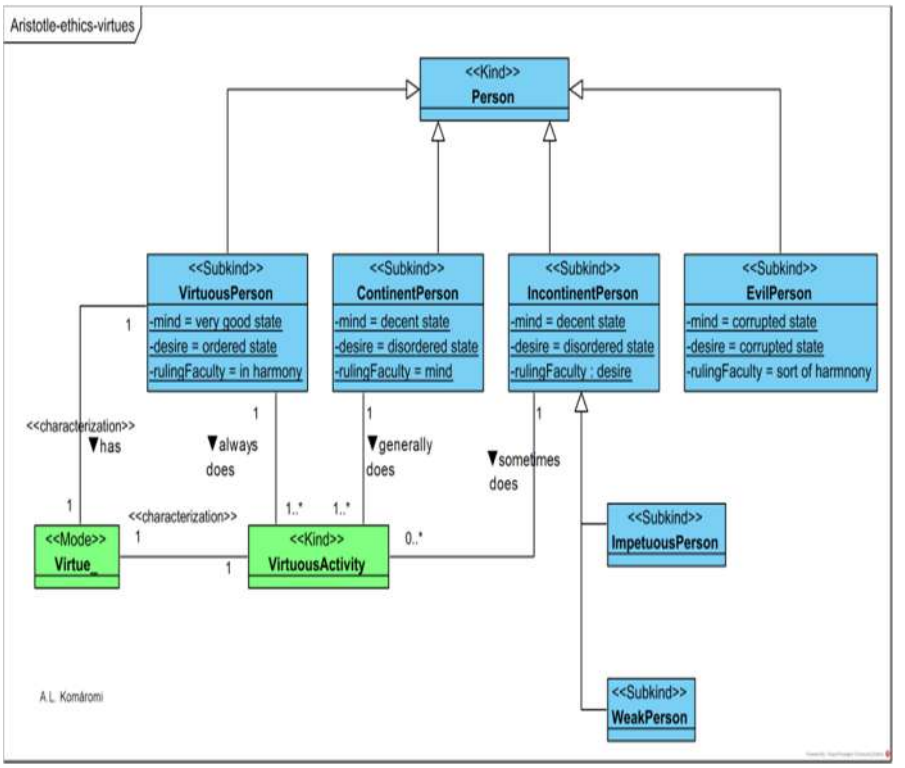


Fig-1: Representing figure showing the need of virtue for state of mind to improving thought process. And shows the virtuous mode and weak mode. (Adapted from Visual philosophy, Google images) [10]

Development in any one of the three, morality, meditation, or insight/wisdom, goes hand in hand with development in each of the other two. The Buddha's main emphases in his ethics are on himself as the exemplar of karunaor compassion and on his teaching of the Noble Eightfold Path; the list of five precepts followed later. As already mentioned, for progress to be made on the Path, all three components – silaor morality, samadhior meditative culture, and prajnaor insight – must be combined in practice.

The culmination of the Buddha's psychological and spiritual journey, it refers to two kinds of blissful state. Firstly, the state reported by the Buddha and others who have been 'awakened' or enlightened in 'this-life nirvana' is brought about through the destruction of the 'impurities' and 'defilements' by the practice of generosity, compassion, and mindfulness in daily life, and cultivated, above all, by the exercise of insight meditation. This-life nirvana is characterised by a consciousness which is not, as frequently supposed, absent – it is altered.

The enlightened Buddha claimed that this-life nirvanic experience gave him insight into the doctrine of Dependent Origination, the Four Noble Truths, and knowledge of how suffering may be overcome by following the Noble Eightfold Path until one is cleansed of 'the defilements.' The second kind of nirvanic state may be attained only by a human being who has attained this-life nirvana. In the latter case the five skandhasor aggregates that constitute individuality remain, and one is still subject to the possibility of suffering and the effect of previous karma. Upon enlightenment one now enjoys right understanding and right views about the truths of existence, like the Buddha. When, after possibly many lives, one maintains the state of this-life nirvana, pursuing perfectly the Noble Eightfold Path in all three dimensions (morality, meditation and insight) it is claimed that, at the moment of physical death, post-death nirvana is attained. This marks the complete end of suffering; there can no longer be karmic [10] rebirth into samsara or the continued cycle of existence. On death the fully enlightened Buddhist is said to attain parinirvana, the final blissful state. The account of the scholarly tradition of the Buddha's post-death nirvana is that, with no further rebirth possible, he transcends consciousness as normally understood, and grasps the 'ultimate reality of things.' It is interesting that the Buddha himself refused to answer the question as to the status of the enlightened person after his or her death; in a rather old section of the PaliCanon, he replies: When a person has gone out, then there is nothing by which you can measure him. That by which he can be talked about is no longer there for him; you cannot say that he does not exist. When all ways of being, all phenomena are removed, then all ways of description have been removed [11].

There is nothing buta 'pure radiant flow' of experiences [12]. Unlike the rational knowledge of first principles attained by Aristotle's 'contemplative man,' the knowledge attained in nirvana is non-propositional and cannot be described, far less conceptualised. For the Buddhist all of reality is interdependent, all things arising and flowing together within the single ever-transient nexus of becoming and passing away. There is no 'moment' of creation in Buddhism and no creator who is somehow outside or independent of the process of becoming. Indeed to speak of 'independence' in any way would be to contradict the whole Buddhist ethos that is so securely rooted, not in any story of origins, but in mindfulness of the here and now. Thus Buddhism seeks to

avoid any account of reality which sets up a dualism of the 'invisible' Real somehow lurking behind the visible phenomena [13]. The overall structure of Buddhist theory and practice is the Four Noble Truths which arose as part of Siddartha Gautama's enlightenment on becoming a 'Buddha' or an 'awakened' one. They became known as the Buddha's first major discourse and the fourfold structure parallels medical practice of his day:

(i) Diagnose a disease –recognizing the reality of dukkhaor suffering due to the insecurity of life of all sentient beings.

(ii) Identify its cause –the fundamental, internal causes of suffering, which are identified as tanhaor craving, dosaor hostility, and mohaor delusion.

(iii) Determine whether it is curable –realizing the possibility of the cessation of suffering and its source.

(iv) Outline a course of treatment to cure it –following the path of spiritual purification and transformation that results in such freedom, the Noble Eightfold Path, so that one is at peace and fully in the present, not merely apathetic and unemotional. Behaviour becomes more motivated by compassion than by grasping for security.

Buddhist psychology understands that the basic nature of people is sane, clear, and good but also that it is obscured by 'the impurities' and 'the defilements' or 'three poisons of the mind' mentioned above: craving, hostility, and delusion. To recover our innate good nature, we have to free ourselves of the 'three poisons.' How does the Buddha propose we free ourselves from them and thus of tanhaor craving? By pursuing the Fourth Noble Truth, that is, following the Eightfold Path: "the middle path of Nirvana lies in the true harmonisation of prajna and karuna of bodhi and upaya of knowledge and love of intellect and feeling" [14]

I. Itis right understanding, that is, understanding the situation one is in, for example, the four noble truths and three marks of existence (impermanence,
Suffering, and not-self), and resolving to do something about it [15]

II. Right thought, including no lust, ill-will, or cruelty.

III. Right speech, including being constructive and helpful and avoiding lying, gossip and vanity.

IV. Right action, including being moral, compassionate, precise, and aware, and avoiding aggression.

V. Right livelihood, not creating suffering.

VI. Right effort, actually doing what should be done.

VII. Right mindfulness and

VIII. Right concentration [16].

Viewing the steps on the Path as a whole, the eight components are seen as both interrelated and interdependent. All eight factors exist at two basic levels, the ordinary (for lay-people) and the transcendent (for monks and nuns), so that generally there is both an ordinary and a Noble Eightfold Path [17].A person gains a first glimpse of nirvana and may enter the 'stream' leading there, the Noble Eightfold Path [18].

Both the Buddha and Aristotle have in mind the need to provide their 'disciples' with a way to reach perfection, each of them differs in what he holds as constitutive of that perfection. Aristotle's main aim in his ethics of virtue is to provide guidelines for attaining eudaimoniaor the happiness or fulfilment to which only "a life

of activity in accordance with virtue" gives rise. Habituation and education in the virtues are seen as the necessary groundwork, already mentioned if one is to develop one's potential (over a lifetime) and provided the set of conditions for the arête is met. These conditions depend on more than merely the dispositions to act virtuously. Underlying factors, such as a certain measure of Material prosperity, good health, and natural endowment, are also referred to by Aristotle as necessary for such aretaic growth. Moreover, achieving such a state is understood as applying within one's natural term of life; Aristotle thinks that wellbeing can be attained in the course of one's life and is complete upon death; there is no personal immortality of the soul. This resonates with Heidegger's "Being unto death" – fulfilment is possible in life but not fully attained until one enters 'the last horizon [19].

In the case of Aristotle, the flourishing of an individual depends on her virtuous actions being done for the sake of the other, that is, the polis or community. In its turn, the state acts morally on behalf of its citizens by providing conditions within which they may flourish. The focus is societal and anthropocentric, the self is dual, body and mind, and inter-subjective relations are conceptualised as being between separate, substantial, individual entities. Thus, one of the most significant features of Aristotelian flourishing is that it is a dual, interdependent process between self and others.

Aristotelian and Buddhist ethics lies in what each considers of central importance in morality; simply put, Aristotle accords the prime role to reason, whereas, for the Buddha, it is compassion which has the main claim. Aristotle starts from what most of us would pre-philosophically have taken to be true and displays a concern for the truth, even though it can be argued that truth in ethics cannot be formulated exactly. Aristotle's ethics centres on the ordinary, everyday experiences that people have of trying to live a good life. For him the interplay between emotional sensitivity, rational coherence and philosophical infrastructure are the main themes of his kind of virtue ethics [20].

Aristotle expects his students, having been well brought up, to arrive with the ground already prepared for further training in ethics. They will be further educated in his ethics course, principally, though not exclusively, in the intellectual virtues, to prepare them to engage in lives of virtuous activity in the city-state. For Aristotle, one's agency and reason shape one's world. He accords reason the pivotal role of controlling desire and emotions in the training and formation of the phronimos. Only the virtuous person has the practical intelligence or wisdom necessary for exercising responsible moral choice. Moreover, as Aristotle points out, it is not the character of the actions that make them virtuous, but the character of the agent: The agent must also be in a certain condition when he does them: in the first place he must have knowledge, secondly he must choose the acts, and choose them for their own sakes, and thirdly his actions must proceed from a firm and unchangeable character [21]. Aristotle and the Buddha reached very similar conclusions as to how we should conduct our lives, if we wish to find happiness and fulfilment as human beings. The first of these is in terms of moral choice or judgement. The Buddhist term for moral choice, cetana, covers such a wide psychological continuum from intention and volition to stimulus, motive, and drive, that it is not likely that any single term in English will convey its full range of meanings [22].

Conjugal between golden mean and middle path: A way to happiness

The Buddha and Aristotle each invite us to consider moral virtue in ways which, on the face of it, are remarkably similar. In the first suttaor parable, the Buddha describes the Eightfold path as a 'middle way' between the extremes of pursuing 'sensual happiness' and pursuing 'self-mortification.' This idea invites comparison with Aristotle's doctrine that moral virtue is 'a mean between two vices, one of excess and one of deficiency' [23]. The similarity between the Buddha and Aristotle is that, for both of them, the correct avenue to moderation negotiates between the extremes of greed on the one hand, and harsh asceticism on the other. The results from successful negotiation of the middle way of the Buddha and of the doctrine of the mean for Aristotle are similar in formal terms. However, since the primary aim of the Buddha's message is the achievement of enlightenment and the fully enlightened person is both virtuous and happy, his teaching centrally includes a moral teaching based on virtue. It is this latter aspect of Buddhist ethics which most closely parallels Aristotle's ethics of virtue; both ethics resonate with neo Aristotelian challenges to ethicists to look at persons, by addressing the question: What type of people ought we to become? Aristotelian and Buddhist ethics both exemplify MacIntyre's model of a re-examined ethics, unsurprisingly in the case of the former since MacIntyre drew on the Aristotelian question 'How ought I to live?' in the first place. Rather than our first asking 'whether an action is right,' MacIntyre urges us to attend to 'not only what we are now doing,' but more importantly to, 'who we are now becoming.'

In broad terms, the comparison between Aristotelian and Buddhist ethics yielded a twofold result: they are similar in that, in both cases, the heart of the moral life is to be understood in terms of the interplay of both reason and feeling; they differ in the emphasis and perspective each has on reason and compassion respectively. The Buddha calls for universal compassion above all and attends less to reason. Aristotle founds his ethics on reason principally and compassion as a motivation is confined mainly to the people of Greek society.

Aristotelian claims the central role in moral education: the first is that becoming a virtuous person should be taken as the general aim of moral education; the second is that moral virtues are not only dispositions for choice and action but also dispositions towards feelings – virtuousness implies having appropriate feelings. Aristotle himself emphasises that the earlier one begins, the better; "the importance of having been trained from infancy to feel joy or grief at the right things" [24]This pre-supposes that the affective life of the child not only can be influenced but can be educated. Although Aristotle locates feelings in the non-rational part of the soul, they can obey and listen to the rational part: Not just in the sense that feelings can be kept under control if they are contrary to the precepts of reason (which is typical of continence), but also, and more importantly, in the sense that they can be harmonised with the voice of reason by their being transformed, moulded or reshaped (which is typical of virtuousness).

According to Philippa Foot, the virtues are corrective, in that they either moderate excessive temptation (as mentioned previously) or compensate for deficiency in motivation. So, the corrective function of moral virtues such as justice and benevolence is quite different from the virtues of will-power. The former correspond

rather to making good or remedying deficiencies of motivation such as a lack of respect for the rights of one's fellow-citizens or a limited concern for other people's needs, respectively [25].Aristotle does not specify how the virtuous dispositions of feeling required to be just and kind towards others are to be brought about through habituation. We must now ask ourselves if his work gives us a clue, as to how habituation establishes and strengthens the concerns and commitments that make up, for example, justice and benevolence [26].

Buddha's nature represents the potential for transformation. It is a stronger version of Aristotle's notion that acquiring the virtues is a transforming process which enables man to make the leap from 'man-as-he-is' to 'manas- he-might-be.' While Aristotle speaks of a settled state (of character) and Buddhism speaks, quite differently, of a changing one (of impermanence), the implication is similar: whatever people are like on the surface, they should always be respected as capable of change for the better. The comparison of each of their ethics suggests that the practice of mindfulness may be considered as the Buddhist contribution to the task of that transformation, alluded to previously, in conjunction with the Aristotelian practice of habituation into the virtues; each compensates for weakness in the other, or, to put it another way, their strengths are complementary [27].

The two states are similar insofar as each is founded on a doctrine of the perfectibility of human nature. There is considerable common ground between the moral perspectives of Aristotle and the Buddha: they both advocate a moral perfection of the person that involves moral, intellectual, and emotional training. In their respective moral teachings Aristotle does not ignore principles, nor does the Buddha ignore rules [28]. But of central importance in each of their ethics is the kind of character a person develops. As for the Buddhist, it has been mentioned that, though the initial motivation for undertaking the Eightfold Path may be focussed on one's own suffering, by the time one becomes fully enlightened, one is understood to have a selfless compassion for all beings.

His claim implies that for an emotional response to be virtuous it must be in accord with what reason judges to be the true demands of the situation, since reason aims at truth. Emotions, then, are not simply to be accepted as given. The standard by which virtuous and vicious dispositions are distinguished from one another is a rational standard. For Aristotle's man of practical reason, deliberative, emotional, and social skills are all necessary and interweave with each other. For the Buddha, desires and emotions are also regulated but not in the same way as those of Aristotle's man of practical reason. Since he was more deeply pessimistic about human nature, he believed that desires and emotions needed to be reshaped rigorously from the perspective of the realization of selflessness. This depends more on the meditative disciplines than on rational inquiry as a purifying preparation for a non-dualist experience that expresses itself above all in compassion and unlimited loving-kindness. It is said to remove the film of ignorance that clouds insight into one's own true nature and that of reality. Although Aristotle's exemplar of the first kind of ideal life in the ideally circumstanced situation, his intellectual contemplative, is also disciplined, the object of his reflection is quite different from that of his Buddhist counterpart.Man seems quite too much concerned with the problem of his own happiness or unhappiness; he has grown morbid.

Nevertheless, the practical maxims which obtain in each of these systems are based upon a certain view of the system of things as a whole [29].

Conclusion:

In the cultural climate of the present world, which puts a constant emphasis on individual choice in everything? Every individual in the society thinks that –"this is right for me; what's right for you is up to you." This assumes that moral judgements are merely a matter of individual preference, taste, or no more than a life style choice. In a pluralist society people are faced with conflicting and unstable moral standards. This present society feels an absence of convincing verbal guidelines. The results from successful negotiation of the 'Middle Way' of the Buddha, or of the Doctrine of the Mean' of Aristotle, might appear similar, they cover up some radical differences. As we have already seen, Aristotle places great importance on our nature as rational beings. This determines our ultimate well-being and the virtues that contribute to it. For Aristotle the basic model is the regulation of desires and emotions by reason. Appropriate responses are the ones that are in accord with the judgement of a particular type of person – the person of practical wisdom. Moreover, virtues are to be defined in terms of a judgement.

Aristotle's social ethic is a prime example of this. It has already been mentioned that, if an individual is to flourish, her virtuous activity has always to be for the sake of the other, that is, the community (and vice-versa). On the other hand, Buddhism, as already mentioned, is bio-centric; its aim is to cultivate loving-kindness and the other three 'wholesome' or virtuous affective states towards all sentient beings. More may be gained by seeking the perfection of Buddhist ethics, compassion for all sentient beings, at the present time, given our many, varied concerns about climate change, terrorism, third world poverty, and so on. At the same time, rational reflection and action, which are central to Aristotle's approach to ethics, make a complementary claim as indispensable to any worthwhile account of ethics and ethical behaviour. Aristotle attaches the predominant weight to reason, and the Buddha to insight. Conversely, whereas the Buddha attaches most importance to meditative cultivation, in both versions of the Aristotelian ideal life, that of the man of contemplation, as well as that of the man of practical wisdom, Aristotle stresses rational inquiry.Each set of ethics is centrally grounded on virtue as forming a person's character. For the Buddhist the first section in the threefold division of the Eightfold Path, sila(the three factors, right speech, right action, and right livelihood), may be translated as virtue as well as morality. With our eye on the centrality of virtue, it is significant that the other two sections include moral dimensions: right intention, classified under wisdom; right effort, classified under concentration. This is illustrated by the Buddha's comment that: 'wisdom is purified by morality, and morality is purified by wisdom.' His conclusion does not parallel the final view of Aristotle that one cannot be morally good without practical wisdom, nor have practical wisdom without possessing the moral virtues.

Acknowledgement

Funding to KD (36 Seed/2019/Philosophy-1, letter number 941/69/OSHEC/2019 dt 22.11.19) from Department of Higher Education, Govt. of Odisha under OURIIP scheme is dully acknowledged.

References:

1. Foot, Philippa. 1978.Virtues and Vices and Other Essays in Moral Philosophy.Basil Blackwell. Oxford. p. 2.
2. Aristotle.1980.The Nicomachean Ethics.Book II, trans. J.L. Ackrill, etc.Oxford: Oxford University Press. p. 91.
3. Approximate dates: Buddha, 563-483 BCE; Aristotle, 384-322 BCE.
4. Ross. David. 1925. Aristotle The Nicomachean Ethics: Translated with an Introduction. Oxford: Oxford University Press.
5. Thomson, J. A. K. 1955. The Ethics of Aristotle: The Nicomachean Ethics. Penguin Classics. Re-issued 1976, revised by Hugh Tredennick p. 95
6. Gerasimos,Santas. 2001.Goodness and Justice Plato, Aristotle, and the Moderns,Black well: Malden. p. 194.
7. Rorty, Amelie, Okensberg.1980.Essays on Aristotle's Ethics,University of Carlifornia Press. p. 3.
8. Barnes, J. (ed.).1984. The Complete Works of Aristotle: The Revised Oxford Translation, PrincetonUP. Metaph., A, 980 a, p.1.
9. Carr, D. 2005. 'Psychology and Ethics in the Theory of Moral Education and Development and the Idea of a 'Psychologised Morality.' Paper presented at AME conference, 6th Nov. 2005, Boston, USA
10. https://visual-philosophy.blog/2019/02/06/aristotle-on-continence-incontinence-akrasia-impetuosity-and-weakness/ Google .images.
11. Loy cites from experiments several experiences of 'merging' with qualia reported by non practitioners 2001. p.83.
12. Sn 1075b-6 Sahdatissa. 1987]. p. 123 Quoted by Schmidt-Leukel, op. cit. p. 50
13. Williams, P. 1989. Mahayana Buddhism: The Doctrinal Foundations, Routledge:London and Newyork, p. 52
14. Barnes, M. 2007. 'Expanding Catholicity and the Dialogue with Buddhism', New Blackfriars.
15. Suzuki. D.T. 1907. Outlines of Mahayana Buddhism, Luzac and Company (London), University of Chicago, p. 362.
16. The question arises, how are we to judge whatis 'right understanding,' but the Buddha says nothingin this respect.
17. Mikulas, op. cit. p.12
18. The form of the Path immediately leading up to becoming an Arahator enlightened saint in Buddhism has two extra factors, right knowledge and right freedom.
19. Harvey, P. 1990. An Introduction to Buddhism, Cambridge University Press. p. 68 .
20. Heidegger, M. 1962. Being and Time, translated by John Macquarrie and Edward Robinson,London SCM Press.
21. Hughes, G.J. 2001. Aristotle on Ethics, London: Routledge, p.221
22. Ross, David. 1925. Aristotle The Nicomachean Ethics: Translated with an Introduction. Oxford: Oxford University Press.
23. Keown, D. 2001. The Nature of Buddhist Ethics, Palgrave, New York.
24. Ross, David. 1925. Aristotle The Nicomachean Ethics: Translated with an Introduction. Oxford: Oxford University Press. p. 10.
25. Thomson, J. A. K. (1955). The Ethics of Aristotle: The Nicomachean Ethics. Penguin Classics.. Re-issued 1976, revised by Hugh Tredennick
26. Foot, P. 1978. Virtues and Vices, and Other Essays in Moral Philosophy, University of CaliforniaPress, pp. 8-10.
27. Das Kabita, 2013. 'Concept Of Prudence And Its Relevance To Contemporary Virtue Ethics', International Journal Of Multidisciplinary Educational Research (IJMER),2, 4, 320-334.
28. Thomson, J. A. K. (1955). The Ethics of Aristotle: The Nicomachean Ethics. Penguin Classics.. Re-issued 1976, revised by Hugh Tredennick
29. The paraphrase of Buddhist virtue and the comment from The Long Discourses of the Buddha aredrawn from Gowans [2003] p. 176
30. Das, K., Paital, B. 2020. "The Synergy between Philosophy and Science, need of the contemporary society", International Journal Of Humanities and Social Science Reserch, (IJHSSR), Vol.6:Issue 1, pp:45-51.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

NEUROSCIENCE AND FILM: NEW DIMENSIONS OF UNDERSTANDING FILM

Dr. K Pradeep
Assistant Professor and Head
M.Sc. Electronic Media
Narayanaguru College of Engineering
Tamilnadu, India

Abstract
Realizing a film is an amazing feat of neural and cognitive processing. A series of still pictures are projected quickly on a screen, accompanied by a stream of sound and a viewer has an experience that can be as pleasing, emotionally affecting, and memorable as many experiences in real life. In these as concern film, is a possible target of investigation for neuroscience, and for a variety of very good reasons. The present work is an attempt to develop new linkage between the film and neuroscience. This study espoused with embodied simulation and mirror in the mind and phenomenological approach.

Keywords: Neuroscience, film, embodied simulation, Mirror in the Mind.

Introduction
This study is an attempt to create a new paradigm to realizing films, specific in the relative sense embodied simulation. Films takes viewers through an experience thatevolves over time and space,grabbing their attention and triggering a sequence of perceptual,cognitive,and emotional processes.Throughout the progress work filmmakers have developed an arsenal of cinematic devices (e.g., montage, continuity editing, close-up) to direct viewers' minds during movie watching. However, during the narrative frame what actually happened in the meaning making process is still a myth, anyway different discipline scholars have been working with film, brain and neural respond. The newly emerging field of neurocinematic studies is still in its infancy, but the researchers can see it branching into two different investigative fields. One scientist can use movies to understand behaviour and brain, as Hassan and Levin are doing. Secondly, researcher could flip that association around and use the brain to understand movies. Imagine a future, for example, in which viewers are shown a pre- release rough cut while the director speak into their minds to see it his work is drawing out of the desired response. Film narration is not real but in the mesmerism of real effect of film leads the feel of reality in the spectator experience. In another question ponder in this field is "How can cinema have so powerful a 'reality effect' when it is so manifestly unreal?" We would like to start by reinstating Steven Shaviro's question against

the background of the new take cognitive neuroscience proposes on embodiment and applying it to film studies. This "reality effect" represents one of the most challenging issues within the debate of film since its origins. Recent studies within cognitive film theory, visual psychology and neuroscience bring out strong evidence of a continuity between perceiving scenes in movies and in the world, as the dynamics of attention, spatial cognition and action are very similar in directexperience and mediated experience.Film is a possible target of investigation for cognitive neuroscience for variety of good reasons. From the side of existing literature, in the technological innovations and the discovery of fMRI (Functional magnetic reasoning Image) which contributes the enormous research intervention to film and neuroscience. This study will pose a peculiar stance of understanding film which has been not yet discussed within India film study academia. Further this study will open the new paradigm of understanding film and brain response while experiencing film narration.

Mapping the relations of Neuroscience and Films

Searching the relation of neuroscience and film has been encounter since 1980s, however, the influence of cognitive film theory gained ground throughout the past decade, especially in relation to the social constructionist paradigm emphasizing psychoanalytical and cultural analytical models. In Narration in the Fiction Film from 1985, David Bordwell questioned how one could explain the cinematic experience and its narrative structure. This question ponder different kind of research embarked the real understanding and the mesmerism happened while in the film study. According to the psychology professor Uri Hasson from Princeton University, studying eye-movements might be illuminating, but this kind of study is not "sufficient by itself to determine the amount of control a movie has on viewers' emotional and cognitive responses". His recent article entitled "Neurocinematics: The Neuroscience of Film", Uri Hasson and his co-workers coin the term 'Neurocinematics' after having studied spectators' relation to narrative fiction film utilizing fMRI scanners recording both eye-movements and neural activity. In the study who propose a new method for assessing the effect of a given film on viewers' brain activity. In their experiment, the researchers analyze the data which indicates how much brain activity the films gathering during the viewing of such separate audio visual phenomena as Alfred Hitchcock Presents (1955-1962), Sergio Leone's The Good, The Bad, The Ugly (1966) and Curb Your Enthusiasm (2000), which offer the new dimensions of understanding film with neuroscience framework.Another major contribution in this field, two major research findings are available along with technological advancements which constitute the primary influence within the field of film study: the discovery of Mirror neuron and Vittorio Gallese, Michele Guerra research on Embodied Simulation and

Film Studies. The discovery of mirror neuron could prospectively have a particular influence within the field of film studies because of cinema's dependency on audio visual stimuli. Drawing on studies into what the mirror neuron system can and cannot tell us, a growing body of film scholars are beginning to highlight, how moods, gestures and facial expression of character can influence our emotional experience of cinema (Coplan, 2006). This finding support while film narration, character action emotion and the relation are very effective because this is made possible by mirror neurons response and in its meaning making in the presence of motor act. In this as concern, engagement with film is the bond with a series of complex cognitive operations that obtain cross culturally. At present, cognitive neuroscience comprises the best complex theories available for analysing all aspects of film from narrative structure to visual construction (Hogan, 2010). He made an effective attempt to enhance the understanding of Indian cinema along with the basic principles of cognitive neuroscience.Another interesting study Maarten Cesegarts, character perception and characteremotion, both category of the (fictional) mind where shown to be grounded in structures of sensory-motor knowledge. How then, are audience able to resonate with the structures, given that they are not performing those activity themselves during the act of viewing the film?. It is in addressing this second paradox that EST was brought into play. It was argued that viewers are able to connect up with these structure (and thereby with the meaning they embody). Because simulation mechanism in the viewer's allow for such connections. For reason why viewers are able to attribute mental states to characters is because there is a distinctive matching or correspondence between their own experience world and the way the mental states of the characters are embodied in film through such resources as film style and acting.

Malach and his colleagues has found that, when we're engaged in intense "sensorimotor processing" – and nothing is more intense for the senses than a big moving image and Dolby surround sound – we actually inhibit these prefrontal areas. The scientists argue that such "inactivation" allows us to lose ourself in the movie:Our results show a clear segregation between regions engaged during self-related introspective processes and cortical regions involved in sensorimotor processing. Furthermore, self-related regions were inhibited during sensorimotor processing. Thus, the common idiom"losing yourself in the act" receives here a clear neurophysiological underpinnings.What these experiments reveal is the essential mental process of movie-watching. It's a process in which your senses are hyperactive and yet your self-awareness is strangely diminished. Now here's where things get interesting, at least for this interpretation of Inception. When we fall asleep, the brain undergoes a similar pattern of global activity, as the prefrontal cortex goes

quiet and the visual cortex becomes even more active than usual (Lehar, 2010).Another very important study based on during the film screening, measured long-term memory for a narrative film, during the study session, participants watched a 27- minutes move episode, with instruction to remember it. During the last session, administered at a delay ranging from 3 h to 9 mo after the study session, long term memory for the movie was probed using a computerized questionnaire that assessed cued recall, recognition, and metamemory of movie events samples 20 sec. apart. Analysis of the different content elements in the movie revealed differential memory performance profiles accounting to time since encoding (Furman and Dorfman et. al. 2007). The study of Carvalho et.al, 2011,psychological correlates of sexually and non-sexually motivated attention to film clips in a workload task. The erotic film clips resulted in larger interference when compared to both the socio-positive and auditory alone conditions. Horror film clips resulted in the highest level of inference with smaller P3 amplitudes than erotic and also than social-positive, social-negativeand auditory alone condition. No gender difference were found. Both horror and erotic film clips significantly decreased heart rate (HR) when compared to both socio-positive and social negative films. The erotic film clips significantly increased the skin conductance level (SCL) compared to the social negative films. The horror film clips significantly increased the SCL compared to both social-positive and social-negative films. Both the highly arousing erotic and non-erotic (horror) movies produced the largest decrease in the P3 amplitude (Carvalho S, Leite, J et.al; 2011). Cinema is a promising naturalistic stimulus that enables, for instance, elicitation of robust emotions during functional magnetic resonance imaging (fMRI). Inter-subject correlation (ISC) has been used as a model-free analysis method to map the highly complex hemodynamic responses that are evoked during watching a movie. This study shows, it is possible that these findings relate to recent observations of a cortical hierarchy of temporal receptive windows, or that the types of events processed in temporal and prefrontal cortical areas (e.g., social interactions) occur over longer time periods than the stimulus features processed in the visual areas. Software tools to perform frequency-specific ISC analysis, together with a visualization application, are available as open source Matlab code. (Kappi, 2010). Recent studies within cognitive film theory, visual psychology and neuroscience bring out strong evidence of a continuity between perceiving scenes in movies an in the world, as the dynamics of attention, spatial cognition and action are very similar in direct experience and mediated experience. However, these all studies where centred in the highly scientific in appearance, at the same time some specific theory proposed with scientific in nature but not similar to follows the scientific instrument, like embedded simulation, Mirror in the mind and neuroaesthetic principle theoretical shadows open the new

dimensions of understanding film. Neuroscience and film has very close association for the process of film narration and human perception, but the scientific temporality separate intellectual interpretation among cinematic world. Contemporary film studies does not deal with neuroscience from a joint perspective; but rather, theorists with different starting points stress diverse areas where neuroscience might prove valuable. Simply put, neuroscience influences theorists with significantly diverse backgrounds and research interests. For instance, Patricia Pisters argues that today's popular fascination with our minds within cinema highlights not only how Hollywood films have developed a 'neuroaesthetic' style, but also that the French philosopher Gilles Deleuze's thoughts on neurobiology, as articulated in The Time-Image and The Movement-Image, have influenced contemporary film theory to a great extent. These theoretical notion open the very interesting and new embark of engaging film perception in the brain based logic.

Research Questions

Neuroscience and film has very important as concern in film study because film is very associate with the brain response. Beside this strong theoretical understanding these research will guided with the following research question.

a). In what ways neuroscience complement film narration?

b). How the narrative discourse engages with brain- body logic while watching films?

c). In what ways the mirror Embedded simulation logic to understand films ?

Scope of the study

Film is multidimensional narrative discourse medium which create the meaning of understanding is made possible by different area of brain response and its neurons action. Inthis very concern film and neuroscience treated as scientific in nature. This scientific complexity keep the notions of neuroscience based film understanding is highly scientific in nature. But within this academic domain some theoretical paradigm offered very insight understanding of neuroscience and film.This study will establish new research paradigm for understanding film and neuroscience.

Embodied Simulation and Brain body system

Embodied simulation theory has been proposed by Vittorio Gallese, who point out a basic functional mechanism of human's brain, by means of which actions, emotions and sensations of others are mapped onto the observer's own sensory-motor and viceroys- motor neural representations. Further embodied simulation theory, our brain –body system re-uses part of its neural resources to map other's behaviour. When witnessing actions performed by others, we simulate

them by activating our own motor system, similar by activating other cortical regions we re-use our effective and sensory- motor neural circuit to map the emotional and somato-sensory experience of others. This linkage underline the embodied simulation have a direct access to the world of others.

Analysis and Discussion

"Catching Characters' Emotions:Emotional Contagion Responses to Narrative Fiction Film", film scholar and philosopher Amy Coplan suggests that cinema highlights affective-responses such as moods and mimicry in a particularly striking manner contrasting our experience of literary narratives. In this sense, she argues that affective responses are "unique to our experience of audio visual narratives" due to their dependence on "direct sensory engagement and … automatic processes". In this argue supports that when we are watching film, the special kind of experience that is similar to the reality which feel the spectator because of the mimicking. This mean, something seriously we experiencing from the film narration the actual feel from the screen is made possible by the self-motor act of the viewer. Embodied simulation can better explain the activity of the viewer as a cinematic subject admitted to the spectator to cope with our sub cognitive response too film in different and more elegant manner. For instance, a hero who gazing the female protagonist, from the appearance sight which directly processes through the motor respond the spectator understood the real context, at the same time within action of work of mirror in the mind share the experience of same gaze to the spectator.As similar as protagonist, attempt to kiss heroin in the organized situation like the same neuron which fire those who looking the scene itself.

Since Embodied Simulation is characterized by the capacity to share meaning of actions, basic motor intentions, feeling and emotions, it is clear how relevant could be its role in the experience of many action-packed movies able to elicitsub cognitive or cognitively impenetrable response (Galles &Guera,2012). Of course film is really multi-cognitive centre, because when we experiencing film contexts different mode of neural respond is required for the technologically and aesthetically produced narration. Character identification, context, colour, music, mise-en-scene, editing etc. this all concerned meaning-making involve highly complex neural process behind the secret of simple as well as the elite mediumof film. This all could be made possible by the embodied simulation."The Feeling of Body consists of the activation within the observer of non- linguistic "representations" of the body-states associated with the observed actions, emotions, and sensation, as if he or she were performing a similar action or experiencing a similar emotion or sensation". In contrast this states support when we experience the narrative sequences observed actions and feeling which drive the spectator mind. This is very prominent command on the

viewership because film as apparatus to driven the emotional contage of the viewer. The neuro scientist Ramachandran points out that when we watching action emotions performed by other our mirror neuron adopts the same act within the observer. However,this reaction is noticed in the functional properties of mirror neurons characterize a parieto-premortol cortical network of the frontal lobe unfortunately what kind of process exactly happened in the brain and its mechanical reaction is still myth in neuroscience.

The other intellectual concept of film narration is ES –mediated capacity to share the meaning of actions. The Feeling of the Body, according to this hypothesis, would enable a direct access to the world of others by means of the ES-mediated capacity to share the meaning of actions, basic motor intentions, feelings and emotions with others, thus grounding our identification with connectness to others (Glles& Guera,2012). This also very strong evidence of some extension happened in the film narration the connection of meaning in the spectator mind, this is the real magic of human motor action inside the brain, while this act most of the time during the narrative engagement the active viewer lost the connection of the real world,instead he is connected with the narrative world of the cinematic world, here every experience of viewer has been extracted from the previous experience and knowledge of him or her in the long-timememory.For instance, a spectator views aclass room based narration in the screen during this movement the brain –body system reuse the neural sense that already feed in the brain. Here what really manipulated is the present context is reuse the reality within the previous information avail in the long time memory.

TheMirror in the mind is close association and its relative sense of understanding in neuroscience and cinema, while experiencing film most of the narrative meaning is happened by the spectator's speculative context. For instance, Pream looks Sruthy, who is grasping a rose flower. Pream understood what Sruthi is doing—she is picking up the flower—and he also knows why she is doing it is smiling at Pream, and he guesses that she will give him the rose flower as a present. The simple scene lasts just moments, and Pream's grasp of what is happening is nearly instantaneous. In this very logic is always employed with film and its meaning making process. Based on the neuro scientific evidence strongly point out this adoptive sense of predictive meaning is made possible by some mirror neuron appear in the pre frontal cortex of frontal lobe. A decade ago most neuroscientists and psychologists would have attributed an individual's understanding of someone else's actions and, especially, intentions to a rapid reasoning process not unlike that used to solve a logical problem: some sophisticated cognitive apparatus in Pream's brain elaborated on the information his senses took in and compared it with similar previously stored experiences, allowing Pream to arrive at a conclusion about what Sruthi was up

to and why. This logic is highly influence in the mind of film viewer, because film is always suspend the logic predictive meaning. For the relative understanding, a hero who chasing the enemy who beheaded the closed one, this context during this sequence the spectator easily predicted a victim will catch and further intervention happened. The spectator can easily speculate the very next moment which not happened in the screen because the mirroring mechanism in the brain made possible understanding in the narrative context. But in reality how its predictive connecting meaning happened in the brain is really complex and unanswered question among the neuroscience.

Conclusion

Film is a strenuous medium to communicate with people because which directly attract the neural sense of the brain.This article proposes a unified embodied model for understanding meaning in film based upon two influential theories of embodied simulation and brain body. Embodied simulation proposed when we watching film the protagonist's actions and emotional responses are simulated by the spectator. The second logic of brain body system logic is when spectator experienced filmspectator's brain body system reuse the neural information which avail in the brain.However these logics are very close interpretation of film and Neuroscience but how its actual process take place in brain is myth in the neuroscience academia.

References

- Bates, M. (2009) The mind is a Mirror; How blind people "see" the actions of others, Scientific American.
- Carvalho S, Leite J, Galdo-Álvarez S, and Gonçalves. (2011) Psychophysiological correlates of sexually and non-sexually motivated attention to film clips in a workload task, PLoS One 6 (12): e29530.
- Carvalho S, Leite, J et.al (2011) psychological correlates of sexually and non-sexually motivated attention to film clips in a workload task, P,LOS 6 (12).
- Coegnaret, M. (2017) Cinema and embodied mind: Metophore and Simulation in understanding cinema, Palgrive Communication
- Douglas M (2006), The Corporeal Image. Film, Ethnography, and the Senses, Princeton: Princeton University Press
- Furman and Dorfman et. al. (2007), The Saw a Movie: Long term memory for An Extended Audio Visual Narrativve, Learning and memory, 14 (6): 457-467
- Furman O, Dorfman N, Hasson U, Davachi L, and Dudai Y. (2007) They saw a movie: long-term memory for an extended audiovisual narrative, Learning and Memory 14 (6): 457-467.

- Gallese, Vittorio & Guerra, Michele. (2012). Embodying Movies: Embodied Simulation and Film Studies. Cinema: Journal of Philosophy and the Moving Image. 3.
- Gallese,V., Guerra. M. (2012) Embodying movies: Embodied simulation and film studies, Cinema: Journal of Philosophy and the Moving Image , 3:183-210
- Hasson U, Furman (2008),Enhanced intersubject correlations during movie viewing correlate with successful episodic encoding.Neuron. 2008 Feb 7;57(3):452-62. doi: 10.1016/j.neuron.2007.12.009.
- Jeffrey M. Zacks & Joseph P. Magliano (ND)To appear in: Art & the Senses, ed. D. P. Melcher and F. Bacci. Film, Narrative, and Cognitive Neuroscience New York: Oxford University Press.
- Jeffrey M. Zacks & Joseph P. Magliano (ND)To appear in: Art & the Senses, ed. D. P. Melcher and F. Bacci. Film, Narrative, and Cognitive Neuroscience New York: Oxford University Press.
- Kauppi J-P, Jääskeläinen IP, Sams M, and Tohka J. (2010). Inter-subject correlation of brain hemodynamic responses during watching a movie: localization in space and frequency, Frontiers in Neuroinformatics 4: 5.
- Kiss, M., (2015), Embodied Cognition and Cinema. Coëgnarts, M. & Kravanja, P. (eds.). Leuven University Press, p. 43-61 19 p.
- Lehrer , J. (2019) The Neuroscience of Inception, Wired, July, 26.
- Pillai, S. (2010).Understanding Indian movies: Culture , Cognition, and cinematic Imagination, College literature , Vol, 37. (7).
- Pillai, S. (2010).Understanding Indian movies: Culture, cognition, and cinematic Imagination, College literature , Vol, 37. (7).
- Rizzolatti.G, Fogassi.L, & Gallese,V. (2006). Mirrors in the Mind, Scientific American, special section ; neuroscience, Nov. pp.54-61.
- Rizzolatti.G, Fogassi.L, & Gallese,V. (2006). Mirrors in the Mind, Scientific American, special section ; neuroscience, Nov. pp.54-61.
- Shaviro, S. (1993). Conclusions. In The Cinematic Body (pp. 255-268). University of Minnesota Press. Retrieved from www.jstor.org/stable/10.5749/j.ctttt8tc.11
- Steven, S. (1993).The Cinematic Body, Minnesota University Press, UK,254-255.
- Vittoria, G & Guerra, M (2010) . Embodying Movies: Embodied Simulation and film Studies. Cinema 3, Article Artigos. pp. 183-210.
- Vittoria, G & Guerra, M (2016). Embodying Movies: Embodied Simulation and film Studies. Cinema 3, Article Artigos. pp. 183-210.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

IMPLEMENTION OF MGNREGA IN JORHAT DISTRICT -A STUDY IN SELECTED DEVELOPMENT BOLCKS IN JORHAT DISTRICT

Dr. Horeswar Das
Associate Professor
CKB Commerce College, Jorhat ,Assam

Abstract
Rural development is a process of developing and utilizing natural and human resources, technologies, infrastructural facilities, institution and organizations, and government policies and programmes to encourage and speed up economic growth in rural areas, to provide jobs and to improve the quality of rural life towards the self-sustenance. The Panchayat and Rural Development Department of Assam is implementing the various rural development programme for the development of rural poor people such as MGNREGA, SGSY, Indira Awass Yojana(IAY) National Social assistance Programme(NSAP) , Chief Minister JeevanJyoti Swaniyojan Yojana, NRLM, District Development Programme, 13th Finance Commission Grant, 4th State Finance Commission etc. The paper highlighted the impact of MGNREGA schemes in crating employment opportunities, income and quality of life of the rural people of Jorhat district, Assam

Key Words: Rural Development, MGNREGA, quality of life.

Introduction: Rural development is a process of developing and utilizing natural and human resources, technologies, infrastructural facilities, institution and organizations, and government policies and programmes to encourage and speed up economic growth in rural areas, to provide jobs and to improve the quality of rural life towards the self-sustenance.

Rural Development is the prioritized objective of development planning for every state in India. In Assam 86 percent of the total population lives in rural areas of the state and most of them are found poverty ridden and economically backward. The State Government has been giving special thrust for elimination of rural Poverty as well as for upliftment of economic condition of people in rural areas. To achieve the objectives, State Government has been implementing various poverty alleviation programmes/schemes undertaken by the Government of India and the responsibilities of implementation of these programmes/schemes have been entrusted on the Panchayat and Rural Development Department of the State.

The objectives of rural development, according to the World Bank are not restricted to any single department but spread over several and the resultant mix serves to raise agricultural output, create new employment, improve health and education, expand communications, providing housing etc.

Development programmes and projects in India- both for urban and rural areas started before independence. From the beginning of the twenty century, a few social workers initiated rural reconstruction works mostly in isolation from one another, without any or

very little government assistance. Since independence the govt. of India lunched so many programmes and projects for all round development of rural and urban people.

The Panchayat and Rural Development Department of Assam is implementing the various rural development programme for the development of rural poor people such as MGNREGA, SGSY, Indira Awass Yojana(IAY) National Social assistance Programme(NSAP) , Chief Minister JeevanJyoti Swaniyojan Yojana, NRLM, District Development Programme, 13th Finance Commission Grant, 4th State Finance Commission etc. The paper highlighted the impact of MGNREGA schemes in crating employment opportunities, income and quality of life of the rural people of Jorhat district, Assam.

Out of the various rural development programmes implemented by the Government of Assam , the present paper highlighted only the impact of MGNREGA in the study areas, i.e. in Jorhat district.

Mahatma Gandhi National Rural Employment Guarantee Act: (MGNREGA) Mahatma Gandhi National Rural Employment Guarantee Act has been implemented since February, 2006. This programme were covered to all district from 2008-2009. MGNREGA is a primary flagship programme of ministry of Rural Development. The primary objectives of the programme is to provide at least 100 days employment guarantee to the job card holders demanding for work and creation of permanent assets. The programme provides employment to the adult members of a family having job card volunteer. For the current financial year wage rate of job card holders has been enhanced to Rs.182/- per day to do unskilled manual labour in every final year. The other objective of the act to create durable community assets for development of rural infrastructure for upliftment of quality of life of rural people. In Assam have been empowered millions of lives in Assam penetrating even in inaccessible and difficult areas. The enhanced income help the rural poor to come out from the vicious cycle of poverty and able to afford better education and health care for their children and families.

Significance of the study: Rural development is the dynamic process of development of the rural people through various programmes and projects so that they become self – reliant citizens of the country. The work is done by involving various agencies and organisations, above all, the local people themselves. The development of the rural people is essential for development of the rest of the people, vis-à-vis the whole country. This shall give economic, political and social stability of the country. But the various allegations like mis-ultilization of funs, improper selections of beneficiaries, corruptions in implementing stage etc. against this programme. The study has been made to examine the role of an important programme of rural development ,how far this programme was benefited for rural people and allegations against this programme in study areas.

Objectives of the Study: To study how far the rural people are benefited from rural development programme, especially from MGNREGA.

Methodology of the Study: Data and information were collected from both primary and secondary sources. The total no. of respondent for the study 69 has been collected by using Probability Proportion to Size (PPS) sampling technique from the

two village of two gram panchayat of two development block of Jorhat District namely North West Jorhat Development Block and Jorhat Development Block.

PERFORMANCE OF NREGA IN ASSAM: The physical progress under MGNREGA in Assam for the last five years, from 2013-14 to 2017-18 are shown in the following table. The table reveals the total numbers of Household registered during these years along with the number of persons. In the year 2015-16, the numbers of household and person registered under the Scheme were higher than other years. Nos. of Job card issued to the different categories like SC, ST and others are also shown in the table. Employment provided to the household and person. It was seen that employment provided to household or the person out of registered maximum 30% only during these period. Maximum numbers of families completed 100 days in the 2015-16. The performance of MGNREGA in are shown in the table 1.1

Table: 1.1. Physical progress under MGNREGA in Assam

Year	Nos. Of Registered		Nos of Job Card issued				Employment Provided			Nos. of Families Completed 100 days
	House hold	Person	Sc	St	Other	Total	HH	Person	Person days	
2013-14	4165360	6308019	253797	663322	3198753	4115872	1261778	1525443	29847172	15505
2014-15	4385542	6964217	259611	696163	3327302	4283076	967179	1224345	21094622	10449
2015-16	4841877	8038296	272449	772185	3583750	4628384	1502345	2172703	48632530	42233
2016-17	4489060	7453136	255836	662017	3310101	4227954	1571954	2335190	46724262	11494
2017-18	4452618	7413710	250170	626884	3274883	4151937	953495	1423522	20831757	1212
Total	**22334457**	**36177378**	**1291863**	**3420571**	**16694789**	**21407223**	**6256751**	**8681203**	**16713034 3**	**80893**

(Source; www.nrega, nic, in)

The physical progress of MGNREGA from 2013-14 to 2017-18 in Jorhat District. The table highlights the approved labour budget for the programme MGNREA. The highest amount of labour budget approved in the year 2014-15 i.e. 16.67 lakhs followed by 2016-17 Rs. 15.98 lakhs. But the maximum person days generated in the year 2015-16 i.e. 14.15 lakhs.The table shows the rate percentage to SC, ST and women out of total person days generated. The shows the average wages rate to the per person per day. It seen that the rate of wages increases year by year from Rs.152 to Rs.182.99 and maximum nos. of household completed 100days in the 2015-16 than other years.

Implementation of Mahatma Gandhi National Rural Employment Guarantee Programme in Study Area: Like other rural development programme the district administration implemented the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) to provide at least 100 days wages employment to the rural people. The MGNREGA scheme is also selected for study because, like other rural development programmes, there are also some allegations like corruption, engagement of contractors, mis-utilization of fund etc.

Analysis and interpretation on collected data: With an aim to enhance livelihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year, for rural household above 18 years of age and volunteer to do unskilled manual labour, the National Rural Employment Guarantee Scheme was introduced by the central govt. in the year 2005 and in Assam it was implemented from the month of February 2006. Like other parts of the country, jorhat district administration also implemented for the benefit of the rural people.

To study the implementation of MGNREGA scheme in the District out of eight development blocks 2 blocks are selected namely North West Development Block and Jorhat Development 69 nos. of beneficiaries selected as sample of study. The block wise beneficiaries are shown in the table: 1.3. Out of total beneficiaries 17.4% from North West Development Block and 82.6% from the Jorhat Development Block. Majority of the respondent from the Jorhat Development Block because it has large number of population and number of panchayat than other block of the District.

Table: 1.3

Block wise Beneficiaries of NREGA Scheme.

	Frequency	Percent	Cumulative Percent
North West Dev. Block	12	17.4	17.4
Jorhat Dev. Block	57	82.6	100.0
Total	69	100.0	

Source: Field Survey

As per guideline of the MGNREGA scheme both male and female member can be select as beneficiary for the MGNREGA scheme. During the time of study it has been seen that majority of the beneficiaries were female i.e. 60.9% and 39.1% were male which is shown in the table:1.4

Table: 1.4

Nature of Beneficiary

	Frequency	Percent	Cumulative Percent
Male	27	39.1	39.1
Female	42	60.9	100.0
Total	69	100.0	

Source: Field Survey

Age of the respondent is the important factor for selection of the beneficiary under the scheme MGNREGA. As per guideline those can be selected as beneficiary who is the age above 18. The table: 1.5 shows the age of the respondents. Majority of the beneficiaries are in the age between 30-40 years i.e. 87%. , above 20 years 4.3% , above 40 years 5.8% and above 50 years only 2.9% . It is good sign for proper implementation of the scheme.

Table: 1.5
Age group wise nos.of Beneficiaries

	Frequency	Percent	Cumulative Percent
20-30	3	4.3	4.3
30-40	60	87.0	91.3
40-50	4	5.8	97.1
50-60	2	2.9	100.0
Total	69	100.0	

Source: Field Survey

As beneficiary of the MGNREGA are select from the poor people who live in below poverty line irrespective of caste. The table: 1.5 show the cast of the beneficiaries. Majority of the respondent from the cast of SC i.e. 39.1%, followed by other categories means general, it is 26.1%, 18.8% from ST and 15.9% from OBC /MOBC. It is the good sign for proper and successful implementation of the scheme
Table:1.5
Categories wise nos. of Beneficiaries

	Frequency	Percent	Cumulative Percent
SC	27	39.1	39.1
ST	13	18.8	58.0
MOBC/OBC	11	15.9	73.9
other	18	26.1	100.0
Total	69	100.0	

Source: Field Survey

Though the education qualification is not the factor for achieving benefit from the NREGA scheme yet majority of the beneficiaries i.e. 79.7% were HSLC qualified and 11.6% are graduate it may be the cause of unemployment in other sector which is reveals by the table: 1.6
Table: 1.6
Beneficiary's Educational Qualification

	Frequency	Percent	Cumulative Percent
Up to class 10	6	8.7	8.7
HSLC	55	79.7	88.4
Graduate and above	8	11.6	100.0
Total	69	100.0	

Source: Field Survey

The table: 1.7 reveal the knowledge of the beneficiaries regarding MGNREGA scheme. Though the scheme introduced in the year 2005 but still now the entire respondent did not know in detail about the scheme. 75.4% beneficiaries know about the scheme while 24.6% have no idea about the scheme of NREGA.

Table: 1.7

Beneficiaries Knowledge about the Scheme

	Frequency	Percent	Cumulative Percent
Yes	52	75.4	75.4
No	17	24.6	100.0
Total	69	100.0	

Source: Field Survey

The table: 1.8 shows the types of work perform by the beneficiaries under MGNREGA schemes in the study areas. The table reveals that 66.7% beneficiaries engaged as unskilled labour under the scheme where as only 21.7% beneficiaries engaged as Skilled labour and only 11.6% engaged with other activity ..

Table: 1.8

Types of Works performed by Beneficiaries

	Frequency	Percent	Cumulative Percent
Unskilled	46	66.7	66.7
Skilled	15	21.7	88.4
other	8	11.6	100.0
Total	69	100.0	

Source: Field Survey

Generally, the wages should be cash money as fixed by the implementing authority as per guideline. During the time of investigation it has been seen that the 100% beneficiaries received the benefit as cash money. The table; 1.9 shows the pattern of receiving benefit.

Table: 1.9
Types of receiving Benefits

	Frequency	Percent	Cumulative Percent
Cash money	69	100.0	100.0
Food grains	Nil	Nil	100.0
Both	Nil	Nil	100.0

Source: Field Survey

The table: 1.10 shows the Bank of Beneficiaries, during the time of study it is seen that 100% beneficiaries open their bank accounts. It is the good sign for financial inclusion.

Table: 1.10
Bank Accounts of Beneficiaries
(Whether they have an accounts in the Bank or not)

	Frequency	Percent	Cumulative Percent
yes	69	100.0	100.0
No	Nil	Nil	

Source: Field Survey

Different Financial institutions help the beneficiaries by opening their saving bank account to achieve the benefit from the rural development or to take the financial assistance under different self employment schemes. In this case rural Bank played an important role. During the time of study it reveals that 50.7% beneficiaries opened their accounts in Assam Gramin Vikash Bank,, 15.9% in SBI, 14.5% in Panjab National Bank, 13% in Allahabad Bank and only 5.8% beneficiaries opened their accounts in other bank like, ICICI, HDFC, Kanaklata Mahila Bank etc. The table; 1.11 shows the name of the bank in which beneficiaries opened their accounts

Table: 1.11
Name of the Bank

	Frequency	Percent	Cumulative Percent
SBI	11	15.9	15.9
AGVB	35	50.7	66.7
PNB	10	14.5	81.2
Allahabad bank	9	13.0	94.2
other	4	5.8	100.0
Total	69	100.0	

Source: Field Survey

There is a provision in the MGNREGA scheme that at least 100 days of wage employment should provide to the rural people. Otherwise implementing authority has to pay unemployment allowances to the beneficiaries. But during the time of study it has been seen that 100% beneficiaries did not get 100 days wage employment or unemployment allowances. It is shown in the table; 1.12

Table: 1.12

Receipts of 100 days of wages and unemployment allowances

Were you given 100days of employment?

	Frequency	Percent	Cumulative Percent
Yes	Nil	Nil	Nil
No	69	100.0	100.0

If no, did you receive any unemployment alliance?

	Frequency	Percent	Cumulative Percent
Yes	Nil	Nil	Nil
No	69	100.0	100.0

Source: Field Survey

Different rural development programme implements by the implementing authority for the benefit of the rural people not only in economic point of view but also social point of view. Properly implementation depends upon the implementing authority. During the study it reveals in the table:1.13 that majority of the beneficiaries said that not properly implements, 20.3% said yes and 26.1% beneficiaries did not say whether the scheme properly implements or not.

Table; 1.13

Performance of Implementing Authority

	Frequency	Percent	Cumulative Percent
yes	14	20.3	20.3
No	37	53.6	73.9
cannot say	18	26.1	100.0
Total	69	100.0	

Source: Field Survey

Proper supervision is very much necessary for successful implementation of the programme. To know whether the implanting authority supervised the programme or not, a question was asked to the respondent In responds to the question 62.3%

beneficiaries said that yes while 37.7% beneficiaries said no. Table: 1.14 shows the percentage of respondent who comments regarding regular supervision or not.

Table: 1.14

Supervision of the implementing authority

	Frequency	Percent	Cumulative Percent
Yes	43	62.3	62.3
No	26	37.7	100.0
Total	69	100.0	

Source: Field Survey

As per the regulation the beneficiaries should received the benefit after 15 days of application but the table: 1.15 shows that all the beneficiaries did not received benefit after 15 days of application. 58% beneficiaries received within fifteen days, 27.5% in between 15 to 30 days and 14.5% received after 30 days.

Table; 1.15

Intervals for getting Wages Employment

	Frequency	Percent	Cumulative Percent
15 days	40	58.0	58.0
15-30 days	19	27.5	85.5
above 30 days	10	14.5	100.0
Total	69	100.0	

Source: Field Survey

As per the provision of the scheme, the implementing authority should provide worksite facilities like medical aids, drinking water, shade and crèche. But in the study reveal in the table: 1.16 that nobody received any worksite facilities from the implementing authority.

Table: 1.16

Worksite facility

	Frequency	Percent	Cumulative Percent
Yes	Nil	Nil	Nil
No	69	100.0	100.0

Source: Field Survey

As per the provision of the guidelines of the scheme , the implementing authority , particularly Gram Panchayat must daily filled up the job cards of beneficiaries but from the investigation it was seen that only 69.9% beneficiary was comment yes , 18.8% said

no and 11.6% beneficiaries did not know whether it was filled up or not. As per table 1.17.

Table: 1.17
Maintenance of Job Cards

	Frequency	Percent	Cumulative Percent
yes	48	69.6	69.6
No	13	18.8	88.4
Canot say	8	11.6	100.0
Total	69	100.0	

Source: Field Survey

The table 1.18 shows the individual monthly income of the beneficiaries before getting benefit from the rural development programmes. From the study it was seen that the monthly income of majority beneficiaries fall under the income group of 3000- 5000. 27.5% were in category of less than 3000 and only 26.1% beneficiaries were the income group of 5000 – 7000.
Table: 1.18
Monthly income of the beneficiaries before getting benefit

	Frequency	Percent	Cumulative Percent
less than 3000	19	27.5	27.5
3000-5000	32	46.4	73.9
5000-7000	18	26.1	100.0
Total	69	100.0	

Source: Field Survey
The table: 1.19 highlight the monthly income of the beneficiaries after getting benefit from the rural development programme. It has been seen that the level of income of the beneficiaries has been increased after getting benefit. Majority of the beneficiaries were fall in the income group of 3000-5000 before getting benefit but after getting benefit it was in the level of 7000-9000

Table: 1.19
Monthly income of the beneficiaries after getting benefit

	Frequency	Percent	Cumulative Percent
5000-7000	18	26.1	26.1
7000-9000	30	43.5	69.6
9000-above	21	30.4	100.0

	Frequency	Percent	Cumulative Percent
5000-7000	18	26.1	26.1
7000-9000	30	43.5	69.6
9000-above	21	30.4	100.0
Total	69	100.0	

Source: Field Survey

After conducting T-Test on the basis of income of individual beneficiary before and after getting benefit from the rural development programme , the result is significant. Null hypotheses are rejected and alternative is accepted. Significant positive correlations exist.

Table: 1.20

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Before	3.8841 E3	69	1283.793 00	154.55052
	After	7.4928 E3	69	1501.011 31	180.70053

Table:1.21

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 Before & After	69	.816	.000

Table: 1.22

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Before - After	-3.60870E3	870.723 01	104.822 73	-3817.86616	-3399.52515	-34.427	68	.000

The table: 1.20 show the socio-economic status of the beneficiaries before getting benefit from the rural development programme. It was seen that socio-economic condition of the majority was in the low categories. Only 17.4% of beneficiaries were medium category and nobody fall under the category.

Table: 1.23

Socio-economic status of beneficiaries before getting benefit from RDs programme

	Frequency	Percent	Cumulative Percent
Low	57	82.6	82.6
Medium	12	17.4	100.0
Total	69	100.0	

The table: 1.21 reveal the socio-economic condition of the beneficiaries after getting benefits from the rural development programme. It has been seen that the percentage of low category of beneficiaries decreases from 82.6% to 50.7% and on the other hand the middle level were increased from 17.4% to 49.3% .

Table: 1.24

Socio-economic status of beneficiaries after getting benefit from RDs programme

	Frequency	Percent	Cumulative Percent
Low	35	50.7	50.7
Medium	34	49.3	100.0
Total	69	100.0	

The table: 1.18 show whether the beneficiaries face any problem? If yes what types of problem they have faced. 82.6%, i.e. majority of the beneficiaries said that they have faced many problems in the time of implementation only 17.4% did not face any problem.

Majority of the beneficiaries said that no 100 days wage employment, 27.5% said about the irregular wages, 18.8% said that no unemployment alliance and 20.3% said that there is political interfere in selection of beneficiaries.

Table: 1.22
Problem face by beneficiary

	Frequency	Percent	Cumulative Percent
yes	57	82.6	82.6
no	12	17.4	100.0
Total	69	100.0	

If yes. Types Problem faced by beneficiary in NREGA

	Frequency	Percent	Cumulative Percent
No Regular Wages	19	27.5	27.5
No 100 days Employment	23	33.3	60.9
No Unemployment Allowance	13	18.8	79.7
Political influence	14	20.3	100.0
Total	69	100.0	

Source: Field Survey

Finding of the study:

1. The study reveals that the number of female beneficiaries is more than the male beneficiaries. As per guide line of the scheme that the implementing authority should preferred female beneficiaries than male.
2. The majority of the beneficiaries were in age of 30-40 years. It is the best selection of beneficiaries. More than 80% beneficiaries were selected from these groups of age; it is the way of proper and successful implementation of the programme.
3. As per guideline, the implementing authority may select the beneficiary irrespective of caste if they are lives in below poverty line. The study reveal that the programme covered all the categories of the rural in study area, Majority of the respondent from the cast of SC i.e. 39.1%, followed by other categories means general, it is 26.1%, 18.8% from ST and 15.9% from OBC /MOBC. It is the good sign for proper and successful implementation of the scheme.
4. Though the education qualification is not the factor for achieving benefit from the MGNREGA scheme yet majority of the beneficiaries i.e. 79.7% were HSLC qualified and 11.6% are graduate it may be the cause of unemployment in other sector.
5. MGNREGA scheme introduced in India in the year 2005 and implemented in Assam from February 2006. But study reveal that still now a good numbers of respondent did not know in detail about the scheme it may be the cause of none

organizing of awareness programme by the implementing authority among the rural people.

6. All the beneficiaries of MGNREGA scheme in the study area received the wages under the scheme as cash money; the cause of the same may be that the implementing agencies performed their duties as per guideline of the scheme.
7. Another important finding of the study that all the beneficiaries of MGNREGA opened their bank accounts in the near bank branch. Majority of the respondent opened their accounts in Assam Gramin Vikash Bank. It is the good sign for financial inclusion and savings habit among the rural poor people.
8. Besides the provisions of 100 days of wages employment to the rural people should be created by implementing authority, not a single beneficiary of the study area got 100 days of wage employment. Moreover no unemployment allowance received by the beneficiaries.
9. Perhaps, due to mis-utilisation of fund, overlapping of work irregular supervision of implementing authority in implementation of the programme , most of the beneficiaries said that there was corruption during the time of implementation of the Scheme.
10. As per the provision of the scheme, the implementing authority should provide worksite facilities like medical aids, drinking water, shade and crèche. But in the study reveal that nobody received any worksite facilities from the implementing authority.
11. As per the regulation the beneficiaries should received the benefit after 15 days of application but it is seen that all the beneficiaries did not received benefit after 15 days of application. 58% beneficiaries received within fifteen days, 27.5% in between 15 to 30 days and 14.5% received after 30 days.
12. Another important question was asked to the respondent that whether the beneficiaries face any problem? If yes what types of problem they have faced. 82.6%, i.e. majority of the beneficiaries said that they have faced many problems in the time of implementation only 17.4% did not face any problem.
    Majority of the beneficiaries said that no 100 days wage employment, 27.5% said about the irregular wages, 18.8% said that no unemployment allowance and 20.3% said that there is political interfere in selection of beneficiaries.
13. Most important finding of the study is that changes of income level of the beneficiaries before and after getting benefit along with the socio-economic condition. It was seen that majority of the beneficiaries was in the level of 3000-5000 before getting benefit but after getting benefit it was fall in the level of 7000-9000. On the other hand quality of life of the major nos. beneficiaries was under the category of low but it was decreased after getting benefit. Like the medium level also increased after getting benefit from the rural development programme.

Conclusion

It can be concluded from the analysis that the number of female beneficiaries is more than the male beneficiaries. The majority of the are in the age group of 30-40 years and most of them are HSLC qualified. The received the wages from the

implementing authority on cash basis and more of them opened their bank a/c with Assam Gramin Vikash Bank.

But the good numbers of beneficiaries are not known in detail about the programme. Due to lack of knowledge of the scheme they could not claim about the 100 days employment or unemployment allowances and other facilities along with the programme. From the study it was seen that nobody did get the benefit of 100 days employment, unemployment allowances and worksite facilities etc.

On the other hand after analyzing the income level of the beneficiaries it was seen that majority of them are benefited and income of them are increased along with the quality of life and after conducting T-Test the result is significant. As p value is less than .05 null hypotheses is rejected and alternative is accepted. It can also be said that a significant positive correlation exist.

Though the Scheme is not free from negative effect, the study shows that there are a lot of positive impact as most of the beneficiaries is economically benefited. Thus it can be said that the scheme is viable for rural development

References

1. Das Sanjay Kanti (2013), 'A Brief Scanning on Performance of Mahatma Gandhi National Rural Employment Guarantee Act in Assam, India'.
2. Borgohain, Rupa Barman (2005), 'Guaranteeing Employment: a bold vision'. The Assam Tribune.
3. Bordoloi, Jotin (2011), Impact of NREGA on Wage Rates, Food Security and Rural
4. Urban Migration- a Study in Assam.
5. Mandal Sagar, Ray G.L, Rural Development, Kalian Publisher.
6. Gupta K.P. , " Rural Development in India.", Atlantic Publisher and Distributor.

Data Source:

1. www.assamgovt.org.in
2. www.mgnrega.nic.in
3. Data Source: Report of Block office, Jorhat.
4. JNU- Study on Quality of life index. Chapter .6:
5. Data Source: Assam Economic Survey.
6. Data Source: Field Survey.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

OER AND OEP PARADIGM SHIFT TO ANALYSIS OF CYP1A1 CYTOCHROME PROTEIN SYNTHESIS AND GENE EXPRESSION ON HYPERTENSIVE CANCER AND NON CANCER SPORTSMEN

Dr. D. Rajalakshmi
Associate Professor
Alagappa University
Karaikudi

Dr. K. Sundar
Assistant Professor
AUCPE
Karaikudi

Abstract

Introduction: Middle-aged population, the majority of the evaluated fitness tests demonstrated health-related validity by strong associations with perceived health and musculoskeletal functioning, and by weaker associations with back symptoms. Either the episode of LBP was not severe or not long enough to affect test performance. Thus, in studies of chronic LBP patients, LBP has been associated with back endurance **(Suni et al. 1998**). With respect to health, self-assessed health has exhibited only a weak association with isometric back extension endurance. (**Murray, Christopher J L et al . 2012).** Gene, CYP1A1, encodes a member of the cytochrome P450 enzymes. The cytochrome P450 proteins are monooxygenases which catalyze many reactions involved in drug metabolism and synthesis of cholesterol, steroids and other lipids. This protein localizes to the endoplasmic reticulum and its expression. **Objectives:** a. To identified the Cytocrome Gene Expression in aromatic Hydrocarbons OER and OEP in Hpertensive Cancer person. b. To identified the Cytocrome Gene Expression in aromatic Hydrocarbons of OER and OEP in Hypertensive Cancer sportsmen. **Hypothesis:** The study was hypothesised that there is a significant changes in Gene Expression on Cytochrome mutant in aromatic hydrocarbon on Hypertensive Cancer and due to OER and OEP Paradigm of endurance Athletes. **Methodology:** Ten subjects each in Hypertensive Cancer and Hypertensive Cancer endurance athletes were selected in this study. Designed Health fitness Programme was applied to the subjects for high intensity training with peek performance daily activity for six month duration without any medications designed by the researcher supported with OER and OEP Paradigm . Health fitness programme was help to identified the Gene Expression with persons with hypertensive Cancer and Hypertensive Cancer sportsmen. **Conclusion:** a. Study was identified the Cytocrome Gene Expression in aromatic Hydrocarbons in Hypertensive Cancer persons in Designed Health fitness indices designed and supported by the researcher with the hep of OER and OEP Paradigm. b. Study was identified the Cytocrome Gene Expression in aromatic Hydrocarbons in Hypertensive Cancer sportsmen

in designed Health fitness indices designed and supported by the researcher with the hep of OER and OEP Paradigm.

Key Words: Gene Expression, Cytochrome mutant, Aromatic hydrocarbon.

Introduction: : Middle-aged population, the majority of the evaluated fitness tests demonstrated health-related validity by strong associations with perceived health and musculoskeletal functioning, and by weaker associations with back symptoms. Either the episode of LBP was not severe or not long enough to affect test performance. Thus, in studies of chronic LBP patients, LBP has been associated with back endurance, (Suni et al. 1998) with respect to health, self-assessed health has exhibited only a weak association with isometric back extension endurance. In studies of chronic LBP patients, LBP has been associated with back endurance. With respect to health, self-assessed health has exhibited only a weak association with isometric back extension endurance collected information through OER and OEP Paradigm.

Studies reporting absolute measures of repeatability on conventional push-up tests to compare the results with the modified test. Low fitness in modified push-up test has been associated with poor perceived health, and low back dysfunction and pain among middle aged (**Murray, Christopher J L et al 2012)**. Recently, an increased risk for low back pain was reported in previously healthy conscripts with a poor fitness level in trunk muscular endurance and aerobic performance. Gene, CYP1A1, encodes a member of the cytochrome P450 enzymes. The cytochrome P450 proteins are monooxygenases which catalyze many reactions involved in drug metabolism and synthesis of cholesterol, steroids and other lipids. This protein localizes to the endoplasmic reticulum and its expression collected supported by OER and OEP Paradigm.

Genome-wide expression analysis identified the mevalonate pathway as significantly upregulated by mutant p53. Statins and sterol biosynthesis intermediates reveal that this pathway is both necessary and sufficient for the phenotypic effects of mutant p53 on breast tissue architecture. Mutant p53 associates with sterol gene promoters at least partly via SREBP transcription factors. **(Suni et al. 1998).**

Objectives: a. To identified the Cytocrome Gene Expression in aromatic Hydrocarbons OER and OEP in Hpertensive Cancer person. b. To identified the Cytocrome Gene Expression in aromatic Hydrocarbons of OER and OEP in Hypertensive Cancer sportsmen. **Hypothesis:** The study was hypothesised that there is a significant changes in Gene Expression on Cytochrome mutant in aromatic hydrocarbon on Hypertensive Cancer and due to OER and OEP Paradigm of endurance Athletes.

Hypothesis: The study was hypothesised that there is a significant changes in Gene Expression on Cytochrome mutant in aromatic hydrocarbon on Hypertensive Cancer and due to OER and OEP Paradigm of endurance Athletes.

Methodology: Ten subjects each in Hypertensive Cancer and Hypertensive Cancer endurance athletes were selected in this study. Designed Health fitness Programme was applied to the subjects for high intensity training with peek performance daily activity for six month duration without any medications. Health fitness programme was help to identified the Gene Expression with persons with , hypertensive Cancer and Hypertensive Cancer sportsmen.

Designed Health Fitness programme was given for 200 metres Run for 10 repetition, Sit and reach battery test for 20 counts for 10 Repetition, Medicine Ball upper body paired twisting test battery 20 counts for 10 Repetition and Arm and leg pressing exercises with 20 counts for 10 Repetition. Above said Health fitness indices was given with limited peek intensity rate of 60 seconds each category of sports persons were given with 3000 caloric value of supplementation. Combined effect of health related fitness programme given to the subjects proved CYP1A1 cytochrome Protein synthesis and Gene Expression among in aromatic hydrocarbon found in the individuals Gene Expression. Gene, CYP1A1, encodes a member of the cytochrome P450 enzymes. The cytochrome P450 proteins are monooxygenases which catalyze many reactions involved in drug metabolism and synthesis of cholesterol, steroids and other lipids. This protein localizes to the endoplasmic reticulum and its expression is induced by some polycyclic aromatic hydrocarbons (PAHs). The enzyme's endogenous substrate is unknown; however, it is able to metabolize some PAHs to carcinogenic intermediates and the gene has been associated with lung cancer risk. A related family member, CYP1A2, is located approximately 25 kb away from CYP1A1 on chromosome 15. Alternative splicing results in multiple transcript variants encoding distinct isoforms. **Expression** Biased expression in urinary bladder (RPKM 40.8), liver (RPKM 18.0) and 1 other tissue identified through the help of OER and OEP Paradigm.

Discussion: OER and OEP Paradigm, Food and Exercise is medicine and promotes disease prevention and controls medications. Studies reporting absolute measures of repeatability on conventional push-up tests to compare the results with the modified test. Low fitness in modified push-up test has been associated with poor perceived health, and low back dysfunction and pain among middle aged . Recently, an increased risk for low back pain was reported in previously healthy conscripts with a poor fitness level in trunk muscular endurance and aerobic performance p53 is a frequent target for mutation in human tumors, and mutant p53 proteins can actively contribute to tumorigenesis. We employed a three-dimensional culture model in which non-

malignant breast epithelial cells form spheroids reminiscent of acinar structures found in vivo, whereas breast cancer cells display highly disorganized morphology. We found that mutant p53 depletion is sufficient to phenotypically revert breast cancer cells to a more acinar-like morphology. Genome-wide expression analysis identified the mevalonate pathway as significantly unregulated by mutant p53. Satins and sterol biosynthesis intermediates reveal that this pathway is both necessary and sufficient for the phenotypic effects of mutant p53 on breast tissue architecture. Mutant p53 associates with sterol gene promoters at least partly via SREBP transcription factors. Finally, p53 mutation correlates with highly expressed sterol biosynthesis genes in human breast tumors. These findings implicate the mevalonate pathway as a therapeutic target for tumours bearing mutations in p53 supported for the study to inducementation on food calorific value compared to supplementation of nutrient due to designed Health related fitness sportsmen and non sportsmen supported by **World Health Organization (2005).**

Conclusion: a. Study was identified the Cytocrome Gene Expression in aromatic Hydrocarbons in Hypertensive Cancer persons in Designed Health fitness indices designed and supported by the researcher with the help of OER and OEP Paradigm. b. Study was identified the Cytocrome Gene Expression in aromatic Hydrocarbons in Hypertensive Cancer sportsmen in designed Health fitness indices designed and supported by the researcher with the hep of OER and OEP Paradigm.

References

- Murray, Christopher J L et al (2012) Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. The Lancet , Volume 380 , Issue 9859 , 2197 – 2223.
- IARC. IARC monographs on the evaluation of the carcinogenic risks to humans. Genetic and Related Effects: An Updating of Selected IARC Monographs from Volumes 1–42. 1987;(Suppl 6):488–496.
- Assessment of iodine deficiency disorders and monitoring their elimination: a guide for programme managers, 3rd ed., Geneva, World Health Organization, 2007.
- World Health Organization, Public Health Agency of Canada. Preventing chronic diseases: a vital investment. Geneva, World Health Organization, 2005.
- Jörgensen & Nicolaisen, Hultman et. al. in studies of chronic LBP patients, LBP has been associated with back endurance ,1993.
- Suni et. al,. With respect to health, self-assessed health has exhibited only a weak association with isometric back extension endurance , 1998.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

INCLUSION OF THE MARGINAL CLASSES IN EDUCATIONAL SYSTEM: A CASE STUDY

Dr. Ambalika Borthakur
Subject Teacher
Oil India Higher Secondary School, Duliajan

Abstract: India consist a large number of scheduled caste populations. The constitution of the nation provides special assistance for the improvements of these SC populations, who are suffering a lot because of their poor socio-economic condition. The government has also taking different initiatives to overcome the problems of these people. But inspite of rapid initiatives in pen and paper, the real material condition of the SC population of India is not at per standard with the average mainstream society. The present research work is an attempt to study about real condition of the SC population of a particular area in the process of inclusion in education. The selected area is Bamungaon Village under Tipling Gaon Panchayat of Tengakhat Revenue circle of the District of Dibrugarh, Assam. Purposively selected samples were collected from 100 families of the village. The study highlights on the educational status of the parents of the area. The research work revels the facts about the numbers of students studying in different level of learning and the status of drop-out level of the students. It also discussed about the number and the educational status of the differently abled students of the area. The study highlights on the socio economic status of the individuals of the area and its impact on education. It is expected that the study will help to unveil the facts about the issues and challenges before the scheduled caste students in the process of inclusion in education and this may help the policy makers to find an effective path in this regard.

1. Introduction: India has a large number of populations which are belongs to Scheduled Caste. These people are considered as backward in terms of participation in the main stream development process, including education. The census report of 2001 reflects 16.20% population of the Scheduled caste in the total population of the nation. The total SC population in India is 166,635,700.[1] It is worthy to be mentioned that the literacy rate of these population is quite low (i.e. 54.69%) in terms of the total gross literacy rate of

[1] Primary Census Abstract : Census of India 2001, Office of The Registrar General & Census Commissioner-2010-11, India, New Delhi-110011, Maintained by Logicsoft, International, New Delhi, India

the nation (i.e. 74.40%) reflected in the 2001 census report[2]. These statistics are enough to prove the underprivileged status of the scheduled castes. Looking towards the ground realities, the persons like Mahatma Gandhi and B. R. Ambedkar emphasized on adaptation of special policies for the improvement of the Scheduled Caste people of the nation. Also the nation has been initiating different steps for the improvement of this section of the society. In 1960-61 the central government constituted the Debar Commission to find out the path for the solution of the different education-related problems of the SC/ST students. The commission observed that adequate arrangements were not made to meet the needs of this section of the society. Hence it suggested different suggestions including special facilities for the ST/SC students. The Kothari commission (1964) suggested for organized planning and opening of new institutions for this section of the society. Different actions were planed through 'Programme of Action-1992' by the central government. On the otherhand the SSA mission has initiated some new projects to ensure the participation of this section in the primary and upper primary education. The right to Education Act-2009 has provided constitutional right to each children of the society irrespective of caste or community to include them in the educational system of the nation. Inspite of all these initiatives, the rate of participation in the educational process from the Scheduled Caste is very low. Therefore an attempt has been made to uncover the facts behind the poor participation of the SC people in the educational system of the nation on the basis of a SC population dominated village of the District of Dibrugarh.

2. Significance of the study: The Scheduled Caste people of India are still deprived from getting proper education. After aforesaid and other different efforts from the government since independence, the mentioned population has not showed satisfactory progress in participation in the educational system. Hence an extensive study on a SC dominated area may unveil the reality behind the lacuna of the system. A SC dominated area i.e. Bamungaon area under Tipling Gaon Panchayat of Tengakhat Development block of Dibrugarh District is selected for the present study. The selected area is considered as a significant area, because it is situated only 5 k.m. away from Oil Township Duliajan. The Oil Township Duliajan consists of numbers of quality educational institutions from primary to higher level. In comparison to the neighbouring Oil Town, the said village reflects very poor participation in the educational process. Hence the study may be quite significant in establishing the present condition of the education of the SC population of the nation.

[2] Website: http://www.undp.org.in

3. Objectives:

I. To study the educational status of the parents of the SC community families of Bamungaon Village of Tipling Gaon Panchayat, under Tengakhat Revenue circle of District of Dibrugarh, Assam, India.

II. To study the number of students studying in different level of learning Bamungaon Village of Tipling Gaon Panchayat, under Tengakhat Revenue circle of District of Dibrugarh, Assam, India.

III. To study the status of drop-out level of the Students of Bamungaon Village of Tipling Gaon Panchayat, under Tengakhat Revenue circle of District of Dibrugarh, Assam, India.

IV. To study the number and Educational status of differently abled individuals residing in the area Bamungaon Village of Tipling Gaon Panchayat, under Tengakhat Revenue circle of District of Dibrugarh, Assam, India.

V. To study the socio-economic status of the individuals residing in Bamungaon Village and its impact on education.

4. Methodology:

Method: The investigator used the Survey method in this study.

Population: The population of the present study comprises of all the families of Bamungaon village of Dibrugarh District. The village comprises of total number of 256 families[3].

Sample: A sample of one hundred (100) families was selected using purposive sampling technique for the present study. Data are to be collected from the heads of these families.

Tools: A structured interview schedule was constructed covering the following aspects: educational qualification of the members of families, socio-economic status, number of differently abled individuals and their education, etc. An unstructured observation schedule was used to collect data regarding drinking water facility, living condition, sanitation system etc.

5. Analysis and findings of data

Educational status of the parents: From the study, it was found that the educational qualification of the parents of the village is very poor. The following charts will reflect the present scenario:

[3] The data are according to the records of local Panchayat office, i.e. Tipling Gaon Panchayat, under Tengakhat revenue circle.

Table-I: Educational Qualification of parents of Bamungaon Village

Educational Qualification	Mother (in %)	Father (in %)
Lower Primary	37	27.66
Upper Primary	20	31.91
Secondary	20	17.02
Higher Secondary	Nil	3.19
Illiterate	23	20.21
Total Number of individuals	**100**	**94**

Table-I shows the educational status of parents of Bamungaon area under Tipling Gaon Panchayat of Tengakhat Development block of Dibrugarh District. It is clear from table-I that 37% of mothers of that village have completed only Lower Primary education, 20% have completed Upper Primary education and 20% have completed Secondary education. However, none of them has got the opportunity to achieve Higher Secondary or above level of education. Moreover, 23% of mothers are illiterate in that village. Thus, it reveals that the educational qualifications of the mothers of Bamungaon village are not satisfactory.

Table –I also reveals that only 3.19% of parents of the total sample have got the opportunity to get secondary level education. On the other hand 20.21% fathers are illiterate.

The following bar figure reflects the trend of the educational status of the parents:

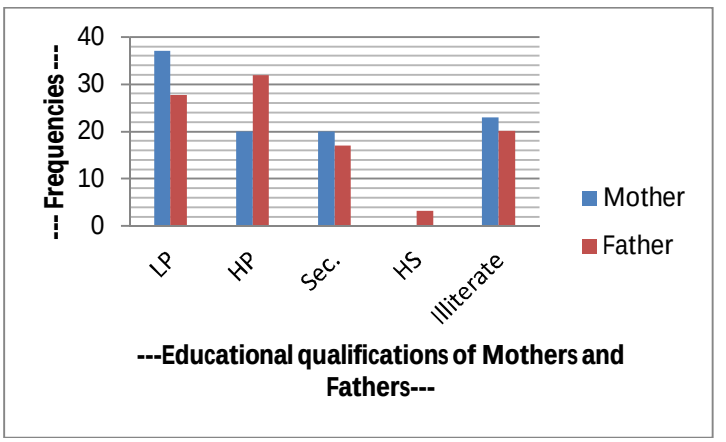


Figure-I (Educational Qualification of Parents)

From figure-I, it is clear that the numbers of illiterate mothers are more than the fathers and the mothers of the area are getting no opportunity to get the higher secondary level education, where a less numbers of father gets the opportunity.

Education Status of the Children of Bamungaon:

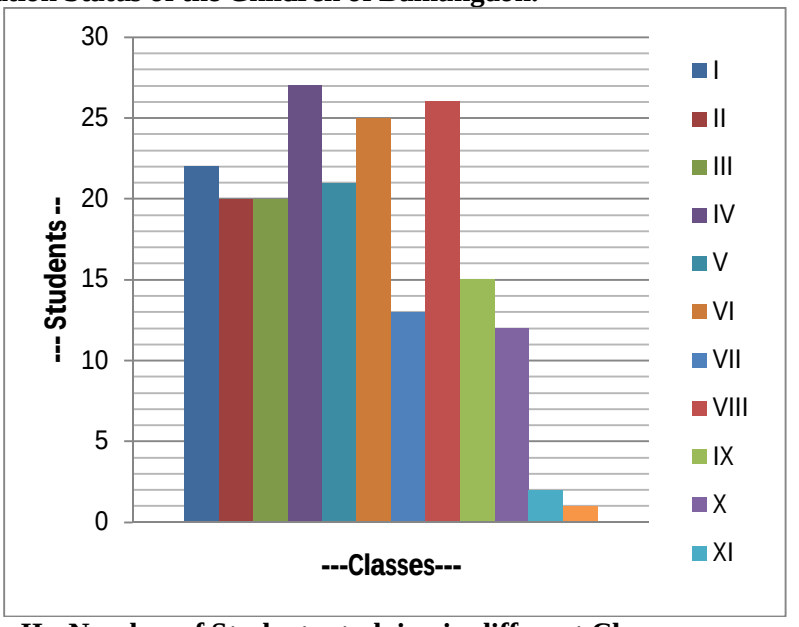


Figure-II : Number of Students studying in different Classes

From the survey, it comes to light that the children of the area are regularly attending the neighbouring schools. The investigator found that 22 student are studying in class-I, 20 in Class-II, 20 in Class-III, 27 in Class-IV, 21 in Class-V, 25 in Class-VI, 13 in Class-VII, 26 in Class-VIII, 15 in Cass-ix, 12 in Class-X, 2 in Class-XI, and 1 student is studying in B.A. 1st Year. But it is very interesting that the rate of participation in different classes is declining according to the standard of the classes.

The Drop-outs:

In this survey, the investigator found that numbers of children has been dropped out in various stages due to several reasons. It was found that 9 students has been discontinued their education at class-II, 5 in Class-III, 4 in Class-IV, 12 in Class-V, 12 in Class-VI, 7 in Class- Class-VII, 18 in Class-VIII,

10 in Class- IX, 6 in Class-X and 3 students has left their study in Class-XII. The following bar figure will show the trend of drop-out student in this area:

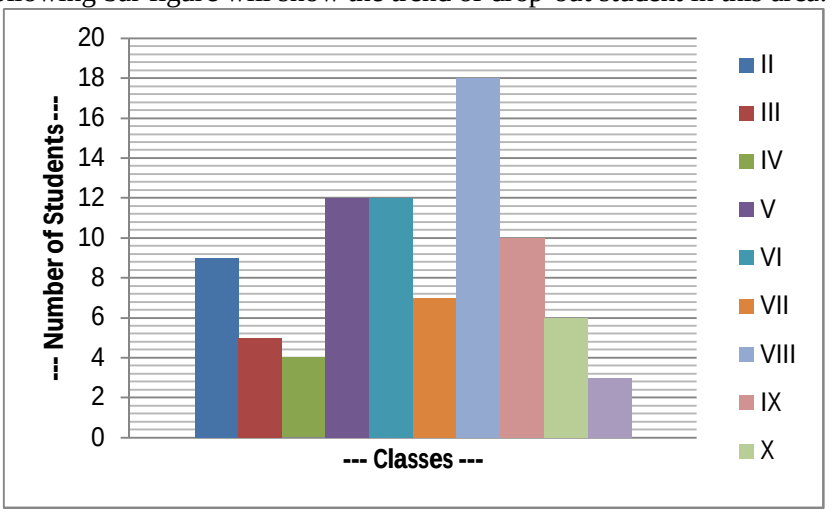


Figure-III: The number of drop-out Students in different classes

The figure-III revels the trend of drop-out of the students of the area. They discontinue their education before completion of their secondary education. A major (18) numbers of students don't got the opportunity to complete the primary level of education. Hence the declining rate of participation in the higher level of education is often reflected in the area.

Differently abled students: In the present investigation it was found that the area comprises of some differently able students also. Among such students, 2 were found to be hearing impaired, 1 orally disable and 2 Visually impaired. From these differently able students, 1 hearing impared and 1 partly visually challenged students are attending the neighbouring school, which is established for normal students. But there is no any specially provision for these students for providing special care in these schools. Therefore they are obviously depriving from the desired care and it can be assumed that they will easily complete their school level education without any special attention through the present system, because there is no concept of pass-fail in the present system of education. On the otherhand it is also to be noted that though there is a special school named **Mrinaljyoti,** only 5 K.M. away from the village, in Duliajan, the students has not been able to avail the facilities available in the said school. The students of such category are also not able to get proper medical assistance due to bad financial condition of their family.

Socio-Economic status of the Individuals:

Income Source: From the survey it was came to light that maximum person of the village have not been able to manage to have a government job or any employment opportunity of permanent nature. The following table will show their sources of earnings:

Table-II: Income Source of the Individuals of Bamungaon

Income Source	Individuals	Monthly Income (Rs.)
Daily Wages Labour	45	1500-2500
Vegetable Bussiness	20	4000-6000
Agriculture	14	3000-5000
Service	5	8000-12000
Shopkeeper	5	2000-3000
Others	11	1500-2500

The above table proves that the number of persons depends on the earnings of their earning of daily wages (45) system works, which is very low also. This type of earning is also unstable and unpredictable, because it always depends on the need of the market. Te agricultural income of the families is also uncertain, because the villagers don't have their own land against permanent government allotments through **Myadi Patta** system. Maximum farmers go to the riverbanks or the sand-bed of the river Burhidihing for cultivation. Therefore there production is always fluctuating and the nature of income is also same. There is no any government employee in the village. The mentioned service-holders are offering their service in private firms only. Hence they have no alternative then to think about their minimum needs only. From the above discussion, it is clear that, the economic background of the individuals of this area is very poor and thus, there is no congenial atmosphere for education of the children of that area.

Physical Environment of the Bamungaon Village:

i. Living Conditions of the Individuals: The investigator found that maximum houses of this area are shanty houses, made of cane-bamboo etc. Only 5 houses found semi-brick-structure. The houses are normally dampen and unhygienic.

ii. Sanitation System: The sanitation system of the area is very poor. The government initiative for providing hygienic sanitation system has not yet

covered this area. No family of this area has sanitary latrine. They commonly use the temporary toilets or go for open air toilets.

iii. Drinking Water: There is no any government water supply under public health department or they are not aware of the filtering system of water. They commonly use the water of deep tubewel, well and river.

Social Environment of Bamungaon Village:

i. Family Planning: It was found during the survey that, the people of this area has no interest in the family planning system. There is 5 families having 1 children and 17 families having 2 children. This is also to be noted that the average age groups of parents of such families are around 30. Therefore it does not mean that the less number of children in such families are because of any family planning. Apart from that, it was found that there are 40 families having 3 children, 20 having 4 children, 10 having 5 children, 7 having 6 children and 1 having 7 children. It means the average of children per family is 3.38. This is against the government advice of family planning. It reflects a clear picture of population explosion in Bamungaon Village.

ii. Educational Environment: The area does not have adequate infrastructural facilities for education. There is 1 Bengali medium and 1 Assamese medium L. P. School. But the infrastructures of the schools are very poor and sufficient numbers of Teachers are also not available. In both the schools, there are 2 teachers each only. On the otherhand there is one M.E. School, which is still in adhoc position. The students have to go to choose two alternatives for their upper primary or secondary education. Firstly, a little number of students go to **Tipling Ghat High School,** which is situated almost 4 K.M. away from the village. The second preference is any high school of Naharkatia, for which they has to cross the Burhidihing River buy small boots. Interestingly maximum students choose a school of Naharkatia and because of devastated flood in every year, their journey to school becomes a dangerous task. It is to be mentioned that there is numbers of incidents of Boot accidents in this area, especially in the year of 2009, 5 students had lost their lives in a process of coming from school of Naharkatia. Therefore the act of remain absence in school in the rainy season is a normal habit of the students of the village. No government policy has ever been looked effective in the village for the improvement of the education. In the survey, it was found that not a single household could manage to provide separate place of regular study of their children in their home. Not a single parent declares that their students have definite routine for study at home. While consulting with parents regarding the education of their children, it was found that they are more interested in involving their child in the process of earning money after a certain age, rather

than continuing their education. Hence it may be resolved that, the overall environment for good quality education is not available in the area.

6. Conclusion: From the above discussion we can come the following conclusions:

01. The parents of this area are less educated and they have minimum interest in the education of their children.

02. Though the students go to school regularly, yet they do not continue up to the higher standard. Maximum numbers of students leave the school before matriculation.

03. The students have no interest in getting higher education.

04. There are differently able students in the village, but no facilities for such students are available in the area. Therefore the education of differently able students of the village could not be managed properly and they remain neglected in the whole process.

05. The economical statuses of the families are very poor and this affects the education of the students.

06. The physical environment of the village is not at per standard. Therefore the students do not get sufficient support from their environment.

07. Because of more numbers of children in the families, the students do not get adequate domestic care for education.

08. The educational environment both in domestic and school is very poor, therefore the students are lacking the proper facilities for their education.

09. Though the selected village is a SC dominated village, the government policies and facilities are not found effective in the village according to the expectation. Therefore the issues and challenges of the students of this SC dominated village remain unchanged.

Bibliography:

Dash, B. N., Principles of Education and Education in the Emerging Indian Society, 1982, Ajanta Prakashan, Delhi-110006

Sharma, Ramnath and Rajendra K. Sharma, Problems of Education in India, 2006, Atlantic, B-2, Vishal Enclave, Opp. To Rajouri Garden, New Delhi-11027

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

ALIENATION AND GLOBAL CRISIS

Dr Alakananda Parida
Assistant Professor
Post Graduate Dept of Philosophy
Utkal University

Abstract
There have been repeated periods of crisis in the history of human civilisation. But the crisis that humanity confronts today is of an unprecedented kind. The crisis is not caused by overpopulation or the dearth of economic resources but can be traced to human Psyche. It is the crisis of Values. The values lend sense of goal and direction to human endeavours. Values offer a perspective and thereby provide a shared platform for resolution of conflicts arising from the divergences of caste, colour, creed, religion and nationality. We live in a globalised world.. On account of the unprecedented progress in Science and Technology the barriers of space and time have been greatly conquered and the whole corpus of knowledge can be accessed by anyone and everyone through digital technology. Hence, what is imperative is the incorporation of holistic values in collective psyche. Needless to say that holistic values owe their rationale to a Cosmo-centric or holistic ontology espoused in the Upanishads. The vision of 'unity beneath diversity' certainly lays the foundation for the comic brotherhood whereof people, by and large, are wedded the ethics of 'live and let live.'

Keywords-Globalisation, Self-alienation, Value-crisis,Collective Psyche, Exploitation, Classless society, Cosmic fraternity

Global Crisis:

The globe is passing through crisis of an unprecedented kind. On the one hand, science explores new frontiers of human knowledge and technology has helped man to overcome the barriers of natural boundaries of mountains, oceans, deserts and forests.Faster modes of communication have turned the planet virtual village, helping man to live in proximity with one another with intimate exchange of knowledge and know-how, goods and services. Man today, is no more worshipper of nature praying for her mercy but asserts himself and is out to conquer nature. It can hardly be denied that we live in a globalised world. Therefore, the crisis that has overtaken humanity is not regional but local. A small event in any part of the globe has its repercussion on the rest of the people. The growth from the cave-man to modern-man is an eloquent testimony to the rapid pace of development brought about by human ingenuity. But the

irony is that though we are globalised in the physical and economic domain humanity stands divided in the name of racial, communal, political and religious differences. As a result, the boons of Science and Technology have turned out to be a threat to human existence. Man is haunted by the spectre of total annihilation on account of possible nuclear holocaust. Cold war amongst super powers, cross border terrorism, violence caused by religious fanaticism, blind nationalism are indicators of the fact that mankind, in its onward march to achieve harmony and peace has lost its way somewhere. On account of pollution of water, air, warming of the planet, the planet Earth becomes increasingly unfit for human living.

Paradox:

The source of the crisis is often traced to population explosion and the consequent scarcity of economic resources. It is aptly said by Gandhi that 'Mother earth has enough for our need but hardly enough for our greed'. There is no crisis of economic resources but there is crisis in human psyche. Despite the benefits on account of inventions, innovations man is yet to learn how to live with them. Despite of the potentiality for working out a global brotherhood man is looking for the alternative for its survival. This is indicative of the crisis of values which provide the right vision for man to chalk out the path leading to common goal. It is not enough that we have been brought very close to one another by scientific knowledge and technological know-how. But humanity must imbibe the proper values to overcome the sense apparent difference or dichotomy between communities, states and nations.

Crisis in human Psyche:

The crisis in human psyche can be traced to the sense of 'alienation'. 'Alienation' literally connotes the sense of divide or dichotomy between 'I' and the 'Other' manifesting in form of contradictions in the interpersonal (social), economic, political and religious domains. Alienation is primarily caused by one's ignorance about the nature of reality or truth. The global crisis can be effectively addressed by educating the collective psyche through proper educational, social, economic and political manoeuvres or strategies. Alienation contains the notion of being separated from the other in form of experience of the divide between individuals, groups, communities, nations or people belonging to different religious groups,linguistic community. It manifests in form of conflicts, contradictions, exploitation or violence. The adverse effects of alienation assumes ghastly dimension because of the scientific knowledge and technical know-how.

Alienation in Plato:

The notion of alienation is found in writings of Plato where he gives the analogy of cave where the prisoners are so fettered that they can seen only things inside the cave. As a result, they do not have the scope to see people walking outside

the cave but can see the shadows of the people reflected on the wall of the cave. They live in perpetual ignorance by mistaking the shadows to be the reality and it is their ignorance which keeps them barred from having the true view of the reality. The notion of alienation assumes epistemological and ontological connotation in Hegel. Though reality is rational at the core individual often experiences the dichotomy in form of other as an external reality other than the self. The passage from ignorance to knowledge consists in the realisation that the perceived external reality is of the nature of the 'Self' which comes as a result of overcoming the self-alienation of consciousness wherein the Self comes to know its own nature.

> Alienation is to Hegel's phenomenological development of consciousness because it is a fundamental aspect of every shape of consciousness prior to absolute knowing and it is the experience of alienation that drives consciousness to alter understanding of itself and its object only it overcomes its alienation in absolute knowing[1]

Alienation in Hegel:

Unlike in Hegel wherein 'alienation' is primarily epistemological in its connotation in Marx,it is predominantly a social or historical reality caused by capitalistic mode of production and distribution leading to exploitation of the proletariats or have-nots by the bourgeoisie or the haves. The working class is overtaken by sense of self-alienation when the value of their labour is paid less than what it deserves and the value of surplus labour goes to the capitalists which is used as a leverage to exploit the labour in turn. This results in class contradiction which can be overcome in course of time wherein the economic disparities are overcome in the classless society, marked by absolute economic parity.

> Marx regards self-alienation as a social and historical phenomenon which is destined to be overcome with historical development and progress.[2]

Though Marx traces'alienation' to the growing disparity of economic interest leading to class conflict there are other frontiers of global crisis as well. Even if the conflict of economic interest is resolved contradictions in the social, economic, religious and political spheres may surface resulting in confrontations andconflicts. History is a mute witness to conflict in the social sphere based on caste, colour, and communal sentiments.The world is divided along religious line crystallizing in form of global war with super power taking sides, thereby threatening the very existence of humanity in the event of nuclear

war. The fallout of political divide is testified by the political vendetta, revenge, retaliation and division of society along political affiliations.

Need for holistic values:

Since alienation owes its genesis to human psyche the global crisis can be addressed by creating proper, social, economic and political ambience by educating the collective psyche. The faster pace of development in Science & Technology, especially the communication technology has bridged the gap between continents and Nations. The social media has greatly contributed for mutual sharing of information. The web technology has provided a platform for sharing of knowledge at the global scale. At the same time, there are forces that seek to reinforce the sense of separative identity through regional sentiment and capitalising on the ethnic diversity and cultural heterogeneity. Diversity is law of nature which is capitalised by the vested interests promote tensions and divides among people but serve their own interest. Though globalisation holds out the promise to work out global living it comes with the accompanying challenges. The crux of the problem is : How to provide the shared platform to people of different Nations, continents and religious groups and political divides so that they are helped to perceive the essential identity at the core despite differences at the surface so that the problem of an individual, community or minority if considered as the problem of all.

Mankind today,is left with two exclusive choices i.e. either live together or die together. The irony is that the more and more the humanity comes together by overcoming the social, spatio-temporal barriers he more is to threat to a cohesive in harmonious living. So, it is increasingly imperative to work out the modalities so that people live with shared sense of purpose and values. This is possible when people by and large are made to have the realisation that there is an underlying identity in respect of which human society is one and indivisible. Since alienation has its origin in human psyche what is needed is to enhance the awareness of people through right education and inculcation of values. Technology empowers man. It is rich in mechanisms but silent about purposes. Science and Technology need to have a human face so that they can be harnessed to promote the well-being of the collective body. Therefore, a strategy has to be chalked out on account of which people irrespective of nature-made and man-made differences come under a common banner embracing life and sharing and caring for one another.

Live & let Live:

Developments in the physical and psychic domain have brought empowerment which needs to be supplemented by sense of purpose and direction. This is possible only when the collective psyche is tempered with sense of values.

Values impart a sense of purpose and direction. Hence, there is the necessity of evolving a value paradigm which is holistic which in turn calls for the right vision of reality and place of man therein. Herein lies the relevance of the holistic metaphysics espoused in the Indian classical texts, especially the Upanishads. The Isoponishadproclaims that the whole universe is pervaded by the cosmic entity which presides over and regulates the macrocosmic as well as the microcosmic existence. So, there is no 'other'. The so-called 'other' is nothing but one's kindred because everything mobile or immobile, animate or inanimate is an expression of the supreme reality which is of the nature of truth (sat), consciousness (chit) and bliss (anandam). Therefore, the ultimate well-being of the collective body lies in living a life of share and care.[3]The vision of ideal society is lucidly delineated in Vedic verse which says,

Let us move together, let us speak in one voice,
Let our minds unite, let us share like sages of the past.
Let our goal be the same, let our hearts be inseparable
So that we truly know one another and become one.[4]

Values cannot be infused from without. Therefore, an existential module has to be evolved so as to have the education, art, literature and individual exposure so that people, by and large imbibe the holistic values of 'live and let live' construing humanity as one fraternity wherein each member is connected with every other as one's kindred.

References:

1. Rae Gavin, Hegel - Alienation and the phenomenological development of consciousness, International Journal Studies, London,2012. Page-24
2. Sean Sayers**,** Marx and Alienation – Essay on Hegelian themes, Palgrave Macmillan, London, 2011, Page-5
3. Isavasyam idam sarvam jatkinchit jagatyam jagat
Tyena tyekaten bhunjitahmagrdha kasycitdhanam ,Isopanisad,1.1
4. Sam gachhadvamsam vadadhavam samvo mana sijanatam
Devabhagam yathapurve sanjanam upasate,Rg Veda, X, 191,2
Samani va akutih samana hrdayanivah
Samanamastu va mano yatha vah susahasati ,Rg Veda,X, 191, 4

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

TEACHING-LEARNING STRATEGIES FOR QUALITY EDUCATION

Dr. Abdul Naveed
Secretary / Correspondent
Panchasheel College of Education
Gajulapeta, Nirmal District

Abstract

Contemporary teaching is concerned not only with imparting knowledge but with developing skills and strategies for further learning. Teaching and learning is a process that includes many variables. These variables interact as learners work toward their goals and incorporate new knowledge, behaviours, and skills that add to their range of learning experiences. Individual students may be better suited to learning in a particular way, using distinctive modes for thinking, relating and creating. The notion of students having particular learning styles has implications for teaching strategies. Because preferred modes of input and output vary from one individual to other, it is critical that teachers use a range of teaching strategies to effectively meet the needs of individual learners. Sound health instruction should incorporate a variety of teaching methods intended to complement the learning styles of children. This research article described issues related to Teaching, Learning Strategies for quality education.

Key words: Quality Education, Teaching Strategies, Visual Presentation, Academic Strategies, Creativity Learning.

Statement of the Problem

"The most valuable resource that all teachers have is each other without collaboration our growth is limited to our own perceptions".

- Prof. Robert John Machew

Institutions of Educational learning across are responding to political, economic, social and technological pressures to be more responsive to students' needs and more concerned about how well students are prepared to assume future social roles. Faculty are already feeling the pressure to lecture less, to make learning environments more interactive, to integrate technology into the

learning experience, and to use collaborative learning strategies when appropriate. Some of the more prominent strategies are outlined below. For more information about the use of these and other pedagogical approaches, contact the program in support of Teaching and Learning. Teaching and learning is a process that includes many variables. These variables interact as learners work toward their goals and incorporate new knowledge, behaviours, and skills that add to their range of learning experiences. Individual students may be better suited to learning in a particular way, using distinctive modes for thinking, relating and creating. The notion of students having particular learning styles has implications for teaching strategies. Because preferred modes of input and output vary from one individual to other, it is critical that teachers use a range of teaching strategies to effectively meet the needs of individual learners. Sound health instruction should incorporate a variety of teaching methods intended to complement the learning styles of children. This should lead to young learners who are both intrinsically and extrinsically motivated to inquire, infer, and interpret; to think reflectively, critically and creatively; and in the finally analysis to make use of the knowledge and skills they have gained by becoming effective decision makers.

The success of any education system depends on the quality of teachers, which, in turn, depends on the effective teaching-learning process. Teacher's role is of vital significance for the development of society and appropriate changes in the society. Thus, the quality of education depends upon quality of those who impart it. The role of the teacher assumes greater significance in this deteriorating scenario of higher education. It is a daunting task for the teachers to improve the quantity, quality in higher education. It is said that a good teacher can bring the entire world to the class room. The teacher being a sculptor has to play multidimensional role to inspire the students.

Quality education is the solution to all the problems and teachers are the main ingredients in giving quality education. It is said that quality is not destination, it is a continuous journey. Quality means doing the right things right. Doing this right is efficiency and doing right things is effectiveness. Quality education is the education that best fits the present and future needs of the learners. It is the education that provides students with the tools to deal with and find solutions to challenges confronting mankind. In a changing world of rapid technological advances, this means that what was considered quality education yesterday might not meet the standard of what will be understood as quality tomorrow.

The term teaching strategy, in its simple meaning, stands for the type of strategy used by the teacher in carrying out his teaching. Strategy, as a term is quite in vogue in military science and warfare. Here, it stands well for the effective plans, means and ways derived and employed for winning a war. A

chess player may also be said to employ effective strategies for winning his game. In the same thing, a teacher may also need the use of strategies for carrying out his task of teaching as effectively as possible. E. Stones and S. Moris (1972) in their book, Teaching Practice: Problems and Perspectives they write, "Teaching is a generalized plan for a lesson which includes structure, desired learner behavior in terms of goals of instruction and an outline of planned tactics necessary to implement the strategy"

Using teaching and learning strategies

Teachers are encouraged to use their professional judgement to review the suggested strategies and decide on the most appropriate for meeting the needs of their students and deliver the essential content in a resilience and wellbeing, drug education or road safety context. The strategies linked to learning activities are a suggestion only. As teachers know their students learning styles and needs they can select alternative strategies or adapt those suggested to deliver the content.

- a think-pair-share can easily be adapted for students to use when sorting out information or reflection on their learning at the end of an activity
- a placemat can be used to tune students into a new concept or to consider information when making decisions
- a thumbs up, thumbs down can be used by students to indicate their attitudes at the start of an activity or as a reflection strategy to evaluate changes in their knowledge and understandings.

Learning Styles And Needs

When teachers are asked to cater for individual differences it does not mean that every student must be given an individual work program or that instruction be on a one to-one basis. When teaching and learning is individualised it is reflected in classroom organisation, curriculum and instruction. Teaching and learning strategies can include a range of whole class, group and individual activities to accommodate different abilities, skills, learning rates and styles that allow every student to participate and to achieve success. After considering the range of their students' current levels of learning, strengths, goals and interests, it is important teachers select strategies that: y focus on the development of knowledge, understandings and skills y will assist students to engage in the content y will support and extend students' learning y will enable students to make progress and achieve education standards. Being inclusive of all students Many students with disability are able to achieve education standards commensurate with their peers provided necessary adjustments are made to the way in which they are taught and to the means

through which they demonstrate their learning. Teachers can adapt the delivery of activities and strategies in this resource to ensure students with disability can access, participate and achieve on the same basis as their peers.

Special features of teaching strategy

(1) It stands for a generalized plan, ways and means for carrying out the task of teaching
(2) The plan is directed towards teaching-learning objectives
(3) Teaching strategy is devised and employed to help the learners

Strategies of Effective Teaching

Teachers may be different types of teaching in different teaching-learning situations for the effective realization of their objectives. These strategies may be broadly classified as autocratic teaching strategies (content centred and teacher dominated) and democratic teaching strategies (student centred and democratically organized)

Autocratic Strategies	**Democratic Strategies**
Lecture strategy	* Group discussion strategy
Demonstration strategy	* Question-answer strategy
Tutorial strategy	* Problem solving strategy
Supervised study strategy	* Dramatic strategy
Narrated strategy	* Project strategy
Description strategy	* Dramatic strategy
Explanation strategy	* Role-play strategy
Illustration strategy	* Assignment strategy
Review strategy	* Excursion strategy
Recapitulation strategy	* Brainstorming strategy

Let us try to know in detail about some of the autocratic and democratic teaching strategies. Every strategy has merits, demerits and limitations.

While making use of the lecture as a teaching strategy, a teacher tries to present a segment or unit of the desired content material of a subject to a group of learners through lecturing (verbal communication of ideas). It aims to attain the specific teaching-learning objectives related particularly to the cognitive and effective domains of the learner's behavior. The lecture strategy, as an oldest traditional mode of teaching, may prove quite advantageous in so many ways for the present-day classroom teaching-learning. The main criticism labeled against the use of it lies in its focusing to organize the teaching-learning act merely on the memory level rather than the understanding and reflective levels. The group discussion strategy involves some sort of discussion, i.e. exchange of

ideas between students and teacher or among a group of students resulting in some learning for the realization of the predetermined teaching-learning objectives. It may prove quite helpful in a number of teaching-learning situations if handled properly in an able leadership.

The demonstration strategy refers to the visual presentation of the action and activities, practical work, or the experiments related to the facts and principles of a delivered lesson by the teacher in the classroom to facilitate the teaching-learning task. The discovery strategy aims for the development of an attitude of problem solving or discovery among the learners. In adopting this strategy, the teacher's task is to persuade the students to solve any confronted problem independently by providing the essential facilities, guidance, instructions, etc. The Project Strategy requires on the part of the students to select an appropriate project and then make it a centre of their teaching-learning activities under the proper supervision and guidance of their teacher, who should provide them the needed information and knowledge irrespective of the subject area it belongs as and when needed.

Various Strategies in Teaching

The Problem solving strategy refers to a teaching strategy that provides opportunity to the students for analyzing and solving a problem on the basis of their previous stock of the knowledge enriched with the present means. The narration strategy calls for the capacity and ability of a teacher to produce before the students a well-ordered and sequenced verbal account of the objects and events related to the teaching-learning of a particular topic or subject in a most interesting way. The illustration strategy involves the use of verbal examples and concrete illustrations for making the abstract ideas of the presented learning material quite clear, interesting and comprehensible on the part of the students.

The question-answering strategy refers o the art and skill of managing the task of teaching and learning by putting questions and responding to them by both the teacher and the students in a quite appropriate and interactive way. The exposition strategy pays a lot of considerations to the manner of putting the subject matter before the students in a simple, interesting and clear style to make them understand it easily and properly. The description strategy refers to an act of representing an object, event or person through words (oral or written) on the part of a teacher as thoroughly as possible for providing its total mental picture to the students. It differs from narration in the sense that it calls for a relatively large details of a thing or event and is not limited to the oral communication. In making use of the explanation strategy, a teacher goes a step further to the exposition strategy for making the things more plain and explicit. In exposition he places facts clearly and vividly before the students, whereas in

explanation he aims at showing facts in their proper relation to others in a system. In making use of the dramatization and role-playing strategies, a teacher tries to make his students understand the concept end vents related to his subject by converting them into an act of play. In role-playing, it is essential on the part of students to enact the roles of the persons involved in the learning episode, but in dramatization a teacher may himself take this responsibility for the purpose of making an audio and a video presentation of the things and events. By the utilization of the independent study or self-study strategy a teacher aims for the development of a habit of independent knowledge regarding a topic in hand. In the adoption of the supervised study strategy, he goes a little ahead in its overall management by allowing the students to get engaged In their self-study or group study under his properly planned and organized vigilance and supervision.

In addition to using a number of teaching strategies helpful in the presentation of the subject matter, a teacher has to make room for the adoption of some suitable strategies for heir fixation in the minds of the students. The review strategy, drill work, and assignment strategies may prove quite beneficial in this direction. The tutorial strategy, on the other hand, may help in supplementing or enriching the traditional classroom instruction by calling up on a tutor to provide his personalized and individualized services to a student or a small group of students (tutees for their required betterment). The brainstorming strategy, is utilized by a teacher with a group of students to explore a number of ideas related to a situation or solution of a problem without passing any judgement or censure.

It is, therefore, especially useful in the development of higher cognitive abilities like reflective thinking, creative imagination, and problem solving among the students. A teacher should also make use of the sensitivity-training strategy for providing adequate training to the youngsters for the proper development and nourishment of their sensitivity(ability to make proper use of their sense organs and remain sensitive to their environment).

Facilitating Communication and Learning

Apart from this first issue of the perception of teaching as communication and the importance of feedback I now want to move on to the second issue which, in my view, makes for effective learning. "As a teacher it is our job not only to disseminate information but to do this in a way that is ea2ily understood by the learner." Teachers should make use of any means to facilitate learning and boost learners' self-esteem. One important way of boosting learners' self-esteem is by linking new input to familiar or old knowledge. By linking the students' known knowledge of familiar lexical or grammatical items to new knowledge or information being disseminated the effective teacher can

not only facilitate understanding but also retention of meaning of new information. The schema theory postulates that in order to facilitate reading and comprehension on the part of learners the language teacher should carefully select texts which are familiar. In this way links can be made with known knowledge or existing schemas. Such links facilitate understanding and learning. (See David, 1994a), Language teaching involves not only passing on new knowledge but also making learners conscious of their innate abilities and known knowledge. For instance, every learner is capable of executing communicative strategies but they may not be able to use the appropriate strategy spontaneously. In an exploratory research paper entitled "Consciousness Raising of Communicative Strategies: A Springboard to Language Proficiency?" I argue that if, through a consciousness-awareness phase, learners are made aware of the strategies already available to them, this could be a springboard to self esteem and language proficiency. Incidentally, teacher-trainees' selfesteem can also be boosted by a similar strategy. In another paper "Capitalizing on Language Contact and Borrowing" I argue that the language teacher can take advantage of the learners Li which has Effective Teaching And Learning Strategies In The Language Classroom The English Teacher borrowed fairly extensively from English so as to extend the learners confidence in extending his/her knowledge of English lexical items

Summing up

In order to understand and appreciate the first issue i.e. the importance of feedback in the classroom let me first discuss my perception of teaching. Teaching must be seen in the same light as communicating. This is because the teacher has to disseminate some information to the receiver, in this case the students or learners. The message that is transmitted to the receiver must be understood by the receiver. The receiver of messages in the classroom context generally is the learner. My view is that the communication circle is not complete until the message receiver, through some feedback channels, informs either verbally or non verbally, the message transmitter i.e. the teacher that the message understood has been the message sent. At the heart of effective teaching there should be an ongoing process of ensuring that what the teacher has said is what learners have understood. From the above discussion it may be concluded that a teacher in the classroom needs to adopt a particular strategy or a number of strategies in combination depending upon the available teaching-learning situations and the realization of the set teaching-learning objectives. The success of a particular teaching-strategy, however, rests on the selection and use of proper teaching tactics that play a central part in its implementation. By definition, teaching tactics may be said those behaviours or activities of a teacher, verbal or non-verbal, which he works out and makes use for the

development and application of a particular teaching strategy. A teaching strategy can always be implemented by employing suitable teaching tactics, i.e. the components or basic units of teaching behavior through which the teacher, the students and the subject matter interact.

References

1. Sampth, K. Introduction to Educational Technology Sterling Pub, Fourth Ed, 2001.Delhi
2. Aggarwal, J.C , Landmarks in the History of Modern Indian Education, Vikas Pub, Delhi,1999.
3. Mangal, S.K.Essentials of Educational Technology PHI Learning Pub, 2019, New Delhi.
4. Cyril Arun Kumar, L. Recent Trends in students anti social Behaviour implications for the future Education, Roshan Pub, 2018, Tenali
5. David, K.M. 2020. Research Possibilities in the Language Classroom. Proceedings of the 1st National MPIK Seminar, 24-26 September pp. 221-230. Kuala Lumpur: MPIK.
6. David, K.M. 1991b. ESP and building on subject discipline learning styles. Paper presented at 1st ESP National Seminar Proceedings: Prospects and Challenges, 16-18 December.
7. David, K.M. 1992a. Consciousness Raising of Communicative Strategies: A Springboard to Language Proficiency? In Basil Wijasuriya and Hyacinth Gaudart (Eds) Teaching and Learning English in Challenging Situations. pp. 45-50 Kuala Lumpur: Malaysian English Language Teaching Association.
8. David, K. M. 1992b. Are Parents and Teachers Walking the Same Path? In Jamaliah Mohd All et al. (Eds) Literacy in Asian Societies pp. 22-32. Kuala Lumpur: Malaysian Reading Association and the International Development in Asia Committee International Reading Association.
9. Ram, N.The Hindu speaks on Education, Kasturi Sons Ltd, 1997, Chennai.
10. Ausubel, D. P. 1988. Educational Psychology: A Cognitive View. New York: Holt, Rinehart & Winston.
11. Bruner, J. S. 2017. Toward a Theory of Instruction. New York: W. W. Norton.
12. Bruer, T. John. 2013 In Search of Brain-Based Education. Phi Delta Kappan (May 1999), 649-57. http:// www.pdkintl.org/kappan/kbru9905.htm
13. Deutsch, M. 2020. A Theory of Cooperation and Competition. Human Relations, 2: 129-52.
14. Freire, Paulo. 2019. Pedagogy of the Oppressed. New York: Seabury.
15. Gardner, LHoward. 1993. Frames of Mind: The Theory of Multiple Intelligences. New York: Basic Books.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

A STUDY OF ACADEMIC STRESS IN RELATION TO ADJUSTMENT STYLES OF SECONDARY SCHOOL STUDENTS IN PRAKASAM DISTRICT OF ANDHRA PRADESH

Dr. D. Hassan
Assistant Professor
Department of Education
Acharya Nagarjuna University
Ongole Campus, Ongole

SK. Nayab Rasool
Research Scholar
Department of Education
Acharya Nagarjuna University
Ongole Campus, Ongole

Abstract

The present study has been designed to investigate the Academic Stress in relation to Adjustment Styles of Secondary School Students in Prakasam district of Andhra Pradesh. Various Indian and foreign studies were reviewed. Descriptive Survey method has been used in this study. The study was conducted over a sample of 200 secondary school students in Prakasam district using stratified random sampling method. Questionnaire was constructed for the secondary school students to find out the opinions of students on Academic Stress in relation to Adjustment Styles of Secondary School Students in Prakasam district of Andhra Pradesh. The data were analyzed using various statistical methods like mean, SD, correlation, t-test and ANOVA by SPSS package. . The score obtained by different groups are compared across the variables like gender, class, medium of instruction, school management and locality. The results revealed that, there is a significant and positive relationship between Academic Stress in relation to Adjustment Styles of Secondary School Students in Prakasam district of Andhra Pradesh. The results are discussed in light of previous research studied; suggestions and Recommendations for further research were also suggested.

Keywords: Academic Stress, & Adjustment Styles of Secondary School Students.

Academic Stress:

Academic stress is a cause for great concern among adolescents. Adolescents face a life full of stress in the fast mechanized and competitive world of today. Academic stress refers to the unpleasant psychological situations that occur due to the educational expectations from parents, teachers, peers and family members, pressure of parents for academic achievement, present educational and examination system, burden of Home work etc.

Adjustment Style:

Man has an amazing tendency to be dissatisfied with things as they are. Therefore, he/she is involved in a constant struggle with physical, social and other forces for making them minister to his/her comforts and safety. In this process he / she come to know new things which develop his/her power of adjustment. A person does not always get success to his/her desires and efforts. The reason for this is lies either in unfavorable situations or in the limited capacities of the individual. However a person makes efforts to adjust himself/herself somehow in his/her environment.

Need and Importance of the Study:

Stress and anxiety in children and teenagers are just as prevalent as in adults. Negligence of parents, high expectations in academic or other performances, abused childhood, growing up tensions and demand for familial responsibility etc. the main causes of childhood and teen stress. Parents who are not emotionally available for their children or lack positive coping mechanisms themselves, often spur stress in their offspring. Tung and Chahal (2005) examined relationship between stress and adjustment and found no significial causal relationship between stress and the adjustment . However direction of the results implied that level of adjustment influences the number of stress full events and amount of stress experienced by them. Each day we faced with new situations that demands decisions involve change in both our internal state and our external environment. The process of adjustment involves a person's attempt to cope with master and transcend such challenges. This working definition provides a starting point for understanding adjustment. However, adjustments are not always definite. Neither it is right or wrong nor do they necessarily have clear starting points or endings. According to Aggrawal (2004) the adjustment of adolescent very much depends on the fulfillment of their significant specific needs that consist of physical needs, emotional needs, social needs, intellectual needs, moral needs and vocational needs. It may be helpful, therefore, to devote a little more space to two important qualities of adjustment. First, it is a process that involves continuous changes and the second people develop consistent pattern of adjustment to these constant changes. Students make many transitions during their years of schooling: from home to school, middle to high school, and high school to college or work. These transitions are usually major events in the lives of students and parents. The stresses created by these transitions can be minimized when the new environment is responsive to each particular age group. Keeping in view the growing problem of academic stress among school students the study was undertaken to examine the level of academic stress among high school students and its probable impact on the overall adjustment among them. Hence, the researcher taken up the study on

"**Academic Stress in relation to Adjustment Styles of Secondary School Students".**

Objective of the Study:

1. To study the relationship between Academic Stress and Adjustment Styles of Secondary school students in Prakasam district.
2. To study the significant difference between the perception of students based on their socio-economic variables i.e., gender, class, medium of instruction, school management and locality of the school towards Academic Stress and Adjustment Styles of Secondary School Students in Prakasam district of Andhra Pradesh.

Hypothesis of the present Study:

1. There would be no significant correlation between Academic Stress and Adjustment Styles of Secondary school students in Prakasam district.
2. There would be no significant difference between the perceptions of students based on their socio-economic variables i.e., gender, class, medium of instruction, school management and locality of the school towards Academic Stress of Secondary school students in Prakasam district.
3. There would be no significant difference between the perceptions of students based on their socio-economic variables i.e., gender, class, medium of instruction, school management and locality of the school towards Adjustment Styles of Secondary school students in Prakasam district.

Review of Related Literature:

Hossein Jenaabadi et al., (2017) reviewed on "The Relationship of Academic Burnout and Academic Stress with Academic Self-Efficacy among Graduate Students". This study aimed to examine the relationship of academic burnout and academic stress with academic self-efficacy among graduate students. Results revealed that academic burnout was significantly related to academic self-efficacy among the students, in the way that an increase in academic burnout among the students led to a decrease in their academic self-efficacy. Moreover, academic stress was significantly related to academic self-efficacy, in the way that an increase in academic stress among the students led to a decrease in their self-efficacy.

Sweta Sonali (2016) reviewed on "Impact of Academic Stress among Adolescents in Relation to Gender, Class and Type of School Organization". Academic stress is one of the important stresses among adolescents and is a cause for great concern for the educationists worldwide. The objective of present study was to find out the impact of academic stress among adolescents with regards to gender, class and type of school organization. The finding revealed that no significant difference exists in the academic stress of students in relation to gender, while significant differences exist with regards to class and type of school organization. Students of class 12th of both CBSE and BSEB

affiliated schools have more academic stress than that of 11th.Students studying in CBSE affiliated school have more academic stress than that of BSEB affiliated school. It was concluded that academic stress hasn't any impact upon gender while has significant impact upon class and type of school organization.

Fernández-González, L. González-Hernández, A. & Trianes-Torres, M.V. (2015) studied on "Relationships between academic stress, social support, optimism-pessimism and self-esteem in college students". This research aims to analyse how optimism, self-esteem and social support help to predict academic stress. Method. Results showed that the physiological manifestations of stress are not predicted by the used predictor variables, while there is significant proof that the behavioral manifestations of stress are predicted by satisfaction with instrumental social support and optimism. There is significant proof that the emotional manifestations of stress are predicted by optimism and pessimism. As for self-esteem, it did not prove to be significant. Finally, a MANOVA analysis was conducted, showing the main effects to be optimism, satisfaction with instrumental support, age and gender.

Akbar Hussain et al., (2008) studied on "Academic Stress and Adjustment Among High School Students". Present study was undertaken to examine the level of academic stress and overall adjustment among Public and Government high school students and also to see relationship between the two variables (academic stress and adjustment). For that purpose 100 students of class IX were selected randomly from two different schools out of which 50 were taken from Public and the remaining 50 were taken from Government school Sinha and Sinha scale for measuring academic stress was used to see the magnitude of stress and Sinha and Singh Adjustment Inventory for school students was used to examine level of adjustment among the students. Results indicated that magnitude of academic stress was significantly higher among the Public school students where as Government school students were significantly better in terms of their level of adjustment. However, inverse but significant relationships between academic stress and adjustment were found for both the group of students and for each type of school.

Design of the Study:

The researcher followed the survey method of the descriptive research. For this investigation the questionnaire had been considered as a suitable tool for the collection of data.

Research Tool:

The questionnaire was constructed and administered to find out the Academic Stress in relation to Adjustment Styles of Secondary School Students.

Tool -1 : Academic Stress :

This tool was prepared and standardized by Kim (1970).This tool consisted of 40 statements relating to Academic Stress of students. This tool comprises of 40 items with five options (Five Point scale).

Tool-2: Adjustment Styles Inventory:

This tool was developed by Perlin and Schooler (1978); Kendall and Hollon (1980); Lazarus (1961); Billings and Moose (1981). This tool consisted of 40 statements relating to Adjustment Styles of Students. This tool comprises of 40 items with five options (Five Point Scale).

Sample:

According to the research, the survey will be conducted 200 students which are located in Prakasam district of Andhra Pradesh.

Statistical Techniques Used:

The investigation has been carried out by the descriptive statistical analysis, such as calculating measures of central tendency like Mean and calculating measures of dispersion like Standard Deviation. For testing the null hypothesis, the correlation and 't-test have been used by the investigator with the help of Statistical Package for Social Sciences (SPSS).

Table 1: Correlation between Academic Stress and Adjustment Styles of Secondary School Students in Prakasam district.

N	'r'-value	p-valu
200	0.21**	0.00

**Significant at 0.01 level

Table: 1 revealed that, there is a high significant and positive correlation between the Academic Stress and Adjustment Styles of Secondary school students in Prakasam district. The calculated correlation (r-value) value is 0.21 and the p-value is 0.00 which is significant at 0.01 level. Hence, the null- hypothesis is rejected.

Table 2: Mean, SD, and 'F'/'t' Values on the perceptions of students based on their Socio-Economic variables towards Academic Stress

Variable	Category	Mean	S.D.	F/t-value	p-value
Gender	Male	125.42	17.45	4.78**	0.00
	Female	131.41	17.34		
Medium of Instruction	English	120.69	15.45	8.52**	0.00
	Telugu	128.75	18.56		
Management	Government	119.40	18.32	15.60**	0.00
	Zilla Parishad	122.06	17.33		

	Municipal	118.62	12.41		
	Private	132.66	13.83		
Locality	Rural	128.62	19.49	2.82**	0.00
	Urban	122.48	17.00		

**Significant at 0.01, *Significant at 0.05 level and NS : Not Significant

Table: 2 observed that, there is a significant difference among the perceptions of students based on their Socio-Economic variables i.e., gender, Medium of Instruction, school management and locality of the school towards Academic Stress of students in Secondary School Students of Prakasam district. The t /F – values were found to be 4.78, 8.52, 15.60 and 2.82 and the p-values were 0.00, 0.00, 0.00 and 0.00 which were statistically significant at 0.01 levels. Hence, the null hypothesis was rejected. We conclude that, according to their gender, female category students perceived high than that of male category students, based on their medium of instruction, Telugu medium students perceived high compared to English medium students, whereas according to their school management, Private school students perceived high compared to other schools, according to their locality, Rural area of students perceived high than that of urban area students.

Table 2: Mean, SD, and 'F'/'t' Values on the perceptions of students based on their Socio-Economic variables towards Adjustment Styles

Variable	Category	Mean	S.D.	F/t-value	p-value
Gender	Male	111.30	12.34	2.72**	0.00
	Female	113.56	13.18		
Medium of Instruction	English	110.21	14.80	3.42**	0.00
	Telugu	113.36	14.66		
Management	Government	115.60	16.64	6.20**	0.00
	Zilla Parishad	112.86	13.50		
	Municipal	110.45	13.40		
	Private	116.16	11.16		
Locality	Rural	114.25	13.85	3.28**	0.00
	Urban	109.30	13.65		

**Significant at 0.01, *Significant at 0.05 level and NS : Not Significant

Table :3 observed that, there is a significant difference among the perceptions of students based on their Socio-Economic variables i.e., gender, Medium of Instruction, school management and locality of the school towards

Adjustment Styles of students in Secondary School Students of Prakasam district. The t /F – values were found to be 2.72, 3.42, 6.20 and 3.28 and the p-values were 0.00, 0.00, 0.00 and 0.00 which were statistically significant at 0.01 levels. Hence, the null hypothesis was rejected. We conclude that, according to their gender, female category students perceived high than that of male category students, based on their medium of instruction, Telugu medium students perceived high compared to English medium students, whereas according to their school management, Private school students perceived high compared to other schools, according to their locality, Rural area of students perceived high than that of urban area students.

Findings and conclusions of the study:

1. There is a high significant and positive correlation between the Academic Stress and Adjustment Styles of Secondary school students in Prakasam district.
2. There is a significant difference among the perceptions of students based on their Socio-Economic variables i.e., gender, Medium of Instruction, school management and locality of the school towards Academic Stress of students in Secondary School Students of Prakasam district. We conclude that, according to their gender, female category students perceived high than that of male category students, based on their medium of instruction, Telugu medium students perceived high compared to English medium students, whereas according to their school management, Private school students perceived high compared to other schools, according to their locality, Rural area of students perceived high than that of urban area students.
3. there is a significant difference among the perceptions of students based on their Socio-Economic variables i.e., gender, Medium of Instruction, school management and locality of the school towards Adjustment Styles of students in Secondary School Students of Prakasam district. We conclude that, according to their gender, female category students perceived high than that of male category students, based on their medium of instruction, Telugu medium students perceived high compared to English medium students, whereas according to their school management, Private school students perceived high compared to other schools, according to their locality, Rural area of students perceived high than that of urban area students.

Recommendations:

- Students must choose a specific stream, not forced by parents. Parents should have expectations by their children according their capability.
- Teachers should arrange the necessary healthy environment to reduce the students' academic stress.

- The teachers' should focus on reducing the students' academic stress by providing mentors classes, time scheduling activities, changing teaching method, and providing extracurricular activities.
- At school level provision should be made for the post of Counsellor / Psychiatrist/ Psychologist or Social worker to help the student, to adjust with the pressure and cope with physiological, emotional, mental and sociological needs and self confidence and self esteem can be enhanced among the students.
- Parents and teachers should take necessary steps to develop Adjustment and reduce the academic stress among students.
- Teachers and school guidance counselors should collaboratively guide students on how to develop good study habits, thereby enhancing their academic success.
- Parents should provide healthier environment to develop good study habits among children. It is very important to provide friendly family environment as it plays an important role in the process of their growth and development.

References:

1. Ajay Kumar (2013). Adjustment Of Secondary School Students Of Working Mothers And Nuclear Families". Volume 3, Issue 1 - Jan. 2013 – English.
2. **Akbar Hussain et al., (2008)** studied on "Academic Stress and Adjustment Among High School Students". Journal of the Indian Academy of Applied Psychology, April 2008, Vol. 34, Special Issue, 70-73.
3. Fernández-González, L. González-Hernández, A. & Trianes-Torres, M.V. (2015). Relationships between academic stress, social support, optimism-pessimism and self-esteem in college students. Journal of Research in Educational Psychology, 13(1), 111-130
4.Hossein Jenaabadi et al., (2017). The Relationship of Academic Burnout and Academic Stress with Academic Self-Efficacy among Graduate Students. DOI: 10.15804/tner.2017.49.3.05.
5.Nadya M. Kouzma and Gerard A. Kennedy (2000). Academic stress, self-efficacy, social support, and health behaviours in female Victorian Certificate of Education (VCE) students". The Educational and Developmental Psychologist, Volume 17, Issue 2, pp. 24-43.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

MENTAL HEALTH OF SECONDARY SCHOOL TEACHERS OF URBAN AND RURAL AREAS

Dr. Namita Sharma
Assistant Professor
R.C.C.V. Girls College
Ghaziabad

Introduction

The old saying "Healthy mind in a healthy body" confirms the inter relationship of mental health and physical health. Like physical health, mental health is also an aspect of total personality if a person is well adjusted, he has good physical health and desirable social and moral values and his mental health is likely to be good. As a matter of fact, good mental health is indicated in such individual who are happy, healthy and hopeful and have harmonious personality.

Mental Health has been described by Whitehead as a state of contains well being in union of zest with peace.

Hadfield defines mental health as the full and harmonious functioning of the whole personality.

White House Conference Report also defines mental health as adjustment to self and to world at large with maximum effectiveness, satisfaction, cheerfulness, social acceptance and acceptance of life realities.

In fact, mental health as such is the capacity of the person to deal and adjust with his world of affairs. Reciprocally, it consists no need of psychiatric intervention or personal guidance.

Mental Health has a positive outlook towards his world of affairs and is free from difficulty and disease. Mental health results from full and free expression of our potentialities and disposition in harmony of one another by being directed to common goal of the personality as a whole.

In modern time with the rapid development in all walks of life, problems have multiplied in great proportion. With the changing socio-economic scenario and increasing unemployment, the value of teachers' and their professional concerns associated with the job have forcibly undergone a change. The new movement of mass education is brought with certain problems for teachers. Many of them are treating "teaching" like profession and making money has become very important for them: Not withstanding this fact the stress and hassles of teachers have also increased.

For providing desirable education we require good and efficient teachers. Teacher's mental health plays an important role in the teaching and learning process. If the teacher has sound mental health, he succeeds in creating healthy and desirable conditions for the positive mental health of his pupils. But if the

mental health of the teacher is poor, it is bound to affect the mental health of the students. He can do incalculable harm to the nation in terms of poor guidance to the students. He cannot do justice to his job. His maladjustment will not only adversely affect his personality but produce maladjustment in children put under his charge.

Teacher is a part and parcel of society and has got a most important role in the development of the new generation. He has to live in the society and the social, economical, cultural as well as surrounding working conditions affect him.

The famous proverb a healthy mind remains in the healthy body clarifies the idea that the mental health is equally essential for everybody. The working condition of a man as well as of a teacher must be stress free, so that he may able to create a positive atmosphere in the field of the development of knowledge.

Need and significance of the study

In 21th century along with physical illness there has been significant increase in the mental illness. With the development of civilization the human needs have also rapidly changed. Man can neither fulfil these needs nor reduce them, as a result, he is facing failures, struggle etc. which may lead to stress and finally mental or physical illness.

Now-a-days teaching has also been identified as particularly stressful job. Teaching is an important and noble profession that stimulates the growth and development of country. The various roles ascribed to the teacher in the society are of an academic specialist, a methodologist, a character trainer, member of staff and a society and lastly as a teacher.

Thus a teacher plays an important role of enlightening the public. He helps in the pursuit of acknowledge and lays the foundation of the personality of an individual. He contributes to the national development and enables it to stand on a solid base for looking towards peace and prosperity.

Teacher works in such an industry where the product is man power. As we know the country's economy, intellectual growth and civilization depend upon the quality of citizen, which shaped by the teacher. It implies that teacher's role is crucial. Good teaching makes the country to grow and removes all possible social corruption.

If a teacher does not find himself making his role effective for the society, that could be disastrous for any nation. It is not uncommon to hear the stressed out or burn out condition of the teacher with overload of role stress and job stress. Under mental health prevention domain the teacher seems to be the most vulnerable population who requires psychological intervention. The study is necessary to find out which areas of mental health of teachers are most affected.

Here an attempt has been done to collect the studies done on this topic. Though no direct study was available, yet the researcher has tried to summarize the available literature on this particular area.

Mohanty (1992) did a comparative study of occupational stress and mental health in the public and private section executive. Results revealed that private sector executives in general, experienced greater job stress, mental health problem and perceived greater organisational support than public sector executives.

Kamau (1992) investigated the problem of burn out in relation the locus of control mental health among teachers. Results revealed that male teachers were emotionally over extended exhausted, internally controlled, anxious, cool towards students and personally accomplished but less capable of establishing constructive relationship, however, they were more capable of, coping with stresses than female teachers.

Anand (1986) reported a study on mental health of school teachers using a mental health scale and observed that 59% of teachers were mentally healthy. The state of working bears no relations to mental health while social values were positively related to mental health of teachers, religious values were negatively related.

Anand (1996-97) studied the effect of mental health status on occupational stress of higher secondary school teacher. Result indicated that as mental health status improved decreased.

Galgotra , M.**(**2013) conducted a study on Mental Health of High School teachers in relation to their sex and job satisfaction. It was found that government school teachers possess good mental health in comparison to private school teachers.

Nandoliya , H. (2013) conducted a study on "Mental health of higher secondary school teacher with relation to sex, habitat, types of school and faculty." The result shows a significant difference existed between male and female teachers on mental health. A significant difference existed between urban and rural teachers on mental health. Significant difference existed among arts, commerce and science faculty's teachers on mental health. Sex and type of school of teachers, interact with each other on mental health.

Pachaiyappan , P. (2014) carried out a study on Mental Health of Secondary and Higher Secondary School Teachers. The study reveals that the Government school teachers' mental health and Higher Secondary school teachers' mental health is higher than their counterparts.

After reviewing the related literature, it seemed that no direct working yet has been done on the mental health of secondary school teachers. So the subject was chosen by the researcher for the study.

Objective

The present study has been conducted on secondary school teachers of Bareilly District (U.P.).

The focus of present study revolves around important issue of life i.e. mental health among secondary school teacher. The objective of the study is as follows:

To compare the mental health of secondary school teachers locality wise i.e. urban and rural.

Hypothesis:

For the purpose of the study following hypothesis was made-

There is no significant difference in mental health of secondary school teachers of urban and rural areas.

M**ethodology:**

Keeping in view the objective of the study, the descriptive survey method was chosen by the investigators for this study.

Sample and sampling technique: To get an adequate and representative sample, multistage random sampling technique was adopted. At the first stage, 15 secondary level schools of urban and rural areas were chosen randomly from Bareilly district. In the second stage, from these schools 185 teachers were chosen for the study.

Tool of the study:

The test instrument which was selected for the present study was "Mithila Mental Health Status Inventory" constructed and standardized by "Kumar and Thakur".

Mithila Mental Health Status Inventory was first developed in English (Thakur 1984) had five scale viz. Egocentrism, Alienation, Expression, Emotional instability and Social Non conformity. These five scales were considered cardinal one for estimating mental health status of people. 200 items (40 items for each scale) were constructed for the inventory. Approximately half of the items of each scale were positively worded and remaining half of the each scale was negatively worded. High Score on MMHSI is indicative of poor mental health.

Statistical operations:

To ascertain the objectives of the study statistical techniques such as mean, S.D. and t ratio were employed.

Table 1
Mean mental health score of urban and rural secondary school teachers

Dimension of MMHSI		Urban N=109		Rural N=76		't'
		Mean	S.D.	Mean	S.D.	
1	Egocentrism	21.92	9.18	23.45	4.92	1.457
2	Alienation	22.51	5.25	24.66	7.77	2.1*
3	Expression	31.13	6.05	31.42	4.02	0.3915
4	Emotional Instability	24.26	6.19	25.08	4.02	0.6804
5	Social Non Conformity	25.77	7.25	27.88	6.39	2.0*
6	Total	128.26	11.8	131.5	19.6	1.29

* .05 level of significant

From the above table-1 which represents the comparison mental health status between urban and rural secondary school teachers, it was examined that on Egocentrism, Expression, Emotional Instability as well as total of MMHSI no significant difference was observed. But on Alienation (t=2.1, S.I.=0.05) Social non conformity (t=2.0, S.I.=0.05) dimension significant difference were obtained. On these two dimension rural teacher scored high. Perhaps the plausible explanation for high score on Alienation by rural sample can be that due to their limited exposure and rural background they are over sensitive and keep themselves cut off from the society as they have also scored higher on the dimension social conformity.

Result and suggestion:

As regard to hypothesis, no significant difference was obtained between urban and rural secondary school teachers on the area egocentrism, expression, emotional instability as well as total mental health status. Rural teachers were more alienated as well as they were also cutting themselves off from the society. Here hypothesis is partially rejected. Locality is playing role in the mental health of secondary school teachers. Thus hypothesis is partially accepted and partially rejected.

Educational implication:

Since the secondary school teachers are very important part of the society and the complete development of students as well as the nation is based on this segment of the society. Teachers mental health problem related to academic, economical, emotional, social or psychological should be removed as soon as possible, so that they may able to perform their duties, for the well being of the society and nation.

My study will be helpful for the government to implant schemes for the benefit of the teacher such as full pay for the whole year, improving service conditions, security of jobs etc. In this connection some suggestions are to be taken in consideration. The government should bound the management of the schools by the law, that a teacher should be paid salary for the whole year, while in practice they are for the only for nine to ten months.

Today, in private and even in the government aided institution, contractual appointment of the teachers are in practice and the teacher get his salary according to the periods taught by him, This contractual rate of period is not sufficient for the fulfillment of day to day needs of the family dependent on teacher. Government should fix a good salary for these contractual appointments and it should be related with the price index of the country.

The temporary phase of the service of the teacher should not be too long as it creates a sense of insecurity resulting anxiety and tension and as soon as possible his appointment will be permanent, the sense of job satisfaction and anxiety free life will be developed and this condition will also be beneficial for the students. So there must be a provision that a teacher by working hard permanently appointed in the same institute where he is working.

There are many schools which are working without taking any financial assistance from government. These schools have been recognized by government but in the absence of any proper service rules, thousands teachers working in these institutions are being victimized by the local managements. Government should intervene in the matter so that teacher, may get rid of the mental anxieties and tension.

Secondary school teacher remain in the school for a long time every day and he engages himself in coaching and tuitions and other family activities. Thus he cuts himself from the society, keeps himself alienated. Hence some friendly or some teacher gathering activities can be arranged by the school authorities as the recreation is the best source to keep one's mood fit. The study will be helpful for the school management also. They should arrange some social gathering activities, by participating in these activities the teachers' mental health can be improved.

The management should also provide proper and sufficient salaries to the teachers, so that they may fulfill their needs and lead on anxiety free life.

The study will be helpful in the progress of nation. Students are the future of the country. The impression of the teacher upon students is ever lasting. A teacher of good conduct and behaviour will definitely create the sense of nationality and discipline among makes the country to grow and remove all possible social corruption. But if the mental health of the teachers is poor, it is bound to affect the mental health of the students. He can do incalculable harm to the nation in terms of poor guidance to the students. He can not do justice to his job. His

maladjustment will not only adversely affect his personality but produce maladjustment in children put under his charge. So it is a responsibility of government, management of the secondary schools and social workers of the society to arrange healthy and peaceful atmosphere inside the college as well as in society. This will result stress free and anxiety lice teachers. Students coming in the contacts of these mentally healthy teachers will be civilized.

Reference and Bibliography

Agarwal, Krishna, (1998). Job satisfaction and occupational stress in relation to felt proximity with top management, Indian Journal of Psychometry and Education: 29(2). 113-114 (96. Vol-7 Jan-Jun 2001).

Anand, Varsha, (1996-97). Study of effect of mental health on occupational stress of higher secondary school teacher's perspectives in psychological researches, 19 and 20 (1 and 2), 67- 70(106,vol 8, Number 1 Jan-Jan 2001).

Baran, K.A., Rahman M and Sen A.K., (1999). A comparative study on mental health and Job stress in self-paced repetitive and non-repetitive workers, Prachi Journal of Psycho-Cultural dimensions. 15 (1) 11-16 (107, Vol 8, IPAR Jan-Jun 2001)

Bernard, H.W., Mental Hygiene for classroom teachers, New York; McGraw Hill Book Company, Inc 1961, p-14

Biwas, Pares Chandra & De, Tikku, (1993). Effect of organizational climate of school on secondary teachers' professional stress, an exploratory study, Indian Journal of Psychometry and Education

Buch, M.B.; Third surveys of Research in education, Vol (I) NCERT (1978-83)

Buch, M.B; Fourth survey of research in education, Vol (II) NCERT 1983-87.

Buch, M.B.; A survey of Research in Education, center of Advance study in education, faculty of Education and psychology M.S. University Baroda (1972).

Crank, K.: Mental Health of Teachers, N. Y. McGraw, 1987.

Fourth Mental Health Congress or Mental Health Proceedings, N.Y., Columbia, 1952.

Felix, R.S.: "A Book shelf, on Mental Health", American Journal of Public Health, 46 (April 1956)

Galgotra, M., 2013, Mental Health of high School Teachers In Relation To Their Sex and Job Satisfaction, International J .Hum. Soc. Sc.,2(1):20-23.

Hadfield, J.A.: Mental Health and Psyco-Neurosis, London, George Allen, 1952.

Joshi, Gandharava, R (1998) (Saurashtra University, Rajkot) A study of Mental Health and job satisfaction among industrial employees. Journal of Indian Academy ofApplied Psychology, 24 (I) 69-72. (279, 1PAR,vol 6 July-Dec 1999).

Kamau, Catherine Wanjiker, (1992). Burnout, Lowis of control and mental health of teachers in the Eastern province of Kenya, Ph.D. Education (JNJ-1254).

Mishra, P.C. &Srivastava, Sipra. (1994), Mental Health as a moderate virable of the organizational commitment and job satisfaction relationship, Psychological studies; 44 (3) 55-58 (323, IPAR. Vol-7, Jul-Dec 2000).

M. Jahoda: Current Concepts of Positive Mental Health, N.Y., Basic books, 1958.

Vini sebastian, (2017). Teacher's mental health –implications for teaching-learning, Scholarly Research Journal for Humanity Science & English Language, Online ISSN 2348-3083, UGC Approved Sr. No.48612, AUG-SEPT 2017, VOL- 4/23

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

NEO-VAISHNAVITE MOVEMENT AND ROLE OF SATRA AND NAMGHAR IN ASSAM : A HISTORICAL ANALYSIS

Heerak Jyoti Nath
Research Scholar
Department of History
Gauhati University, Assam

Abstract

In the 15th century AD the social fabric of India was torn by all round degradation and cultural distortion and corruption permeated all section of the society, right from the ruling class to the priestly class. Various malpractices were committed in the name of religion, which vitiated the social structure. There were people who loosely adhered to Vaishnavism or Saivism and there were others who practiced Saktism bordering on extreme Tantricism. The followers of these cults indulged in evil practices like animal and human sacrifices, magical rites, spells and the like. The poor and downtrodden people became victims of these ghastly practices. It was at this juncture, that the great spiritual leader, social reformer, playwright and composer- Srimanta Sankaraadeva appeared on the social scene of Assam. He was a multi-faceted genius who gave a direction to the chaotic Assamese society by initiating a fresh approach to the existing Vaishnava religion that gave rise to a set of new values and aided in social synthesis. Vaishnavism has been constantly playing a significant role in the process of assimilating diverse elements- indigenous and non-indigenous into the Assamese culture. The movement evolved new institutions of Satra and Namghar which began to serve not only as the instrument spreading the faith, but also helped to sustain and to stabilize Vaishnavism by making it a part and parcel of Assamese social and cultural life. With its dynamic philosophy of inclusiveness Sankardeva's Neo-Vaishnavism has given birth to a new Cultural Nationalism focused on a national identity shaped by cultural traditions and language, not on the concept of common ancestry or race. The Cultural Nationalism was brought forward to the indigenous people with the help of Satras and Namghar which has a major role to play in the preservation and development of the indigenous culture of the region.

Key Words : Neo-Vaishnavism, Cultural Nationalism, Assamese, Satra, Namghar

I. Introduction

Assam is the home of different ethnic groups with a variety of cultures and speaking different languages and dialects. The

population of Assam is a broad racial intermixture of Mongolian, Indo-Burmese, Indo-Iranian and Aryan origin. At a time, they got themselves integrated as a population and have given birth to the greater Assamese nation. The amalgamated Assamese identity was initiated by the Great Vaishnava Saint Mahapurush Srimanta Sankaradeva with his Neo-Vaishnavite Movement. Assam Vaishnavism has been constantly playing a significant role in the process of assimilating diverse elements- indigenous and non-indigenous into the Assamese culture. The movement evolved new institutions of Satra and Namghar which began to serve not only as the instrument spreading the faith, but also helped to sustain and to stabilize Vaishnavism by making it a part and parcel of Assamese social and cultural life. With its dynamic philosophy of inclusiveness Sankardeva's Neo-Vaishnavism has given birth to a new Cultural Nationalism focused on a national identity shaped by cultural traditions and language, not on the concept of common ancestry or race. The Cultural Nationalism was brought forward to the indigenous people with the help of Satras and Namghar which has a major role to play in the preservation and development of the indigenous culture of the region. (Gait,1905)

II. Objectives

The specific objectives of the study are as follows:

i) to study the importance of Neo-Vaishnavism movement in the development of national and cultural identity in Assam.

ii) to explore the role of Satra and Namghar in the preservation and development of the indigenous culture of the region

III. Methoology

The study involves the qualitative and analytical method of research on the basis of both primary and secondary sources which contains the official records, proceedings, related books and journals, reprint of published papers, soft copies included web pages, pdf files (e-reprints) downloaded from the websites. The study will be based mainly on the primary sources, while secondary sources will be consulted wherever and whenever it is found necessary.

IV. A historical background of Neo-Vaishnavite Movement in Assam

"Cultural Nationalism" is a form of nationalism in which the nation is defined by a shared culture. It is an intermediate position between ethnic nationalism on one hand and liberal nationalism on the other. Cultural nationalism will thus focus on a national identity shaped by cultural traditions and by language, but not on the concepts of common ancestry or race. If one can define the concept of "cultural nationalism' as the above, then the teachings of

Mahapurush Srimanta Sankaradeva can rightly be described as an intergrationalist philosophy. As the doyen of cultural Renaissance, harbinger of Bhakti Movement and a strong proponent of Vaishnavism, Srimanta Sankaradeva took on the orthodox elements of the society. He had an inclusive and integrationalist approach whereby, he inculcated that one single thread of cultural unity i.e. Vaishnavism unites the whole Assam with the rest of India. (Acharya, 1990)

In the 15th century AD the social fabric of India was torn by all round degradation and cultural distortion and corruption permeated all section of the society, right from the ruling class to the priestly class. Various malpractices were committed in the name of religion, which vitiated the social structure. There were people who loosely adhered to Vaishnavism or Saivism and there were others who practiced Saktism bordering on extreme Tantricism. The followers of these cults indulged in evil practices like animal and human sacrifices, magical rites, spells and the like. The poor and downtrodden people became victims of these ghastly practices. It was at this juncture, that the great spiritual leader, social reformer, playwright and composer- Srimanta Sankaraadeva appeared on the social scene of Assam. He was a multi-faceted genius who gave a direction to the chaotic Assamese society by initiating a fresh approach to the existing Vaishnava religion that gave rise to a set of new values and aided in social synthesis. The Neo-Vaishnavite Movement initiated by Srimanta Sankaradeva in Assam in latter period of the 15th Century ushered an era of socio-cultural renaissance in Assam, humanist in content and popular in form, in literature as well as in the vocal and visual arts. The uniqueness of the movement lay in the fact that unlike other contemporary cults in the rest of India, Srimanta Sankaradeva's Neo-Vaishnavism rested not on a discursive reasoning and abstract thinking but its emphasis was more on ethnic integration, social reforms and spiritual upliftments through an innovative mode of religious conduct based on indigenous elements of the region, at a time when the society in Assam was in a turmoil fragmented and faction-ridden as it was. It was revolutionary in the sense that Neo-Vaishnavism in Assam meant not only a religious faith but a way of life. It encompassed their social, cultural and religious spheres even as it brought about a change in the very outlook of life and the world. Neo-Vaishnavisn stands out among the different Bhakti-cults of India in terms of its unique and innovative character, which found expression in the move to create a egalitarian civil society based on the shared values of fraternity, equity, humanism and democracy. This new creed of fact started by Srimanta Sankaradeva is officially known as Eka-Sarana-Naam-Dharma. Sankaradeva preached devotion to a single God, Lord Krishna or Vishnu. (Bhuyan, 2008)

IV.1 Srimanta Sankaradeva's philosophy of Neo-Vaishnavism

In his magnum opus Kritan Ghosa, Srimanta Sankaradeva stated all living beings as the creation of one God:

"Kukura srigala gardhabaru atma Ram janiya sabako pari kariba pranam"

And no distinction should be made on the basis of caste regarding the prayer of God:

Kirata Kachari Khasi Garo Miri
Yavana Kanka Goala
Asama maluka rajaka turuka
Kuvacha melechcha chandala
Ano jati nara Krishna sevakara
Sangata pavitra haya

Sankaradeva visualized an equal society, where members from all sections of life irrespective of caste, tribe and community will be able to sit together for the prayer of God and dine together. This great and reformist idea of the saint truly reflects itself when proselytized members from Naga, Mishing, Garo and many other tribal communities of the valley to form the embryo of an equal society.(Sharma, 2014)

V. Discussion

Role of Satra in the development of Assamese Culture

The hallmark of the Neo-Vaishnavite movement in Assam is the evolution of two distinctively unique institutions, viz., The SATRA and the NAMGHAR, both of which began to serve not only as the instrument spreading faith but also intimately associated with the social as well as the cultural life of the Assamese society. The Satras of Assam are the most distinguished and influential socio-cultural institution of the state. Satras propagated Neo-Vaishnavite Movement and can be traced to the time when the movement initiated by Sankaradeva was still in its nascent stage. Today the Satras are the fountainheads of Assamese culture and heritage. The cultural history of Assam in respect of fine arts and craft, of education and learning and of literature and heritage since the beginning of the 16th century till the advent of the British developed centering around the Neo-Vaishnavite Movement which in turn found expressions through the institution of Satra. For centuries, certain Satras have preserved the cultural traditions of the movement initiated by Sankardeva in their pristine purity. They have relentlessly encouraged the arts and craft, like dance, drama, music, book-illustration and the making of decorative objects for the beautification of the Satra interiors- the Satriya Architecture.(Borkakoti, 2006)

The Satras over centuries has become intimately connected with the Assamese life and culture paving way From Majuli to Koch Behar, the Satra

dominates the social landscape of Assam and the entire state is integrated one religious whole by this network of Satras. Today, the number of Satras in Assam is well over 500 with numerous Vaishnava householders affiliated to one or the other Satra. The preservation of the Satras is a matter of great importance, more so in the light of the fact that they contain manuscripts, artifacts and antiques of immense historical value as well. (Nath, 2009)

Role of Namghar in the genesis of Assamese Identity

Namghar-Satra network provided a well-organized and yet decentralized religious structure that is a unique feature of Vaishnavism of Assam. In 1503 A.D., Sankaradeva constructed the 1st Namghar with the help of the initial followers. He composed the prayers himself. Recitations from the Bhagavata and religious discussions were held in this Namghar. Sankaradeva was conversant with the raga-based music and composed his devotional songs- the Borgeets based on ragas. He popularized his cult with the help of a pantomime where he developed a genre of philosophy, art and music in the form of Borgeets, Anikya Nats or Baonas. The Namghar served as the ideal platform to showcase these art forms and attract the common mass to identify with the philosophy of the Neo- Vaishnavism. The Namghar signifies two principles- Equality of mankind and Recognition of the worth and dignity of all things alive.

The existence of the Namghar is noticed in almost all Assamese villages so much so that the identity of village folks is closely tied to the Namghar they attend. In fact, the Namghar came to serve as a forum of not only religious but socio-cultural activities of the community. For the last five hundred years the Namghar has been serving as the village pubic hall with the multifaceted role of a village prayer hall, a cultural centre, a village court and a village parliament, thereby providing a common forum for the villagers to assemble in an atmosphere of goodwill and cooperation. The ideals of Sankaradeva of an equal society, where members from all sections of life irrespective of caste, creed, tribe and community will be able to sit together for the prayer of God and dine together was fulfilled by the evolvement of the Namghar.

Namghar as a community prayer hall

The name itself signifies its role of a prayer hall for the word ‘Naam’ means prayer and ‘Ghar’ means house. So the Namghar is also known as the “House of Prayer”. The Namghar has been designed in such a way that people from all spheres of life can enter and take part in the congregational prayers and attain salvation by taking refuge in God (Deva). The Namghar is constructed without any walls and sometimes with only half walls so as to symbolize the ideals of equality of all mankind irrespective of caste, creed, tribe, religion or language. The Naam Prasangas (congregational prayers) are according to the Eka-Sarana traditions. The ‘Naams’ are led by a leader called the ‘Naam Loguwa’, who sits

at the end of the central region facing the sanctum sanctorum. The west end of the Namghar often leads to an independent room – the Manikut which houses Singhasana, a wooden throne. A sacred book by either Srimanta Sankaradeva or his disciple Mahapurush Madhavadeva is kept on the throne. An Akhyoy Banti (bell metal lamp) is kept in front of the shrine.

Namghar as a Centre for Preservation of Indigenous Culture

Srimanta Sankaradeva composed Bhaonas (a theatre form centering on the theme from the Bhagavata-Purana and the Ramayana) where people from all walks of life can take part in the enactment of the Bhaonas in the Namghar. No discrimination on the basis of caste, class or religion is made while distributing the roles in the Bhaonas held in the Namghar. The village folks contribute in cash or kind according to their capacity to make the Bhaona a success. The staging o the Bhaonas in the village Namghar brings all the village folks under a common cultural umbrella.

Namghar as a Proto-type Parliament

The foundation of Local Self Government was laid down in the 15th Century by the Great Saint Srimanta Sankaradeva. The eminent feature of the Namghar is that it recognizes the importance of the collective wisdom and social progress through participation of all for re-construction and stability of the villagers. Srimanta Sankaradeva conceived the idea of community development and Panchayati Raj much before the concept was brought by the British Raj. A general body consisting of the eldest members of each household of the village is formed and is known as the Raij. The Raij takes decisions on various issues of their community life, be it reconstruction of the Namghar on the establishment of educational institutes. The Namghar thereby provides an effective forum of decentralized planning and decision-making. By facilitating the involvement of the whole village in the decision-making process for the determination of social goods and allocation of resources to achieve them, the Namghar is ensuring the development of the people, by the people and for the people.

Namghar as a Village Court

The Raij tries out cases of moral or social delinquency. The parties in dispute appoint their own Raij –Medhi or the Barmedhi from their own Satras to try out their cases. Punishments according to the nature of the offence are meted out and the rulings are binding to both the accuser and the accused. There are certain limitations also regarding the nature of the cases tried as such criminal cases are kept out of the jurisdiction of the Namghar and minor cases of moral and civil in nature are tried.

Namghar as a Community granary & a place of shelter during natural calamities It serves the purposes of community belongingness with having a community granary wherein the villagers contribute a portion of their

production for community use. During flood and other natural calamities also the Namghar provides a place of shelter to all the people of the village. (Rahman, 2015)

VI. Conclusion

In the light of the above discussion, it can be concluded that with its dynamic philosophy of inclusiveness Sankaradeva's Neo-Vaishnavism has given birth to a new Cultural Nationalism focused on a national identity shaped by cultural traditions and language, not on the concept of common ancestry or race. The Cultural Nationalism was brought forward to the indigenous people with the help of Satras and Namghar which has a major role to play in the preservation and development of the indigenous culture of the region. In the genesis of the Assamese Identity, the Namghar is one of the major pole bearers, playing the multi-faceted role of Cultural Centre, Proto-type Panchayat, and Forum for Decentralized Planning and Decision-making.

References

[1]. Gait. E. (1905), A History of Assam, Guwahati, EBH Ppublisher, ,p.8-9
[2]. Acharya N.N (1990), A Brief History of Assam. Guwahati, Omsons Publication. p. 7-11
[3] Bhuyan, A (2008), Sankardeva and Neo-Vaishnavism in Assam. Retrieved: https://indianfolklore.org/journals/index.php/Ish/article/download/469/544
[4]. Sharma SJ (2014), Thoughts of Cultural Nationalism in Srimanta Sankaradeva's Vaishnavite Movement in Assam; Forging Cultural Unity (Nation) without Political Integration. Janlok: Online weekly journal Nov 25, 2014, p. 21-24.
[5]. Borkakoti SK (2006), Unique contribution of Srimanta Sankardeva in Religion and Culture. Srimanta Sankardeva Sangha, Nagoan, p. 43-47
[6]. Nath D (2009), The Majuli Island: Society, Economy, and Culture, Delhi, Anshah Publishing, p,51-54
[7]. Rahman Mehjabeen. S (2015, Role of Satra & Namghar in the evolution of genesis of Assamese identity, IJSSM, Vol-2, Issue-2, 108-113

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

IMPACT OF GYMNASTIC TRAINING ON HEALTH RELATED PHYSICAL FITNESS OF BADMINTON PLAYERS

Javed Ahmad Ganie
Ph. D. Research Scholar
Department of Education
Bhagwant University
Ajmer, Rajasthan, India

Dr. Samay Singh
Assistant Professor
Department of Education
Bhagwant University
Ajmer, Rajasthan, India

Abstract
The present study was undertaken to explore the 'Impact of Gymnastic Training on Health Related Physical Fitness of Badminton Players'. In pursuance to same, 200 badminton players were selected by using random sampling technique. The respondents were selected with the age level of 18 years. The present study was carried with the help of "one group pre-test post-test design". Maximum efforts were made to control the impact of extraneous variables in the study. Whole respondents were drawn from Anantnag District. Gymnastic training was provided as treatment for all respondents before conducting post-test. The collated data was analysed with the help of mean SD and 't' value. The results of the study indicate that there exists significant impact of gymnastic training on the flexibility and cardiovascular endurance of the respondents.

Key words: Gymnastic Training, Flexibility, Cardiovascular Endurance Badminton Players

1.1: Introduction: Gymnastics is an excellent mechanism for the teaching basic motor skills and promoting health-related fitness in players almost in all types of games. Gymnastic in the sports includes exercise requiring balance, strength, flexibility, agility, coordination and endurance. Gymnastic training contributes to the development of arms, legs, shoulders, back, chest and abdominal muscle group. Gymnastic training has positive impact on the psychological profile of an individual, it develops various traits like self-confidence, self, discipline, self-esteem and curiosity level of an individual. The most impact of gymnastic training is on health related physical fitness of the respondents. Experts has recommended minimum half an hour of physical activities for every individuals to live healthy life. The important of physical fitness for gymnastic training is so obvious that coaches and sportspersons give the major parts of gymnastic training spells for developing physical fitness, as performance of the sportsperson in any sports.Physical fitness is a term used to refer to the functional capacity of an individual to perform certain kinds of tasks requiring

muscular activity. Physical Fitness is the ability of the body to adopt and recover from strenuous exercise. It is the relation of one's ability to work and play with vigour and pleasure without undue fatigue and with sufficient energy for unforeseen emergencies. Physical fitness is to ability to last, to bear up and to preserve under difficult circumstances where an unfit person would give up. It is the opposite of being fatigued from ordinary efforts However, in context of Jammu and Kashmir the inclination towards gymnastic training is moderate. Besides, some researcher have explored the impact of gymnastic training significant, notable are; respondents like, Craftysman, D., & Tumb, l. (1999), **Hoff, J., Helgerud, J., & Wisloeff, U. (1999), Halin, R., Germain, P., Buttelli, O., & Kapitaniak, B. (2002), Kaj, M., Németh, J., Tékus, E., & Wilhelm, M. (2013), Violan, M. A., Small, E. W., Zetariuk, M. N., & Micheli, L. J. (1997) and James, et. al. (2012)"**. In context to same, the investigator considers it vital to explore the study on below mentioned research problem:

1.2: RESEARCH PROBLEM: The statement of the researcher problem of the study is as under:

"Impact of Gymnastic Training on Health Related Physical Fitness of Badminton Players"

1.3: OBJECTIVES: The present study consists of below mentioned objectives:

- **Objective-I:**To study the impact of gymnastic training on the level of flexibility of the badminton players.
- **Objective-II:**To study the impact of gymnastic training on the level of cardiovascular endurance of the badminton players.

1.4: HYPOTHESIS: The present study consists of below mentioned hypothesis:

- **Hypothesis-I:** There exists significant impact of gymnastic training on the level of flexibility of the badminton players.
- **Hypothesis-II:** There exists significant impact of gymnastic training on the level of cardiovascular endurance of the badminton players.

1.5: CONCEPTUALISATION OF TERMS AND VARIABLES: The conceptualisation of terms and variables are as under:

1) **Gymnastic Treatment (GT):** Gymnastic treatment (GT)in the present study refers the score obtained by the respondents on post-treatment assessment.
2) **Badminton Players (BP)**: Badminton Players (BP)in the present study refers those players who are playing badminton since last three years. However, it is imperative to mention here that only 18 years players were selected for minimising the effect of extraneous variables. However, all these adolescents were selected from Anantnag District.

1.6: DELIMITATION OF THE STUDY: Keeping nature, time and budget complexities under consideration, the research delimited the present study to following domains:

1) The study will be delimited to only players within the age 18 years of respondents.
2) The study will be delimited to badminton players of Anantnag Districts of Union Territory of Jammu and Kashmir only.

1.7: METHODOLOGY AND PROCEDURE: The methodology and procedure involved in the present study is reported as under:

- **Minimisation of Extraneous Impact:** The investigator left no stone unturned in minimising the effect of extraneous variables. Accordingly, the investigator made the proved of randomisation for "Minimisation of Extraneous Impact".Initially randomisation was made on the basis of selection of sample. In addition to this, it is imperative to mention to here thatefforts have been made by investigator to minimise the effect of exteriors variables, besides all participants were selected male. They were informed of the nature and possible inconveniences associated with the experiment. Prior to datacollection parental consent and child assent was obtained. No respondent had any reported history of learning difficulties or any behavioural, neurological or orthopaedic problems that would qualify as exclusionary criteria for this study. Children participated in 45 minutes per session of sport gymnastics training that included activities based on fundamental movement skills.
- **Design of the study:** The study was carried out with the help of **"one group randomised matched pre-test post-test design**".
- **Sample:** The total sample for the present study consists of 200 badminton players. The players were selected within the identical age group of 18 years. Respondents were selected from different higher secondary schools. The required data was selected with the help of randomisation.
- **Instruments used:**In the present study below mentioned procedure were used for collecting the data:
- **"Sit and reach test apparatus"** were used to determine the flexibility of the respondents. Respondents were seated with the extended knees and the feet totally leaning in the seat. The subject tried to reach the largest distance slowly with the hands, without bending the legs. The measures were taken three times, with the best attempt recorded in centimetres.
- **Cardiovascular Endurance:** For determining the cardiovascular endurance, The "**Harvard Step Test"** for cardiovascular endurance

- **Collection of the data:** Keeping the design of the study under consideration data was collected during "pre-test post-test intervals".Data was collected during two tests, before and after the eight-week gymnastics training programme. 200 Badminton Players (BP) were selected with minimising the effect of extraneous variables. Whole data was selected by taking demographic characteristics under consideration.
- **Observational site:** Experimental treatment was provided to all selected respondents in Playground Anantnag. Therefore, in pre-test and post-test design "Playground of Anantnag" near "Mehandi Kadel" was used as an observational site.
- **Treatment involved in the study:** As mentioned earlier200 Badminton Players were selected with minimising the effect of extraneous variables. However, with the help of randomisation (Yeats Table) all respondents were selected from different sampling sites. However, treatment was provided after the assessment made in pre-test.
- **Sampling Technique (ST):**Different Sampling frames were already available in the department of physical education of different higher secondary schools. So the investigator found it suitable to collect required data with the help of Random Sampling Technique (RST).

1.8: ANALYSIS OF THE DATA: The collected data was processed with the help of SPSS. Frequency Distribution, Mean, S.D. and 't' value was used for the collected data. The detailed analysis is reported as under:

Table: 1.1: Showing significance of mean difference of badminton players on pre-experimental and post experimental design on their level of flexibility.

Flexibility	Mean	SD	N	"t" value
Pre-experimental (P_1)	7.84	2.27	100	3.22***
Post experimental (P_2)	12.18	1.99	100	

Index:

- ***= Significant at 0.01 level of confidence

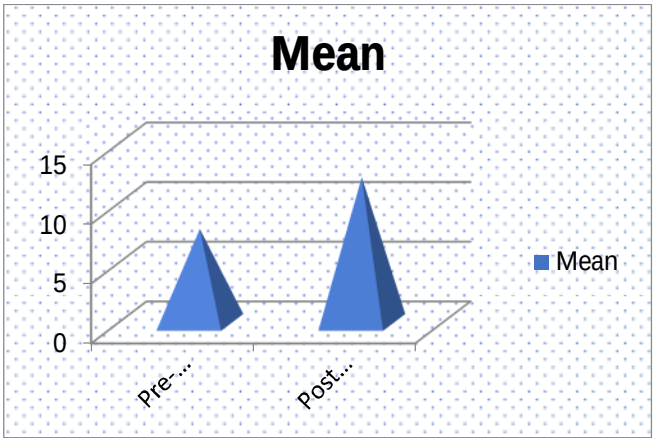


Fig: 1.1: Showing graphical representation of badminton players on pre-experimental and post experimental design on their level of flexibility.

Table: 1.2: Showing significance of mean difference of badminton players on pre-experimental and post experimental design on their level of Cardiovascular Endurance.

Cardiovascular Endurance	Mean	SD	N	"t" value
Pre-test (P_1)	40.80	14.00	100	5.53***
Post-test (P_2)	50.70	11.20	100	

Index:

- ***= Significant at 0.01 level of confidence

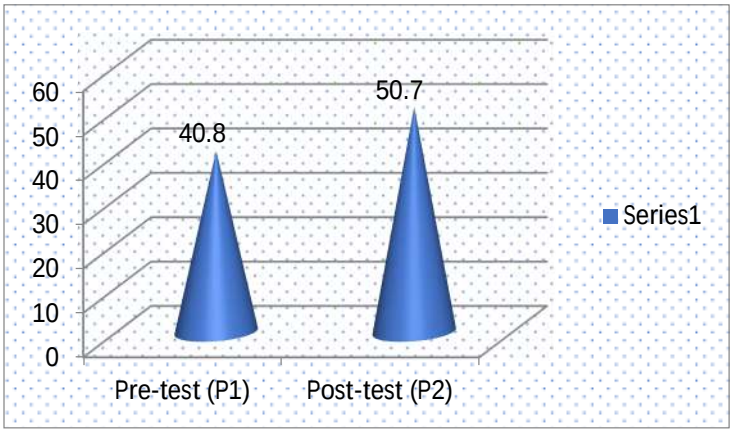


Fig: 1.2: Showing graphical representation of badminton players on pre-experimental and post experimental design on their level of Cardiovascular Endurance.

1.9: INTERPRETATION OF THE DATA: The interpretations of the above analysed tables are reported as under:

1.9.1: Interpretation of Table 1.1 (Fig. 1.1): The results obtained in table 1.1 (Please See Fig. 1.1) gives information about the means significant difference on pre-test and post-test of badminton players on their level of flexibility. The acquired results indicate that the mean value of post was relatively significant higher (M=12.18) that the mean vale of pre-test (M==7.48). When the groups were analysed statistically, the results indicate that there exists significant difference between pre-test and post-test observations on their level of flexibility. The calculated 't' value came out to be 3.22, which exists significant at 0.01 level of confidence. Thus, impact of treatment **(Gymnastic Training)**seems to have significant impact on the level of flexibility of the respondents. Therefore, the status of the hypothesis is reported as under:

- **Hypothesis-I: "There exists significant impact of gymnastic training on of flexibilitylevel of the badminton players".**
- **Accepted:** The hypothesis stands accepted. Indeed, impact of gymnastic training was reported significant on the level of flexibility of the respondents. So the previously speculated assumption stands accepted.

1.9.2: Interpretation of Table 1.2 (Fig. 1.2): The perusal of the table 1.2 (Please see Fig. 1.2) gives information about the means significant difference on pre-test and post-test of badminton players. The obtained results indicate that the mean value of post was relatively significant higher (M=50.70) that the mean vale of pre-test (M==40.80). when the groups were analysed statistically, the results indicate that there exists significant difference between pre-test and post-test observations. The calculated 't' value acme out to be 5.53, which exists significant at 0.01 level of confidence. Thus, from the above reported results it can be said that the impact of gymnastic training is significant on the level of cardiovascular endurance of the respondents. Thus, impact of treatment **(Gymnastic Training)**seems to have significant impact on the level of cardiovascular endurance of the respondents. Therefore, the status of the hypothesis is reported as under:

- **Hypothesis-II: "There exists significant impact of gymnastic training on the level of cardiovascular enduranceof the badminton players".**

  …… "Accepted"
- **Accepted:** The hypothesis stands accepted. Indeed, impact of gymnastic training was reported significant on the level of cardiovascular

endurance of the respondents. So the previously speculated assumption stands accepted.

1.10: CONCLUSIONS OF THE STUDY: The present study was explored with a view to explore the impact of gymnastic training on the selected heath related physical fitness of the badminton players. Accordingly, the study revealed that there exists significant impact of gymnastic training on the level of impact selected heath related physical fitness of badminton players.Thus the results are carried inconsonance of the host of the researchers like, "**Hoff, J., Helgerud, J., & Wisloeff, U. (1999), Halin, R., Germain, P., Buttelli, O., & Kapitaniak, B. (2002), Kaj, M., Németh, J., Tékus, E., & Wilhelm, M. (2013), Violan, M. A., Small, E. W., Zetariuk, M. N., & Micheli, L. J. (1997) and Werner, P. H., Williams, L. H., & Hall, T. J. (2012)"**

1.11: Conflict of Interest: During the entire research process no any conflict of interest has been reported by investigator

Bibliography

- Ahel. C. H. (2010). Motor fitness in pre-primary school children: The EUROFIT motor fitness test explored on 5-7-year-old children. Pediatric Exercise Science. 12(4).
- Freedson, P. S., Cureton, K. J., & Heath, G. W. (2000). Status of field-based fitness testing in children and youth. Preventive medicine, 31, (2), Pp-77-85.
- Grice, T. (2003). The development of KidTest 2002 update: A talent identification inventory for predicting success in sports for children. Applied Research in Coaching and Athletics Annual, 228-246.
- Halin, R., Germain, P., Buttelli, O., & Kapitaniak, B. (2002). Differences in strength and surface electromyogram characteristics between pre-pubertal gymnasts and untrained boys during brief and maintained maximal isometric voluntary contractions. European Journal of Applied Physiology. 87(4-5), 409-415.
- Hastad, D.N., & Lacy, A.C. (1998). Measurement and evaluation in physical education and exercise science. Champaign: Human Kinetics.
- Hoff, J., Helgerud, J., & Wisloeff, U. (1999). Maximal strength training improves work economy in trained female crosscountry skiers. Medicine and Science in sports and Exercise, 31, Pp-870-877.
- Hopkins, W., Marshall, S., Batterham, A., & Hanin, J. (2009). Progressive statistics for studies in sports medicine and exercise science. Medicine Science in Sports Exercise, 41(1), Pp-3.
- Hunsicker, P. A. & Reiff, G. G. (1976). AAPHER Youth fitness test manual. American Alliance for Health, Physical Education and Recreation, Washington D.C.
- Ismail, S. H. (1976). Correlation between cognitive, motor and conative characteristics. Kineziologija, 1(2), Pp-7-28.
- Jayanthi, N., Pinkham, C., Dugas, L., Patrick, B., & LaBella, C. (2013). Sports specialization in young athlete's evidencebased recommendations. Sports Health: A Multidisciplinary Approach, 5(3):251-7.
- Jemni, M., Sands, W. A., Friemel, F., Stone, M. H., & Cooke, C. B. (2006). Any effect of gymnastics training on upper-body and lower-body aerobic and power components in national and international male gymnasts? The Journal of Strength & Conditioning Research. 20(4), Pp-899-907.
- Kaj, M., Németh, J., Tékus, E., & Wilhelm, M. (2013). Physique, body composition and physical fitness of Finish, Hungarian and American adolescents. Exercise and Quality of Life, 5(1), Pp-19-29.
- Kalinski, S. D., Miletić, Đ., & Božanić, A. (2011). Gender–based progression and acquisition of gymnastic skills in physical education. Croatian Journal of Education, 13(3), 4-24.
- Katić, R. (1995). Motor efficacy of athletic trianing applied to seven-year old schoolgirls in taching physical education. Biology of sport, 12(4), Pp-251-256.
- Kioumourtzoglou, E., Derri, V., Mertzanidou, O., & Tzetzis, G. (1997). Experience with perceptual and motor skills in rhythmic gymnastics. Perceptual and motor skills, 84(3), 1363–1372.

- Kvaavik, E., Kleep, K.I., Tell, G.S., Meyer, H.E. & Batty, G.D. (2009). Physical fitness and physical activity at age 13 years as predictors of cardiovascular disease risk factors at ages 15, 25, 33, and 40 years: Extended follow-up of the Oslo Youth Study. Pediatrics, 123(1), Pp-80-86.
- Lissau, I., Overpeck, M. D., Ruan, W. J., Due, P., Holstein, B. E., & Hediger, M. L. (2004). Body mass index and overweightin adolescents in 13 European countries, Israel, and the United States. Archives of paediatrics & adolescent medicine, 158(1), 27-33.
- Lovecchio, N., Casolo, F., Invernizzi, P., & Eid, L. (2012). Strength in young Italian students: results from Eurofit test and comparison among European data. Polish Journal of Sport and Tourism, 19(1), Pp-13-15.
- Madić, D., Popović, B., & Tumin, D. (2009). Motor abilities of girls included in program of development gymnastics. Glasnik Antropološkog društva Srbije, (44), 69-77.
- Maffulli, N., King, J. B., & Helms, P. (1994). Training in elite young athletes (the Training of Young Athletes (TOYA) Study): injuries, flexibility and isometric strength. British journal of sports medicine, 28(2), 123-136.
- Matvienko, O., & Ahrabi-Fard, I. (2010). The effects of a 4-week after-school program on motor skills and fitness of kindergarten and first-grade students. American Journal of Health Promotion, 24(5), 299-303.
- Millet, G. P., Jaouen, B., Borrani, F., Candau, R. (2002). Effects of concurrent endurance and strength training on running economy and VO~ 2 kinetics. Medicine and science in sports and exercise, 34(8), 1Pp-3511-359.
- Ortega, F. B., Artero, E. G., Ruiz, J. R., España-Romero, V., Jiménez-Pavón, D., Vicente-Rodríguez, G., ... & Ciarapica, D. (2011). Physical fitness levels among European adolescents: the HELENA study. British journal of sports Medicine, 45(1), Pp-20-29.
- Ortega, F. B., Artero, E. G., Ruiz, J. R., Vicente-Rodriguez, G., Bergman, P., Hagströmer, M., ... & Polito, A. (2008). Reliability of health-related physical fitness tests in European adolescents. The HELENA Study. International journal of obesity, 32, S49-S57.
- Rodríguez, P. L., Santonja, F. M., López-Minarro, P. A., Baranda, P. S., & Yuste, J. L. (2008). Effect of Physical Education Stretching Programme On Sit-And Reach Score In SchoolChildren. Science & Sports, 23(3), Pp-170-175.
- Ruiz, J. R., Rizzo, N. S., HurtigWennlöf, A., Ortega, F. B., Wärnberg, J., & Sjöström, M. (2006). Relations of total physical activity and intensity to fitness and fatness in children: the European Youth Heart Study. The American journal of clinical Nutrition, 84(2), Pp-299-303.
- Sawczyn S., (2000) Physical development and physical fitness of artistic gymnasts aged 10–15 years (in Polish). PhD thesis, AWF, Poznań 1985. Sawczyn S., Training loads in artistic gymnastics for many years of preparation system (in Polish). AWFiS, Gdańsk
- Semenick, D. M. (1994). Testing Protocols and Procedures. In: Baechle TR (Ed): Essentials of strength training and conditioning. Human Kinetics, Champaign. Pp-258–273.
- Silva, D.A.S., Petroski, E.L. and Gaya, A.C.A. (2013). Anthropometric and physical fitness differences among Brazilian adolescents who practise different team court sports. Journal of Human Kinetics. 36 :77–86.
- Sloan, S. (2007). An investigation into the perceived level of personal subject knowledge and competence of a group of pre-service physical education teachers towards the teaching of secondary school gymnastics. European Physical Education Review. 13, (1), Pp-57-80.
- Vaid, S., Kaur, P., & Lehri, A. (2009). A study of Body Mass Index in Boys of 1017 years in age. Journal of Exercise Science and Physiotherapy, 5(2), Pp-132.
- Violan, M. A., Small, E. W., Zetariuk, M. N., & Micheli, L. J. (1997). The effect of karate training on flexibility, muscle strength, and balance in 8 to 13-year-old boys. Paediatric Exercise Science. Vol. Pp-55-64.
- Werner, P. H., Williams, L. H., & Hall, T. J. (2012). Teaching children gymnastics (3rd ed.). Champaign, IL: Human Kinetics Publishers, Inc.
- Yadav, S.K.S., Yadav, M. and Kerkata, K. (2016).Comparison of selected physical fitness variables of school level basketball and volleyball male players. International Journal Physical Education& Sports. 1 (3): Pp-21-23.
- Ziv, G. and Lidor, R. (2009).Physical Attributes Physiological Characteristics, On-Court Performances and Nutritional Strategies of Female and Male Basketball Players. Sports Med., 39: Pp-547–568.

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

कल्पचिकित्सा

(मृत्युञ्जयकल्पाः)

Dr. G. AMARESWARAKUMAR
PDF Scholar, Dept. of Puranetihasa,
R.S. Vidyapeetha, Tirupati.

आयुर्वेदशास्त्रे कल्पचिकित्सायाः विषयः, प्रयोगाः प्रप्रथतया लकाश्यपसंहितायां व लशुनकल्प-नावतीतकल्प (बाबर् पाण्डुलिपिः) चित्रककल्प - इत्यादि सन्दर्भेषु दरीदृश्यते। कल्पचिकित्सायाः विषयः अश्विनीकुमाराणां सूक्तः-ऋग्वेदे (दशमसूक्ते) बहुशः विर्णितः। अत्र मनुष्याणाम् आयुवृद्ध्यर्थ उपायाः, विना रोगैः जीवनयापनं च अत्युत्तमया प्रतिपादितम्।

कल्पसागरः धन्वन्तरिः

कल्पान् मृत्युञ्जयान् वक्ष्ये ह्यायुर्दान् रोगमर्दनान्।
त्रिशती रोगहा सेव्या मध्वाज्यत्रिफलामृता ॥[1]

इदानीमहम् आयुर्दाय प्रदं, सर्वरोगविनाशकं - मुत्युञ्जयकल्पं प्रवक्ष्यामीति धन्वन्तरिरुवाच।

मधु - घृतं - त्रिफला - अमृतम् - इत्येतेषां सेवनेन मनुषः विनारोगेन त्रिशतवर्षकालं जीवति।

पलं पलार्द्धं कर्षं वा त्रिफलां सकलां तथा।
बिल्वतैलस्य नस्यञ्चमासं पञ्चशती कविः॥[2]

त्रिफलचूर्णं पलं, पलार्थं, कर्ष प्रमाणं वा सेवनीयम्। एकमासकालपर्यन्तं बिल्वतैलं नश्यरूपेण स्वीत्रियते चेत् सः पञ्चशतवर्षाणि यावत् जीवति । (पलम् - तुलम् इति तेलुगुभाषायाम्)

रोगापमृत्युबलिजित् तिलं भल्लातकं तथा।
पञ्चाङ्गं वाकूचीचूर्णं षण्मासं खदिरोदकैः ॥[3]

तिल - बल्लातकी - वाकुची - पञ्चङ्गम् इत्येतान् खदिरोदकेन षण्मासकालपर्यन्तं स्वीत्रियते चेत् समान्यरोगाः, अपमृत्युः, कुष्ठरोगः च नश्यन्ति।

क्वाथैः कुष्ठं जयेत् सेव्यं चूर्णं नीलकुरूण्टकम्।
क्षीरेण मधुना वापि शतायुः खण्डदुग्धभुक् ॥
मध्वाज्यशुण्ठीं संसेव्य पलं प्रातः स मृत्युजित् ।[4]

नीलकुण्टचूर्णं क्षीरेण सह वा, मधुना सह वा सेवनमुत्तमम्। खण्डदुग्धपानेन सः सर्वरोगहीनो भूत्वा शतवर्षकालपर्यन्तं सुखेन जीवति। मधु - आज्य - शुण्ठी - इत्येतान् प्रतिदिने प्रातः काले एकपलप्रमाणमात्रं स्वीकरणेन मृत्युं जयति।

पलाशतैलं कर्षैकं षण्मासं मधुना पिबेत्।
दुग्धभोजी पञ्चशती सहस्त्रायुर्भवेन्नरः ॥[5]

एकपलप्रमाणं फलाशतैलं मधुना सह षाण्मासपर्यन्तं सेवनेन, पुनः तदानीमेव क्षीरपानकरणेन सः पञ्चशतवर्षकालपर्यन्तं जीवति।

ज्योतिष्मतीपत्ररसं पयसा त्रिफलां पिबेत्।
मधुनाज्यं ततस्तद्वत् शतावर्य्या रजः फलम्॥
अभयां सगुडं जग्ध्वा घृतेन मधुरादिभिः।
दुग्धान्नभुक् कृष्णकेशोऽरोगी पञ्चशताद्भवान्॥[6]

क्षीरेण सह ज्योतिष्मतीपत्ररसं वा, त्रिफलं वा पानकरणेन सः सहस्त्रवर्षकालपर्यन्तं जीवति। मधुना सह घृतस्य, चतुः पल प्रमाणं शतावरी चूर्णस्य सेवनेन सः सहस्त्रवर्षकालपर्यन्तं जीवति।

अभया, गुड- मध्वादीन् घृतेन सह खादति चेत्, क्षीरान्न भोजनेनापि च केशाः सर्वदा कृष्णमयाः भवन्ति, पुनः रोगरहितः भवति सः पञ्चशतकालवर्षपर्यन्तं जीवति।

त्रिफला पिप्पलीं शुण्ठी सेविता त्रिशताब्दकृत्।
शतावर्य्याः पूर्वयोगः सहस्रायुर्बलातिकृत्॥[7]

चूर्णं घृतैर्वा मधुना गुडाद्यैर्वारिणा तथा।
ओं ह्रूंस इति मन्त्रेण मन्त्रितो योगराजकः॥[8]

त्रिफला - पिप्पली - शुण्ठीनां चूर्णसेवनेन शतवर्षकाल पर्यन्तं जीवनं यापायितुं शक्यते। उपर्युक्त चूर्णं घृतेन, मधुना अथवा गुडेन सह वा जलसहितपानकरणेन आयुर्वृद्धिः भवति। लओं ह्रूंसव इति मन्त्रजपेन मृत्युमपि जयति।

चूर्णमामलकं तेन सुरसेन तु भाविवम्।
मध्वाज्यशर्करायुत्तं लिङ्घा स्त्रीशः पयः पिबेत्॥

माषापिप्पलिशालीनां यवगोधूमयोस्तथा।
चूर्णभागैः समांशैश्च पचेत् पिप्पलिकां शुभाम्॥

तां भक्षयित्वा च पिबेत् शर्करामधुरं पयः।
नवश्चटकवज्जम्भेद् दशवारीन् स्त्रियं ध्रुवम्॥[9]

आमलकेन सुरसं भावयित्वा, आमलकं मधु - घृत - शर्कराः मेलयित्वा क्षीरेण सह पानेन, सः स्त्रीणां प्रभुः भविष्यति।

माषा - पिप्पली - शालि - यव - गोधूमानां चूर्णानि समभागैः स्वीकृत्य, पिप्पलिकां पचनं कृत्वा भक्षयित्वा च , शर्करायुक्त - मधुरक्षीरपानं करोति चेत् सः चटकपक्षिवत् निस्संशयेन दशपर्यायाः स्त्रीसङ्गमं कर्तुं समर्थो भवति।

रात्रौ तु मधुसर्पिभ्यां दीर्घमायुर्जिजीविषुः।
शतावरीरसेसिद्धौ वृष्यौ क्षीरे घृतौ स्मृतौ॥

कलम्बिकानि माषाश्च वृष्यौ क्षीरघृतौ तथा।
आयुष्या त्रिफला ज्ञेया पूर्ववन् मधुकान्विता॥[10]

दीर्घायुषं यः वाञ्छति सः त्रिफलं मधुना, घृतेन च सेवनीयम्। शतावरीं रस सिद्धं कृत्वा क्षीरेण, घृतेन च सेवनेन वीर्यवर्धकं भवति। माषाः, क्षीरं, घृतं च वीर्यवर्धकानि, मधुमिश्रितत्रिफलं वीर्यायुर्वर्धकं भवति।

एवं प्रकारेण आग्नपुराणे 286 अध्याये आयुर्वर्धकाः कल्पचिकित्साविषयाः बहुधा प्रोक्ताः ।

मन्त्ररूपौषधानां वर्णनम्

शारीरिक - मानसिकादि चतुर्विधेषु रोगेषु मानसिकानाम् आगन्तुकानां च चिकित्सा आग्नपुराण चतुरशीत्यधिकद्विशततमेऽध्याये वर्णिता। मवैद्योनारायणो हरिःय लोकवादसारः एव अत्र प्रतिपादितः। आयुर्वेदे सर्वत्र निदानस्यैव चिकित्सा त्रियते न तात्कालिकी। निदानं त्वादिकारणम्। यत्र मानसिकः विकारः तत्र रोगभयं भवति। क्वचित् वाञ्छिताभावात् दुःखं विकारहेतुः। क्वचित् अप्राप्यभयात्, लब्धनाशभयात् वा दुःखं विकार हेतुः। मानसिकदुःखमेव शोकः। शोककारणस्यापनये शोको नश्यति तन्मुखेन मनसि स्वस्थता भवतीत्यपि अत्राध्याये (284) साररूपतया प्रतिपादितम्। अत एव मन्त्ररूपौषधकथनमिति अध्यायस्य सार्थकं नाम।

मयानि नामानि गौणानि विख्यातानि माहात्मनःय इति विष्णुनामस्तु पठितानां नाम्नां गौणत्वमादाय तेषां तत्कालीयोपयित्वमत्र निरूपित्वम्। प्रायशः गौणशब्दस्य अप्रधानमित्यर्थः। तथाऽपि मगुणतो विख्यातानि गौणानिय इति गौणशब्दार्थः शङ्करभगवत्पादैः विष्णुसहस्रनामभाष्ये व्यस्थातः। अतः भगवतो नाम्नः यो गुणः यस्योपकारः तन्नामजत्वा तत् फलं लभेदिति आशयेन प्रयोजनापेक्षया नामान्युदाहृतानि।

अमरत्वप्राप्त्यर्थं मन्त्रः -

सर्वेषां मन्त्राणाम् लओङ्कारःव नायकमणिः। ओङ्कारस्य सर्ववेदानां शास्त्राणां तपसां च प्रयोजकमिति उपनिषत्सु बहुधा स्पष्टम्। लओम्व इत्येकाक्षरं लब्रह्मव इति वेदवचः, ब्रह्म परमात्मस्वरूपं दृढयति। प्रत्यहं च गायत्री अनुष्ठाने श्रोर्त्यैः प्रशस्यते च।

सर्वे वेदा यत्पदमामनन्ति तपांसि सर्वाणि च यद्वदन्ति।
यमिच्छन्तो ब्रह्मचर्यं चरन्ति तत्तेपदं सङ्ग्रहेण ब्रवीमि॥[11]

ओम् इत्येतत् इति। कठोपनिषदि स्पष्टम्।
आयुरारोग्यकर्त्तार ओंकाराद्याश्च नाकदाः।
ओंकारः परमो मन्त्रस्तं जप्त्वा चामरो भवेत्॥
गायत्री परमो मन्त्रस्तं जप्त्वा भुक्तिमुक्तिभाक्।[12]

अतः सर्वेषां नाम्नामारम्भे ओङ्कारः प्रजोज्यः। एतानि नामानि आयुषः, आरोग्यस्य च कर्तारः दुःखापनोदकाश्च भवन्ति। ओङ्कारः परमो मन्त्रः, तं जप्त्वा च अमरो भवेदिति ओङ्कार जपफलमुक्तम्। म्रियतेति मरः। यद्वा मरः मृत्युः न विद्यते यस्य अमरः। मृत्युराहित्यादपि मृत्युभयमेव मर्त्यैः प्रार्थनीयम्। अमरः मृत्युभयरहितः इत्येव वचनं साधु। सर्वदा मरणाभावस्य ब्रह्मणोप्यसम्भवात्। नरापेक्षया इन्द्रः शास्वतः, तदपेक्षया ब्रह्मा। न तु कश्यचन अमृतत्वम्, शतानां वैरिञ्चानां संवत्सराणामन्ते ब्रह्मणोप्यायुषः समाप्तिरिति पुराणेषु स्पष्टम्।

ततः गायत्री जपफलमुक्तम्।
मगातारं त्रायतेय इति गायत्री शब्दः यास्कारचार्यैः उक्तः।[13]

मतत्सवितुर्वरेण्यं भर्गो देवस्य धीमहि धियो यो नः प्रचोदयात्।य इति चतुर्विंशत्यक्षारात्मकोऽयं मन्त्रः। सवितुः सूर्यस्य वरेण्यं प्रशस्थं कमनीयं वा भर्गः, तेजः धीमहि ध्यायामः। यः यः सूर्यः नः अस्माकं धियः बुद्धिं प्रचोदयात् सदा सन्मार्गे

कार्यसाधने च योजयति। धीमहि इत्यार्षः प्रयोगः। अनेन मन्त्रेण सर्वार्थलाभः। बुद्धिः सर्वार्थसाधिका। देवाः यं रक्षितुमिच्छन्ति तस्मै कालोपयोगिनीं बुद्धिं दास्यतीति विद्वांसः वदन्ति।

न देवा दण्डमादाय रक्षन्ति पशुपालवत्।
यं तु रक्षितुमिच्छन्ति बुद्ध्या संयोजयन्ति तम्॥ [14]

अतः बुद्धिप्रचोदनं गायत्र्या प्रार्थनीयम्।
लओं नमो नारायणायव [15]

इत्यष्टाक्षरोमन्त्रःसर्वार्थसाधकः। नारायणशब्दार्थः अज्ञाननिवृत्तिपरः। स च ऐहिकार्थसाधकःआमुष्मिकप्रदश्च। कुलशेखराचार्योऽपि नारायणमन्त्रमेव सर्वव्याधिनिवारकं स्तुवन्ति। कुलशेखरः द्वादशाल्वार्(12) इत्येतेषु परिगणितः। श्रीरङ्गनाथस्य अयं परमो भक्तः। विष्णुभक्ताः अस्यादेशं शिरसि धारयन्ति।

हे लोकाश्शृणुत प्रसूतिमरणव्याधेश्चिकित्सामिमां,
योगज्ञास्समुदाहरन्तिमुनयो यांयाज्ञवल्क्यादयः।
अन्तर्ज्योतिरमेयमेकममृतं कृष्णाख्यमापीयतां,
तत्पीतं परमौषधां वितनुते निर्वाणमात्यन्तिकम्॥

हे मर्त्याः! परमं हितं शृणुत वो वक्ष्यामि संक्षेपतः,
संसारार्णव मापदूर्मिबहुलं सम्यक् प्रविश्यस्थिताः।
नानज्ञानमपास्य चेतसि नमो नारायणायेत्यमुं
मन्त्रं सप्रणवं प्रणामसहितं प्रावर्तयध्वं मुहुः॥

व्यामोहप्रशमौषधं मुनिमनोवृत्ति प्रवृत्यौषधं,
दैत्येन्द्रार्तिरौषधं त्रिभुवनी सञ्जीवनैकौषधम्।
भक्तात्यन्त हितौषधं भवभयप्रध्वंसनैकौषधं,
श्रेयः प्राप्तिकरौषधं पिबमनश्श्रीकृष्णदिव्यौधम्॥ [16]

अपि च मओं नमो भगवते वासुदेवायय इत्यपि द्वादशाक्षरो मन्त्रः। नारायणस्य चतुर्विधः व्यूहः वर्तते। गुणत्रयात्मकः केवलज्ञानात्मकश्च सङ्कर्षणः तामसव्यूहः। तेन व्यूहेन शिवो भूत्वा विष्णुरेव प्रलयकारी, अनिरुद्धः सर्वगुणः, तेन सृष्टिकरः। प्रद्युम्नः रजोगुणात्मकः - तेनायं स्थितिकारी। वासुदेवः ज्ञानस्वरूपः, त्रिगुणातीतश्च। एष विषयः

लभूतकृत् भूतभृत् भावः चतुरात्मा चतुर्व्यूहःव इत्यादि विष्णुसहस्रनाम भाष्ये शङ्करभगवत्पादैः व्याख्यातम्।

एवं ज्ञानात्मकत्वात् वासुदेवः आमुष्मिकप्रदः। अपि च वासुदेवः जगन्निवासभूतः। वसति जगति आस्मन्निति वासुः। वासुश्चासौ देवश्च वासुदेवः इत्यपि भौतिकरूपोर्थः। लभूतावासो वासुदेवःव इत्यत्र शङ्करभगवत्पादैः व्यख्यातम्। अतः एकमपि प्रयोजनं भवति। सर्वं ददातीति सर्वदः। ततः विष्णुशब्दः औषधं परमिति उक्तम्। व्याप्नोति इति विष्णुः। सर्वभूतेषु संस्थितः इत्यर्थः। विष्णुस्मरणेन देवाः, राक्षसाश्च रोगरहिताः अभवन्। रुजायाः निर्गताः निष्क्रान्तारुजा येभ्यो वा नीरुजाः प्राप्तस्वस्थाः रोगैः विमुक्ताः इत्यर्थः।

पुराणेषु प्रह्लादः, वृत्रासुरश्च नारायणमाराद्य शुभानि प्राप्नुवन्। श्रीमद्भागवते षष्ठ (6)स्कन्धान्ते वृत्राय उपदिष्टः नारायणकवचमन्त्रः प्रसिद्धः। धर्मः विष्णुरेव। सहस्रनामसु धर्म, धर्मकृत्, धर्मी धर्मगुप् प्रभृतिनामानि प्रसिद्धानि। धरति लोकानिति धर्मः। अत एव धर्मस्वरूपो विष्णुः धारणार्थं ध्येयः। एवं श्री इत्यादिशब्दाः योगिकाः श्रियः प्रदाने समर्थाः। श्रीलाभेन तेजस्वी निश्चिन्तश्च भवति।

एवमानन्द प्राप्तये नामानि जाप्यानि।

धर्मः सद्धर्मकृद्धर्मी एतैर्धर्मैश्च निर्मलः।[17]

ऐश्वर्यप्राप्त्यर्थं मन्त्रः -

श्रीदः श्रीशः श्रीनिवासः श्रीनिकेतनः॥
श्रियः पतिः श्रीपरम एतैः श्रियमवाप्नुयात्।[18]

धनमूलमिदं जगत् इति लोकोक्त्यनुसारेण सर्वे जनाः धनं वाञ्छन्ति, तदर्थं श्रीदः, श्रीशः, श्रीनिवासः, श्रीधरः, श्रीनिकेतनः, श्रियः पतिः, श्रीपरम एतैः नामभिः विष्णुं प्रार्थनीम्।

जयप्राप्त्यर्थं मन्त्रः -

रामः परशुरामश्च नृसिंहो विष्णुरेव च ॥
त्रिविक्रमस्य नामानि जप्तव्यानि जिगीषुभिः।[19]

शतुस्थितौ मनसः शान्तिः न भवति। विपक्षमखिलीकृत्य प्रतिष्टा दुर्लभा खलु। अतः शतुजिगीषा कार्या। (जेतुमिच्छा जिगीषा)। (जिगीषाः च इति जिगीषुः)। विष्णुः येषु अवतारेषु जिगीषुरभूत् स एव जयसिद्धये स्तोतव्यः। जय लाभे मनश्शान्तिः, ततो मानसिकविकारोपशमः। जयार्थं रामः, परशुरामः, नृसिंहः, विष्णुः, त्रिविक्रमः इत्येवं प्रकारेण विष्णुनामानि जपः करणीयानि।

विद्याप्राप्त्यर्थं मन्त्रः -

विद्यामभ्यस्य तां नित्यं जप्तव्यः पुरुषोत्तमः॥[20]

विद्यार्थी पुरुषोत्तमं ध्यायेत्। विद्या मोक्षविद्यैव । पुनः हयग्रीवनाम जपेनापि विद्यायाः वृद्धिः भवति।

नेत्ररोगनिवारणार्थं मन्त्रः -

लदामोधरो बन्धहरः पुष्कराक्षोऽक्षिरोगनुतव॥[21]

नेत्ररोगनाशार्थं दामोधर - बन्धहर - पुष्कराक्ष नामाभिः हरिस्सेव्यः। नोदयतीति नुत्। अक्षिरोगाणां नुत् अक्षिरोगनुत्।

औषधसेवने जपः करणीयः मन्त्रः -

हृषीकेशो भयहरो जपेदौषधकर्मणि॥[22]

औषधसेवनविषये हृषीकेश इति नाम्ना विष्णुः सेव्यः। हृषीकाणि इन्द्रियाणि तेषामीशः हृषीकेशः। भयहरः इति हृषीकेशस्यैव विशेषणम्। अपि च अन्यलौकिकार्थाय सिद्धयेऽपि नरसिंहादि नामभिः अच्युतः सेव्यः।

1. लअपराजितःव इति नामस्मरणं युद्धकाले करणीयम्।
2. लश्रीनृसिंहःव इति नामस्मरणं जलतरणसमये, भीतिनिवारणसमये च करणीयम्।
3. लगरुडध्वजःव इति नामस्मरणं विषहरणसमये करणीयम्।
4. लवासुदेवःव इति नामजपः सर्वदा करणीयः।
5. लअनन्ताच्युतनामानिव धान्यादीन् गृहे स्थापनसमये, शयनसमये च जपः करणीयः।
6. पुत्रप्राप्त्यर्थं जगत्यूतिं स्मरणं करणीयम्।
7. पूर्वादिदिक्षु विजय प्राप्त्यर्थं ल चत्री, गदी, शाङ्गी, खड्गी व इत्यादीनि नामानि जपः करणीयानि।

एवं विष्णुस्मरणं सर्वरोगशमकं मन्त्ररूपमौषधमिति आग्नपुराणे 284 तमे अध्याये स्पष्टम्।

वृक्षायुर्वेदः

यद्यपि ओषधीनां अनेकोपयोगास्सन्ति अस्थानप्रवरूढाः, अकालप्ररूढाः च वृक्षाः औषधार्थं नोपयोक्तव्याः। चरकेऽपि योग्यौषधप्ररोहणानुकूलदेशाः विस्तारेण निरूपिताः। श्मशानस्थाः वृक्षाः न औषधयोग्याः। अधार्मिकराजानुशासितराज्येऽपि प्ररूढाः वृक्षाः औषधयोग्याः न भवन्ति इत्यपि आयुर्वेदविदां मतम्। वर्जनीयाः वृक्षाः, देशाश्च चरकसंहितायां विमानस्थाने

सन्दर्भ ग्रन्थः

1. अग्निपुराणम्. 286-1
2. अ.पु. 286-2
3. अ.पु. 286-3
4. अ.पु. 286-4,5
5. अ.पु. 286-7
6. अ.पु. 286-8, 17
7. अ.पु. 286-20
8. अ.पु. 286-23
9. अ.पु. 285-64,65,66
10. अ.पु. 279-49, 50
11. कठोपनिषत्
12. अ.पु. 284-1,2
13. निरूक्तम् - नैघण्टुक खाण्डः
14. नैषधीयम् - मल्लिनाथव्याख्यायां 14-8
15. अ.पु. 284-2
16. मुकुन्दमाला-17,18,24
17. अ.पु. 284-5
18. अ.पु. 284-5,6
19. अ.पु. 284-7,8
20. अ. पु. 284-8
21. अ.पु.284-9
22. अ.पु. 284-9

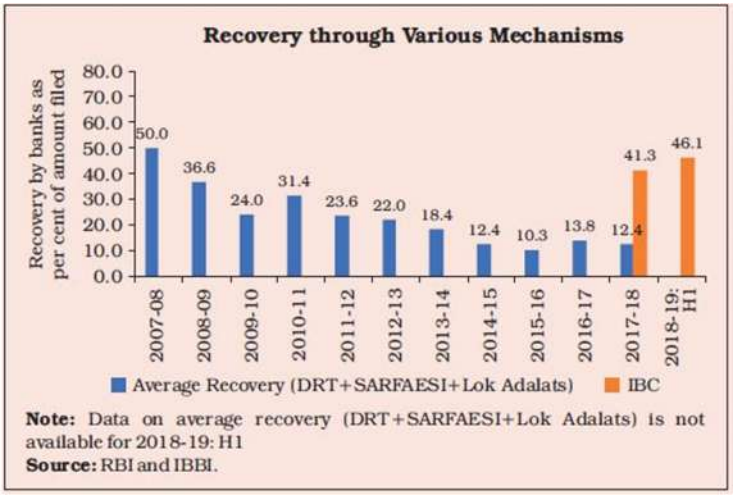
INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :6.514(2020); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and UGC Approved:VOLUME:9, ISSUE:3(4), MARCH:2020

INSOLVENCY AND BANKRUPTCY CODE (AMENDMENT ACT), 2020: AN ANALYSIS

Dr.Binoy J. Kattadiyil
ICSI IIP, IPA of IBBI

Introduction

The Insolvency and Bankruptcy Code (hereafter, ''IBC'), 2016 is considered to be a landmark legislation. It officially commenced on 28 May, 2016. According to the World Bank's Doing Business report[1] which was released in 2016, the secured creditors in India on an average recovered only 20% of their entire debt from an insolvent firm at the end of the insolvency proceedings which was in stark contrast to the OECD (The Organisation for Economic Co-operation and Development) countries where creditors recovered up to 72.3% of their debt. In addition to this, the legislative frameworks which existed in India before the enactment of the IBC, weretime consuming as the whole process of debt recoverytook about 4.3 years to conclude whereas it took just around 1.7 years in the OECD countries. For the reasons stated above, India was ranked at an abysmal 130 out of 189 countries with respect to resolving insolvency. However, with the introduction of the IBC the current recovery rate has increased from 20 to 42%.[2]



[1]A World Bank Group Flagship Report - Doing Business 2016 Measuring Regulatory Quality and Efficiency, 13th Edition, https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB16-Full-Report.pdf
[2]Id.

The Amendment Act- Salient Features

The Insolvency and Bankruptcy Code (Amendment Act), 2020 ("The Amendment ") was passed by the Parliament on March 12, 2020. Some of the key features of the Amendment are as follows:

1. **Minimum threshold for initiating the process of resolution :**As per Section 7, of the current Act, any financial creditor upon the default of Rs. 1 lakh from the corporate debtor caninitiate an insolvency proceeding in the National Company Law Tribunal (NCLT).[3]Later on, the home buyers were added under the category of a financial creditor. [4]This has led to a trend of real-estate builders undergoing Insolvency due to a proceeding initiated by a single buyer. As a result of this since June 2018 there has been a marked rise in number of cases. Till now 1,828 cases have been filed by a single real estate buyer alone. The new amendment has shifted the process of initiation of the proceedings from monetary terms to affected crowd. In other words, in case of real estate projects, if an allottee (person to whom a plot, apartment, or building has been allotted or sold) wants to initiate a resolution, then the application should be filed jointly by at least 100 allottees of the same real estate project, or 10% of the total allottees under that project, whichever is less.[5]

   For other financial creditors, where the debt owed is either in the form of securities or deposits, or to a class of creditors, the application should be filed jointly by at least 100 creditors in the same class, or 10% of the total number of such creditors in the same class, whichever is less.
2. **Appointment of resolution professional -** As per thecurrent provision, Section 5 (12) defines the term "insolvency commencement date" [6]and S.16 reads that the Resolution Professionalisto be appointed within 14 days of the insolvency commencement date[7]. As per theproposed amendment, Section 5 stands repealed [8]. As a result of which, there's an automatci change in Section 16(1) of the IBC, now the Resolution Professional shall be deemed to have been appointed on the date of the commencement of the insolvency itself.
3. **Right of the Corporate Debtor to initiate the CIRP Process – Prior to the amendment,** there was no clear instruction regarding the rights of a

[3] §7, The Insolvency and Bankruptcy Code, 2016 Act No.31 of 2016.
[4] IBC Changes :Want to drag realtor to NCLT? Draw in 99 homebuyers, The Financial Express, https://www.financialexpress.com/industry/ibc-changes-want-to-drag-realtor-to-nclt-draw-in-99-homebuyers/1739035/.
[5]Id.
[6] §5(12), The Insolvency and Bankruptcy Code, 2016 Act No.31 of 2016.
[7] §16, The Insolvency and Bankruptcy Code, 2016 Act No.31 of 2016.
[8]Insolvency and Bankruptcy Code (Second Amendment) Bill, 2019 Quick review of Proposed Amendments, Vinod Kothari Consultants, http://vinodkothari.com/2019/12/ibc-second-amendment-bill-2019-quick-review/.

corporate debtor and whether he can institute an insolvency proceeding against another corporate debtor. Section 11 of the Amendment Act aims to resolve this conflict as it states that a corporate debtor who has an ongoing Insolvency proceeding taking place against him, has the right to commence an Insolvency proceeding against another corporate debtor.[9]

4. **Moratorium –** The amendment in Section 14 (1) of the Amendment states that any existing licence, permit, registration, quota, concession, or clearance, given by the government or local authority, will not be suspended or terminated on the grounds of insolvency. However, there should be no default in payment of current dues for the use or continuation of such grants. Insolvent professionals will have the authority to extend the moratorium to include the continuance of supply of goods and services that he or she considers essential.
5. **Parties related to the Corporate Debtor** -The Code recognises and prescribes that the parties related tothe corporate debtor are not eligible to be a part of the committee of creditors. However, the Code hasabsolved the financial creditors of their ineligibility wherein the reason behindthem becoming a related party was the result of mergers, transfer of shares due to debt etc., The Amendment has clarified that the Central Government may prescribe certain additional transactions that shall not come under the category of a related party.
6. **Office of the Resolution Professional –**As per Section 23 (1) of the current IBC, the Resolution Professional is responsible for the affairs of the Corporate Debtor, until a resolution plan was submitted to the Adjudicating Authority. However, this section has been proposed to be amended in a way so as to extend the responsibility of the Resolution Professional till a plan has been approved by the court or till a liquidator has been appointed.
7. **Immunity for Prior Offences: Addition of Section 32A –** Newly inserted section 32A in the Code provides that corporate debtors will have immunity against offences committed by them prior to the commencement of the resolution process. Adding to that, the Amendment also prohibits any action against the Corporate Debtor in respect to any immovable property including attachment, seizure or confiscation. It is only applicable if there is a shift of control in promoters or management after the approval of the Resolution Plan.
8. **Widening of the scope of Interim Finance** - The Amendment expands the definition of 'interim finance' to include, 'such other debt as may be notified'. The intent of this addition is made clear by the statement of objects and reasons, which suggests that 'last mile funding' options to

[9]Id.

'prevent insolvency' is likely to be included under interim finance and thereby, enjoy priority in the insolvency or liquidation process under the IBC. The ambit of such debts has not yet been decided, andwill be further notified.

9. **Financial Service Providers –** The explanation inserted in Section 227 of the Amendment describes that the Insolvency Proceeding against a financial institution or financial service provider will be conducted in the manner prescribed, with modifications that'll be further notified.
10. **A New timeline of 330 days –** The time period for the whole proceeding has been increased to a maximum limit of 330 days. If the process in not complete within the said time frame then the Resolution Professional needs to give in writing the reasons for the delay.This has been done with the aim to l speed up the mechanism.

Impact of new amendments

The Amendment aims at improving the IBC as a mode of recovery. It also aims at preventing frivolous applications and to not diminish the value of the corporate debtor by preventing the supply of goods and services which are critical to its value. We will now discuss, what will be the implications of the Amendment:

1. The Forum for People's Collective Efforts (FPCE)[10], a national lobby of homebuyers, highlighted that the new Amendment will defeat the purpose of adding homebuyers as financial creditor. It will surely increase the work of Advocates as now they will also have to act as a mediator, in order toconvince other buyers to institute a proceeding. In a way, this change will givethe monetarily strained builders a chance to revive their business.On the other hand, a decline in the number of insolvency applications by homebuyers may be seen.
2. Since the Resolution Professional is to be admitted on the day the Insolvency proceeding starts, it will increase the efficiency and help complete the proceedings in a time-bound manner. The stakeholders will be made to follow a strict timeline and also all the paperwork will need to have been done before the commencement of the proceeding. This will enable a better approach at the revival of the company, as time will be counted from the day of the commencement of the proceedings[11].

[10] Homebuyers object to Insolvency code amendment approach parliamentary committee, The Economic Times, https://economictimes.indiatimes.com/industry/services/property-/-cstruction/homebuyers-object-to-insolvency-code-amendment-approach-parliamentary-committee/articleshow/74049218.cms?from=mdr

[11]Insolvency and Bankruptcy Code (Second Amendment) Bill, 2019 Quick review of Proposed Amendments, Vinod Kothari Consultants, http://vinodkothari.com/2019/12/ibc-second-amendment-bill-2019-quick-review/

3. With the clarity of the rights of the Corporate Debtor, i.e., that he can institute an Insolvency proceeding against another Corporate Debtor even when undergoing an Insolvency proceeding against himself, the root cause of default may be addressed.
4. The non-cancellation of lease, license, quota, grants etc will benefit the Corporate Debtor ensuring the essential requirement for the conduct of the company during Insolvency proceedings remain intact.
5. Widening of the definition of interim finance will encourage more investment for revival of the Corporate debtor.

Conclusion

The new measures aim to economically boost the Corporate sector. Due emphasis has been given to the survival and revival of the Corporate Debtor. In a way, it can be said that the new Amendmentis inclined towards the Corporate Debtor.[12] The proposed changes will hugely impact the Corporate Debtors and professionals of this field. It is also believed to create a positive imprint on the economy as the approach has changed from debt recovery to corporate revival.

[12]IBC Second Amendment Bill, 2019: Finishing Touches to the Indian Restructuring Landscape, India Corporate Law, Cyril AmarchandMangaldas Blog, https://corporate.cyrilamarchandblogs.com/2019/12/ibc-second-amendment-bill-2019-finishing-touches-to-the-indian-restructuring-landscape/