

The Working women and Me Too movement in Indian perspective: A Legal Analysis

Prof.(Dr.) Acharya Rishi Ranjan
Professor and HoD
Netaji Subhas Institute of Law,
Netaji Subhas University, Jamshedpur, Jharkhand

ABSTRACT

#Me Too Movement is against sexual harassment and sexual assault usually at workplaces and also creates a negative impact in the society. The term sexual harassment had not been defined in any Act in India before POSH Act 2013. Until the mid 1990s the concept of sexual harassment at workplace was not recognized by Indian Courts as such In Rupan Deol Bajaj vs. Kanwar Pal Singh Gill (1995) the Court recognized sexual harassment as a crime falling squarely under Section 354 of the Indian Penal Code. The Supreme Court of India laid down various guidelines for prevention of sexual harassment at workplace in the Vishakha & Ors. v. State of Rajasthan. (AIR 1997 SUPREME COURT 3011) which later led to the establishment of Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013. There are a number of steps that you can take to reduce the risk of sexual harassment occurring at workplace.

Keywords: Metoo, POSH Act, sexual harassment, employee, employer, work place, CEDAW, unorganized sector, sexual assault

Introduction

The sexual harassment of women at their workplaces is a rampant and distressing issue. It not only undermines the confidence of women to work freely, but also leads to a corresponding negative impact on the performance and reputation of the organization. As women's fight against sexual misconduct gains momentum in India with the viral #Me Too movement in recent year. #Me Too Movement is against sexual harassment and sexual assault usually at workplaces and also creates a negative impact in the society.

The “#Me Too” term was coined by Tarana Burke, an American social activist and community organiser, in 2006 on Myspace social network which received wide recognition on social media in October, 2017 when Alyssa Milano, an American actress, used the hash tag in her tweet against Harvey Weinstein¹. The movement was started by Tarana Burke with the primary purpose of empowering women, especially young and vulnerable with empathy against sexual harassment and sexual assault. However, Alyssa used the term with the intent of revealing the extent of sexual harassment problem in the world. She tweeted “if all the women who have been sexually harassed or assaulted wrote ‘Me too’ as a status, we might give people a sense of the magnitude of the problem” and they did. .

Definition of sexual harassment at work place

The term sexual harassment had not been defined in any Act in India before POSH Act 2013. Until the mid 1990s the concept of sexual harassment at workplace was not recognized by Indian Courts as such In Rupan Deol Bajaj vs. Kanwar Pal Singh Gill (1995) the Court recognized sexual harassment as a crime falling squarely under Section 354 of the Indian Penal Code, by interpreting—outraging the modesty of a woman to include outraging the dignity of a woman. Before 1997, a person facing sexual harassment at workplace had to lodge a complaint under Section 354 of the Indian Penal Code 1860 that deals with the 'criminal assault of women to outrage women's modesty', and Section 509 that punishes an individual/individuals for using a 'word, gesture or act intended to insult the modesty of a woman. Later in 1997, a landmark judgment in Vishaka vs State of Rajasthan and Ors case², Supreme Court for the first time defined sexual harassment at workplace. Sexual harassment was defined as that which includes such unwelcome sexually determined behavior (whether directly or by implication) as:

- physical contact and advances
- a demand or request for sexual favours
- sexually colored remarks
- showing pornography
- any other unwelcome physical verbal or non - verbal conduct of sexual nature.

In this epic judgment, the Supreme Court also recognized it as a Human Rights issue and pointed out the legal vacuum to address the concern of the sexually harassed women.

¹ [https://en.wikipedia.org/wiki/Me_Too_movement_\(India\)](https://en.wikipedia.org/wiki/Me_Too_movement_(India))

² . AIR 1997 SUPREME COURT 3011

AN ANALYSIS OF SECTION 498- A OF INDIAN PENAL CODE

Rakhi Dubey * & Prof. (Dr.) Acharya Rishi Ranjan**

Abstract

Many people in India are still not aware of section 489 A of the Indian penal code 1860, or what is to be done when a case related to section 498 A is registered. This section was introduced in the year 1983 and it was brought in order to protect women from being subjected to cruelty. But, on the other hand any such law which is made to protect woman against any cruelty being faced by them becomes a easy tool for woman to misuse it and take revenge from husband on to file a false case. This section is one of the most controversial sections of Indian penal code. Section 498 A of the Indian penal code, 1860 deals with violence done one women after her marriage. This section covers any violence done violence done by husband on her in-laws or any relative of the husband. The section prescribes punishment for three years and a fine.

Keywords: Marital Home, Women, Cruelty, IPC, Maintenance

Introduction**Arguments against Making Section 498A IPC Bailable**

The basic spirit underlying Section 498A is that domestic violence should be non- negotiable and should be unacceptable in all circumstances. In this sense Section 498A must not make the offence bailable. If it makes it bailable, it would reduce the gravity of offence and it would remove any fear in the mind of the violator. So making it bailable would not only dilute the gravity of the offence, but it would defeat the very purpose of the law. If the offence is made bailable, the perpetrators of crime need not appear before a magistrate to obtain bail. Making the offence bailable would open the floodgates of corruption, thereby blocking any access for harassed woman to get justice.

Arguments against Making Section 498A IPC Compoundable

Making any offence compoundable involves withdrawal of police complaints at any point of time. This is all the more serious if the complaint is regarding marital violence. By removing compoundability of the offence, the gravity of marital offence will come down, and as a result would be at par with gravity of other offences. In addition to this, harassed women would be under pressure to withdraw their police complaints and enter into an unequal compromise which is unfavorable to women. All this would make a harassed woman more vulnerable to cruelty and family violence, defeating thereby the very purpose of law. All this points to the necessity that the law must continue to remain non- compoundable both in letter and spirit

Arguments against Making Section 498A IPC Cognizable

At present offence under Section 498A of IPC is a cognizable offence, but a section of population insists that the offence under this Section be made noncognizable. If the Section is made non-cognizable, the police will have to obtain search warrant from the courts before arresting the accused. It will take a long time before arrest is made. A harassed wife will also have to go through the time-consuming judicial process to file an initial complaint against her husband/ in-laws. In other words, non- cognizability of law would rob the harassed wife of all the benefits already available to her under the existing Section 498A.

Rights of a married woman in India**Right to reside in Marital home**

According to "The Hindu Adoptions and Maintenance Act, 1956 wives have a basic right to reside in the marital/ matrimonial household. Matrimonial household is a house that a woman shares with her husband. Such a house may be owned by the parents of her husband or it can be a rented property or a property which is officially provided to him. Even if such a house is a joint family house or an ancestral one, a daughter-in law has the right to reside in such a house. in addition, she has a right to reside in such a house after the death of her husband.

There have been many reports about such cases where the husband leaves the rented house once his relation with his wife becomes critical. However, doing this does not free the husband from maintaining his wife and children. The husband will still be liable to maintain his wife and children.

* Research Scholar, Oriental School of Law, Oriental University, Indore

** Assistant Professor, Oriental School of Law, Oriental University, Indore

Right of woman with regard to streedhan

Streedhan refers to the gifts received by a woman during pre marriage or marriage ceremonies and during childbirth. This may include any jewelry, gifts, money, property of any movable or immovable nature and many more (e.g. god bhara, baraat, moo dikhai). the objective of streedhan is to provide some monetary safeguards to the woman after her marriage.

The apex court has given unchallengeable rights to a married woman over streedhan. This right of a woman is not lost even after her separation from her husband, the wife has complete ownership over all her streedhan, the gifts and money she gets pre or post marriage. And any denial in such context by the husband, any relative or her in-laws makes them liable for criminal charges. If in case the mother-in law has possession over the streedhan of woman and she dies without giving it to her or dies without any will with regard to the same, the woman has a legal right over it.

Right to be maintained by her husband

A woman has the right to claim honest livelihood standards and basic comforts of life from her husband. And such maintenance will be according to the income and property owned by the husband. In case of souring ties between husband and wife, the husband has to provide basic maintenance to his wife and children if any. The basic maintenance includes food, clothing, shelter education, and medical treatment. This right is recognized by section 125 of The Code of Criminal Procedure, 1973. The Indian legal system provides a provision to women that states that a woman can claim up to 25 % of her husband's net income as alimony.

Maintenance of the children

A minor child has the right to required facilities, and the same is the duty of her husband and wife to provide the same. In a situation where the wife is not capable of earning a living, it is the duty of her husband to fulfill the required financial assistance. And in case both of them are not capable enough to take care of the child then they can take help from their parents to take care of the child. Also, the child has the right in the any ancestral property.

Rights given to women with regard to her parental home

In Indian society we have observed that people believed that a daughter is a liability to the family but with the passage of time or say due to the influence of education the mindset of the society has changed. Nowadays, daughters have equal status as their brothers have and this situation is even after the daughter is married.

1) Inheritance

According to the Hindu Succession Act, 1956 daughters did not have equal right as the sons had in their father's property. According to the previous Act the daughter had the right over the property of her father only till the time she was unmarried. But this Act has been amended in 2005 and according to this amendment of 2005 it was introduced that every daughter whether she is married or unmarried, has the equal right as her male sibling to inherit the property after the death of her father. Every daughter has the right and liability over the property of her father similar to the right and liability of her brother. Not only this, daughter has a right in the property of her mother. And in case the father does not Sign any will before his death, the daughter has the right to court proceedings regarding the same.

2) Coparceners

A coparcener is formed with four generations of the family, earlier daughters were not a part of it. However, The Hindu Succession Act 2005 gave equal rights to daughters to be coparceners. And also enables the right of a woman over coparcener property. It also implies that the daughter of the family has the equal right to inherent the undivided property since her birth. All daughters have similar rights and liabilities as the son.

Right of a woman to live dignity and respect

Any human being, be it a man, a woman or a child has the right to live his life with dignity. A woman has the legal right to live with dignity and self-respect with her in-laws. A woman has the right to live her life in the same manner as her in-laws live. Independence of a woman is a legal right given to her, also she has the right to shout out against any physical or mental torture faced by her at her matrimonial home.

As stated by the hon'ble Supreme Court of India "A daughter-in-law is to be treated as a member of the family with the warmth and affection and not as a stranger with respect able and ignorable indifference. She should not be treated as a house maid. No impression should be given that she can be thrown out of her matrimonial home t any time. The matter in which sometimes the bride is treated in many a home by husband, in-laws and the relatives create a feeling f emotional numbness in society."

Section 498 A

According to the Indian penal code, 1860 section 498 A is “husband or relative of a husband of a women subjecting her to cruelty- whoever, being the husband or the relative of the husband of a women, subjects such women to cruelty shall be punished with imprisonment for a term which may extend to three years and shall also be liable to fine. “

Explanation- for the purpose of this section, “cruelty” means-

- A) Any willful conduct which is of such a nature as is likely to drive the women to commit suicide or to cause grave injury or danger to life, limb or health (whether mental or physical) of the woman ; or
- B) Harassment of the woman where such harassment is with a view to coercing her or any person related to her to meet any unlawful demand for any property or valuable security or is on account of failure by her or any person related to her to meet such demand”

Evidence act, 1872

Section 113 A- presumption as to abetment of suicide by a married woman-

When the question is whether the commission of suicide by a woman had been abetted by her husband or any relative of her husband and it is shown that she had committed suicide within a period of seven years from the date of her marriage and that her husband or such relative of her husband had subjected her to cruelty, the court may presume having regard to all the other circumstances of the case, that such suicide had been abetted by her husband or by such relative of her husband.

Explanation for the purpose of this section, “cruelty” shall have the same meaning as in section 498 A of Indian penal code (45 of 1860).

Section 498 A of Indian penal code is cognizable offence if the information related to the commission of any such offence is given to the police, by the aggrieved or by any person related to her by blood, marriage or adoption and if no such person is there then by any public servant who belongs to such class or category as may be notified by the state government. Also, such offence is a non-bailable offence.

Section 498A Indian penal code was introduced with the allowed object to combat to menace of dowry deaths and harassment to a woman at the hands of her husband or his relatives. Nevertheless, the provision should not be used as a device to achieve oblique motives as stated in the case of *Onkar Nath Mishra v. state (NCT of Delhi)*, (2008)2 SCC 561.

A complaint may be filed by:

- A) The complaint under section 498 A may be filed by the woman aggrieved by the offence by the offence or by any person related to her by blood, marriage or adoption.

And if there is no such person, then any public servant as notified by the state government in this context.

Period of limitation of complaint under section 498 A:

According to section 468 code of criminal procedure a complaint claiming commission of an offence. Under section 498 A can be filed within 3 years from the commission of the offence.

Section 473 Code of criminal procedure enables the court from taking cognizance in the matter after the period of limitation if the court is satisfied that it is necessary to do so in the interest of justice. Cruelty is the essence of section 498 A it is continuing offence and on each occasion on which the woman was subjected to cruelty, she would have a new starting point of limitation, *Arun Vyas V. Anita Vyas*.

Meaning of cruelty

Cruelty as stated in case of **Haliyaperumal V. state of Tamil nadu**¹ Cruelty is a common essential in offence under both the sections 304 B and 498 A of Indian penal code. The two sections are not mutually inclusive but both are distinct offences and persons acquitted under section 304 B for the offence of dowry death can be convicted for an offence under section 498 A of Indian penal code. The word cruelty is explained under section 498 A.

Section 304 B does not talk about the word cruelty but the meaning of cruelty as stated under section 498 A applies to section 304 B as well.

In case of **Inder Raj Malik V. Sunita Malik**² cruelty is defined in the explanation which inter alia says, harassment of a woman with a view to coerce her or any related persons to meet any unlawful demand for any property or any valuable security is cruelty. Every harassment does not amount to cruelty within the meaning of section 498 A.

Cognizance by court?

¹ 2004 (9) SCC 157; 2004 SCC (cr) 1417; 2003 AIR (SC) 3828.

² 1986(2) crimes 435; 1986 (92) CRLJ 151; 1986 RLR 220.

Any court may not take cognizance on an offence which is punishable under section 498 A. except upon a police report of facts which constitute such offence or upon a complaint made by the person aggrieved by the offence or by her father, mother's brother or sister. The court can also take cognizance if the complaint is made by blood marriage or adaption with courts permission- section 198 A code of criminal procedure.

Essentials of the offence:

For the commission of such offence the following essentials are required to be satisfied.

- 1) The woman must be married.
- 2) She must be subjected to some kind of cruelty or harassment, or
- 3) Such cruelty or harassment must be shown either by husband or relative of the husband of the woman.

Stated under *suvetha v. state* (2009) 6 SCC 757.

But the Act does not state that a woman can blindly make her husband, in-laws and relatives liable for any offence she states against them. Anything stated by the woman must be proved by her and this has been held in the following case:-

Shobha rani v. medhukar reddy

In this case it was held by the hon'ble court that, evidence is required to prove cruelty and if the act is done to harass women or any other person related to her to meet unlawful demands.

Use of section 498 A by Indian courts.

This provision is being used by the Indian courts in order to safeguard the women facing the cruelty at their matrimonial homes. Mostly such cases are related to dowry, wherein the woman is threatened for the want of money and property and in case if it remains unfulfilled, the woman is tortured, threatened, abused both physically and verbally and harassed.

In case of *Ram krishan Jain and ors v. state of Madhya Pradesh*³

Due to insufficiency of dowry demands the woman was administered calmpose tablets and thereafter she even cut the arteries of both her hands. Sometimes, dowry may not be the cause but the woman for several reasons like completion or family status is tortured to death.

***Surajmal Banthia and Anr V. State of west Bengal*⁴**

The deceased was ill-treated and tortured for several days and even not given food several times. Her father in law misbehaved with her quiet often.

And such problems are faced are faced with many young brides once they move out of their parents home into the house of their in-laws.

View of National Commission for Women

The view point of National Commission for Women represented by Member-Secretary placed before the Parliamentary Committee on Petitions (Rajya Sabha) (report presented on 07.09.2011) has been summarized in the report of the Committee as follows: (i) Section 498A, IPC, provisions of the Dowry Prohibition Act 1961 and the Protection of Women from Domestic Violence Act 2005 have an element of commonality and need to be harmonized and uniformly implemented; (ii) Police should in the interest of the protection of the constitutional rights of a citizen ensure that no arrest should be made without a reasonable satisfaction after some investigation as to the genuineness and bonafide of a complaint and the need to effect arrest; (iii) Creation of Mahila Desks at police station and Crime Against Women (CAW) Cell, at least at the district level which would specifically deal the complaints made by women. When a wife moves to file a complaint to a women cell, a lot of persuasion and conciliation is required. The Legal Service Authorities of the States / UTs, National Commission for Women, NGO and social workers should set up a desk in CAW Cell to provide conciliation services to the women so that before the state machinery is set in motion the matter is amicably settled at that every stage; (iv) In case of matrimonial disputes, the first recourse should be effective conciliation and mediation between the warring spouses and their families and recourse of filing charges under Section 498A, IPC may be resorted to in cases where such conciliation fails and there appears a prima facie case of Section 498A of IPC and other related laws; and (v) Counseling mechanism envisaged under the PWDVA should be implemented by State Governments and counseling of parties should be done only by professionally qualified counselors and not by the police. The police may consider empanelling professional counselors with CAW Cells.

STATISTICAL INFORMATION

According to the statistics published by National Crime Records Bureau for the year 2011, 3, 39,902 cases under S-498A were pending trial in various courts at the end of the year and 29,669 cases under S-304-B of IPC.

³ II (200) DMC 628.

⁴State of Maharashtra v. Jaiprakash Krishna Mangaonkar And ors II (2003) DMC 384.

The conviction rate in S-498A cases is 21.2% and in S-304-B cases, it is 35.8%. The number of cases reported under S-498A in the year 2011 is 99,135 and during the two previous years, they were 94,041 and 89,546. Thus, there is a slight increase (about 5%) in the reported cases every year.

As regard to compound ability, the Law Commission has given a comprehensive report (237th Report) under the title of “Compounding of IPC Offences”. The Commission recommended that the offence under Section 498A should be made a compoundable offence with the permission of Court.

In the 154th Report of the Law Commission, there was a recommendation to make the offence compoundable. Justice Mallimath Committee on Criminal Justice Reform also recommended that it should be made compoundable as well as bailable.

View of former Justice KT Thomas –

In his article titled “women and law” he expressed

“whenever a law is made very stringent under the pressure of emotionally surcharged social reaction, there is the danger of its misuse.”

He stated various points in the article I have stated a few of them below-

- After the constitution came into force, Parliament of India introduced various legislative measures to correct gender imbalance.
One of the important measures was towards liberating women from the scourge of the dowry system by introducing dowry prohibition law that was enacted in 1961.
- It is a law in which the burden of proof is on husband and his family to prove he did not commit the offence which means that if there is any accusation of having received or demanded dowry, it was for the accused to prove that he did not do so.

Conclusion

A suitable amendment to Sec 498-A is the imperative need of the hour. The number of false cases is not a material consideration, as even an accused person is harassed, it is sufficient to protect his rights. After all human rights of persons, whether of husband or wife or the relatives of the wife have to be protected. Section 498 A can prove to be a weapon as well as a shield to a woman. It is necessary for the government to ensure that no false cases are filed and rove it to be a balanced act-both for husband and wife. Women’s emancipation is the need if the hour and every measure should be taken to stop harassment and dowry deaths. Also, helpline number for women- 1091. The number can be called by the woman in case of emergency and there is a need for urgent help. Therefore this section is much needed for the society through with certain amendments.

“All the strength and succor you what is within you. Do not be afraid.”

SUGGESTIONS

First of all the victims should know the guidelines issued by the Supreme Court of India for their protection. The guidelines given by the apex court on 2/7/2014 needs to be adhered to strictly. These guidelines may be summarized thus:-

- i) Sec 41 Cr Pc may be circulated with a list of items to be satisfied before the power of arrest is exercised;
- ii) The power of arrest should not be automatically exercised, merely because of FIR being registered;
- iii) The police officers affecting the arrest should furnish all the details as required under Sec 41 to the magistrate explaining the expediency to arrest and the need for further detention to be ordered by the magistrate. The material should satisfy the criteria laid down under Sec 41 Cr Pc.
- iv) The magistrate must apply his mind to the police report before authorizing further detention of the accused persons and record his reasons in writing in support of his order.

The victim (man or his family) can file the case under women under the different section listed below

- Sec 191 of IPC – Giving false evidence
- Sec 192 of IPC – Fabricating false evidence
- Sec 193 of IPC – Punishment for false evidence
- Sec 209 of IPC – Dishonestly making false claim in court
- Sec 211 of IPC – False charge of offence made with intent to injure
- Sec 499 of IPC – Defamation
- Sec 500 of IPC – Punishment for defamation

There should be a body formed that protects and counsels victims and protect their right to livelihood, right to child custody, right to prove their innocence and right to terminate the injurious martial relationship.

NGO’S like 498A.org should be a given governmental support and recognition so that they do their work more effectively and fast.

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- 177th Report of the Law Commission of India relating to Arrest
- Dr. Justice V.S. Malimath Committee Report- Committee on Reforms of Criminal Justice System
- Report of the Committee on Amendments to Criminal Law- headed by Justice J.S Verma



IMPACT OF 'RERA ACT' ON INDIAN REAL ESTATE DEVELOPERS: A STUDY

Abdul Asif Khan* & Prof. (Dr.) Acharya Rishi Ranjan*

Abstract

Real Estate Regulatory Act(RERA) came into force across India on 1ST July 2017. Various state level regulatory authorities were established to regulate the real estate sector of their respective states. RERA covers both existing and new projects under its ambit. The Real Estate Regulatory Authority (RERA) was formed to bring transparency, accountability and efficiency into this sector with the rights and duties of both buyers and developers being clearly defined. This paper envisages to explore the economic impact of RERA on profitability of real estate developers. Income statements from January 2017 to December 2018 are used to gauge the impact of RERA on profit margins of real estate developers. The top 10 real estate developers by market capitalization are considered as the sample for this analysis. After using paired t test for analysis we conclude that thus disruption caused by introduction of regulation in the real estate industry has impacted the profitability of Indian Real Estate developers significantly in the short term.

Keywords: Financial Performance, Real Estate Developers, Real Estate, RERA, Real Estate (Regulation and Development) Act 2016, Profitability, RERA Act 2016

Review of Literature

(Singh, 2009): In her paper titled “Problems and Prospects of Real Estate in India”, she states that the different types of real estate are: Agricultural, Residential and Commercial. She also states that features of real estate market are: Immobility, Heterogeneous, Durability, Bothan investment good and consumption good, long time delays, High transaction costs.

(Jadoun, 2014): In his thesis titled “Financial Analysis of Selected Real Estate Companies”, Jadoun, Sarika found that “In sample Real Estate companies during study period Current Ratio was very high, Quick ratio was high while Cash Ratio was very low. It means overall liquidity position of the sample companies was very sound. He also found that the Difference between current ratio and Quick Ratio was marginal. It means companies were not having much stock at a time. In comparison to current and Quick Ratio Cash Ratio was very low which shows the Cash liquidity was comparatively very low and dues to customers(debtors) was very huge in amount. Except India Bulls Real Gross Profit Margin of all the companies was increasing continuously but Net Profit was decreasing it means revenue of companies is declining continuously due to huge indirect expenses. In few financial years of a few companies Net Profit was higher than Gross Profit Margin due to high volume of non-operating incomes. It means companies have used their additional funds to invest outside business to earn additional income. It seems this policy has been implemented to maintain the soundness of Balance Sheet to raise funds from financial Institutions. Earnings Per share was declining continuously of all the companies as Profit after Interest and Tax is reducing continuously while there was no further issue of Equity share Capital during the study period. Return on Equity Capital was declining continuously of all the companies as Profit after Interest and Tax is reducing while there was no further issue of Equity share Capital during the study period. It is found that the main cause of decreasing Net Profit was that maximum companies are working on high debt Equity Ratio.

It was found that Dividend Pay-out Ratio of maximum companies was very low. It shows companies have retained their earnings for the growth of business during study period. It is a healthy sign for the further growth of the companies. Cash Flow Statement analysis shows very fluctuating net cash inflow from operating activities. The reason is that in the years of launching project companies were receiving huge cash from customers and in subsequent years which are the project completing years using huge amount of cash to complete the projects. Net Cash Inflows from investing activities of all companies in all the years were found negative. It shows all companies have used a huge amount of cash in purchasing fixed assets. Two companies DLF and India Bulls Real are on top in investing huge cash in purchasing fixed assets. Net Cash Inflow from financing Activities were positive in general. It shows maximum companies has raised borrowing more than payment made by them during study period. It results more dependency of companies on debt. In year 2009 and 2012 DLF, 2012 HDIL, 2012 India Bulls Real and 2009

* Research Scholar, Oriental School of Law, Oriental University, Indore MP

* Principle, Oriental School of Law, Oriental University, Indore, Email- ranjanacharyallm@gmail.com

and 2011 SunTek realty were showing negative cash inflow from financing activities which indicates the above companies paid borrowings in concerning years, resulting less dependency on debt capital.”

(CRISIL, 2017): In their research report titled “RERA is all about effective implementation “ they state that “CRISIL Research believes with effective implementation of RERA, the sector is expected to see improved transparency, timely delivery, and organized operations. While the ongoing projects have been given a timeline of three months (May-July 2017) to comply with RERA regulations, the Act does not permit developers to launch new projects before registering them with the RERA authority. This will be a major shift from practices followed currently by developers wherein they manage to sell part of the project through soft-launch/ pre-launch activities. RERA is also expected to put an end to fund diversion, and transform the realty sector into a more organized and trustworthy one, re-instilling the confidence of the end-users towards the market.” CRISIL research also states that “During the procedures, documentation and quarterly disclosures. They may also have to opt for joint ventures with big players to survive in the market, which will eventually remove all the unorganized players in the real estate sector. This, along with the registration and approval costs, are expected to increase the compliance cost for realtors.”

(Das, 2017): In his research report titled “RERA through a magnifying glass “he states that “The implementation of the Act, in its entirety, will have a far-reaching impact on the real estate sector. The Act will be a game changer for the entire sector and will transform the entire paradigm in which the sector operates and the manner in which different stakeholders interact with each other. Implementation of the provisions of the Act will cause some teething troubles in the short term but in the long run, the sector will stand to gain. The Act will require developers to recalibrate their business model so that it complies with the various provisions of the Act. Participation from homebuyers will galvanise the fortunes of the sector and help the cash-strapped developers. The confidence flowing into the sector, from the provisions of the Act, will also rub off on institutional funds and banks, thus enabling them to lend to the sector. The access to funds at competitive rates, which in the present day are pretty high, could lead to rationalisation of prices within the sector thereby making it a win-win situation for all the stakeholders. Most importantly, the Act will ensure that only serious and strong players remain within the sector. Therefore, going forward, a consolidation among players within the sector cannot be ruled out. The success of the new rules of the game will however, lie in having the necessary systems and processes across states so that the act can be implemented in full letter and spirit without causing much distress among the relevant stakeholders.”

(Housing News Desk, 2017): In their article titled “Real estate sentiments turn negative on RERA, GST implementation: FICCI-NAREDCO-Knight Frank India’s sentiment index” they state that “The short-term uncertainty over new policies such as RERA and the GST, have turned real estate sentiments negative for the first time since Q4 2015, according to FICCI-NAREDCO-Knight Frank India’s sentiment index”

(Sharma N. , 2018): In his article titled: “Developers to focus on ramping up systems for RERA compliance” he states that “Over the years, real estate sector has been characterised by myriad unstructured practices, which has given a very different perception of the sector to the larger stakeholders of the economy. These practices have led to increase in the number of litigations, marked with worsening customer sentiments as seen in the recent times.”

(Sharma A. , 2018): In his article titled “Over 40% developers have no formal process in place to comply with RERA: Survey” he states that “About 45 per cent developers across India have no formal process in place to manage compliance mechanism of RERA while 44 per cent have made some modifications to their MIS (Management Information System), a recent survey by FICCI and Grant Thornton Advisory has revealed.”

(Dash, 2018): In his article titled “20,000 projects under Rera so far” he states that “Around 20,000 real estate projects have been registered across India under the Real Estate Regulation Act (Rera), according to the housing and urban affairs ministry.” (Housing News Desk, 2018): In their article titled “What is RERA and how will it impact the real estate industry and home buyers?” they state that “Impact of RERA on real estate industry will be Initial backlog, Increased project cost, Tight liquidity, Rise in cost of capital, Consolidation, Increase in project launch time.”

(Shenoy, 2018): In his article titled “RERA’s conciliation tool brings hope to common man”, he states “Before the Real Estate (Regulation And Development) Act, 2016 (RERA) came into effect the affected buyers of real estates could only approach the civil courts, criminal courts or consumer forums under the provisions of the Maharashtra Ownership of Flats Act (MOFA) or the Consumer Protection Act, 1986.”

Limitations of Study

This study is able to gauge only the short term impact of RERA on real estate developers due to nonavailability of data. Also, data shall be collected from listed public real estate developers since their accounting methods are

most transparent and they will comply to the maximum extent with the provisions of RERA. Impact of inflation on income statements has been ignored.

Introduction

Real estate can be defined generally as space delineated by man, relative to a fixed geography, intended to contain an activity for a specific period of time. 1 Real estate can be classified as: Residential new houses and existing houses for resale, Commercial shopping centres and offices, Industrial and manufacturing buildings and property and vacant land and farms. In simple words we can say that a person having any one of the above property is called a Real estate owner. Real estate is a property consisting of land and the buildings on it, along with its natural resources such as crops, minerals, or water; immovable property of this nature; an interest vested in this; (also) an item of real property; (more generally) buildings or housing in general.² Real estate sector, which has forward and backward linkages with more than 250 different sectors, is the second largest employment generator in India after agriculture. The sector correlation with GDP is high at 0.78x (every INR1 invested in the sector directly adds INR0.78 to the GDP) and there is significant room for improvement, as real estate sector correlation in other large economies (such as China, the U.S., the U.K., Germany, Spain) is at least 0.9x. According to the Economic Survey 2015-16, the real estate sector constituted 7.4 per cent of India's GDP in 2014-15.³ Before the introduction of The Real Estate (Regulation and Development) Act, 2016⁴, Indian real estate customers had little legal recourse and consumer protection was offered to them under various acts such as: The Indian Contract Act, 1872; The Consumer Protection Act, 1986. Indian consumers had to approach various authorities such as, Consumer Courts and Civil courts, to get their grievances addressed.

Before the passage of the act, no single regulatory authority existed for regulation of real estate sector and buyers were facing problems like timely delivery of projects, possession not being handed over by the developer, high rate of interest being charged on late payments, multiple bookings for the same property, misselling of projects etc. The developers were facing issues like delay in construction permits, late payments by homeowners and operations in a non-transparent environment. The Real Estate Regulatory Authority (RERA) was formed to bring transparency, accountability and efficiency into this sector with the rights and duties of both buyers and developers being clearly defined. This research aims to evaluate the short term impact of Real Estate (Regulation and Development) Act, 2016 on the real estate developers.

Study of RERA Act

No promoter is allowed to advertise, market, book, sell or offer for sale, or invite persons to purchase in any manner any plot, apartment or building in any real estate project or part of it, in any planning area, without registering the project with the RERA. The advertisement or prospectus issued or published by the promoter shall mention prominently the website address of the Authority and the registration number obtained from the Authority. Where any allottee sustains any loss or damage by reason of any incorrect, false statement included therein, he shall be compensated by the promoter in the manner as provided under this Act. The entire investment along with interest and compensation shall be returned to allottee if he intends to withdraw from project.

The promoter shall make an application to the Authority for registration of the project within a period of three months from the date of commencement of this Act for ongoing projects and whose completion certificate is not issued. No registration of the real estate project required where; a. The area of land proposed to be developed does not exceed 500 square meters or the number of apartments proposed does not exceed eight inclusive of all phases. b. The promoter has received completion certificate for a real estate project prior to commencement of this Act; c. For the purpose of renovation or repair or redevelopment which does not involve marketing, advertising selling or new allotment of any apartment, plot or building, under the real estate project. Act specifies the list of documents and drawings which the promoter has to submit for Registration.

The promoter shall create his web page on the RERA website and enter all details of the proposed project in all the fields as provided, for public viewing, including—

1. details of the registration granted by the Authority
2. quarterly up-to-date the list of number and types of apartments or plots booked, garages booked, approvals taken and pending subsequent to commencement certificate and status of the project;
3. such other information and documents as may be specified. It is the right of Allottee to get all the above information from time to time. He is responsible for all obligations, responsibilities and functions till the conveyance of all the apartments, plots or buildings. With respect to the structural defect or any other defect continue even after the conveyance deed, its promoter's responsibility to execute. Responsibility of promoter-
 1. To obtain the completion certificate or the occupancy certificate, or both.
 2. To obtain the lease certificate, where project is developed on a leasehold land.

3. For providing and maintaining the essential services, on reasonable charges, till the taking over of the maintenance of the project by the association of the allottees.

4. Enable the formation of an association or society or co-operative society or federation of the allottees, under the laws applicable.

5. Execute a registered conveyance deed in favour of the allottee.

6. Pay all outgoings until he transfers the physical possession of the project to the allottee or the associations of allottees. Revised carpet area definition Carpet area means net usable floor area of an apartment, excluding the area covered by the external walls, area under services shafts, exclusive balcony or verandah area and exclusive open terrace area but including the area covered by the internal partitions walls of the apartment.

Advantages:

1. This act is beneficial for the builders with a high budget.
2. It is also beneficial for the middle class people. Due to this act builders are mandatorily bound to include the technical and professional people. All the possible ways of corruption are totally altered.
3. Corruption between the agents and the builders could be stopped to a greater extent. The Stamp duty in form of taxes could be recovered. This process is highly transparent.
4. Transparency: It brings total clarity in favour of customers, Promoters, dealers, agents, builders it must provide accurate disclosures, registration number on the website also on the advertisement along with the allotment letters, payment modes and amount to be paid through electronic medium. It is a possible way to alter the corruption between agents and builders. Buyers can obtain the taxes with stamp duty on the form.
5. Mandatory registration: Builders must register with the housing regulatory projects and submit all the details of project to the state government authority. Any development of apartment or building can be judged through the mentioned details in future.
6. Should not have any misleading claims: A written affidavit should be given mentioning the time frame of the projects to be delivered. In case of delay in possession, return of amount and compensation, no deposit in advance any such obligation took care by this act.
7. Money handling: Builders have to deposit 70% of the buyer's amount in an escrow A/c to avoid diversion of money. This process is highly transparent to retain the benefits to the buyers.
8. Warranty: RERA will provide 5 year warranty for structural defects such as electric fittings, tap leakage etc. It helps to maintain the interiors for a time period. It reduces the ambiguity from the buyers to pay extra expenses on such issues.

Disadvantages:

1. The timelines of approvals by regulatory authorities have not been defined. Any delay in approvals from regulatory authorities could impact buyers as well.
2. The Bill may lead to slightly higher prices of properties due to the reduced competition.
3. New project launches might be limited as developers may not be able to launch without obtaining approvals, which could take two to three years.
4. Hike in property price: Due to various extrinsic and intrinsic factors in the sector it leads to lack of cash, builders have to look for other sources for money thus, leading to rise in the price of the property. This variation affects to demand and supply condition in this sector.
5. Stagnant growth: Due to 70% investment in escrow account there will be cash flow hindrances leading to delay in projects. This step is taken to stop the developer from diverting their mind repeatedly to new projects and complete the running project.
6. Supply-demand imbalance: Compliance to all the aspects will delay the project and as there won't be preselling of the property. Big builders can develop two to three project within 2 years it will lack economies imbalance due to the project duration and small builders cannot able to earn money with lack of techniques and resources.
7. Strong penalty: If a builder fails to fulfil any provision, he will be liable for imprisonment up to 3 years or 10% of the total cost of the project. This situation put the buyer in trouble and keep them away from their houses till the matter get solved. This creates stress in their lives and badly effect on their financial crisis.
8. No cover on rental: RERA doesn't include any rental agreements it totally depends upon the buyer to maintain the rental agreement which denotes the agreed and disagreed part clearly to save the property and make a proper use of it.

Future Scope:

Few sections of this act should be revised in future considering customer's as well as builder's or developer's convenience.

Current RERA Issues in India:**Mumbai:**

The government is planning to bring tenanted or cessed buildings and tenants of such buildings under the Real Estate (Regulation & Development) Act, 2016 (RERA), providing for the first time the same protection to these consumers as those available to other home buyers. The tenanted or cessed buildings that dot the landscape of many cities, especially Mumbai, house people who have been living for several decades and paying cheap and artificially depressed prices. Known as the Pagdi system in Mumbai, tenants are not covered under the authority. MUMBAI: The appellate tribunal of MahaRERA has asked the secretary of the regulatory body to initiate action against an architect for issuing factually incorrect certificate to a project. While hearing an appeal, the tribunal found out that a builder during a hearing in MahaRERA had said that building has occupation certificate. However, it was found by the tribunal that the amenities, lift, staircases and other Facilities were yet to be completed. The Maharashtra Real Estate Regulatory Authority (MahaRERA) has asked various planning authorities in the state to act against 293 real-estate projects that are being developed without requisite permissions, said a top official of the authority. Interestingly, the regulator has gathered information about these projects through emails sent by various people on a specific email id floated to find out about projects that need registration but have not been registered.

New Delhi:

Magic bricks reports says Around 74 per cent home buyers in India are unaware about the online process to check a realty about the project's status under the Real Estate Regulatory Act, also respondent does not know whether the projects are registered or not on the website. Respondents lack with all the necessary information with regards to carpet area, payment modes, registration number of the builder etc. Many projects were due to register on websites also to mention flyers to Showcase the exact details of the builders.

Conclusions

Though the act is very new, it is accepted very easily by the seller and buyers. A very positive impact is expected in the future as the act becomes more intact. Amendments are still going on. It is very early to study the results of this act in terms of both the parties. Single window system plays an important role in the success of the RERA Act.

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A STUDY ON CHILD SEX ABUSE IN INDIA

Varsha Dhiman* & Prof. (Dr.) Acharya Rishi Ranjan*

Abstract

India is home to 430 million children, roughly one in five of all children (individuals under age 18) in the world. From the moment they are born, the challenges many of them face are staggering.⁴ At least 1.7 million children die before the age of five every year in India.⁵ Malnutrition means that almost half of those that survive are stunted, and 43 percent are underweight.⁶ The right to education is enshrined in the Indian constitution,⁷ but, though the situation is improving, there were still 8.1 million out-of-school children in mid-2009.⁸ The government estimates that 40 percent of India's children are vulnerable to threats such as trafficking, homelessness, forced labor, drug abuse, and crime, and are in need of protection.⁹ More than half of the country's married women were wed before the legal age of 18.¹⁰ Currently, only about 60 percent of births in India are even registered.¹¹ In 2007 the government published its first ever survey to address what the then minister of women and child development, Renuka Chowdhury, described as the "conspiracy of silence" surrounding child sexual abuse.¹² The report uncovered some alarming statistics, though, as explained below, the report methodology was limited and the numbers should be taken more as an indication of the seriousness of the problem than a reflection of the actual incidence of abuse.¹³ Of the children interviewed, more than half (53 percent) said that they had been subjected to one or more forms of sexual abuse. Over 20 percent of those interviewed said they were subjected to severe forms of abuse, defined in the report as "sexual assault, making the child fondle private parts, making the child exhibit private body parts and being photographed in the nude." Of those who said they were sexually abused, 57 percent were boys.

Keywords: Child Abuse, Human Rights, Sexual Abuse, Fundamental Rights, Fundamental Duty.

Introduction

Child abuse is a state of emotional, physical, economic and sexual maltreatment meted out to a person below the age of eighteen and is a globally prevalent phenomenon. However, in India, as in many other countries, there has been no understanding of the extent, magnitude and trends of the problem. The growing complexities of life and the dramatic changes brought about by socio-economic transitions in India have played a major role in increasing the vulnerability of children to various and newer forms of abuse. Child abuse has serious physical and psycho-social consequences which adversely affect the health and overall well-being of a child. According to WHO: "Child abuse or maltreatment constitutes all forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation, resulting in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power."¹

Child abuse is a violation of the basic human rights of a child and is an outcome of a set of inter-related familial, social, psychological and economic factors. The problem of child abuse and human rights violations is one of the most critical matters on the international human rights agenda. In the Indian context, acceptance of child rights as primary inviolable rights is fairly recent, as is the universal understanding of it. The National Study on Child Abuse undertaken by the Ministry of Women and Child Development, Government of India, in 2005, attempts to understand the extent of the problem, its dimensions as well as

Its intensity in addition, it examines two aspects:

- (a) Strategies to address the problem of child abuse
- (b) Identification of areas of further research, based on the findings of the study.

Definition of child abuse

The term 'Child Abuse' may have different connotations in different cultural milieu and socio-economic situations. A universal definition of child abuse in the Indian context does not exist and has yet to be defined. According to WHO²:

Physical Abuse: Physical abuse is the inflicting of physical injury upon a child. This may include burning, hitting, punching, shaking, kicking, beating or otherwise harming a child. The parent or caretaker may not have

* Research Scholar, Oriental School of Law, Oriental University, Indore MP

* Principle, Oriental School of Law, Oriental University, Indore, Email- ranjanacharyallm@gmail.com

intended to hurt the child. It may, however, be the result of over-discipline or physical punishment that is inappropriate to the child's age.

Sexual Abuse: Sexual abuse is inappropriate sexual behavior with a child. It includes fondling a child's genitals, making the child fondle the adult's genitals, intercourse, incest, rape, sodomy, exhibitionism and sexual exploitation. To be considered 'child abuse', these acts have to be committed by a person responsible for the care of a child (for example a baby-sitter, a parent, or a daycare provider), or related to the child. If a stranger commits these acts, it would be considered sexual assault and handled solely by the police and criminal courts.

Emotional Abuse: Emotional abuse is also known as verbal abuse, mental abuse, and psychological maltreatment. It includes acts or the failures to act by parents or caretakers that have caused or could cause, serious behavioral, cognitive, emotional, or mental trauma. This can include parents/caretakers using extreme and/or bizarre forms of punishment, such as confinement in a closet or dark room or being tied to a chair for long periods of time or threatening or terrorizing a child. Less severe acts, but no less damaging, are belittling or rejecting treatment, using derogatory terms to describe the child, habitual tendency to blame the child or make him/her a scapegoat.

Neglect: It is the failure to provide for the child's basic needs. Neglect can be physical, educational, or emotional. Physical neglect can include not providing adequate food or clothing, appropriate medical care, supervision, or proper weather protection (heat or cold). It may include abandonment. Educational neglect includes failure to provide appropriate schooling or special educational needs, allowing excessive truancies. Psychological neglect includes the lack of any emotional support and love, never attending to the child, substance abuse including allowing the child to participate in drug and alcohol use. Adolescence is one of the most fascinating periods of human life that makes the transition from being a dependent child to an independently functioning adult. The expression of sexuality becomes a point of grave concern during adolescence because it is a period of transition as well as personal development, during which an adolescent must establish a sense of individual identity and feeling of self worth (Erikson, 1963).

Major internal and external changes like changes in the body size and proportions maturity of sex organs and appearance of secondary sexual characteristics develop during adolescence. This change will lead doubts, confusions and curiosities. Now a day's adolescent girl faces many problems in India. One of them is sexual abuse. Sexual abuse is the forcing of undesired sexual behavior one person upon another. When that force is immediate, of short duration, or frequent, is called sexual assault. The offender is referred to as a sexual abuser or (often pejoratively) molester. The term also covers any behavior by any adult towards a child to stimulate either the adult or child or child sexually. When the victim is younger than the age of consent, is referred to as child sexual abuse.

Sexual abuse is unwanted sexual activity, with perpetrators using force, making threats or taking advantage of victims not able to give consent. Most victims and perpetrators know each other. Immediate reactions to sexual abuse include shock, fear or disbelief. Long-term symptoms include anxiety, fear or post-traumatic stress disorder. While efforts to treat sex offenders remain unpromising, psychological interventions for survivors — especially group therapy — appears effective.

Sexual abuse, also referred to as **molestation**, is forcing undesired sexual behavior by one person upon another. When that force is immediate, of short duration, or infrequent, it is called sexual assault. The offender is referred to as a sexual abuser or (often pejoratively) molester. The term also covers *any* behavior by *any* adult towards a child to stimulate either the adult or child sexually. When the victim is younger than the age of consent, it is referred to as child sexual abuse. **sexual abuse** (also referred to as **molestation**) is a general term used defined as the forcing of undesired sexual acts by one person to another.

People with developmental disabilities are often victims of sexual abuse. According to research, people with disabilities are at a greater risk for victimization of sexual assault or sexual abuse because of lack of understanding (Sobsey & Varnhagen, 1989). The rate of sexual abuse happening to people with disabilities is shocking, yet most of these cases will go unnoticed.

Sexual abuse is a big issue in some minority communities. In 2007, a number of Hispanic victims were included in the settlement of a massive sexual abuse case involving the Los Angeles archdiocese of the Catholic Church. To address the issue of sexual abuse in the African-American community, the prestigious Leeway Foundation¹ sponsored a grant to develop www.blacksurvivors.org, a national online support group and resource center for African-American sexual abuse survivors. The non-profit group was founded in 2008 by Sylvia Coleman, an African-American sexual abuse survivor and national sexual abuse prevention expert.

It is important to remember that these are general categories of sex crimes and may be defined in different ways and called by different terms varying by jurisdiction. Different types of sexual abuse involve:

- Non-consensual, forced physical sexual behavior such as rape or sexual assault

- Psychological forms of abuse, such as sexual harassment, stalking, human trafficking, and indecent exposure and the targets of exhibitionism, especially children.
- The use of a position of trust for sexual purposes, which includes some forms of pedophilia and pederasty, sexual assault, and incest

Sexual Abuses of women in workplace in India

About 40-60 per cent of women in the city face harassment at their work place. And it's none other than the Hyderabad police department itself that substantiates this claim.

Worse still, most of these cases end up being "internally closed" by managements concerned, authorities say, much like what Tehelka allegedly intended to do initially in the now burning sexual assault case against its founder-editor Tarun Tejpal.

To add insult to injury, several prominent government and corporate offices in Hyderabad still have no internal complaints committees, despite it being made mandatory under the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013.

"It is true that most management, for the fear of their reputation taking a beating, attempt to resolve these matters internally," said city police commissioner Anurag Sharma, reiterating this worrisome trend that he claims, often deter his men from acting on such cases.

"But whenever we are alerted, we try and address it at the earliest," he added. Incidentally, things have remained the same in Hyderabad over the past two decades, or so it seems, from a closer look at some of the most widely reported sexual harassment cases that occurred between 1994 and 2012, women activists say.

Take for instance the M Sailaja Suman case. In 1994, this Doordarshan employee, as was reported across the media, filed a sexual harassment case against the organization's director P L Chawla. Result? Suman was transferred to Lucknow. While she has now returned as director of Doordarshan Kendra, Hyderabad, and has even gone on record to say that she has no hard feelings anymore, the fact remains that the voice of the 'victim' went unheard then.

In a more gruesome repeat of sorts, a young practicing lawyer, Sangeeta Sharma, committed suicide in 2000. Newspaper reports suggested that her suicide note directly held three lawyers responsible for her death. It said, the trio, one among them a man of repute, had sexually harassed her that eventually forced her to take the extreme step.

Social groups, the National Commission for Women (NCW) and the public did all they could to seek justice for Sharma, but none yielded any result. The men went scot-free. Cut to 2012. A senior IAS officer, V S Bhaskar, faced similar charges -- of allegedly sexually abusing an IRS officer, S Padmaja, under the influence of alcohol. While his office immediately issued him a transfer order (no, he wasn't fired), Bhaskar challenged it in a court of law. Newspaper reports that appeared thereafter claimed that the lady officer was asked to proceed on a six-month leave by the department, while Bhaskar was repatriated to The Maharashtra cadre.

"Clearly, there has been no dip in the misdemeanor of men in all these years. There is still no difference between the man on the street and the man in the Supreme Court," said Kalpana Kannabiran, eminent sociologist and founder member of Asmita Resource Centre for Women. The group fought tooth and nail in the Sangeeta Sharma case.

On the brighter side, she added that women today have becoming very vocal and forthright. "Like in the Delhi case, women are now willing to go public with these cases. They are willing to testify. This is a welcome change," Kannabiran said.

But for those like Kondaveeti Satyavati, chief functionary of the Bhumika Women's Collective Organization, it is only the constitution of an internal complaints committee in all offices (public and private) that'll eventually make a difference.

Abusers and Victims

Perpetrators:

Contrary to the myth that most perpetrators are strangers, children typically know and trust their perpetrator. Male perpetrate the majority (80–95%) of sexual abuse, though there are certainly some cases in which female offenders victimize male or female children. Girls are more likely to be sexually abused by someone within their family.

Potential victims

Such as parent, stepparent, grandparent, uncle, cousin, or sibling, while boys are more likely to be sexually abused by someone outside of the family, such as a coach, teacher, neighbor, or babysitter. Adults, adolescents, and even prepubescent children may perpetrate sexual abuse. Unlike other forms of child maltreatment, sexual abuse by

definition does not have to involve a parent or caregiver. The Internet is the newest medium that offenders have begun using to reach vulnerable children. A recent study surveying youths 10–17 years old found that 20% of those participants who regularly used the Internet (at least once a month) had received unwanted sexual solicitations and approaches in the last year. In some instances, the solicitor to gain further access to the minor by phone, mail, or in-person meetings.

While there is no typical child victim, it is possible to make some assumptions about risk factors for being sexually abused. More girls than boys are sexually abused, although it is believed that boys are less likely to report their abuse than girls. Children who are emotionally needy because of family problems, poor parental supervision, and low self-esteem may be most vulnerable to sexual abuse because offenders deliberately target children who are responsive to their attention. Thus, force is frequently not needed. In some cases in which force, threats, or use of strength are involved, the offender is more commonly an adolescent.

Signs and Symptoms of Sexual Abuse

Sexual abuse often does not result in lasting physical injuries or produce clear observable evidence; however, it can be associated with various psychological and behavioral problems well into adulthood. There is no single child abuse syndrome or single response pattern for children who have been sexually abused.

Factors that influence a child's response include age, severity and duration, invasiveness of the acts, relationship to the perpetrator, and the support and reactions from others. Some of the signs and symptoms of sexual abuse may seem subtle and less likely to be related to sexual abuse. The following symptoms are indicators of possible abuse. The psychological and behavioral responses listed are not unique to victims of child maltreatment, but might also be indicative of Attention Deficit Hyperactivity Disorder, Oppositional Defiant Disorder, or Bipolar Mood Disorders. Parents and educators should use these indicators to prompt them to consider the possibility that a child has been sexually abused and remain open to additional confirming or disconfirming information. Sensitive parents and educators can pick up important clues by observing children, remembering that it is often a cluster of indicators or history of symptom presentation that make up an abuse composite. Some of the immediate and long-term consequences a child might experience as a result of being sexually abused include:

Health and Physical Consequences

- Pregnancy, especially in early adolescence
- Sexually transmitted diseases
- Difficulty walking, sitting, or standing
- Torn, stained, or bloody underclothing
- Vaginal/penile discharge
- Pain during urination or urinary tract infections
- Bruises on the child's mouth, to the hard or soft palate
- Sleep disturbances (difficulty sleeping, nightmares)
- Enuresis or encopresis
- Self-injurious behavior (cutting, burning oneself, suicide attempts)

Cognitive Development and Academic Achievement

- Age-inappropriate sexual knowledge
- Sexually explicit drawings (not open to interpretation)
- Sudden changes in academic performance
- Refusal to participate in certain activities (dressing for gym)
- Difficulty concentrating

Emotional, Psychosocial, and Behavioral Development

- Sexualized play (frequent sexual themes with toys or other children)
- Frequent touching of genitals or masturbation
- Inappropriate sexual expression with adults (frequent hugging of a female teacher that produces arousal)
- Aggressive sexual behavior with use of force or verbal threats
- Socially isolated or withdrawn
- Extreme fear reactions
- Dependent or clingy behavior
- Poor social skills
- Substance abuse or delinquency, especially in adolescents
- Difficulty trusting others

- Fire setting
- Cruelty to animals
- Running away

Preventing Sexual Abuse

- Know the signs and symptoms of sexual abuse so that you might recognize a child who is being harmed.
- Be willing to report suspicions. Remember, it is not your job to prove that sexual abuse has occurred, and your report might keep a child from further harm. Offer ongoing communication about sexual touching and other topics to create trusting relationships with children.
- Teach children self-protection skills that they have the right to say no or stop and to tell an adult and keep telling the adult until they are believed.
- Support community and school programs to prevent abuse

Types of sexual abuse

There are many types of sexual abuse, including:

- Non –consensual, forced physical sexual behavior (rape and sexual assault).
- Unwanted touching, either of a child or an adult.
- Sexual kissing, fondling, exposure of genitalia, and voyeurism, exhibitionism and up to sexual assault.
- Exposing a child to pornography.
- Saying sexually suggestive statements towards a child (child molestation)
- Also applies to non –consensual verbal sexual demands towards an adult.
- The use of a position of trust to compel otherwise unwanted sexual activity without physical force (or can lead to attempted rape or sexual assault)
- Incest (sexual deviancy).

Statistics from the mid- 1990s indicate that although girl abuse is found at all levels income and educational achievements in the united states, children born into poor families are 12 times as like to be abused as the children of middle- class or wealthy families, without regard to race or ethnic background. About 25% of children who are abused or neglected are younger than two years of age. Both sexes are equally affected. As of 2000, between 1, 000 and 1,200 children die each year in United States as the result of physical abuse. Of those who survive, 20% suffer permanent physical injury. Girls who suffer from birth defects, developed delays, or chronic illness have a higher risk of being abused by parents or other caregivers.

Causes of sexual abuse

The causes of interpersonal abuses are complex and overlapping. Some of the most important factors are:

Substance abuse: Alcohol and mood-altering drugs do not cause abuse directly, but they weaken or remove a person's inhibitions against violence toward others. In addition, the cost of a drug habit often gives a substance addict another reason for resenting the needs of the dependent person. Majority of workplace bullies are substance addicts.

Mental disorders: Depression, personality disorders, dissociative disorders, and anxiety disorders can all affect parent's ability to care for their children appropriately. A small percentage of abusive parents or spouses are psychotic.

Ignorance of development timetables: some parents have unrealistic expectations of children in case of appropriate age for toilet training, feeding themselves, and similar milestones, and attack their children for not meeting these expectations.

Lack of social support or social resources: Caregivers who have the support of an extended family, religious group, or close friends and neighbors are less likely to lose their self control under stress.

Belief systems: many men still think that they have a "right" to a relationship with a woman; and many people regard parent's rights over children as absolute.

Mass media influences: sexual abuse is reinforced by audio –visual images of gender relationship of mass media, especially cinema. Sexual abuse has got nothing to do with sexual attraction genuine expression of love, affection, or consensual flirting. Sexual compliments, touching, comments, etc are presented in Indian films as a mean of convince to a boy's love.

Early learning experiences: This factor is sometime described as the "life cycle" of abuse. many abusive parents were themselves abused as children and have learned to see hurtful behavior abnormal child rearing. At the other end of the lifecycle, some adults who abuse their elderly parent are paying back the parent for abusing them in their early years.

There is not any single fact which causes sexual abuse; abuse usually occurs in families where there is a combination of risk factors. Abuse and neglect occur most often in families who are under pressure and lack support. Most abuse other than sexual abuse occurs in families to which some, or all, of the following apply:

- Poverty
- Lack of education
- Serious marital problems
- Frequent changes of addresses
- Violence between family members
- Lack of support from the extended family
- Loneliness and social isolation
- Unemployment
- Inadequate housing

In some cases the abuser may also display the following:

- Very high expectations of the child and what the child should achieve
- The parent may have been abused as a child
- A lack of knowledge and skills in bringing up children
- Low self esteem and self confidence
- Depression
- Alcohol and/or drug abuse
- Mental or physical ill health
- Work pressures

Certain community attitudes may encourage child abuse. These include:

- Acceptance of the use of violence and force
- Acceptance of physical punishment of children
- Acceptance of parents "ownership" of children and their right to treat children as they see fit
- Racism
- Inequality between men and women

AFTER EFFECTS

Sexual abuse affects all dimensions of human development and existence.

Physical and neurobiological:

In addition to such direct results of trauma a broken bones or ruptured internal organs, physically children often display retarded physical growth and poor coordination. malnutrition may slow the development of the brain as well as produce such dietary deficiency diseases as rickets in both children and adults ,repeated trauma produces change in the neurochemistry of the brain that effect the memory formation instead of memories being formed in the normal way, which allows them to be modified by later experiences and integrated into the person's ongoing life, traumatic memories are stored as chaotic fragments of emotions and sensation that are sealed off from ordinary consciousness. These traumatic memories may then erupt from time to time in the form of flashbacks.

Cognitive and emotional:

Abused children develop distorted patterns of cognition (knowing) because they are stressed emotionally by abuse. As adults, they may suffer from cognitive distortions that make it hard for them to distinguish between normal occurrences and abnormal ones, or between important matters and relatively trivial ones. They often misinterpret other people's behavior and refuse to trust them. Emotional distortions include such patterns as being unable to handle strong feelings, or being unusually tolerant of behavior from others that most people would protest.

Social and educational

The cognitive and emotional after effects of abuse have a powerful impact on adult educational, social, and occupational functioning. Children who are abused are often in physical and emotional pain at school; they cannot concentrate on school work, and consequently fall behind in their grades. They often find it hard to make or keep friends, and may be victimized by bullies themselves. In adult life, abuse survivors are at risk of repeating childhood patterns through forming relationships with abusive spouses, employers, or professionals. Even though a survivor may consciously want to avoid re-abuse, the individual is often unconsciously attracted to people who remind him or her of the family origin. Abused adults are also likely to fail to complete their education, or they accept employment that is significantly below their actual level of ability.

ADOLESCENCE AND THEIR ATTITUDE

Sexual abuse is not new phenomenon. It has been on for decades. It was only in the late 70s that unwanted attention of this kind named. There is no list of behavior gestures, words or literature that can be constituted as sexual abuse. Sexual abuse can be directed at one person or at a group of people, or it can have both a direct and indirect effect on a person or a group of people.

According to campus survey on sexual abuse (social welfare) some of the general myths on sexual abuse of adolescent girls are given below.

- No really doesn't mean no.
- Nice girls don't get raped.
- She asked for it.
- Children make up stories about rape.
- The victim is at fault for allowing sexual abuse to continue.
- Most assaults are by strangers.
- The best way to recover from the assault is not to talk about it and act like it never happened happen.
- Attractive women are provocative and / or promiscuous.
- All men can defend themselves.

Adolescent girl's reaction to the sexual abuse

Boys and girls are victims; although the exact numbers are unclear boys in particular are reluctant to disclose abuse. Indeed because of social stigma and shame attached to the victims, sexual offences remain one of the most misunderstood and under reported crime. Offenders of abuses are both men and women instead of that more are men. They come from very class, creed, race and profession. There are two group offenders those that abuse within family setting and those that molest of the cases offenders are known to and those that most of the cases offenders are known to and close to the victim. Therefore addressing the problem is a major challenge. Majority wanted to keep the incident as secret. There are various reasons for least reporting of sexual offences as:

- a) Fear being accused of participation
- b) The fear being accused of provocation (what were you or wearing that provoked him)
- c) The fear of being accused of irresponsibility (why were you not at home were you belong)
- d) The desire of parents to prevent publicity and further or deal or emotional injury to their child.
- e) The experience of shame or a desire to protect her reputation.
- f) Fear of retaliation by the offender or his friends .
- g) Fear of loved one's reactions.
- h) A style of life or set of circumstances which may render her story suspect.
- i) Sentimental ideological notion (such as no one should be prison)
- j) Fear of police procedure appearing in court etc

THE THEORIES RELATED TO SEXUAL ABUSE

Why men sexually abuse children has been one of the foremost questions guiding research on sexually deviant behavior in the twentieth century. As with most forms of deviant behavior, there are various explanations as to the etiology and maintenance of sexual offending. Within the specialist literature, biological, psychological and sociological theories have been designed to explain the onset of deviant sexual fantasies and behavior.

Biological theory Concerned with organic explanations of human behavior; psychological factors (e.g. hormone levels, chromosomal makeup) have an effect of sexual behavior; androgens promote sexual arousal, orgasm, and ejaculation, as was regulate sexuality, aggression, cognition, emotion and personality; abnormal levels of androgens lead to aggressive sexual behavior.

Psychodynamic theory sexual deviance is an expression of the unresolved problems experienced during the stages of development; the human psyche is composed of three primary elements: there, the ego and the superego; sexual deviancy occurs when the id (pleasure principle) is overactive.

Behavioral therapy Deviant sexual behavior is a learned condition, acquired and maintained through basic conditioning principles.

Attachment theory Human has a propensity to establish strong emotional bon with others, and when individuals have some loss or emotional distress, they act out as a result of their loneliness and isolation.

Cognitive behavioral theory addresses the way in which offenders thoughts affect their behavior; focuses on the way in which sex offenders diminish their feelings of guilt and shame by rationalizing it through excuses and justifications.

Integrated theory There are preconditions to child sexual abuse, which integrate the various theories about why individuals begin to participate in sexually deviant behavior; focus is on the inhibitions of the offenders (internal barriers) and how these barriers are diminished distorted thoughts can lead to deviant action.

In a culture, which places too much importance on female sanctity where girls are meant to portray sati Savitri and Lakshmi rolled in one the despaired and trauma of an abused girl is a harsh reality. But the problem is that the adolescent girls are not aware about the abuse. Majority of our girls thinks that 'rape' is the real abuse.

"Sexual abuse is the act/ behavior that is intended to hurt or embarrass the victim through various forms of verbal communication as a sexual attention that acts to pressurize or make the object of such attention comply with the aggressor's wishes "sexual abuse can be forced physical sexual behavior, rape, sexual kissing, fondling exposure of genital and voyeurism, exhibitionism and up to sexual assault, pornography, incest, sexual harassment. Adolescent girls have attitude like there is no one list of behavior gesture words or literature that can be constituted as sexual abuse. What is acceptable to one person may not be acceptable to another. everyone has different thresholds on matter of personal, touching, dirty jokes etc. and these have to be taken in to consideration women's dressing provocation can be sexually harassed and legally adolescent girls are unaware of the punishment under the section 354, section 375, section 376, section 377, section 228(a). Sexual abuse is not a problem of any particular country but it's a rapidly increasing problem.

According to a study conducted by U N population fund titled "international statistics on child sexual abuse, at least 2 out of 4 girls are victims of sexual abuse". A survey conducted by an NGO samavad among 348 girls student on this issue reveals that 83% of the respondents had experienced physical eve teasing 13% of them when they were less than 10 year old. 47% of the respondents have been molested experienced serious forms of sexual abuse including rape 31% then were less than 10 year old. Disclosure had been made by 86% of those who are teased 67% of those seriously abused increases with the tendency of self blame by the victim. Among them 22% of that eve teased, 37% of those molested and 50% of those seriously abused, felt self blame. Even the knowledge or awareness highly provided about the sexual abuse. Although the previous figures are alarming it does not present the actual gloomy pictures because many cases go unreported or sometime unregistered police. The social stigma and share attached to adolescent girls and their family member's causes the abuse offences to grow more and more. Here majority of the population keeping a negative attitude towards sexual abuse. A girl's dressing, body language, family background, socialization, education etc.. Many of us will agree with this statement. But the reality is very controversial. And attitude towards an offender is very different. offenders of the abuses are both men and women out of that more offenders are men. They come from every class, creed, race and profession. There are two group offenders are known to and those that most of the cases offenders are known to and close to the victim.

Historically, child sexual abuse (CSA) has been a hidden problem in India, largely ignored in public discourse and by the criminal justice system. Until recently, CSA was not acknowledged as a criminal offence; rape was the main, if not the only, specific sexual offence against children recognised by law in India. In the absence of specific legislation, a range of offensive behaviours such as child sexual assault (not amounting to rape), harassment, and exploitation for pornography were never legally sanctioned. In the past few years activists, Non-Governmental Organisations (NGOs) and the central government's Ministry of Women and Child Development have actively engaged in helping break 'the conspiracy of silence' (HRW 2013) and have generated substantial political and popular momentum to address the issue. The movement, spearheaded by the Ministry of Women and Child Development, led to the enactment of new legislation called the Protection of Children from Sexual Offences (POCSO) 2012. This commentary highlights the distinguishing features of POCSO and focuses on three issues that might have consequences for how the law operates in reality. In this reflexive piece, we begin by briefly discussing the prevalence of CSA in India and the legal response to it. We draw upon existing literature, legal documents, media reports, access to police sources and personal practitioner experience to inform the paper.

Growing concerns about female infanticide, child rapes and institutional abuse of children led to the commissioning of the first large scale government sponsored research study to assess the extent and nature of child abuse in India (Kacker et al. 2007). The study, based on a well-designed methodology, covered 13 states (two states from each of the six geographic zones in the country) including states with the highest through to the lowest crime ratesinci of offences against children. The sample was purposive and included 12,447 children, 2324 young adults and 2449 stakeholders representing five different evidence groups: children in the family, at the workplace, in schools, on the streets and in institutions. The study reported widespread emotional, physical, and sexual abuse prevalent in all the states surveyed. While every second child reported emotional abuse, 69 % (n = 12,447) reported physical abuse, and 53 % (n = 12,447) reportedly experienced some form of sexual abuse. Half of sexual abuses reported were committed by "persons known to the child or in a position of trust and responsibility" (Kacker et al. 2007: vii). Carson et al. (2013) survey of the current state of knowledge on CSA in India concluded that

empirical studies report a much higher incidence of CSA than previously acknowledged by authorities or by families. The paper summarises the findings of several studies and reports that 18–20 % of CSA occurs in the family and around 50 % in institutional settings. Further, there is regional and rural–urban variation in the rates and extent of CSA in the country. Girls are more vulnerable to sexual abuse, although boys too reported a high percentage of victimisation and are subject to greater social stigma. Finally, Carson et al. (2013) suggest that although sexual exploitation and abuse is strongly correlated to poverty, it occurs in families across the socioeconomic and religious spectrum. However, factors that facilitate CSA, such as poverty, overcrowding, extended family living arrangements, abundance of street children, and lack of recreational facilities in families (Carson et al. 2013) are by no means exclusive to India. Admittedly, their impact might be exaggerated or intensified given the population density and size in India. Thus, a complex mix of individual, ecological and situational factors that are said to facilitate CSA (Smallbone et al. 2014) might account for its prevalence in the Indian context. However, the absence of empirical research precludes definitive conclusions.

Sexually abused children are severely let down by systemic failure of the criminal justice system to redress their grievances and by social ostracism associated with such abuse (HRW 2013). Only 3 % of CSA offences uncovered by Kacker et al. (2007) study were reported to the police (HRW 2013). It is unsurprising that CSA is severely underreported given the shame and associated socio-cultural stigma, especially if the abuse is in the context of the family (Choudhury 2006). This phenomenon is not unique to India but common to collectivist cultures in other Asian countries where an individual's experience is ignored so as to protect the family from shame associated with sexual abuse (Back et al. 2003; Stoltenborgh et al. 2011).

CONCLUSION

However, the Indian government has yet to create an effective social services network to protect children and prevent crimes against them. This shortfall became news in 2012 when Falak, a two-year-old girl, was brought to the hospital with serious injuries, including cuts to her head and bite marks on her cheeks and leg. She died two months later. Falak had been left in the care of a 14-year-old, who herself had had a violent upbringing. Her father used to beat her, as did a warden in a children's residential care facility where she lived for three years. After being coerced into sex work, she was left taking care of Falak, an illegally adopted baby. She told investigators that she had slapped and bitten the infant to stop her from crying. At no time had the state social service system stepped in to assist the 14-year-old despite her history of domestic violence, abuse in a residential care facility, and sexual abuse. According to Raj Mangal Prasad, chairman of the Child Welfare Committee of South Delhi, which was responsible for looking after both girls once their plight became known, "the story is a grim reminder of failure of the government ... There are lakhs [hundreds of thousands] of Falaks in our country who are waiting for immediate help.

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RIGHT TO EDUCATION: A JUDICIAL APPROACH

Prof. (Dr.) Acharya Rishi Ranjan*

Abstract

*The importance of education as a means for emancipation of human beings and liberating them from ignorance has for long time been accepted in national and international legal systems. With this in focus efforts have also been made to educate people and thereby contribute to the development of society consistent with the dignity of society. Internationally, the importance of right to education received much appreciation in the UN Declaration of Human Rights, 1948 and later instruments like International Covenant on Economic, Social, and Cultural rights, the Convention against Discrimination in Education, 1962 etc.*¹

Indian Approach

Our constitutional makers to make the right to education a constitutional goal and placed it under Part IV directive principles of state policy. Accordingly article 41, 45 and 46 of the constitution dealt with various aspects of right to education. But the inability of the constitutional provisions to achieve the object of free and compulsory education often led to conflict with judicial policy in this respect. An exposition of this conflict requires a close look at the development of the legislative and corresponding judicial approach as addressed by the Supreme Court in this area.²

Relevant Case Laws-

Mohini Jain Vs. State of Karnataka³

The Supreme Court held that Right to education is fundamental right under Article 21 of the Constitution. The right to education springs from right to life. The right to life under Article 21 and the dignity of the individual cannot fully be appreciated without the enjoyment of right to education. The Court observed:

The Court held the fee to be an arbitrary and unequal action in violation of Article 21, and stated; “We think that the right to life includes the right to live with human dignity and all that goes along with it, namely the bare necessities of life such as adequate nutrition, clothing and shelter and facilities for reading, writing and expressing oneself.” Note that the limiting clause in Article 21 is not applicable because the capitation fee was not established by law, rather by the policy of a medical school.”⁴

Unni Krishan Vs. State of Andhra Pradesh⁵

The Supreme Court struck down the Mohini Jain ruling and held that the right to education up to the age of 14 years was a fundamental right. The Court argued that this right flowed from Article 21, which guaranteed the fundamental right to life. In 1950, the Constitution had set a time limit of 10 years in which the right was to be given effect. But as this goal had not been met, „we think that the Court should step in“. That is what the Court did; they declared that every child had a right to free education till the age of 14 years.⁶

The Apex Court, however, limited the State obligation to provide educational facilities as follows:-

*Principle, Oriental School of Law, Oriental University , Indore, Email- ranjanacharyallm@gmail.com

¹. Available at http://lawatindia.com/index.php?option=com_content&view=article&id=16:only-right-to-education-in-india&catid=28:current-users&Itemid=44 last visited on 18.02.2010

². Available at http://lawatindia.com/index.php?option=com_content&view=article&id=16:only-right-to-education-in-india&catid=28:current-users&Itemid=44 last visited on 18.02.2010

³. AIR 1992 SC 1858, (1992)3 SCC 666

⁴. Available at http://www.legalserviceindia.com/articles/edu_pes.htm last visited on 03.05.2011, see also Vijay Pal Singh - Research Scholar, education: a fundamental right in India

⁵. AIR 1993 SC 2178, (1993)1 SCC 645

⁶. The crisis of elementary education in India; Ravi kumar; 1st edition; SAGE Publications New Delhi, thousand oaks, Londond; p. - 68



INVESTORS PERCEPTION TOWARDS OPTION TRADING: A STUDY OF INDIAN STOCK MARKET IN EAST SINGHBHUM DISTRICT OF JHARKHAND REGION.

Dr. Shradha Verma

Assistant Professor, Department of Commerce and Management, NSU, Jamshedpur, Jharkhand

Rashid iqubal Ansari

Research Scholar, Department of Commerce and Management, NSU, Jamshedpur, Jharkhand

Abstract

After Covid, financial markets have been marked by excessive volatility. Fluctuation in stock price makes it hard for businesses to estimate their future price. Derivative securities provide them a valuable set of tools for managing the risk. National Stock Exchange provides facilities of Option trading in individual shares as well as indexed like Nifty 50, fin nifty. These days, most of retail investors are going towards option trading due to high volatility and fluctuation of option premium which gives them a chance to earn a high profit with low capital. This study is aimed to know the profitability of day trader and short term retail investor in Option contract. This study is also aimed to know that, why investors are entering in option contracts (whether they are using this option to hedge their investment or they only wants to earn money using this option trading). It is a matter of debate that, option buyers are making money or not, but these day's option volume is increasing rapidly.

Key words : Derivative Market, Call option, Put option, volatility, NSE.

Introduction

Derivative means financial contracts which derive their value from its underlying assets or group of assets. The value of these contracts keeps on changing depending upon market condition. The primary principle of entering into derivative contracts is to manage the risk by contemplating the underlying asset's value in the future.

Option contracts are those agreements that used to facilitate a possible transaction between two parties. It involves right to buy or sale underlying assets in future at a pre fixed price that is strike price. it defines the essential terms and conditions, including details of the underlying security. The strike price and the date of expiry of contracts. It is basically of two types.

Call option: A call option is a contract that gives its owner the right to buy a certain number of shares of a stock at a particular strike price on a specific expiration date. To get this right option buyer has to pay a sum of money to option seller. That amount is called option premium.

Put option: A Put option is a contract that gives its owner the right to sell a certain number of shares of a stock at a particular strike price on a specific expiration date. Put option is also a derivative contract between two parties. The buyer of the put option earns a right (not an obligation) to exercise his option to sell a particular asset to the option seller for a specific period of time.

The expiration date: in derivatives market, refers to the date in which options or [contracts](#) expire. In other words, the expiration date is the last day that a derivative contract is valid. On the date of



**A STUDY ON GROWTH OF MUTUAL FUNDS WITH SPECIAL REFERENCE TO
JHARKHAND**

Fouzia Anwar

Research Scholar, Commerce Department, NSU, Jamshedpur, Jharkhand

Dr. Shradha Verma

Assistant Professor, Commerce Department, NSU, Jamshedpur, Jharkhand

Abstract

Earlier people used to invest in fixed deposits and gold but now days peoples are more attracted to mutual funds by looking at benefits of mutual fund and the higher profits returns of the mutual funds, this is the reason behind growth of mutual funds in Ranchi and all over Jharkhand. Mutual funds have two investment options either growth or dividend. Mutual funds provide various future securities and it helps to secure future with the help of various schemes. Mutual funds give many future securities like good returns, secured future returns and secured future. Mutual funds charges low fee and it is an accessible platform to invest. Investments in shares market and debt securities helps the senior citizens to generate funds these helps, to secured the future retirement plans and future benefits. This paper will explore the benefits of future security, low cost and accessibility feature of mutual fund and about schemes of mutual fund favoring senior citizens. Various tables, pie charts have been included to present a clear picture of the study. Then findings, suggestions and conclusion related to the topic has been mentioned in the paper

Keywords- Mutual funds, Schemes, Securities, Dividend, Investors.

Introduction

The professional fund manager collects money from all the investors who decide to invest money together and choose securities like shares, bonds, stocks to invest in and generate good returns back to the investor this is basically mutual funds. Mutual funds are an investment option for small investors where even small amount can be invested in big stocks of the company.

History of mutual funds

Mutual funds firstly started in the last of 17th century in Europe. In India mutual fund is started with the establishment of UTI (unit trust of India) in 1963 from government of India and RBI (reserve bank of India). India first mutual fund is UTI. There are different phases in history of mutual funds, the first phase (1963 – 1987), the second phase (1987-1993), the third phase (1993-2003).

Mutual funds management

Mutual funds give chances to small investor or individual investor to invest in professionally managed platform. Mutual Funds can be classified into three categories: hybrid, equity, and debt. Mutual funds are directed by professional called funds managers and the fund managers have many years of experience in the financial market, they collect money from investors and invest them in securities such as bonds, stock market, cash, gold etc. After researching and analyzing they decide where to invest and maximize returns at lower risk. However, mutual funds are associated with risk and needs proper investigation before investing.

Mutual funds risk and returns

Although some schemes in mutual funds are highly risky but there are various schemes which has

AN ENQUIRY INTO FINANCIAL AWARENESS LEVEL OF RURAL WOMEN: A CASE STUDY OF VAISHALI DISTRICT

Vandana Kumari¹ Dr. Shradha Verma² Dr. Adarsh Kumar³ Dr. Ashish Mohan⁴

¹Research Scholar, Babasaheb Bhimrao Ambedkar University, Muzaffarpur

²Assistant Professor, Netaji Subhas University, Jharkhand

³Assistant Professor, Amity University, Patna

⁴Assistant Professor, Amity University, Jharkhand

ABSTRACT

In this era of rapid economic expansion, technological innovation, and the current digital age, having access to and understanding of digital financial services is crucial for financial inclusion and women's empowerment. Women struggle to effectively use their bank accounts due to low financial awareness and inadequate penetration of banking channels, especially in rural Bihar. Objective of Study is to understand the level of financial literacy amongst women of rural area of Hajipur Block of Vaishali District to know the various sources of financial literacy to evaluate the perception of rural women towards financial awareness and digital financial literacy. In this study, an attempt has been made to study the relationship between various demographic factors and financial awareness of rural women workers in the area of Hajipur Block, Bihar. Data has been collected through primary sources utilizing questionnaires, schedule, personal interviews and survey method. Descriptive Statistical tools and Chi-square test have been conducted for hypothesis testing. The findings of the study shows that the SHG model is successful in raising awareness among rural women. The overall rate of financial awareness is 69%. Even there is a necessity to analyze and improve the financial behaviour of rural women and this can be done by some of the ongoing government projects for women education. The progress of such programs is slow in our country and there is a need to expedite the same.

Keywords: Financial Inclusion, Financial awareness, Women empowerment, Self-help group

1. Introduction

Meditationes Sacrae (1597), "Knowledge itself is power" so too is financial literacy power. Financial literacy is the foundation of a relationship with money, a lifelong journey of learning. Unfortunately, Rural Indian women still often have limited financial knowledge. Financial literacy is important for women as it prepares them for emergencies. They can deal with the cost of living and inflation if they are financially literate. Mothers have a greater influence on children than fathers' do. Being financially literate sets a good example for their children as well. In most of the

A STUDY ON IMPACT OF REGULATORY CHANGES IN MUTUAL FUND INDUSTRY

Sudipta Sinhamahapatra¹, Dr. Shradha Verma²

Research Scholar, Department of Commerce, Netaji Shubhas University Jamshedpur¹

Assistant Professor, Department of Commerce, Netaji Shubhas University Jamshedpur²

Abstract

Regulatory changes have a tremendous impact on the mutual fund industry. The research employs a mixed-methods study approach that integrates analysis of case studies in leading markets, surveys conducted with industry stakeholders, and statistical analysis to uncover the influence of fundamental regulatory dimensions including but not limited to disclosure requirements, taxation frameworks, investor protection, and product regulations. These initiatives have been crucial in promoting transparency, increasing investor confidence, and growing the industry. But when Read was asked: Limited to U.S., India and EU markets, which may not be representative of global or new-market trends. The results suggest that investing based on this information occurs because the regulation provides incentives for greater transparency and more protection of the interests of investors, while producing headaches for fund managers who have to change their strategies. Going forward, future developments in regulation have to balance the need for stability in the market while nurturing innovation, more so in emerging markets, enabling long-term growth without compromising the interests of all stakeholders.

Keywords: Changes in Regulations, Mutual Funds, Market Effects, Investor Behavior, Funds Practices

1. Introduction

Introduction: There have been many evolutions in the mutual fund industry in the last 10 years due to changes in regulations [1]. These shifts have been material, have altered the nature of market structure, the needs of investors, the practice of fund management and as such have driven the realization, which frankly has been lacking for years, that the functional link between the regulation framework and these elements of industry itself, and the importance of that link, is critical. This is mainly due to the fact that these regulatory revisions affect disclosure standards, tax policies, investor protection systems, and product regulations. [2] This study presents a multi-layered view of how regulatory interventions influence this process by studying the case studies of large market like the U.S., India and the EU and complements the findings with surveys of industry experts and statistical analysis. The paper emphasizes that regulation serves as a primary catalyst of transparency, investor confidence and growth within the mutual fund industry. But it also acknowledged that if we keep focusing on just a few regions, we are leaving out trends in developing markets. With regulatory measures evolving, in markets where regulatory framework is still developing, the need to balance between the promotion of market stability, investor protection and innovation is paramount [3]. The research will provide good information for industry players to manage and navigate regulatory environments.

FUND MANAGEMENT IN MUTUAL FUND COMPANIES-WITH SPECIAL REFERENCE TO SIPs

Ms. Sudipta Sinhamahapatra, Ph.D. scholar at the Dept of commerce and management, Netaji Subhas University

Dr. Shradha Verma, Asst. professor at the Depart of commerce and management, Netaji Subhas University

ABSTRACT

The connections between development of economy, saving and speculation are the intriguing issue between market analysts of the world. These sort of elevated degrees of reserve funds and speculations are the key factors which impact the economy and prompts manageable and vigorous long-haul development. The worth creation must be conceivable through gathering of investment funds, mutual funds, and Systematic Investment Plans (SIPs). Many individuals in India put resources into shared reserve through precise growth strategy. Efficient speculation plan gives the adaptability to contribute a specific measure of cash speculation month wise. The economic situations will assume a significant part of increment or diminishing in sum contributed through deliberate growth strategy. Still, most of the respondents see shared reserve speculation as untouchable because of the market unstable circumstances. Common asset's return is benchmarked against a characterized market record. Consequently, need of this study has been excited in request to see the financial backers' inclinations in regard to the shared asset venture contributed through Taste in different economic situations. Additionally, it is vital to recognize which are the different variables of common asset speculation done through Taste influences the financial backers' the point at which the economic situations are evolving continually. The current review attempts to track down the responses to these inquiries. Present study has qualities like; clear examination question, formal and construction research process, testing explicit speculation and analyzing connection between specific factors and information examination is quantitative in nature. Likewise, concentrate on manages the evaluation of inclinations of financial backers towards value shared reserve through Taste during different economic situations, hence, Quantitative exploration approach with graphic examination configuration used in the current review. The gathered information were investigated with the assistance of engaging measurements, exploratory element investigation, corroborative variable examination and organized condition demonstrating.

The review recognized the significant elements which influence the common asset speculation through Taste during different value economic situations. The concentrate likewise uncovered

A STUDY ON ROLE OF MSMEs IN ENTREPRENEURSHIP DEVELOPMENT IN EASTERN INDIA

Neha Burman¹ and Dr. Shradha Verma²

¹Research Scholar, Department of Commerce, Netaji Subhas University, Jamshedpur

²Assistant Professor, Department of Commerce, Netaji Subhas University, Jamshedpur

ABSTRACT

MSMEs are acting as a key player in entrepreneurship and socio-economic development of eastern India by making industrialization of rural and backward area, generating more employment opportunities reducing regional imbalance, poverty alleviation and women empowerment. MSME sector has wider scope in eastern India because of its natural resources like coal, iron, agriculture and allied activity product. Kolkata (West Bengal), Patna (Bihar), Jamshedpur (Jharkhand), Bhubaneswar (Odisha) are the MSME hubs in eastern India where a number of textiles, steel, jute, iron ore, coke, bricks, food processing product and agricultural product are produced. In spite of these opportunity, eastern India are facing some issues like lack of finance, problem of skilled labors in rural areas, limited access to quality infrastructure and so on. This paper aims to make comparative study of MSME sector of four selected states-Bihar, Jharkhand, Odisha and West Bengal in eastern India. The research findings reported that there is significant difference in MSME sector among these selected states of eastern India.

Keywords: MSMEs, Entrepreneurship Development, Eastern India

INTRODUCTION

Micro, Small and Medium Enterprises (MSMEs) sector is one of the most important segments of Indian economy. The primary responsibility of promotion of MSMEs is of State Government in the concerned state. However, the Central Government of India initiated some unique schemes like MUDRA yojana, Stand-up India, start-up India, Make-in-India and so on to boost MSME sector in India. Apart of these, National Bank for Agriculture and Rural Development (NABARD), Small Industrial Development Bank of India (SIDBI), Commercial Bank and Micro Finance Institutions (MFIs) are the key players in financing MSME sector in India. These financial institutions also facilitate Entrepreneurship Development Program (EDP) for skill development and vocational training to MSME entrepreneurs. NSS 73 round survey and Udyam portal reported that a total of 6.34 crore MSMEs are functioning in India out of which 2.82 crore MSMEs are registered in Udyam portal. The MSME sector has been providing 11.10 crore jobs in rural and urban area of India.

MICRO SMALL AND MEDIUM ENTERPRISE (MSME)

As per revised definition of MSME given by Micro Small Medium Enterprises Development (MSMED) Act, 2006 “The enterprises where investment is not more than 1 crore and its turnover is not more than 5 crore is known as micro enterprises, the enterprises where investment is not more than 10 crore and its turnover is not more than 50 crore is called small enterprises and the enterprises where investment is not more than 50 crore and its turnover is not more than 250 crore is termed as medium enterprises” This definition has come into force with effect from 1st July 2020. In this definition, investment means cost of plant, machinery and equipment and turnover means sale proceeds excluding export.

Portfolio Management in Investment Decision – An Overview

Ms. Shradha Verma

Research Scholar, Ranchi University

Abstract

The era of Globalisation has enhanced the role of investment portfolio managers. In the stock market parlance, investment decision refers to making a decision regarding buying and selling of orders. Portfolio management is basically the selection, prioritization and controlling of an organization's programmes and projects, in line with its strategic objectives and capacity to deliver. The goal behind management of portfolio is to balance the implementation of change initiatives and maintenance of business while optimizing return on investment. The portfolio management techniques and how this helps the investors in making investment decision will be considered in this paper. The objective of the paper is to examine whether portfolio management assist in investment decision making, then to explore the role of investment managers in developing investment portfolio and to determine the role of investment managers as investment decision maker. With these, conclusion, and some possible suggestion to enhance investment in India has also been offered.

Keywords: Portfolio, Portfolio management, Investment decisions and Investment tracker.

Introduction

Investment decision or capital budgeting decision mean one and all. It is a planned action to obtain the highest possible return through allocation of financial resources. This decision considers investment objectives, risk appetites, and the nature of the investor in planning investment. The portfolio management assists in making the right investment choices, tracking performance, invest in a regular and disciplined manner, manages liquidity, balances risks and reward, readjusts investments with time and improves financial understanding. It is simply a collection of all the investments. It maintains record of different types of assets, such as equity shares, fixed deposits, mutual funds, life insurance, cash and non-financial assets such as gold, real estate etc. Grouping all the assets in portfolio enables investors to easily asses their investments and make informed decisions. The core objective of portfolio management is capital appreciation, maximizing returns on investment, to improve the overall proficiency of the portfolio, risk optimization, allocating resources optimally, ensuring flexibility of portfolio and protecting earnings against market risks.

As per the empirical study. The investment decision depends on the mood of the market. These are most important financial decisions made to utilize its funds to secure benefit over a period of time. Thus there exists several discussions surrounding the universe of investment options. The key components of investment management discussed in this paper are cost control, asset allocation, tax control and investment policy. To provide a clear view regarding these key components of investment management, they have been discussed below separately.

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Women Entrepreneurship in India: Approaches to Women Empowerment



***Shradha Verma **Dr. Radha Raman Das**

***Research Scholar, Deptt. of Commerce and Management Studies, Ranchi University, Ranchi.**

**** Assot. Prof. (Retd.) Deptt. of Commerce & Management Studies, Marwari College, Ranchi.**

A B S T R A C T

The era of Globalisation has enhanced the role of women entrepreneurs in India. Today, Government too is actively participating in developing more women entrepreneurs as it brings in empowerment of women and that of nation. The present paper reviews the available literature about key aspects of women empowerment through women entrepreneurs in India. The factors necessary for economic empowerment of women has been identified. Various schemes of government related to the development of women entrepreneurship in India has been presented. Further, the role of entrepreneurship in empowerment of women has been explored. With these conclusion, and some possible suggestion to enhance entrepreneurial growth in India has also been offered.

Keywords: Globalisation, liberalisation, development, women entrepreneurs, SHGs, women empowerment.

Introduction

Entrepreneurship plays a critical role in empowerment of women. It assists in increasing spiritual, political, social and economic strength of women. It involves the empowered developing confidence in their common capacities. Entrepreneurship in general and women entrepreneurship, in particular, are imperative to the development of the economy. Today sustainable growth, labour participation and empowerment are part of the vibrant feminist discourse. So also, women entrepreneurship. It is considered the appropriate profession for women as women are out-ri-val of multitasking.

According to Government of India – “A woman enterprise is an enterprise owned and controlled by a woman having a minimum financial interest of 51 percent of the capital and giving at

least 51 percent of the employment generated in the enterprise to women”. Thus, it can be said that women entrepreneurs are those women who think of a business enterprise, initiate it with minimum 51 percent of financial interest in the capital, organise and combine factors of production, operate the enterprise with 51 percent women employees and undertake risks and handle economic uncertainty involved in running it.

As per Late Dr. APJ Abdul Kalam, empowering women is a prerequisite for creating a good nation, when women are empowered, society with stability is assured. Empowerment of women is essential as their thoughts and their value systems lead to development of good family, good society and ultimately good nation. This women entrepreneurship is one of the emerging concepts which has a positive impact on women's economic empowerment. These are also influential in





The Impact of Digital Marketing on Consumer Behavior

Dr. Dipika Bharti

Assistant Professor, Department of Commerce, M.B.N.S. Group Of Institution, Jharkhand

Dr. Shradha Verma

Assistant Professor, Department of Commerce, Netaji Subhash University, Jharkhand

Abstract

Digital marketing has revolutionized the way businesses engage with their customers, offering unprecedented opportunities for personalized communication and targeted outreach. This study investigates how digital marketing strategies—social media, search engine optimization (SEO), influencer marketing, and email campaigns—affect consumer behavior, including decision-making, trust, and engagement. Using a mixed-method research approach, the paper identifies critical factors such as personalization, convenience, and social proof that influence consumer behavior. The findings offer insights into improving digital marketing effectiveness while addressing challenges such as consumer fatigue and privacy concerns.

Keywords

Digital Marketing, Consumer Behavior, Search Engine Optimization (SEO), Digital Marketplace, Digital Buissness.

1. Introduction

The digital era has fundamentally reshaped consumer interactions with brands, enabling them to access products, services, and information with a few clicks. Digital marketing, characterized by its precision and adaptability, has become the cornerstone of modern marketing strategies. Unlike traditional methods, digital marketing provides a two-way interaction that fosters engagement and builds relationships with consumers.

Consumers now rely heavily on digital platforms for making informed decisions. For instance, social media, search engines, and online reviews are critical touchpoints influencing purchase decisions. According to Smith (2023), over 80% of consumers consult online resources before making a purchase, showcasing the integral role of digital marketing in the consumer decision-making process.

The rise of the internet and digital technologies has fundamentally transformed the global marketplace, making digital marketing an indispensable tool for businesses seeking to connect with their customers. Unlike traditional



AN ANALYSIS OF CORPORATE SOCIAL RESPONSIBILITY (CSR) ON ORGANIZATIONAL PROFITABILITY IN THE CONTEXT OF THE INDIAN TEXTILE INDUSTRY

Dipika Bharti

Research Scholar, Department of Commerce, Netaji Subhash University, Jharkhand

Dr. Shradha Verma

Assistant Professor, Department of Commerce, Netaji Subhash University, Jharkhand

Abstract

This paper explores the impact of Corporate Social Responsibility (CSR) on the profitability of organizations within the Indian textile industry. By examining various CSR initiatives and their corresponding financial outcomes, this study aims to identify patterns and provide insights into how CSR activities influence profitability. The research methodology includes a mix of qualitative and quantitative analyses, utilizing case studies, financial data, and industry reports. Findings indicate that while CSR investments may initially appear as additional costs, they often lead to long-term financial benefits through enhanced brand reputation, customer loyalty, and operational efficiencies.

Keyword: CSR, Corporate Social Responsibility, Textile Industry, Companies Act 2013.

1. Introduction

The Indian textile industry is one of the most significant and historic sectors of the Indian economy, contributing approximately 2% to the country's GDP and employing over 45 million people directly and 60 million people indirectly. This industry is crucial for both the rural and urban economy, providing employment opportunities and acting as a backbone for various communities. The textile sector in India encompasses a wide range of activities

A Study on Sustainable Development Through Microfinance for Small-Scale Farmers in Darbhanga BIHAR

Fouzia Anwar¹, Dr Shradha Verma²

¹Research Scholar, Department of Commerce, Netaji Subhas University, Jamshedpur.

²Assistant Professor, Department of Commerce, Netaji Subhas University, Jamshedpur.

Abstract

This study investigates the impact of microfinance on sustainable development among small-scale farmers in Darbhanga, Bihar. The paper uses a mixed-methods research approach to examine how microfinance influences agricultural productivity, income diversification, and gender empowerment. The findings reveal significant improvements in financial inclusion and sustainable farming practices, although challenges such as accessibility and financial literacy persist. The study concludes with comprehensive policy recommendations to enhance the effectiveness of microfinance programs and support sustainable agricultural development in the region.

Keywords: Microfinance, Sustainable Development, Small-Scale Farmers, Financial Inclusion, Agricultural Productivity.

1. Introduction

Microfinance has emerged as a pivotal tool for fostering financial inclusion and promoting sustainable development, particularly in rural areas where traditional banking services are often inaccessible. In India, small-scale farmers frequently encounter financial constraints that hinder their ability to invest in sustainable agricultural practices and enhance productivity. This study focuses on Darbhanga, Bihar, a region heavily reliant on agriculture, exploring how microfinance initiatives can contribute to sustainable development by improving access to financial services, enhancing agricultural productivity, and supporting income diversification among small-scale farmers.

Sustainable development is a global imperative that necessitates the integration of economic growth, social inclusion, and environmental protection. In the conditions of agriculture, which remains the backbone of rural economies in many developing regions, sustainable development is critical. Small-scale farmers, who constitute a significant portion of the agricultural sector, face numerous challenges that hinder their ability to adopt sustainable

INVESTIGATING THE PERCEPTION OF GST: A COMPARATIVE ANALYSIS OF DIFFERENT SOCIO-ECONOMIC GROUP IN JHARKHAND

Dr. Ashish Mohan¹ Dr. Adarsh Kumar² Dr. Shradha Verma³ Ms. Neha Kumari⁴

¹Assistant Professor, Amity University, Ranchi

²Assistant Professor, Amity University, Patna

³Assistant Professor, Netaji Subhas University, Jamshedpur

⁴Assistant Professor, Usha Martin University, Ranchi

ABSTRACT

The implementation of the Goods and Services Tax (GST) in India marked a significant shift in the country's tax regime, aiming to streamline indirect taxes and boost economic growth. This study explores the perception of GST among various socio-economic groups in Jharkhand, a state characterized by its diverse demographic and economic landscape. Using a mixed-methods approach, the research involved quantitative surveys and qualitative interviews across urban, semi-urban, and rural areas, targeting groups differentiated by income, occupation, and education levels. The analysis revealed contrasting perceptions influenced by socio-economic status. Higher-income and well-educated groups generally viewed GST positively, appreciating its potential to unify the market and reduce tax evasion. In contrast, lower-income groups and small-scale business owners expressed concerns over compliance complexity and increased financial burden. The study also identified significant variations in GST awareness and its perceived impact on daily life and business operations. This comparative analysis underscores the necessity for policymakers to consider socio-economic diversity when implementing tax reforms and to tailor communication strategies that address the specific concerns of different groups. The study attempts to investigate the difference in perception of different groups of the society towards GST and also tries to examine the relationship between implementation of GST and various factors such as transparency in business, ease of doing business, impact on the price of the products, tax burden etc. Chi-Square test have been used for the study. By providing a nuanced understanding of GST perceptions, the findings aim to inform more equitable and effective policy measures, ensuring that the benefits of GST are more uniformly realized across all sections of society in Jharkhand.

Keywords: Goods and Services Tax, Socio-Economic Groups, Business Transparency, Ease of Doing Business

Introduction

Goods and Services Tax (GST) is a comprehensive indirect tax system implemented in India on July 1, 2017. It is designed to replace multiple cascading taxes levied by the central and state governments, such as excise duty, service tax, value-added tax (VAT), and others. GST is a destination-based tax, which means it is levied on the consumption of goods and services rather than the production or sale. The introduction of GST in India was aimed at simplifying the tax



**CLOUD IMPACTING ACCOUNTING PRACTICES- WITH SPECIAL REFERENCE TO
PARTNERSHIP ACCOUNTING**

Achal Poddar

Research Scholar, Department of Commerce, Netaji Subhash University, Jamshedpur, Jharkhand.

Dr. Shradha Verma

Assistant Professor, Department of Commerce, Netaji Subhash University, Jamshedpur, Jharkhand.

ABSTRACT:

The Cloud Accounting is a demanding technology and it can revolutionise the way of record keeping of business transactions. It is third party software that can connect to the computer of a business through Internet and provide better records than traditional accounting. The present research paper shows that how the cloud concept can specifically put an effective impact on a partnership form of business. The research paper reveals that the all time and anywhere access and control facility enables the partners to manage their business better than using traditional accounting software approach. The features of cloud accounting also proving to be a boon for partners because its help them to diversify their business easily by collaborating with other businesses. The requirement of utmost good faith amongst the partners is also becoming strong and intact due to automated features of cloud accounting that detects the access, time and type of fraud. This paper includes overview regarding cloud impacting partnership accounting. Their after findings and suggestion related to the topic has been dealt in detail in the paper.

KEYWORDS: Access, Control, Diversification, Fraud Detection etc.

INTRODUCTION:

Cloud accounting is an internet server based record that provides 24x7 access and control from anywhere. It does not require a physical setup of computer, accounting software and other accessories in the office of the business. The company that provides the facility of cloud accounting maintains the accounting records of all the business transaction of a business and enables that business to keep access and control from anywhere it wishes to do so. This offers numerous benefits especially to small businesses like partnerships where the partners want to keep access and control over the accounting records. It is an emerging and vibrant technology of today that imparts immense benefits to the business. Still, its benefits are not yet fully explored by the business.

A business is a complex set of many systems that greatly depends on Accounting. Accounting means systematic recording of financial transactions, interpretation of results thereof and communication of such results to the management and different users to facilitate decision making. The communication plays a vital role in the decision making in term of content and time. This creates need for different accounting software that can replace the manual system of accounting to make the communication of accounting results fast. But today's world is becoming very dynamic and keeps on changing that requires better accounting solution. In such a situation, cloud accounting plays pivotal role in making things easier for business world. It offers solutions to all accounting problems like access, control and communication.

LITERATURE REVIEW:



CRITICAL ANALYSIS OF TEXTILE INDUSTRY IN INDIA- PROBLEMS AND PROSPECTS

Dr. Shradha Verma

Assistant Professor, Department of Commerce, Netaji Subhash University, Jharkhand.

Dipika Bharti

Research scholar, Department of Commerce, Netaji Subhash University, Jharkhand.

Abstract:

The textile industry is one of the oldest and largest industries in India, contributing significantly to the country's economy and employment. However, the industry faces several challenges, including increasing competition from other countries, lack of modernization and technology adoption, environmental issues, and labour concerns. This research paper aims to critically analyse the problems and prospects of the textile industry in India, examining its current state and potential for growth and development.

Keywords: Problems, Prospects, Textile, Handloom, Challenges, Modernization

Introduction:

The textile industry in India is a significant contributor to the country's economy, providing employment to millions of people and generating substantial foreign exchange earnings. However, the industry faces several challenges that hinder its growth and development, including competition from other countries, lack of modernization and technology adoption, environmental issues, and labour concerns. This research paper aims to critically analyse these problems and prospects of the textile industry in India, identifying strategies for its sustainable growth and development.

The textile industry in India is one of the oldest and largest industries, contributing significantly to the country's economy and employment. However, the industry faces several challenges that hinder its growth and development. These challenges include increasing competition from other countries, lack of modernization and technology adoption, environmental issues, and labour concerns. Therefore, it is essential to conduct a critical analysis of the textile industry in India, examining its current state and potential for growth and development. The textile industry in India has a rich history, with its roots dating back to ancient times. It is a significant contributor to the country's GDP, employing millions of people directly and indirectly. The industry is diverse, encompassing a range of activities, including cotton, silk, wool, and jute production, spinning, weaving, dyeing, and printing.

Despite its significant contribution to the economy, the textile industry in India faces several challenges that hinder its growth and development. One of the most significant challenges is increasing competition from other countries, particularly China and Bangladesh, which have lower labour costs and modernised production technologies. This competition has led to a decline in India's market share in the global textile trade.

“A critical evaluation of sustainable development of tourism industry in Chhattisgarh”

Mrs. Anupma Jain

Research Scholar

Mats University, Raipur (C.G.)

Supervisor

Dr. Shradha Verma

Assistant Professor

MSBS Department

Mats University, Raipur (C.G.)

Abstract

The sustainable tourism is fundamentally linked to the idea of sustainable development as it has been interpreted in the Brundtland Report of 1988. A major problem with sustainable development is its ambiguity and subsequent vulnerability to interpretation and employment on ideological grounds. Hence, anthropocentric perspectives tend to emphasise the status quo of resource exploitation for the good of human populations, while the biocentric perspectives place the primary emphasis on the natural environment itself. However, there is room for compromise between the more moderate schools on either side; that is, the resource conservationists on the anthropocentric side, and the resource preservationists on the biocentric side. The purpose of this report is to critique the concept of sustainable tourism, which now forms the dominant organizational paradigm of the global tourism sector. Tourism managers and planners within virtually all destinations, as well as entrepreneurs and communities, now enthusiastically embrace sustainable tourism as a desirable objective. However, there appears to be little general understanding of its origins, nature and indicators, or of the problems that are likely to be encountered in the implementation process. By drawing upon an extensive array of relevant secondary sources, this report intends to provide basic knowledge to a broad audience of tourism stakeholders, so that the concept and practice of sustainable tourism can be engaged with ‘open eyes’.

Keywords: Tourism, Globalization, Goal, Social Changes, Activity. Suitable Development. Economy, tourism Assets.

Introduction

Tourism moves people from one region of the world to another. Tourism is a global happening. It is an expression of man’s natural instincts to move from one place to another. The tourism sector occupies a significant place in the foreign exchange earnings

**A STUDY ON NATIONAL PENSION SCHEME (NPS) WITH SPECIAL REFERENCE
TO JHARKHAND GOVERNMENT T.G.T. SCHOOL TEACHERS AS NPS
SUBSCRIBERS OF EAST SINGHBHUM, JHARKHAND**

Achal Poddar¹, Dr. Shradha Verma²

¹Research Scholar, Department of Commerce, Netaji Subhash University, Jamshedpur,
Jharkhand

²Assistant Professor, Department of Commerce, Netaji Subhash University, Jamshedpur,
Jharkhand

ABSTRACT:

The National Pension Scheme NPS is found to be an effective investment for the school teachers if proper financial awareness exists among them. The present research paper reveals that the level of financial awareness among the Jharkhand Government T.G.T. School Teachers is found to be satisfactory in rural and urban area especially with the female teachers. The subscription to National Pension Scheme is safe because it is regularly monitored by the Pension Fund Regulatory and Development Authority (PFRDA) and the performance of Pension Fund Managers is also reviewed by the NPS trust. The experienced Fund managers like SBI Pension Fund Pvt. Ltd., LIC Pension Fund Ltd., UTI Retirement Solutions Ltd. etc. are responsible for fund management of National Pension Scheme. This research throws light on financial awareness on the basis of demography. The NPS subscribers amongst the teachers in rural area, semi-urban area and urban area are focussed to study their level of financial awareness. This research paper throws light on the benefits of financial awareness amongst the teachers working in Jharkhand Government schools.

KEYWORDS: Financial Awareness, NPS Subscribers, Urban, Semi-Urban and Rural.

INTRODUCTION:

National Pension Scheme NPS has come into existence on 1st April, 2004. The Pension Fund Regulatory and Development Authority (PFRDA) under the jurisdiction of the Ministry of Finance of the Government of India is the regulatory body that governs the National Pension Scheme NPS. The National Pension Scheme NPS provides an investment opportunity which is voluntary in nature. In the beginning the NPS was applicable to the Central Government employees and State Government employees only but in the year 2009 it has become applicable to all the citizens of India. The National Pension Scheme NPS is an investment that is based on volatile market rate of returns. The NPS is an innovative investment scheme that has open up the scope for small investors to invest their savings into a fund that not only provides returns but is also monitored by the fund managers appointed by the Govt. of India. The newly appointed T.G.T. school teachers who have joined the government service must know about the National Pension Scheme NPS as it will not only facilitate them with great financial security after their retirement but also provides them with good financial returns that is under due supervision of the Government of India. To make this happen financial awareness about the National Pension Scheme NPS is truly needed on the part of Jharkhand Government T.G.T. School Teachers.

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Department of Sanskrit
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Muzaffarpur

E-mail : vaichariki@gmail.com

www.vaicharikibihar.com

A Review Paper on Job Satisfaction of Secondary School Teachers in Relation To Their Adjustment At Multiple Levels.

Rani Singh*

Dr. Jay Prakash Singh**

The present study is conducted to determine the direct/proportionate relationship between Job satisfaction and Adjustment of secondary school teachers. Researcher has tried to review the literature to find the relation between Job satisfaction and Adjustment. During present investigation the process of reviewing the past work, it's found that there exists a negatively proportionate relationship between these two variables of job satisfaction and adjustment in few studies whereas later studies found absolutely no difference between Job satisfaction and adjustment in all its traits.

Keywords: Job satisfaction, Adjustment, teachers.

1. Introduction

Teaching is considered an especially demanding profession dominated by cognitive, social and emotional demands that are potentially aggravated by external factors related to political or organizational structures (Lomas et al., 2017). The emergence of positive psychology (Seligman & Csikszentmihalyi, 2000) has contributed to the current focus of researchers and the educational community, not only on reducing negative aspects (e.g., stress, burnout, etc.) but, also, on enhancing the positive aspects (e.g., self-efficacy, emotional capacities, etc.) that generate higher levels of well-being and satisfaction in teachers (Chan, 2011).

1.1 Job Satisfaction

It is very difficult for an organization to manage its workforce because of the uncertainties in the work environment due to many factors, one of which is job satisfaction at different levels. This is particularly evident in the educational sector where job satisfaction becomes an important factor for the teachers whose disposition of job dissatisfaction tends to affect the teaching-learning process which, in turn, further impacts on their other roles in and outside the classroom and school contexts. The classic job satisfaction, however, points to the aspirational disposition of a person towards his/her job. Two types of factors, according to Szecsenyiet al, (2011) are considered to dominate job satisfaction. These are intrinsic and extrinsic factors:

- Intrinsic factors cover recognition, tasks and responsibility. The inner impulse of performing any activity pertains to intrinsic job satisfaction; and it is concerned with satisfaction with a relation to inner motivation of a person.
- Extrinsic factors cover working conditions, company policies and salary, representing the outermost comfort (i.e. physical and tangible elements) provided to the employees by their organization.

Money, good scores and other rewards are other examples of extrinsic factors. Job satisfaction is an emotional response that occurs as a result of the interaction between the employee's values concerning his/her job and the profits he/she gained from the job. It is the state of pleasure the employee, gains from his job and his job experience and this can be

* Department of Education, Netaji Subhash University Jamshedpur, Jharkhand

** Associate professor, Department of Education, NetajiSubhash University Jamshedpur, Jharkhand



Behavioural Problems Among Students with Disabilities in East Medinipur District

SARASWATI BEJ
Research Scholar, (Ph.D.)
Department of Education
Jamshedpur, Jharkhand.

DR. JAY PRAKASH SINGH
Supervisor & Associate Professor,
Netaji Subhas University,
Jamshedpur, Jharkhand.

Abstract:

This study aims to determine the interaction between behavior problems among students with disabilities in East Medinipur, West Bengal and a number of dependent variables (gender, age, type of disability and severity of disability). The study sample consisted of 300 students enrolled in rehabilitation centers affiliated with the Ministry of Social Affairs. A questionnaire was designed and developed on the basis of its content validity and its reliability. Findings indicated that significant differences in the behavior problems were found for the independent variables of gender, age, type of disability and severity of disability. Male students above eight years old, students with intellectual disability and students with severe disabilities were most likely to exhibit behavior problems. The occurrence of certain behavior problems was found to be relevant to the type of disability. Based on the results of this study, a number of recommendations are provided to help ameliorate behavior problems associated with the variables addressed above.

Keywords: Behavioral problems, Students with disabilities, East Medinipur

1. Introduction

A behavior problem is defined as a socially inappropriate or harmful behavior to self or to others. Kirk (2003) defines a behaviour problem as a deviation from the conduct that is appropriate for a specific age and also interferes with an individual's growth, development and the lives of others. Ibrahim (1993) believes that children in the East Medinipur suffer from many behavior problems as a result of social changes in their communities and the lack of specialized rehabilitation services. Criteria used to quantify behavioral problems are, to some degree, dependent on the context in which the child lives. Thus, a given behavior may be considered a behavior problem in one community, while it is not so in another. In addition, other characteristics of behaviors, such as their shape, frequency and contextual appropriateness should be considered when determining whether they meet the criteria for being a labeled behavioral problem.

Viewing the frequency and the role of behavioral problems of students with disabilities in preventing their psychological and social adaptation as well as in hindering the benefits of providing educational and therapeutic services, this study aims to identify the most frequent behavioral problems of students with disabilities who are enrolled in centers affiliated with the Ministry of Social Affairs in the West Bengal. Behavior problems are examined as they relate to several independent variables, including gender, age, type of disability and severity of disability. The significance of this study is related to the fact that students with disabilities are vulnerable to behavioral problems resulting from their failure to adapt to the demands of their surrounding communities, their intellectual difficulties and their sensory and motor deficits that impact perceiving stimuli around them. These problems affect students' abilities in acquiring the necessary skills for adapting to the social and academic contexts of their schools. Considering the importance of this subject and the scarcity of studies that address this problem in the West Bengal, especially in the East Midnapore.

Learning Style of Secondary School Students in the Context of Multidisciplinary Curriculum

Ganga Bhola* and Jay Prakash Singh**

*Research Scholar, Netaji Subhas University, Jamshedpur, Jharkhand, India.

** Professor, Netaji Subhas University, Jamshedpur, Jharkhand, India.

ABSTRACT

Multidisciplinary Curriculum has played a significant role in the all-round development of the students mainly Secondary school students. It provides an opportunity for the student to develop and cope with the modern and required education echo system. Examining more and more practical aspects of difficult subjects makes education more meaningful and it is expected that students will be more inclined to prepare for their future. It promotes a pragmatic approach to the students and assists them to decide what they should opt for and what would be their potential benefits. Learning styles play a major role in a student's academic performance. Learning style, critical thinking, problem solving, self-management, etc are all part of the multidisciplinary curriculum and are also essential for life in the coming century. This curriculum should have an approach that the activities will be planned by the teacher and executed by the students. Multidisciplinary learning has been made mandatory in basic education in the 2014 international curriculum in Finland. UNESCO has focused on sustainability over education with acquiring knowledge, skills, and values needed to shape a sustainable future. This paper aims to compare the learning style of secondary school students with the context of a multidisciplinary curriculum.

Keywords : *Multidisciplinary, Curriculum, Secondary school students, Practical aspects, Educational sustainability, and critical thinking.*

INTRODUCTION

In general, education which is not only the concept of facts and technical skills, but also naturally related to the development of the human mind, becoming a means of problem-solving, in today's dynamic world, which is important for the development and maintenance of human civilization is extremely necessary. Learning styles play a major role in a student's academic performance and in academic success. A teacher's perception of a student's learning style will help him or her choose learning strategies that will extend the student's learning potential. A multidisciplinary course is one in which a subject is studied from the perspective of more than one subject. Students of engineering can take humanities. Learning is not limited to a particular

subject. Students always keep on exploring themselves for real-world situations. Multidisciplinary learning has been made mandatory in basic education in the 2014 international curriculum in Finland. NEP 2020 states that

Address for correspondence :

Mrs. Ganga Bhola, Research Scholar, Netaji Subhas University
Pokhari, Near Bhilai Pahadi, Jamshedpur, Jharkhand, India.

E-Mail ID: ganga.swain@rediffmail.com

ORCID ID: 0009-0001-5031-9728

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EFFECT OF SOCIAL FACTORS ON ENVIRONMENTAL AWARENESS OF TEACHER TRAINEES

Gurucharan Kour

Research Scholar, Department of Education, Netaji Subhas University

Dr Jay'Prakash Singh

Associate Professor, Department of Education, Netaji Subhas University

ABSTRACT

Environmental awareness of 180 teacher trainees (B.Ed students) of three Teachers Training Institutes of Jamshedpur city was studied using self-constructed questionnaire. Effect of different social factors such as gender, educational background, medium of schooling, locality of residence, caste and parental education on environmental awareness was evaluated. It was found that gender and father's education did not exhibit any significant impact whereas medium of schooling, locality and caste influenced it significantly ($P < 0.05$). There was also significant difference ($P < 0.01$) in environmental awareness of teacher trainees due to educational background and mother's education.

Key Words: Social Factors, Environmental Awareness, Teacher Trainees

INTRODUCTION

Human being lives in the world having finite natural resources. Increase in population accompanied with modernization activities for more comfort of man puts pressure on exploitation of such resources. Its non-judicious use leads to different types of pollution which endanger environment. So, prevention of ecological degradation needs to be made part of our life. Protecting the environment is economically more effective than repair of its damage. In this regard public awareness bears immense importance to create environment oriented citizens in society. Environment education has objective to raise public awareness and understanding of its different issues of conservation and optimum use of nature and natural resource with purpose for sustainable development of society. It focuses on how each and every component of ecosystem interacts with and influences each other. It develops knowledge, awareness, attitude, skills, commitment values etc. required for protection and improvement of environment. The need of hour is to orient citizens in environmental responsible manner by promoting their environmental literacy and awareness. Teachers are considered as suitable agents to translate it into action because they are best source to communicate and implement desirable behaviour, attitude and values in society. So, teacher trainees undergoing B.Ed. training need to realize importance of environmental education to orient their teaching properly and thus facilitate teaching-learning process in school children. Their ability need to be developed to understand and analyse ins and outs of working forces as well as condition of environment. Meinhold & Malkus (2005) emphasized on need of research in environmental knowledge, perception, awareness, attitude, literacy, and pro environmental behaviour of different categories of students including the teachers teaching environment education. Bhalla (2008) reported if environmental education is imparted to about 42% of children up to 14 years of age, then it will be highly beneficial to society for environmental protection and conservation. So, teachers' knowledge on proper understanding of environment can find out solutions to different problems like pollution, resource depletion, environmental hazards etc. Teachers can be able to discharge the role as



ICT IN TEACHER'S TRAINING: POSSIBILITIES AND CHALLENGES

Madhuri Kumari

Research Scholar, Department of Education, Netaji Subhas University. Dr. Jay Prakash Singh

Associate Professor Department of Education, Netaji Subhas University

Abstract

Teaching is becoming one of the most challenging professions in our society where knowledge is expanding rapidly and modern technology is demanding teachers to learn how to use these technologies in their teaching. Information and communication technology (ICT) has great potential for enhancing teaching and learning outcomes. The realization of this potential depends much on how the teacher uses the Information and communication technology (ICT). While it increases teachers' training needs, they also offer part of the solution. ICT can provide more flexible and effective ways for professional development for teachers, improve pre-service and in-service teacher training, and connect teachers to the global teacher community.

This paper takes a look at ICT in teacher training and provides a holistic view of how to use ICT in teacher training. Further, it discusses new possibilities and challenges that ICT has brought to teacher training and professional development. It concludes with a discussion of emerging issues concerning ICT integration into teacher training and networking and implications of the trends, in terms of prospects for the future, will then be drawn.

Keywords: ICT, Teacher's training

Introduction

While information and communication technology (ICT) is not a panacea for all educational problems, today's technologies are essential tools for teaching and learning. To use these tools effectively and efficiently, teachers need visions of the technologies' potential, opportunities to apply them, training with just-in-time support, and time to experiment. Only then the teachers be informed and confident about challenging jobs nowadays and knowledge is shared amongst the teachers and the students. (Perraton, Robinson, & Creed, 2001). As new concepts of learning have evolved, teachers are expected to facilitate learning and make it meaningful to individual learners rather than to provide knowledge and skills. Modern developments of innovative information and communication technology (ICT) have provided new possibilities to teaching professions, but at the same time have placed more demands on teachers to learn how to use these further information and communication technologies (ICT) in their teaching (Robinson & Latchem, 2003). These challenges ask teachers to continuously retrain themselves and acquire new knowledge and skills while maintaining their jobs (Carlson & Gadio, 2002). Then what can be done to help teachers meet these challenges?

Today, a variety of ICT can facilitate not only the delivery of instruction but also the learning process itself. Moreover, ICT can promote international collaboration and networking in education and professional development. There is a range of ICT options, from video-conferencing through multimedia delivery to websites, which can be used to meet the challenges teachers face today.

In fact, there has been increasing evidence that ICT may be able to provide more flexible and effective ways for lifelong professional development for today's teachers because of rapid growth in ICT, especially the Internet, traditional initial teacher training as well as in service continued training



A STUDY OF LIFE OF CHILDREN WITH INTELLECTUAL DISABILITY IN RELATION TO THEIR BEHAVIOURAL PROBLEMS AND PARENTAL INVOLVEMENT

Saraswati Bej

Research Scholar (Ph.D.), Netaji Subhas University, Jamshedpur, Jharkhand.

Dr Jay Prakash Singh

Supervisor, Associate Professor, Netaji Subhas University, Jamshedpur, Jharkhand.

Summary The present research provides strong and scientific evidence regarding the variables quality of life, behavioral problems and parental involvement of children with intellectual disability. It was found that quality of life of children with intellectual disability can be improved with increased parental involvement with the child and controlling the behavior problems of the children. The children with fewer behavior problems and high parental involvement are found to have better quality of life. Therefore the researcher confined to the children with intellectual disability only and made a study with the sample size of 35 children with intellectual disability from special schools of east Midnapore in West Bengal only. the age group of the children with intellectual disability was 8 years to 16 years and having in the range of 50-70 only.

Key words- Children with Intellectual Disability Students , Behavioural Problems And Parental Involvement

1.0 Introduction

Quality of life is very essential for the health of any individual because health is not merely the absence of diseases but the presence of physical, mental and social well being and all these dimensions of health can be attained if the quality of life is good. Therefore it can be interpreted that quality of life depends upon good health and good health is vital for the good quality of life. Simoes (2016) compared the quality of life of adults with and without intellectual disability. It was found that health is a significant predictor of quality of life for the people with or without intellectual disability.

Behavioral Problems

Behavioral problems are the disruptive behaviors depicted by the children with intellectual disabilities that are normally considered unacceptable to parents, peers, family or school. It is common for children who have intellectual impairments to simultaneously suffer from behavioral difficulties and mental illnesses; this is referred to as "dual diagnosis". It is a symptomatic manifestation of emotional or interpersonal maladjustment, which is particularly prevalent among youngsters as nail biting, enuresis, negativism, or by overly hostile or anti-social acts the behavioral problems usually interfere with the child's capacity to function properly throughout the day, including his or her ability to engage in regular interactions and activities at home and at school.

Parental Involvement

Parental involvement is a combination of commitment, active participation and unique child rearing practices. Research has shown that parental involvement towards the needs of the child can exert significant positive impact on their physical health, mental health, academic achievements, motivation level, self confidence and social skills. Parental involvement improves the academic learning outcomes of the children irrespective of their income level or racial lines . Parental involvement is a significant



STUDY OF EDUCATIONAL INTEREST OF SECONDARY SCHOOL STUDENTS

Vibha Kumari

Research Scholar, Department of Education, Netaji Subhas University

Dr. Jay Prakash Singh

Associate Professor, Department of Education, Netaji Subhas University

ABSTARCT

The present study deals with the educational interest of secondary school students of Jamshedpur block of East Singhbhum district of Jharkhand state. The researcher randomly selected 100 boys and 100 girls of class IX from six different schools to administer Educational Interest Record developed by S.P.Kulshrestha. Researcher found that there is no difference in educational interest of boys and girls. There is no difference in educational interest of students studying in private and government schools. Also, there is no difference in educational interest of students studying in rural and urban area secondary schools. So, it may be concluded that the secondary school students have similar educational interest areas.

Key words: Educational Interest, Secondary School Students.

INTRODUCTION

Man is a social being. He wants to gain something out of doing something. He becomes knowledgeable through different sources like books, films, radio, television, newspaper, internet, latest electronic gadgets or through direct contact with different persons and places. The continuous accumulation of knowledge from different directions in education.

Our education begins at home firstly, thereafter as we grow, we go to schools, colleges and other educational institutes. So, education is a systematic process through which a child or an adult acquires knowledge, experience and skill. It makes an individual civilized, refined, cultured and educated. For a civilized and socialized society, education is the only means.

A man without education is a man without back bone. Knowledge is inherent in man no knowledge comes from outside, it is all inside. So, education should enlighten the inherent knowledge of child and formation of the right conduct, behaviour, character and personality are the make an individual perfect. A person's educational interest is related to his general intelligence and special aptitudes and is determined in part by his environment, parental qualification, and his opportunity to explore different kinds of activities. It is important to investigate one's educational interest so as to render appropriate advice to him or her at an early stage. The educational interests provide not only intellectual development but also the development of personality and broaden the pupils mind in all walks of life, namely educational, physical, biological, mental, moral, social, emotional and cultural, the pupil may fulfil their inner ambitions and quench their inner thirst of their various interests by choosing and selecting the interested education subjects. These are very essential to the pupils to grow as perfect and responsible as well as respectable citizens of a nation. Educational interest is intimately related with child's acquisition of knowledge, understanding and skills which actually forms the basic for his educational choice. Educational interest, learning and human development these all are interrelated with each other.



HUMAN BRAIN REGIONS RESPONSIBLE FOR DIFFERENT TYPES OF MEMORY

Chanda Kumari Verma

Research Scholar, Department of Education, Netaji Subhash University, Jamshedpur, Jharkhand

Dr Jay Prakash Singh

Associate Professor, Department of Education, Netaji Subhash University, Jamshedpur, Jharkhand

Abstract

Human memory is not a unitary process. At the psychological level, various types of memory are at work in human beings. These various systems bring different parts of the brain into play. Types of memory can be classified in a number of ways, depending on the criterion used. With duration as the criterion, at least three different types of memory can be distinguished: sensory memory, short-term memory, and long-term memory.

Cerebral cortex is involved in Long-term memory whereas Amygdale is involved in Emotional memory. Hippocampus converts short-term memory into long-term memory. Cerebellum is involved in timing and motor learning abilities. Basal ganglia transforms memory to long-term memory.

Key Words- Human memory, sensory memory, short term memory, long term memory, brain regions

Introduction

Memory is the ability to remember past experiences. We learn a new language by studying it, but we speak it by using our memory to retrieve the words that we have learned. Memory is essential to all learning; because it lets us store and retrieve the information that we learn. Memory is basically nothing more than the record left by a learning process. Thus, memory depends on learning.

Learning is a relatively permanent change in behaviour that marks an increase in knowledge, skills, or understanding thanks to recorded memories. A memory is the fruit of this learning process, the concrete trace of it that is left in our neural networks.

Human memory is fundamentally associative. We can remember a new piece of information better if we can associate it with previously acquired knowledge that is already firmly anchored in our memory. And the more meaningful the association is to us personally, the more effectively it will help us to remember. So, taking the time to choose a meaningful association can pay off in the long run.

Example: Suppose that a school class has visited a museum of Egyptian art on a rainy day. Ten years later, the teacher, now retired, reads a history book that mentions the name of a mummy that was on display in that museum. The mummy's name reminds the teacher of that class trip ten years ago. Then, by association, the teacher remembers some students from that class whom he had not even thought about since then. He can even remember how fascinated they were with the mummy, and some of the questions they asked him about it. In short, he has formed associative memories: one thing reminds him of another, which reminds him of yet another, and so on.

Also, contrary to the image that many people have of memory as a vast collection of archived data, most of our memories are actually reconstructions. They are not stored in our brains like books on library shelves. Whenever we want to remember something, we have to reconstruct it from elements scattered throughout various areas of our brains.



**EDUCATIONAL ASPIRATION OF SECONDARY SCHOOL STUDENTS WITH RESPECT
TO GENDER AND SOCIAL CATEGORY**

Ganga Bhola

Research Scholar, Department of Education, Netaji Subhas University, Jamshedpur

Dr Jay Prakash Singh

Associate professor, Department of Education, Netaji Subhas University, Jamshedpur

Abstract

Educational Aspiration most tend to be much more focused and one hopes to improve their desires to achieve better. It will be influential and accompanied by high expectations for students. The purpose of the present study is to compare the Educational Aspiration of secondary school students of Jamshedpur city of East Singhbhum District, Jharkhand with respect to their gender and social category. In this study descriptive survey method was adopted for the population comprising of all the class IX students studying in the different CBSE secondary schools in the academic year 2022-23 and 10 secondary schools had selected as sample for the study by using simple random sampling technique. Educational Aspiration Scale developed by V.P. Sharma and A. Gupta was used for the study. The study revealed that girls have higher educational aspiration in comparison to boys. It also reveals a positive dependence of educational aspiration of secondary school students on their social category.

Key words: Educational aspiration, Gender, Social category.

Introduction

Aspiration means a strong desire to achieve something high or great. Every human being has some aspirations. From birth people start trying for self-enhancement. The aspirations during adolescence period are influenced by many factors. Education is an important factor informing Or modifying aspirations of adolescents. It may help them become more knowledgeable about the world, more sensitive and understanding of their relationship and more contributing members of the society. It is essential to increase self- confidence and to assist for development. According to Foster and Rosenzweig, education contributes to economic and social development through increased national income and individual learning. Aspirations as a Cognitive state motivate or drive young people to strive for academic success (Khoo and Ainsley 2005). Academic aspiration is an important variable in predicting achievement and can be viewed as an element in academic motivation, as they are linked to the development of a strong desire for success and the goals of succeeding in particular academic areas or achieving a particular grade.

Educational aspiration, a universal trait, is based on knowledge of traits. The level of educational aspiration of a student is an important motivating factor. Though, a student can take decision about what he or she wants to become in life and what course he or she should study to do so. In well developed countries the school system is so organized that the student can make some anticipating or actual vocational decisions at the end of each stage of education. The students have the freedom to choose from different curricular, hence context the secondary school students have no freedom to choose the



REVIEW THE RELATIONSHIP BETWEEN ACHIEVEMENT MOTIVATION AND EMOTIONAL INTELLIGENCE AMONGST SECONDARY SCHOOL STUDENTS

Mr Niranjana Pattanayak

Research Scholar , Dept. Of Education , Netaji Subhas University , Jamshedpur , E-mail –
niranjana pattanayak85@gmail.com .

Dr. Jay Prakash Singh

Associate Professor , Dept. Of Education , Netaji Subhas University , Jamshedpur , E-mail –
drjpsingh151@gmail.com .

Abstract:

This study aims to comprehend the relationship between accomplishment motivation and emotional intelligence and its components, including self-awareness, self-management, social awareness, and relationship management. During present investigation the process and product of these traits in relation to achievement motivation have been studied and it has been found that the creative thought process and the intelligence are having direct relation with achievement motivation. With headings like "Academic achievement and EI," "Emotional Intelligence impacts of achievement motivation," "Secondary students achievement motivation," and "EI effects on students," the literature analyzed and consulted throughout the current inquiry is examined.

Keywords Achievement Motivation| Intelligence| Secondary school students |EI

INTRODUCTION

Numerous studies and surveys show that the desire to achieve success and superiority over others is one of the most significant motivations. Achievement motivation, as defined by McClelland (1985), is the degree to which people differ in their need to work toward obtaining rewards including physical fulfillment, approval from others, and emotions of personal mastery. While Elizor (1987) categorized achievement in the following ways: Cognitive, emotional, and instrumental behavior modality. The nature of the encounter (problem and self- confrontation). A consideration of time (before to, during, and following completion of the work). A motivated individual can be thought of broadly as having cognitions or attitudes that encourage positive achievement behaviors, such as making an effort or persevering through challenges.

In the context of the characteristic Emotional Intelligence model, the term "emotional intelligence" (EI) refers to the capacity to recognize, evaluate, and control one's own emotions as well as those of others, as well as those of groups. There is debate about the various definitions of emotional intelligence that have been put forth. The ability to detect, comprehend, and apply the strength and wisdom of emotions as a source of human energy, knowledge, connection, and influence is what Cooper and Sawaf (1997) define as emotional intelligence. According to Mayer and Salovey (1993), emotional intelligence is the ability to monitor one's own and other people's moods and emotions, to distinguish between them, and to use this knowledge to inform one's thinking and actions. Emotional intelligence consists of several components, including the capacity to accurately identify, assess, and express emotions as well as the capacity to access and/or produce emotions when doing so supports thought.



ANALYTICAL REVIEW OF RELATIONSHIP BETWEEN ACHIEVEMENT MOTIVATION AND CREATIVITY

Niranjan Pattanayak

Research Scholar, Dept. of Education, Netaji Subhash University,
Jamshedpur, Jharkhand, India

Dr. Jay Prakash Singh

Associate Professor, Dept. of Education, Netaji Subhash University,
Jamshedpur, Jharkhand, India

ABSTRACT

This article examines the relationship between achievement motivation and Creativity among secondary school students. For this purpose the researcher has randomly selected three papers having the same investigation in different times in Indian states. Almost all the three investigations demonstrated either null or weak relationship between achievement motivation and creativity. There was also evidence that this relationship differed depending upon educational stage and which school achievement measure was used, with a stronger relationship existing with achievement tests than for GPA. Intelligence and motivation served as other moderators. Moreover, the results showed that girls were higher than boys in creativity and achievement motivation.

Keywords: Achievement Motivation, Creativity.

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1. INTRODUCTION

The ultimate goal of all education insituations is educate and training the capable People that have desirable capabilities in their career. School education is an important segment of the total educational system contributing significantly to the individual as well as to national development. The primary concern of school is the imparting of academic skills. Achievement motivation is the prime concern of psychologists, educators, learners as well as parents. Achievement is of key importance at the Secondary School stages since it provides a base for higher studies. So, achievement motivation at this stage has to be scrutinized.



**"THE ROLE OF SELF-EFFICACY AND WORKPLACE EXPLOITATION IN PREDICTING
TEACHER PROFESSIONALISM: A STUDY OF SECONDARY EDUCATION"**

Seema Chaudhary

Research Scholar, Dept. Of Education, NSU (Jamshedpur)

Dr. Jyoti Prakash Swain

Professor, Dept. Of Education, NSU (Jamshedpur)

Abstract:

This concept paper explores "the role of self-efficacy and workplace exploitation in predicting teacher professionalism in the context of secondary education". Understanding the elements that affect teachers' professionalism is essential since it has a direct impact on educational quality and learning results. The literature on teacher exploitation, self-efficacy, and professionalism is reviewed, and its relevance to education is discussed.

A theoretical framework is put out to connect self-efficacy, workplace exploitation, and teacher professionalism based on the study of available literature. The results of the study show a link between teacher professionalism and self-efficacy, with higher self-efficacy resulting in more dedication, self-assurance, and success in the classroom. Employer exploitation, on the other hand, has a detrimental impact on teachers' professionalism, leading to disengagement and reduced job satisfaction.

To sum up, understanding how self-efficacy and workplace abuse affect teacher professionalism is essential for enhancing instructional strategies and results. Educational institutions can improve the quality of education by addressing these issues and resulting in an environment that empowers instructors, fosters professionalism, and increases student achievement.

Keyword: Self-efficacy, workplace exploitation, teacher professionalism, secondary education, social cognitive theory, professional development

Introduction:

In the field of education, teachers play a pivotal role in shaping the intellectual and personal growth of students (Ingersoll & Strong, 2011). Their professionalism has a direct impact on the standard of instruction and overall results of learning. Therefore, it is crucial to comprehend the variables that affect teachers' professionalism. In the context of secondary school, the purpose of this concept paper is to investigate how self-efficacy and workplace exploitation influence teacher professionalism.

Competence, dedication, ethical behaviour, and ongoing professional growth are just a few examples of the many facets that make up a professional teacher. Job happiness, workplace culture, and opportunities for professional growth are just a few of the variables that have been found to have an impact on teachers' professionalism. (Hyer, Gardner, & Darling-Hammond, 2017). Self-efficacy and workplace exploitation, however, have only received modest consideration.

An individual's self-efficacy is defined as their confidence in their capacity to do specified duties or positions well. High self-efficacy teachers are more likely to demonstrate higher dedication, self-assurance, and effectiveness in their professional practise. (Häkkinen & Hämäläinen, 2017). On the other hand, educators with poor self-efficacy may struggle with self-doubt, low motivation, and a lack of professionalism. (Skaalvik & Skaalvik, 2018).



LEARNING STYLES OF SECONDARY SCHOOL STUDENTS IN RELATION TO THEIR ATTITUDE AND ACHIEVEMENT OF SCIENCE

Nutan Kumari

Research Scholar, Netaji Subhash University, Jamshedpur, Jharkhand

Prof.(Dr.) Jyoti Prakash Swain

(Supervisor), Professor and Head Dept. of Education, Netaji Subhash University, Jamshedpur
Jharkhand

Abstract

Learning style of secondary school students helps in the improvement of academic achievement and attitude towards different subjects. Here, in the present study, learning styles for students at secondary educational level has been taken for research to explore different changes in classroom situation and its relation to the development of academic achievement and attitude towards science. Purposive random sampling techniques were followed for selection of sample. As the objective of the study was to study the relationship between scientific attitude of students and their achievement in science. The investigator has used the ex-post facto method in which an attempt is made to study the secondary school students learning style with special reference to their achievement attitude towards science. The 500 science students belonging to class XI of Government and private students in East Singhbhum District. The three standardized as Learning style Inventory, Scientific Attitude Scale and Achievement Scores have been used for the purpose.

Key Words – (Learning Style, Secondary School students, Attitude towards Science, Achievement of Science)

Background and importance of the study

These days when knowledge is multiplying day by day, where new methodologies, strategies and technologies are being invented; where new approaches and systems are being explored; where new models are being initiated to redesign and reshape the prevailing academic environment in institutions to keep pace with the increasing knowledge in each sphere; where educational literature is being enriched by new innovations, the objective of making learning more promising and maximally effective to the learner can be achieved by making instructions individualized. Teaching is made adaptive to the learner's ability, personality, interest etc. Teaching has been viewed as a science i.e. as a systematic application of rules of science of human behavior in organizing instructions for learners. Every learner has a characteristic pattern of behavior in particular learning field. A person's unique pattern of behavior and scientific attitude represents a unified pattern of person's thinking which is called learning style. In present situation, it seems important to highlight the learning variations among students by taking into consideration their learning styles. In India, Science and Technology have been in use since long. But in recent years, India as a nation is heading for rapid individualization based on the use of high technology. Such effort needs automation and the use of computers. These efforts have two major requirements. First, there is a need of highly trained experts, who can build indigenous system of science and technology; second, scientifically literate citizens, who can take decisions about the proper use of science and technology. In this science and technology oriented society every citizen should be able to

**TEACHER PROFESSIONALISM: EXPLORING THE DYNAMICS, PERSPECTIVES,
AND IMPACT IN SECONDARY EDUCATION**

Mrs. Seema Chaudhary

Research Scholar, Department of Education, NSU

Dr. Jyoti Prakash Swain

Head Dept. of Education, Netaji Subhas University, Jamshedpur

ABSTRACT

This study aims to enhance comprehension of the difficulties encountered by secondary level educators by examining the interaction among three crucial factors: teachers' professionalism. The analysis chapter will yield significant findings that offer vital insights into the various aspects that influence teachers' work happiness and performance.

Furthermore, the article unveils the outcomes of an empirical study involving a sample of secondary school teachers, providing insights into their perceptions of professionalism and its manifestations. The results underline the substantial role of teachers' characters, revealing significant differences across the secondary school level. This study contributes to the discourse surrounding teacher professionalism, offering valuable insights into its complexities and implications for fostering a nurturing educational environment.

Keywords: Teacher professionalism, Secondary education, Educator attitudes, Teacher satisfaction, Teacher characteristics etc.

INTRODUCTION

Status of Secondary Education in India

Secondary schools play a crucial part in the country's educational system. It bridges the gap between primary and higher education. Secondary education is designed to equip students with the skills they'll need to properly engage in our increasingly complex society, whereas elementary education focuses on instilling the fundamental essentials for getting by in the world. Several earlier commissions and committees issued suggestions on the importance of secondary education. The NPE, which dates back to 1968, states that secondary education is essential for a country's economic, political, and social progress. Early in the Eleventh Year Plan (2007-2012), the Central Advisory Board of Education (CABE) suggested making secondary education free and mandatory like elementary school. Rashtriya Madhyamik Shiksha Abhiyan (RMSA) is a government initiative that has been in place since 2009. The Indian government is investing in this initiative to raise the quality of secondary education across the country. The main goal of RMSA is to increase the GER and make better educational opportunities available to students.



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**TEACHER PERFORMANCE IS THE SIGNIFICANT CONTRIBUTOR FOR ACADEMIC
ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS**

Meenakshi Choudhary

Research Scholar, Department of Education, Netaji subhas University

Dr. (Prof.) Jyoti Prakash Swain

Head Department of Education, Netaji Subhas University.

Abstract:

Every field has an objective to be achieved and the employees are the key drivers in achieving that. It becomes mandatory that the employees perform well in order to achieve the objectives. The performance of the employees should reach optimality for achieving the targeted objectives successfully by the organization including the education institutions. In education field teachers are the key drivers on whose performance the education institutions achieve their targeted goals. In education institutions the goals and objectives are centred around students. Student academic achievement is the main objective for any education institutions to achieve. Teacher the vehicle of education institution by their performance drive and let the student achievement to be achieved. In education institutions at secondary level the main objective is to let the student be skilled full, be creative, have understandable ability etc. Success in these objectives results in academic achievement. Teacher by their performance make the academic achievement of students successful. NEP 2020 has reformed the policies in the field of education by keeping the use of on going technology in mind. The main aim of NEP is to let achieve academic achievement in easy go and this is possible by the performance of teacher as the teacher performance is the hallmark of success in any education institutions.

Keywords: Teacher Performance, Academic Achievement, Secondary School

Introduction

Progressive society is the result of education. To be in the race of development and part of globalization quality education is the only tool. Education is the subsystem of society that helps in modelling, framing and constructing of human resources, who are the asset for the country. It paves the way for progress, development and innovation. Developing countries always give education a top priority for their successful development. The importance of quality education cannot be ignored. One learns in the educational institution where the learner experience their first interaction with the social world. The educational institutions are run by the education system with main focus to give quality education to the learner for getting benefits from the learner on the long run.

Education is tri polar process, which depends on teacher, student and environment. Whereas the quality education depends mainly on the shoulder of a teacher. In order to handle the drastic changes by the education system quality teacher and their performance plays a vital role. Students get involved in education institutions for getting achievement in learning. This achievement depends on the performance by the teacher in the educational institutions. For improving the quality of education, one permanent way is to focus on teacher, one whose performance is the resource of the education system. The single most important significant factor in student attainment is teacher performance (Hanushek,



"EXPLORING THE ROLE OF EMOTIONAL AND SOCIAL INTELLIGENCE IN THE ACADEMIC SUCCESS OF ORPHAN STUDENTS IN SECONDARY EDUCATION"

Manisha Kumari Singh¹ and Dr. Jyoti Parkash Swain²

¹Research Scholar, Department of Education, Netaji Subhas University, Jamshedpur

²Head, Department of Education, Netaji Subhas University, Jamshedpur

Abstract:

This concept paper aims to investigate the significance of emotional and social intelligence in the academic achievement of adolescent orphans. The academic success of parentless children is closely linked to their emotional and social intelligence. Emotional intelligence pertains to the capacity to identify, articulate, and regulate one's own emotions, as well as those of others. On the other hand, social intelligence involves the ability to interact proficiently with others. Research has indicated that children with higher levels of emotional intelligence demonstrate increased school engagement and achieve better academic outcomes. Similarly, studies have shown that students' social intelligence affects classroom participation, interpersonal skills, and collaborative learning. The discussion emphasizes the combined "role of emotional and social intelligence in shaping the academic success of orphan students", emphasizing the importance of integrating interventions and policies that foster the development of these intelligences. The consequences for education and policy are also covered, emphasising the necessity of including lessons on emotional and social intelligence in the curriculum and in the support networks for orphan kids. In order to develop targeted treatments that support orphan kids' academic achievement and general well-being, the concept paper emphasises the need for additional research that is focused specifically on their experiences and problems.

Keywords: Emotional intelligence, social intelligence, Academic success, Orphan students, Secondary education.

INTRODUCTION:

The academic success of orphan students in secondary education is a topic of great significance, as it not only impacts their educational journey but also shapes their future prospects. Due to the lack of parental involvement and the emotional and social obstacles brought on by their poor backgrounds, orphan students confront particular hurdles. In order to create specialised treatments and support systems to meet their unique needs, it is essential to understand the aspects that contribute to their academic performance.

This concept paper attempts to investigate how orphan students' academic progress in secondary education is influenced by their emotional and social intelligence. "According to **Mayer and Salovey (1997)**, emotional intelligence is the capacity to identify, comprehend, and control one's own emotions as well as those of others". **Goleman (2006)** defined "social intelligence as the ability to successfully negotiate social settings, comprehend social dynamics, and forge deep connections".

According to research, "social and emotional intelligence are important factors in a variety of areas of students' lives", including academic success, interpersonal connections, and general well-being. These intelligences may play a particularly significant role in determining the academic results of orphan students since they frequently experience additional emotional and social difficulties.

Studies by **Brackett and Rivers (2014)** and **Lomas et al. (2019)** and others have found a positive



**EFFECTS OF STUDY HABITS AND INSTITUTIONAL CLIMATE ON ACADEMIC
ACHIEVEMENT OF TRIBAL AND NON-TRIBAL STUDENTS IN ENGLISH AT
SECONDARY LEVEL OF EDUCATION**

Komal Kumari

Research Scholar, Department Education, NSU.

Dr.(Prof.)Jyoti Prakash Swain

Head Department of Education (NSU)

Abstract:

The study was designed to investigate the Effect of Institutional Climate and Study Habits and their interaction on Academic Achievement in English of the children of Tribal and Non-Tribal community at secondary level. 360 Participants of Tribal and Non-Tribal communities studying in class-IX at secondary level were selected from three Revenue Division Commissions of Jharkhand for the study. 120 Higher Secondary students were selected randomly among them 60 belonged to boys and 60 belonged to girls from each revenue division. Academic Achievement Test in English prepared by the investigator was administered on the participants to obtain the relevant data. Academic Achievement scores of the students in the subject of English included the percentage of marks obtained was also taken into consideration. Institutional Climate scale (ICS) prepared by the investigator, Study Habit Inventory (SHI) of M. Mukhopadhyaya and D.N Sanswal. After the data was collected, it was tabulated and analyzed. The results revealed females have better Study Habits than the male, though, the Academic Achievements of males is better than the females. However, there is no significant difference between male and female tribal and non-tribal Secondary students on Academic Achievements. Besides this, results indicated that Institutional Climate and Study Habits had significant effect on Academic Achievement in English at secondary school students. The Interaction between Institutional Climate and Study Habits had significant effect on Achievement in English.

Key Words- (Study Habits, Institutional Climate, Academic Achievement, Tribal And Non-Tribal Students)

Introduction:

Language is an essential component of human beings. It is one of the greatest accomplishments as it distinguished us from other living beings. Language helps in the overall development of an individual as it has a great impact on the cognitive development. English language is very necessary in the era of globalization and modernization. The language English is like a bridge between the countries. English is the only language which is bringing speedily development in the dynamic world and it helps people for world trading within the nations. Therefore, the whole world is transforming into a global village and as to be connected or to maintain good relationship with the other country people English is being accepted as a global language due to its similar qualities and need among the speakers of thousands different languages. In this connection, English as a language has not lost its glamour due to its status as an international language, a link language and a library language. It is accepted that one person out of every ten in the world is a native speaker of English and one out of every four on the earth can be reached with it. English is the standard language of international conferences, United Nations Organization. Hence, the knowledge of English will surely make a person of the world broad. .



A STUDY OF ACADEMIC SELF-EFFICACY LEVEL OF SECONDARY SCHOOL
STUDENTS IN RURAL AND URBAN AREAS OF EAST SINGHBHUM DISTRICT

Gunjan Kumari

Research Scholar, Netaji Subhash University, Jamshedpur, Jharkhand

Prof.(Dr.) Jyoti Prakash Swain

(Supervisor), Professor and Head Dept. of Education, Netaji Subhash University, Jamshedpur
Jharkhand

Abstract

The present study was designed to compare the academic self-efficacy level of students in rural and urban area schools at secondary level of Jamshedpur city of East Singhbhum district in Jharkhand. The null hypothesis of the study was that there is no significant difference of academic self-efficacy level of students studying at secondary level in rural and urban areas in Jamshedpur city in East Singhbhum district. The study employed a quantitative research approach. The descriptive research design was used. All the secondary school students of boys only of Jamshedpur city in East Singhbhum district in the public sector were the population of the study. Stratified random sampling technique was used for the distribution of the sample size and its allocation. The population was categorized into two broad groups (strata) with reference to urban and rural region schools of East Singhbhum district. 300 students from Jamshedpur city were selected from each stratum i.e. urban and rural areas of the said district. In order to collect data on academic self-efficacy level, a standardized tool established by Forman and Owen was used. Data was analyzed by applying a statistical test i.e. the t-test was used to compare the difference of the academic self-efficacy level of the students of urban and rural areas of East Singhbhum district Jharkhand. The study found that in the majority of both rural and urban areas, students liked to participate in a classroom discussion. They agreed with the statement that essay type tests are harder for them than objective type tests. They avoided facing difficulties in their studies and had problems to listening carefully during a lesson on a difficult topic. The majority of the students from urban and rural areas thought that it is a very rewarding experience being a student. They assumed that if they study enough, they can perform better academically. The result of the hypothesis testing showed that there was no significant difference between the academic self-efficacy level of secondary school students in urban and rural areas schools of East Singhbhum district Jharkhand by applying the sample t-test.

Key words: self-efficacy, academic self-efficacy, academic achievement, secondary schools students.

Introduction

Most of the students have a keen interest towards learning and perform better academically in comparison to those who find themselves as disinterested and de-motivated. Despite sharing the same learning environment which has always being a major concern for teachers, no single statement can justify responses to this query. Giving sound results at the secondary level is defined concerning many elements among which the academic self-efficacy level of the students plays a prior role. School students must be actively involved in their learning process and the most important goal of a student is a positive academic performance which can be affected by various factors. One of these factors may be their belief in being successful in getting good grades. The belief of a person about being good on a specific task or achieving a goal may influence the performance on that task. Bandura (1997) named this belief as self-



ACADEMIC ACHIEVEMENTS OF TRIBAL STUDENTS IN RELATION TO THEIR SOCIAL SUPPORT AT THE SECONDARY LEVEL OF EDUCATION

Mrs. Komal Kumari, Research Scholar,
Department of Education, NSU.
Prof. (Dr.) Jyoti Prakash Swain, Head Dept. of Education,
Netaji Subhas University, Jamshedpur.

Abstract:

The present study is an attempt to examine the level of social support among tribal school students with their academic achievement. A total number of 400 students were included in the sample. Simple random sampling technique was used for sample selection. Academic achievement refers to a student's performance in the previous class as well as their academic performance on the most recent annual exam. In the present study researcher have used the previous class achievement score of tribal secondary school of 10th grade students. Social support scale developed by Prof. Indira Dull and Sangeeta Godara (2015) was used to assess the level of social support of the tribal school students. The results were analysed by means of coefficient correlation and t-test. The result showed that there exist positive relationship between social support and academic achievement among tribal school students. Similarly they differ significantly in term of social support and academic achievement.

Key Words: *social support, Secondary Schools Scheduled tribe students, Academic Achievement.*

Introduction:

A Large variety of indigenous people lives in India. The Scheduled Tribe population represents one of the most economically impoverished and marginalized groups in India. With a population of more than 10.2 crores, India has the single largest tribal population in the world. According to the 2011 census, this constitutes 8.6 percentage of the total population of the country. Education is one of the primary agents of transformation towards the development. Education is in fact, an input not only for economic development of tribes but also for inner strength of the tribal communities which helps them in meeting the new challenges of life. It is an activity, or a series of activities, or a process which may either improve the immediate living conditions or increase the potential for future living. It is the single most important means by which individuals and society can improve personal endowments, build capacity levels, overcome barriers, and expand opportunities for a sustained improvement in their well-being. In today's fast-paced and competitive world, preparing students to succeed academically is crucial. Having a healthy body and mind, as well as doing well in school, are goals shared by everybody. Students' final grades and test scores are indicators of their academic success, which is the result of the schooling they get. It takes a sequence of deliberate and well-organized experiences to reflect student learning outcomes. Students' success in the classroom is proportional to how much they learn and absorb over the course of instruction. Academic success has come to take precedence over everything else in a student's life, and with good reason. It is the bedrock upon which the student's future identity will be built.

In any given area, a student might be at a higher or lower level. The main focus of the cognitive domain is the development of one's mental faculties. Reading, basic arithmetic, and acquiring new ideas and generalizations are all examples of intellectual development in this domain. According to Bloom (1958), there are six main categories of cognitive domain objectives: Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. The term "achievement" is often used in the field of education. Assigning grades, promoting students to the next grade level, categorizing students, providing career guidance, teaching remedial skills, evaluating the efficacy of learning environments, selecting students, and measuring the effectiveness of learning situations are just a few of the many important tasks that guidance and counseling serve.

ENHANCING ACADEMIC ACHIEVEMENT THROUGH EMOTIONAL
INTELLIGENCE: A MULTIDIMENSIONAL STUDY AMONG SECONDARY
EDUCATION ORPHAN STUDENTS

Dr. Jyoti prakash Swain

Supervisor, Head, Deptt of Education

Manisha Kumari Singh

Research scholar

ABSTRACT

Emotional intelligence plays a pivotal role in comprehensive individual development, encompassing academic prowess, personal growth, interpersonal finesse, and life accomplishments. This study delves into the emotional intelligence of orphan students, highlighting their diverse needs. Prioritizing emotional intelligence alongside academic proficiency emerges as a pivotal strategy, fostering holistic development and equipping individuals with crucial emotional competencies beyond the academic sphere. This research investigates the intricate interplay between emotional and social intelligence and the academic achievement of orphan students in secondary education. Given the unique challenges faced by orphaned and vulnerable students, examining the nexus between emotional intelligence, social intelligence, and academic success is essential for formulating effective interventions and support systems.

Keywords: - Emotional intelligence, orphaned student, academic achievement, skills etc.

INTRODUCTION

Every stage of a person's life, from infancy to adulthood, has importance, but none is more complex and crucial than adolescence, which lasts from about 13 to 19 years of age. The pursuit of self-discovery and novel experiences takes front stage during this transitional phase, which is characterised by a tremendous rush of vigour and curiosity. Adolescents set out on a voyage of self-discovery in an effort to define their identities, interact in a variety of ways, and develop their innate talents. This critical stage is defined by the pursuit of autonomy and the investigation of personal goals. It is a time of deep physiological and psychological change that moulds people into the people they will become. The significance of this phase on future trajectories is significant, especially in light of how it affects emotional stability, social connections, and academic success.

The transition from childhood to adulthood throughout adolescence is marked by a variety of changes in the physical, social, psychological, and cognitive spheres. These adjustments invariably have an impact on people's self-perception, personalities, educational success, and health. Teenagers who find themselves orphaned or without parental assistance suffer particular

Gender, Locality & Socio-Economic Status as related to Students' Level of Aspiration

Jyoti Prakash Swain

Principal Netaji Subhas Institute of Education, Pokhari, Jamshedpur, India

Abstract

In today's world of competitiveness, almost everyone is ambitious in some or other form. A great deal of individual variation is found with regard to goal setting behaviour. Persons with an equal amount of ability may also differ significantly in their goal setting behaviour. One may set it very high while the others very low. Still others may set near to their performance level. Thus, in choosing life goals and in doing daily activities people differ largely in their expectations and aspiration. Academic achievement constitutes an essential ingredient in the gigantic super structure of teaching and learning process. The academic achievement is day by day attracting the attention of educationists because it has been assumed as criteria for selection in various works of life.

Happiness depends upon the harmonious development of a child, which is greatly affected by different factors like level of aspiration, socio-economic-status, locality as well as academic achievement of the student. In some societies, it so happens that the parents show their reluctance towards the education of their children. The reason behind, is that they engage them to earn the livelihood for the family. Level of aspiration, socio-economic-status, locality and gender some of the important factors in determining academic achievement of the students. The findings of the study revealed that there is no significant interaction between gender, locality and SES on the level of aspiration of secondary adolescent students; there exists no significant difference between the level of aspiration of male and female adolescent students. Hence the hypothesis that there is no significance difference in low aspirations between male and female adolescent students is accepted.

KEYWORDS: socio-economic status, level of aspiration and achievement

Background of the study

The significant aspect of personality which deserves consideration with regard to academic attainments of a student is the level of aspiration. The concept of level of aspiration is invoked in reference to the goal striving behaviour of an individual presented with a task, outcome of which can be measured on an achievement scale. Frank (1941) defined level of aspiration as "the level of future performance in a familiar task, which an individual, knowing his level of past performance in that task, explicitly undertakes to reach". According to Frank an individual arranges his aspiration towards his possible assignments in a hierarchy of difficulties that he is likely to face. His level of aspiration is described to be the most attractive orientation on continuum of difficulty in relation to the goal he aspires to achieve.

According to Boyd (1952) level of aspiration means "as individuals ambitions in a dynamic situation that is an individual's goals or expectations in regard to the goodness of his own future performance for given task." Whereas, Backer and Seigal (1957) referred level of aspiration "as individuals strive for a particular goal or level

Perception of Class VII Students about Learning and Teaching of Science with Respect to Locality of School in Odisha State

Madhusmita Dash¹ and Jyoti Prakash Swain²

¹ GETEI, Kendrapara

² Netaji Subhas University, Jamshedpur

² Email: jpswain.ed@gmail.com

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ABSTRACT

Science learning for upper primary students gives importance to learning outcomes related to change in behaviour, perception and activities of students. Paas, Renkl and Sweller (2003) found that mental activities of students are accelerated through learning of science. Science teachers can easily identify strengths and needs of their students. It is the responsibility of science teachers to provide remedial measures according to pupil's need. Students who have more weakness in assigned portion of science on the basis of their class level needs more attention from teachers. Science learning enables children for their maximum intellectual development. Learning science at primary level activates neural pathways which permit novel thinking and problem solving skills. A person with more experience about a particular field is considered as more intellectual in that field which impacts a lot during life. Osher, Cantor, Berg, Steyer, Rose (2018) conducted a research on perception of students and found that learning science requires strong student-teacher relationships. Preparing of valuable projects, deriving solutions for assignments, solving day to day problems would be easier if they learn together by collaborating with each other. The present study sought to explore the perception of class-VII students related to student's feelings during learning science, liking towards their science text book, using topic related science TLMs in their science class, use of TLMs for learning of science, most liking topics & difficult topics in the science text book, participation in conducting experiments in science period, use of computer in science class, participation in science exhibition & in science seminar, use of projector, ability to explain a science topic to one of their friends who is weak in science, benefits of learning science in their day today activities & questions put in science examination.

Key Words: Learning Achievement in science, Locality of school

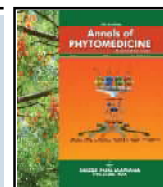
INTRODUCTION

Science makes learning meaningful and easy by linking new ideas with existing concepts. Application of science in day to-day life makes learning enjoyable for the learner. In the modern day, attitudes toward science education have shifted from objective fact-based information to practical activity that reflects the learners' abilities, attitude, and beliefs. Conduction of experiments inside class room under the guidance & supervision of teacher makes learning more reliable as well as valid. Teachers need to be made aware of and sensitized towards the needs of high ability- gifted students. Students' involvement and actions during learning science result in improvement of students' knowledge, higher order skills, attitude towards science, process skills, and ability to apply concept in new situation.

REVIEW OF RELATED LITERATURE

Paas, Renkl, and Sweller (2003) conducted a study on perception of students about teaching learning process of science at upper primary level and found that relevant mental activities by students definitely affected learning as adequate exercise of brain which facilitated better result of learning science for upper primary students.

Penuel, Ferguson, Singleton, Shea, Borelli and Korbak (2008) conducted a study on perception of students about teaching learning process of science at upper primary level and found that students could be able to think scientifically by learning how to form hypotheses, how to conduct experiments, observing, collecting evidences and framing conclusions while seeking to understand the principles working on a phenomenon.



Original Article : Open Access

Evaluation of different isolates of *Pseudomonas fluorescens* against *Fusarium oxysporum* f. sp. *ciceri*, causing wilt of chickpea (*Cicer arietinum* L.)

Madhumita Pandey, Amit Kumar Maurya ♦*, Vinny John** and Mukesh Kumar***

Department of Agriculture, Netaji Subhas University, Pokhari, Jamshedpur-831012, Jharkhand, India

** Department of Agriculture, Ghanshyam Urvashi P.G College, Phoolpur-211002, Prayagraj, Uttar Pradesh, India

*** Department of Plant Pathology, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj-211007, Uttar Pradesh, India

*** Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur-848125, Bihar, India

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Abstract

Pseudomonas fluorescens is an efficient antagonist against fungal diseases. Many strains of *P. fluorescens* showed their potential towards suppressing the disease severity in chickpeas caused due to *Fusarium oxysporum*. The present study aimed to the evaluation of operative strains isolated from chickpea fields. Out of 20 isolates of *P. fluorescens*, six isolates (Pf4, Pf13, Pf14, Pf18, Pf19, and Pf20) were identified as strong inhibitors against *Fusarium oxysporum* f. sp. *ciceri* (Foc) in dual culture approach, when compared to other bacterial strains of *P. fluorescens*. Later, the inhibitory activity of the same six isolated strains was validated by all cultural and biochemical tests. The antagonistic activity of (Pf 18, Pf 4, Pf 20, Pf 19, Pf13, and Pf 14) was reduced by (80.1, 79.8, 76.4, 73, 72.6, and 70.3) per cent, respectively, as compared to the control. Pf14 isolate out performed other isolates in terms of enhancing shoot and root growth when compared with control. Selected isolates shown showed significant decrease in wilt incidence percentage both in greenhouse and field trials and also increased seed germination (98%) in Pf13.

1. Introduction

Pseudomonas fluorescens has been documented as a complex collection of a large number of described species (Gardener *et al.*, 2005) and is considered an effective growth-promoting Rhizobacteria and biocontrol agent. Many strains of this bacteria are found worldwide in a wide range of environments and show a substantial amount of physiological and genetic flexibility (Nowak-Thompson *et al.*, 1997). The intimate association of many strains with chickpea and inhibitory action against the wilt causing soil born pathogen, *F. oxysporum*, indicate *P. fluorescens* as a functionally and ecologically worthy micro-organism (Salman, 2010; Hebber *et al.*, 1992; Fridlender *et al.*, 1993; Maurya *et al.*, 2020). *P. fluorescens* occurs naturally in the plant rhizosphere and protects the plant by secreting secondary metabolites containing growth-promoting substances, antimicrobial substances, and hydrolytic enzymes such as chitinase and protease (Kohl *et al.*, 2019; Kumari and Khanna, 2019; Agaras *et al.*, 2020).

In recent years, with an increase in population demand for pulses especially chickpeas have been increased in the food and agriculture industry. Because of the high protein content, calcium, iron, phosphorus, and other minerals; chickpea is an important part of a vegetarian's diet (Latham, 1997). The majority of chickpea production

and consumption (95 per cent) takes place in underdeveloped countries. According to Kaur *et al.* (2007), infections brought on by fungal, bacterial, nematode, mycoplasma, and viral pathogens have been documented to affect chickpeas. Throughout, 32 countries around the world have reported having the widespread chickpea wilt caused by *F. oxysporum*, and six fungal infections have been identified as being serious and leading to significant crop loss (Haware *et al.*, 1986; John *et al.*, 2022; Kaur *et al.*, 2007). In India, the fungus causes substantial yield losses of 10-15 per cent, which can rise to 60-70 per cent in years of severe epidemics (Jalali *et al.*, 1999).

Chemically synthesized organic and inorganic compound and their indiscriminate use in agriculture have been continued for many years. Chemical treatments for plant diseases are costly while at the same time, biomagnification and toxic consequences of these chemicals have created environmental and public health issues (Shanmugaiiah *et al.*, 2015). In addition, chemical-based treatment causes decreased soil productivity, crop quality, and yield loss.

In this scenario, in contemporary agriculture, the use of biological control agents as fungicide alternatives is steadily expanding. *P. fluorescens* can be used to biologically control several plant pathogens, and using plant growth promoting rhizobacteria strains, especially those from the genus *Pseudomonas*, to do so is an effective alternative to using chemical pesticides to control plant diseases, according to several studies (Kumari and Khanna 2019). The exceptional ability of the soil bacterium, *Pseudomonas* to control phytopathogens through a variety of mechanisms, including the production of antibiotics, siderophores, and lytic enzymes, as well as the release

Corresponding author: Dr. Amit Kumar Maurya

Department of Agriculture, Ghanshyam Urvashi P.G College, Phoolpur-211002, Prayagraj, Uttar Pradesh, India

E-mail: maurya.amit856@gmail.com

Tel.: +91-6386992790

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COMPARATIVE STUDY OF PHYTOCHEMICAL ACTIVITY OF TULSI SPS. (*OCIMUM TENUIFLORUM* AND *OCIMUM SANCTUM*)

Shabnam Sultana * , Dr. Madhumita Pandey

Phd Scholar, Department of Botany , Netaji Subhas University, Jamshedpur

Assistant Professor , Department of Botany , Netaji Subhas University,

*Corresponding author (mail id- shabnasultanaa86@ gmail.com)

Abstract:

Tulsi (*Ocimum* spp.), an aromatic plant belongs to the family, Lamiaceae. Tulsi can be grouped to two broad categories, namely holy basil (*Ocimum sanctum*) and mediterranean basil (*Ocimum basilicum*). The present study was carried out to compare phytochemical activity of two Tulsi species, namely Rama Tulsi (*Ocimum sanctum*), Krishna Tulsi (*Ocimum tenuiflorum*).

The study revealed that all the both species possess varied amounts of phytochemicals qualitatively and the best therapeutic character. These plants may prove to be a rich source of compounds with possible antimicrobial activities, but more pharmacological investigations are necessary.

Key words: *Ocimum sanctum*, *Ocimum tenuiflorum*, Phytochemicals, Therapeutic character

Introduction

It is an aromatic plant. Plants have served human kind as sources of medicinal agents since its earliest beginnings. In fact natural product once served as the source of all drugs. The main chemical constituents of Tulsi are: Oleanolic acid, Ursolic acid, Rosmarinic acid, Eugenol, Carvacrol, Linalool, and β -caryophyllene, have been used extensively for many years in food products, perfumery, and dental and oral products.

Ocimum Sanctum also known as Tulsi family of the *ocimum sanctum* is laminaceae. *Ocimum sanctum* are produced in India and Southeast Asia, India is the largest sources of medicinal plant in whole world. Herbs have been provided therapeutic potential to the health of individual. The demand of this plant are increasing day by day for medicinal purpose [1].

Holy Basil also known as Tulsi (*Ocimum sanctum*), an aromatic herb has healing and curative properties. It is a sacred herb in India and is grown in all houses, temples, gardens, etc

Tulsi is used in treatment of a number of diseases like mental illness, cough and fever, gut diseases, bone and joint problems, eye diseases and other optic problems, ringworm, insect bite, snake bite and scorpion bite and malaria [2].

Holy basil is one of the most worshiped and consumed herb in India. There are approximately 60 species identified under the *Ocimum* genus in plant family lamiaceae. Scientific studies show that it has anti-inflammatory, antioxidant, antibacterial, analgesic, antipyretic, cancer fighting, immune booster properties [3]

Tulsi has antimicrobial activities against many pathogens and can be used as mouth wash agent, for wound healing, and preservation of food stuff. Tulsi is antibacterial, antiviral, antifungal, antiprotozoal, antimalarial, and can be used also for killing mosquitoes [4].

It has anti-oxidants and can be used as anti-cataract agent, anti-inflammatory agent, as well as protects from chemicals and radiations, good for the liver and nerves and heart, anticancerous agent, protects the



**FOREIGN POLICY AND SUSTAINABLE DEVELOPMENT GOALS: A PATH TOWARDS
GLOBAL PROGRESS**

Triveni Kumari¹ and Dr. Manish Ranjan^{2*}

¹Research Scholar, Department of Political Science, Netaji Subhas University, Jamshedpur

^{2*} Head & Assistant Professor, Department of Political Science, Netaji Subhas University,
Jamshedpur

Abstract:

This paper explores the crucial role of foreign policy in advancing the sustainable Development Goals (SDGs) established by the United Nations. The SDGs encompass a broad spectrum of objectives aimed at creating a more equitable future for all by 2030. By aligning foreign policy with the SDGs, countries can contribute sustainably to global efforts in achieving these goals. This paper examines various ways in which foreign policy can support the SDGs, including diplomatic cooperation, development assistance, trade and economic policies, peace and security, climate change and environmental protection, as well as human rights and gender equality. By understanding the interconnectedness between foreign policy and sustainable development, policymakers can foster international collaboration and address pressing global challenges, ultimately paving the way for a more prosperous and inclusive world.

Key word: Foreign policy, human rights, alignments, Sustainable Development Goals, diplomacy, trade policy, global corporations, climate change, gender equality, peace and security

Introduction:

Foreign policy is a fundamental aspect of a nation's governance that shapes its interactions and engagement with other countries on various fronts, including political, economic, and security matters. In recent years, the concept of foreign policy has expanded beyond traditional realms to encompass broader global goals, such as the sustainable development goals. The SDGs adopted by the United Nations in 2015, providing a comprehensive framework for addressing pressing global challenges and promoting sustainable development worldwide. They comprised 17 interconnected goals, encompassing poverty eradication, quality education, health care, gender equality, climate action, and more. Achieving these goals by 2030 requires concerted efforts from governments, international organizations, civil society, and the private sector. The relationship between foreign policy and the SDGs is the topic of increasing importance and interest. It explores how a nation's foreign policy decisions and actions can support the progress towards the SDGs. When foreign policy aligns with sustainable development objectives, it can serve as a powerful tool for advancing the global goal through diplomatic negotiations, development assistance, climate change, and more. Foreign policy plays an important role in advancing the Sustainable Development Goals (SDGs). The SDGs are a set of 17 goals established by the United Nations in 2015, aiming to achieve a sustainable and equitable future for all by 2030. These goals cover a wide range of issues, including poverty eradication, education, healthcare, gender equality, climate action, and more. Foreign policy refers to a country's strategies and actions concerning its relationships with other nations and international organizations. By aligning foreign policy with the SDGs, countries can contribute to the global efforts of achieving these goals. Here are some ways foreign policy can support the SDGs:

Diplomacy and Cooperation: Foreign policy can facilitate diplomatic efforts and international



encourage innovation as a means to tackle sustainable development challenges. Innovation plays a important role in finding new solutions, technologies, and approaches to address complex global issues. Foreign policy can create an enabling environment for innovation by promoting research and development, supporting entrepreneurship, and facilitating knowledge exchange between countries. It can also establish policies and incentives to encourage investment in sustainable technologies and promote the diffusion of innovation across borders.

Conclusion : foreign policy has a significant role to play in advancing the SDGs and fostering innovation. Through international cooperation, partnerships, and diplomatic efforts, foreign policy can mobilize resources and drive collective action towards achieving the SDGs. Additionally, by promoting innovation and creating an enabling environment, foreign policy can spur the development and implementation of new solutions to address sustainable development challenges. A proactive and strategic foreign policy approach is essential to maximize the impact of global efforts towards the SDGs and foster a more sustainable and prosperous future for all . Foreign policy and the SDGs are intertwined, offering a pathway towards global progress. Through diplomatic channels, multilateral cooperation and partnership foreign policy can effectively contribute to the implications of the SDGs, addressing pressing Global challenges.

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Transformation Of China's Maritime Strategy In The 21st Century

Manish Ranjan*

Abstract

China's maritime development and its position across the globe under the People Liberation Army Navy (PLAN) has raised concern to the international community. China is developing its navy has never seen before. This paper is an attempt to trace the China's maritime strategy and its linkages with its ambitious project the 21st century Maritime Silk Road. The current study has focused on the role, missions and strategic transformation of PLAN. This paper also traces the China's threat perception in the maritime domain. Further the paper has discussed the China's interests from near sea to the far sea as a maritime strategy. Further this paper examines the different measures taken by China to safeguard its maritime rights and interests. The overall objective of the study is to understand the China's maritime strategy, its aspiration and its future endeavor to become a potent maritime country.

Key Words: *China, People Liberation Army Navy, Maritime Silk Road, Defence White Paper, South China Sea, Sea Line of Communication.*

Introduction

History reveals that China has one of the oldest naval tradition in the world. In past two decades it has been observed that the government of China has shown a great interest to develop and transform of its navy to protect and promote its maritime interests. China's maritime development has gone through several ups and down. In the 19th century China had lost its control of coastal lines as it has attacked and invaded several times through sea. Primarily Sino-Japanese war of 1894-95 in that China got defeated by Japanese and their forces occupied several provinces coastal areas of China. Hence, learning from the past and frequent attacks in 19th and 20th century China headed forward for its maritime development.

After the establishment of Chinese Communist Party (CCP) in 1945, People Liberation Army Navy (PLAN) has been formed for and become a large coastal force by 1957. PLAN got support of Soviet and facilitated in terms of transfer of ships and technology to China. It has developed its PLAN as a coastal defense force to counter its antagonist Taiwan and United States in 1950. China's naval development restrain between 1960-70 when its relation with soviet started crumbling due to their ideological level and territorial disputes. However, after getting a formal entry into the United Nation membership China started actively participate in international forum such as the Law of Sea negotiations. Then only China taken decision to expand its merchant marine and modernize and enlarge the shipbuilding industry and port facilities.

In collaboration with the Soviet Union, China developed its maritime infrastructure including merchant ships, naval combatants and above all nuclear submarines. China during Deng Xiaoping regime had a vision which gave four-point modernizations program to strengthen the field of agriculture, industry, national defence and science and technology to its country, which left an important impact on the coastal zone and contributed to its national economy. Not only this, but even China's academic institutions were also instructed to impart knowledge about the significance of maritime power. The central aim behind this paradigm shift in academics was intended to transform China into a strong maritime power.

In 1953 Mao stated that China has to build a strong navy to defend them against imperialist aggression. Subsequently, in 1979 Deng Xiaoping called for a powerful navy and in November 2012

* Research Scholar, Department of National Security Studies, Central University of Jammu

Envisioning Indo-China Future Prospect Through New Silk Road

Manish Ranjan

Research Scholar, Department of National Security Studies, Central University of Jammu

Email: - hellomanish.ranjan@gmail.com

Abstract

China's vision on the New Silk Road is to provide a platform for the development and growth of India as well as China. The revival of the ancient Silk Road in 21st century has the potential to change the global politics and economy of the international community. The new Silk Road comprises of two components such as Silk Road Economic Belt (SREB) and Maritime Silk Road (MSR), also known as Belt and Road Initiative (BRI). India's reservation behind opposition to the project is major concern for China. The current government showed his concerns of joining the new Silk Road as China Pakistan Economic Corridor (CPEC) passes through Kashmir region of India. It also envisions that despite many reservations among Indian diplomats, it can turn out to be a game changer in many respects - Economic development, exchange of science & technology, tourism, cultural exchange, a climate of peace and stability, and can also bring a paradigm shift which would help building trust between both the nations. The current paper attempts to envision Indo-China future prospect through the lens of the new silk road initiative proposed by Xi Jinping in 2013.

Keywords: Silk Road, BRI, SREB, MSR, CPEC, India, China.

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China's Engagement In The South China Sea

Manish Ranjan*

Abstract:

China's aspiration to become a maritime power is evident through its naval expansion in the South China Sea (SCS). In the past two decades China's activities in the SCS has increased rapidly. Chinese naval expansion, infrastructure development and its territorial claim in SCS has created concern in the region. This paper aims to explore the current situation of the SCS and examines the China's interest in the region. The current paper has analysed the SCS disputes and traces the core issues of the conflict in the region. Moreover, the paper also discussed the other claimant countries at general and explores the significance of SCS for China as well as the entire region. The current paper also highlights the geopolitics in the region and the China's naval strategy in the SCS.

Key Words: *China, South China Sea (SCS), ASEAN, Indian Ocean, UNCLOS, Exclusive Economic Zone (EEZ), Defence White Paper (DWP).*

Introduction

History reveals that the South China Sea (SCS) has always remained significant due to its strategic location. The ancient kingdoms of South Asia not only flourished on the seaborne trade but at the same time this maritime connection gave a new shape to the Southeast Asian culture; taking elements from the neighbours such as India and China. SCS domain has also played as the medium of activities between Indian, Chinese and the South-East Asians. Other than that, the identification of SCS and the Indian Ocean was not known to the early modern seafarers visiting this region. It is argued that the areas of the Indonesian archipelago falling within the realm of today's Indian Ocean region were considered as part of SCS because to the early modern Asian merchants, SCS and Indian Ocean formed one single stretch of water body with series of Seas, Islands and bays extending from east coast of Africa to west coast of Malaya and Sumatra from the Chinese coast to west coast of Malaya including the Philippines, Taiwan and the Indonesian archipelago. This whole region formed a heart of trade network in South, Southeast and East Asian Region (Bhattacharya 2017). In the past two decades it is evident that the dispute in the SCS is on its pick. The SCS is one of the largest, semi-enclosed sea located in the south of mainland China and Taiwan, east of Vietnam, west of the Philippines, and north of Brunei and Malaysia in the Pacific Ocean. SCS covers 1,40,000 square miles with several islands. The most important groups of islands are the Paracel Islands and the Spratly Islands. The SCS is strategically very important and also a major shipping route that connects the Indian Ocean to the Pacific Ocean and Australia.

Importance of the South China Sea

The SCS is the economic lifeline for everything in the region right from fishing to energy exploration. The issue has gone beyond the territorial claims after the increase in energy demands by China and other countries. During 1990s, China not only occupied the Philippines controlled reefs and Spratly islands but started expanding her air and naval forces adopting an aggressive posture in the SCS. China not only pursues to protect its political interests but also security and economic interest. One-third of the total world trade-ships cross every year and it is estimated \$5 trillion worth of goods are transported through SCS shipping lanes each year (Fensom 2016). In a quantity with two-thirds of South Korea's energy supplies, nearly 60% of Japan's and Taiwan's, and 80% of China's crude oil imports flow through the. Moreover, the SCS has a massive potential of gas and oil reserves and natural resources. Approximately 11 billion barrel oil and 190 lakh crore cubic feet natural gas, 12% of world fish, approximately 30% of the coral reefs in the world are located in the SCS (Sen 2016). The SCS maritime zone is coming up as a crucial factor in the geopolitical affair of Asia as the global power shifting.

The South China Sea Dispute

The SCS dispute is related to territorial sovereignty in oceans whereas the Paracel and the Spratly are the major disputed islands in the region. Although, these two islands Paracel and Spratly islands claimed in whole or part by several countries but China also claims upon these two as their territorial water which is the foremost issue of dispute between China and Philippines (Keck 2014). Both the Philippines and China claim to the Scarborough

* Research Scholar, Department of National Security Studies, Central University of Jammu

resources. Also SCS is strategically, economically and politically more important. Chinese energy demand has increased in past two decades and seeking for huge amount of energy and resources for the development of China and fulfil its demand of the citizens of China. Chinese engagements in SCS with its infrastructure developments and artificial ports building showing not only its geographical expansion but also military muscles to the other countries in the region. There is a need of trust building between China and the ASEAN countries. In 2013 China has announced its 21st century Maritime Silk Road, which is also an ambitious project of China. For the successful of Chinese project there is a need of trust building among the SCS countries. China have to show big heart to maintain peace, harmony and prosperity in the region. This is only a mechanism which will help both China and SCS countries in their development. But one should not forget that China is very cunning and self-centric nation. Hence, it before accepting any Chinese proposal every nation should think thousands of time.

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River Water Dispute: A Factor in Indo-China Relations

Manish Ranjan

PhD Scholar, Dept. of National Security Studies, Central University of Jammu, J&K

Dr. R. Sudhakar

Assistant Professor, Dept. of National Security Studies, Central University of Jammu, J&K

Abstract

India and China not only share a 3488 km long border but also share numerous watercourses including Brahmaputra River which is one among the major rivers of Asia. While both the riparian nations are water stressed, as well as the scarcity may worsen the competition over the shared water resources in their trans-boundary rivers, particularly the Brahmaputra River is set to intensify. Despite the many attempts made by India still there is no treaty between the two nations for water sharing device mechanism to govern and manage the water resources. Since, there is no effective working mechanism between the countries and in addition China's construction of dams (along Yarlung Zangbo), hydro power projects and its plan to divert the course of the rivers will seriously affect the agriculture and livelihoods of the entire region of North East India and water conflicts could potentially become a serious challenge and may further overshadow the border dispute and make relations between the neighbours more stained and complex. The issue can be harmoniously resolved through an institutionalized agreement on sharing the Brahmaputra River water between the two riparian states.

Keywords: Water Conflicts, India-China, Brahmaputra River Dispute, Great Bend Northeast.

Introduction

Brahmaputra is a trans-boundary river originates from Himalaya in south of Tibet near Mansarovar, flows through China, India and Bangladesh. The Brahmaputra River also known as *Yarlung Tsangpo* in Tibetan language and is the major arm of the Ganga-Meghna- Brahmaputra system. It passes to south meet at Padma (branch of Ganga), then it further flows to Bay of Bengal through Bangladesh after travelling to 2900 km. Brahmaputra is a life line for north-east region and is 29th longest river of the world flowing around 918 kms in India and 363 kms in Bangladesh.¹ Brahmaputra is a precious gift of nature endowed with enormous natural resources and the huge potential with water resources of India's total hydropower 41% and 30% respectively.² The average discharge of the river is about 19,300 cubic meters per second and it is navigable for most of its length. The potential for hydroelectricity generation from the river is great and essential for developing countries like India and China. Brahmaputra is a wealth of river in northeast region as well considered as sacred in India. With the five percent of India's total area and thirty percent of total national water resources Northeast is having 16,589 cubic meters water availability as compared to the national figure of 2,208 cubic meters. It has also shaped since many years the socio economic, cultural, religious, political and linguistic fabric of the northeast region of India. Brahmaputra river play a key role to meet their livelihood in the form of fishing, cultivation of different types of crops, irrigation, cattle and transportation including men, materials and animals. During the colonial period Brahmaputra has served as a means of transportation and communication of merchandise and people from and to northeast. The river was used for the export of tea, leather, jute grown in earlier time from Assam to Calcutta (now Kolkata) and vice-versa. Fishing, marine farming, agriculture is the main occupation of the people of northeast. Ship transportation creates employment in the region for thousands of people.

Bank of Brahmaputra is also famous for tourist hot spots, especially cruise tourism has emerged as an important adventure and pleasure tourism across the river and recognized as one of the top 10 most adventures cruises by CNN. This river contributes daily basis to about 30 percent of the total average people in the region get direct daily employment in the ferries, in bamboo transportation trade, retail shops and services units along the river and indirect employment. In Assam there are 46 dams situated in the Brahmaputra basin out of which three are in various stages

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HOSPITALITY INDUSTRY: STILL A CHALLENGING CAREER PATH FOR WOMEN
A Review Study

Ananya Shahi^{1*}, Dr. Puja Prasad^{2*}

¹Research Scholar, Department of Management, Netaji Subhas University, Jamshedpur

²Assistant Professor, Department of Management, Netaji Subhas University, Jamshedpur

Authors Email id: ananyathakur025@gmail.com

*Corresponding Author Email id: puja@nsuniv.ac.in

Inclusion and Equity are the need of every organisation for a sustainable future. This study explores the multi-faceted factors that influence women employment in the hospitality industry. Despite considerable progress towards gender equality in various sectors, women still face numerous barriers in accessing and advancing within hospitality related roles. These challenges are termed as "glass ceiling" which prevents women from rising up in the hierarchical pyramid. The study explores socio-cultural, personal and organisational factors that impact women employment in the hospitality industry, with the aim of providing suggestion to overcome these hurdles. The study is completely a secondary data where 30 related papers (10 Indian and 20 International) have been reviewed. The study highlights the key factors that impact women employment in the hospitality sector and also identifies the best practices that can be implemented to overcome these challenges.

Keywords- Glass Ceiling, Gender equality, Hospitality industry, Diversity, Inclusion, Equity

Introduction

Today's date diversity and inclusion is not just a practice or policy that needs to be implemented by the organisation, but a requirement from government or society, it has become the ladder to success and growth of an organisation. (Aradhya) A study done by BCG reflected that a more diverse organisation have increased revenues also a study done by Deloitte reflected that diverse companies have 2.3 times higher revenues per employee. Study by Gartner showed that a diverse workforce has 30% better performance than a non-diverse one. India is a country of unity in diversity and I strongly believe that our workforce should also be an epitome of the same. Diversity has a very wide domain and it goes way beyond the difference of gender, age, caste and ethnicity. Embracing the differences and accepting individual with all the differences that they may have from us leads to a true diverse and inclusive workplace. Our workplace should be such a place where every employee feels welcomed, safe and comfortable to be their true selves. This leads to a sense of belongingness and dedication towards the organisation and helps to harness the best from each and every employee. Studies have shown that diversity leads to employee engagement which further leads to more commitment towards the organisation and hence productivity increases. Just hiring a diverse workforce or formulating diversity support policies is not enough, retaining this diverse workforce is also equally important and the best way to do so is to treat them fairly and equally and accept them completely as an individual not only for their skills but also for their traits that make them unique. Diversity is a half achieved goal unless it is combined with inclusion. Organisations should not focus only on achieving diversity as it is not enough, it must be combined with inclusion. It will help in harnessing the long term benefits of a diverse workforce.



FACTOR IMPACTING THE WORK ENGAGEMENT IN IT SECTOR IN INDIA

Aditi Gupta 1* , Dr. Puja Prasad 2 *

1 Research Scholar, Department of Management, Netaji Subhas University, Jamshedpur

2 Assistant Professor, Department of Management, Netaji Subhas University, Jamshedpur

*Corresponding Author Email: puja@nsuniv.ac.in

ABSTRACT

Work Engagement is the burning topic for any organisation at the time of COVID 19. Engaged employees tend to contribute more to the organisation as compared to disengaged employees. It maintains a higher level of commitment and productivity in the organisation. It is observed in the IT sector that most of the employees are disengaged, as at the time of COVID 19, they had to work from home, and the level of stress and time management was difficult for them to manage. So it is one of the challenging jobs of every HR manager to keep their employees engaged. This research paper attempted to analyse the factors impacting the work engagement of employees working in the IT sector. The respondents were selected randomly, and a structured questionnaire was sent to the employee through the mail. The total number of employees selected for the study was 100. The associations between Utrecht Work Engagement Scale (UWES) scores and other variables were examined using a multiple regression analysis. This study's findings show that improving the level of health, job satisfaction, and stress is the best focus when implementing health and productivity management in the IT sector to increase WE.

Keywords: Work Engagement, Productivity, Engagement, Stress, Job Satisfaction.

Introduction

In today's generation attracting employees is a crucial agenda for all organisation world wide. Now- a-days human capital becomes extensively important because of advanced knowledge requirement in the work field. It is not only important to bring oneself physically at work place , but also important to bring their entire selves at work place. According to Wikipedia.com Absorption can be defined as being completely concentrated and happily engrossed in ones work where it becomes difficult to detach them from their work, Vigour can be characterised by extreme potential of energy and mental devotion towards ones work and dedication refers to ones strong involvement in their work with enthusiasm , pride and challenge. We may realize that only satisfied employees is not enough in todays fast moving organisation but there is urgent requirement of committed employees who is absolutely focused for self as well as organisation's development and growth for which proper work engagement strategy is required.

According to "indeed editorial team" there are 15 different types of industry sections which currently exist and are more diverse then those existed 20 years ago. No matter what type of industry we are talking about ,IT is something which has undertaken and has become backbone of all types of industry.



In this paper I am going to deal with work engagement of only IT sector industry, with its quick development and cutting down edge contest, the Information Technology and Information technology enabled service is altering Indian corporate standard.

According to IBEF (India Brand Equity Foundation) February 2023 data, the IT sector has become one of the most significant growth catalyst for Indian economy. It plays key role in the economic transformation of nation and has helped to regain a significant position in the global economy. Since organisations are now focusing on enhancing their internal environment by routinely implementing effective work engagement techniques in order to retain a highly motivated employee force. Therefore in-depth study of subject becomes necessary to better understand the different element that positively affect work engagement in IT organisation as well as to identify factors that provide problem for implementing efficient work engagement techniques. According to business standard (2023) with the COVID-19 pandemic, employee engagement and retention have become the worst-hit areas of businesses in the technology sector. Employee retention and engagement have been the areas of technology organisations that have been most impacted by the COVID-19 pandemic, according to a People Asset report. Revenue, client retention, new client acquisition, and employee productivity have all suffered significantly as a result of the pandemic. Senior leaders, who made up 88.9% of the sample, acknowledged the effect on their organisations, citing difficulties with communication, teamwork, work-life balance, and a lack of association and interconnectedness. As businesses struggle to fill talent gaps, the crisis has created a supply-demand imbalance.

Literature Review

Dr. Manjunath S. et al., (2018) The study was conducted on “Winning effective employee engagement in IT sector : An analysis on emerging trends and challenges”. The objective of the study was to reveal various challenges that arise in the effective engagement in IT sector for this purpose a group of IT professionals were interviewed. The study concluded that Employee engagement is the critical function which need consistent research and constant monitoring.

Baklaieva, (2016) The study was conducted on “Meaningfulness of work, work engagement and intention to leave “. The objective of the study was to investigate the psychological meaningfulness of work relates to work engagement and intention to leave for this purpose 200 respondents were taken from different companies and position. The outcome of the study revealed that there is a strong positive relationship between psychological meaningfulness of work and work engagement and a strong negative relationship between psychological meaningfulness and intention to leave as well as work engagement and intention to leave.

Caroline Knight, et al., (2016) The study was conducted on “Building work engagement :A systematic review and meta analysis investigating the effectiveness of work engagement interventions”. The objective of the study was to assess the evidence for the effectiveness of work engagement intervention, for this purpose 20 studies were met using UWES (Utrecht Work Engagement Scale) containing relevant quantitative data. The result concluded that the overall effect of work engagement was small but positive.



Eldor, (2016) The study was conducted on “ Work Engagement: towards a general Theoretical Enriching model. The objectives of the study was to promote work engagement among employees in an organization. For this purpose competetive study was done. The result concluded that comprehensive, holistic model is required for improving human resource development practisioners.

Garg, (2014) The study was conducted on “ Impact of employee engagement on IT sector” . The objective of the study was to know how the employee engaagement plays crucial role in modifying inclusive structure of an organisation . The result concluded that although every business is impacted by employee engaagement , the information technology (IT) industry is most in the focus.

B.Bakker,(2022) The study was conducted on “ The Social psychology of work engaagement : state of the field. The objective of the study was to create a theoretical framework and examines how employess actively influence and are influenced by their leaders, partners and coworkers level of a job engagemnt. For this purpose author incorporate research on leadership proactive work behaviour , team work involvement , emotiinal contagioius and work to family spill over. The result concluded that work engaagement is the resultof various social psychological process.

Wilmar B. Schaufeli, (2013) The study was conducted on “work engagement : a critical assesement of the concept and its measurement”. The objective of th estudy ststes that employee level of engagemenet is crucial for the organisation. The study was conducted through self report questionnaire. The result of the study states that level of work engagement can be enhanced through organisation measure such as building of job and personal resource.

Jari J.Hakanen, (2006) The study was conducted on “Burnout and work engaagmeent among teachers”. The objective of the study was to investigate how teachers working condition affect their health issue and organisation commitment through job related well being such as work engagement and burnout. For this purpose 2038 samples were collected from teachers of education department. The result concluded that teacing profession would predict ill health through threir influence on burnout and that the demand of teaching.

Arnold B. Bakker,et.al., (2011) The study was conducted on “ Work engagement : further reflection on the state of play”. The objective ogf the study was to reflect key themis which included theory and m,easurement of engagement, climate for engagaemnet versus collective enagement etc. For this purpose eight preeminent work engegemenet researcher were selected to respond . The result concluded that engagement can be rationally conceptualised as a happy highly aroused and energetic affective state.

Vanden Heuvei Machteed,et.al.,(2010) The study was conducted on “ The personal rresource and work engagement in the face of change. The objective of the study wsa to maintain work engaagement in the face of change. The aim of the study was to increase understanding of the factors that contributed to the positive organisational change from both organisation and employee prespective. For this purpose a research model was developed which provided a micro level frame work for ananlysing relationship between personal resource and job engegement and their performance in time of change.



Research Methodology

Measurement This study is inquiring into the factors that may affect employee engagement among employees in the construction industry. Quantitative research had conducted which incorporates scientific research to investigate the relationship between the independent and dependent variables. The instrumentation for this study comprises of self-administered questionnaires as a primary source. By using a Likert type scale one until 5, a set of the survey was administered to the respondents via the online questionnaire method. Data are collected by using SPSS software (version 23.0). The Cronbach alpha values for both pre and actual test are above 0.7. It shows that this study is reliable. The primary and secondary data was used for data collection and correlation and regression analysis was done for finding the factor which is influence the work engagement .

Objective of the study

- 1) To study the demografic profie of the respondents in the IT Sector .
- 2) To study the association among health issue with WE in IT Sector.
- 3) To study the association among job satisfaction with WE in IT sector .
- 4) To study the association among stress with WE in IT in IT sector.

Hypothesis

H01 : There is significant relationship between healthissue and WE in the IT Sector.

H02 :There is significant relationship between job satisfaction with WE in IT sector .

H03: There is significant relationship between stress with WE in IT in IT sector.

ANALYSIS OF THE STUDY

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Sex	100	1	2	1.66	.473
Age Group	100	1	3	1.99	.338
Education	100	1	3	1.66	.502
Marital Status	100	1	2	1.25	.434
Designation	100	1	9	3.68	2.420
Work Experience	100	1	4	2.85	.756
Valid N (List wise)	100				



Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Total health issue	100	15	42	38.38	4.552
Total stress	100	45	112	102.15	9.278
Total job satisfaction	100	8	35	31.51	4.436
Total Performance	100	10	35	31.38	4.749
Total Work Itself	100	21	56	50.77	6.514
Valid N (List wise)	100				
	100				

Intrepretation : The statistical analysis of the data revealed that mean value of work Engagement in designation is high as 3.68 and similarly the mean value of stress in work environment is scored high 102.15.

Table 1.2 Correlations

Particulars	Correlation	Significance value
Gender	0.261	0.28
Age Group	0.253	0.33
Education	0.258	.044
Marital Status	0.018	0.628
Designation	0.018	.428
Work Experience	0.049	0.04

Intrepretation : The correlation was applied to test the relationship between demographic profile with total work Engagement from the above data it was revealed that only gender, age group, designation and work experience is having significant relationship with work Engagement and marital status have no significant relationship with WE.

1.3 REGRESSION ANALYSIS

PARTICULARS	R	R SQUARE	F	SIG
JOB SATISFACTION	.847	.702	1048.306	.000
STRESS	.648	.646	756.451	.000
HEALTH ISSUE	.535	.532	458.368	.000

Intrepretation : The regression table 1.3 state that job satisfaction have higher impact on WE followed by stress and health issue as the p value is 0.00 which indicate significant relation ship .



Conclusion :

From the above study it can be concluded that how the collected data are interconnected to each other and how we can focus on to the variables so as to ensure efficient work engagement in the IT sector. This data would help the organisation to focus on certain element to make their employees work with full enthusiasm and energy. This study sought to determine the elements affecting remote workers' commitment to their jobs in the Indian IT sector during the COVID-19 pandemic. We discovered that high levels of work engagement in Indian workers who work from home are associated with communicating frequently with superiors, avoiding working long hours, and getting enough sleep. This implies that programmes designed to address these issues could increase workers' levels of job engagement.

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New Trends of Accounting and Its Effects on Corporate Sector

Rakesh Kumar

Research Scholar

Deptt. Of Commerce

Kolhan University, Chaibasa

Abstract

The adoption of new Accounting Standards (such as AS-22: Accounting for Taxes on Income, AS-28: Impairment of Assets, etc.) has affected profitability of companies. This is in view of the stringent recognition and measurement guidelines laid down by the new Accounting Standards. The new Accounting Standards also require that adequate training be imparted to both accountants and CFOs. Auditors also have had to grapple with interpretation issues. In many cases, where clarifications have not been readily available, the benefit of the doubt has, more often than not, been given to the companies. In addition to the formulation of the Accounting Standards, ICAI has also been active in issuing Auditing and Assurance Standards (AAS). AAS (or SAPs as they were earlier called) are mandatory for auditors to follow while giving their opinion on the "truth and fairness" of financial statements. The AAS issued by the Auditing and Assurance Standards Board of ICAI follow the International Standards on Auditing (ISAs) issued by IFAC. Till date, ICAI has issued 34 AAS.

Keywords: - Accounting Standards; Measurement Guidelines; Financial Statements

Introduction

Accounting as a branch of knowledge emerged as it was felt that a short pencil is better than long memory. All the transactions that were undertaken by any entity in the old days grew to such an extent that it became impossible for anyone to manage all of them by memory alone. Gradually as trade and commerce developed, accounting became a requirement and then a necessity. Not only does the law requires every organization to prepare the accounts but also decides on the format and other issues. Today, accounting has a far greater significance because of the role it plays in decision-making process. The Government accounts and financial reporting currently followed in our country derive their 'substance and form' largely from the accounting procedures introduced during the British rule. The system worked reasonably well in the early phase of post-independence era. But over the last two to three decades, there has been a significant change in the role and responsibilities of the government. Today, our government is expected to continuously review itself in light of the changes that are taking place and should not hesitate in implementing any such change that is desired in the current scenario. An examination of the possible areas where our Government can presently make any meaningful change is the change in the country's accounting system from cash to accrual basis. This is because an accounting system is not an end in itself but rather a means to an end. A sound accounting system should assist the Government in fulfilling its objectives in a changing scenario by providing the desired inputs for decision-making. It needs to disseminate information of high quality in terms of understandability, relevance, materiality, reliability, faithful representation, substance over form, neutrality, prudence and comparability. The present system of accounting does not fulfill

An Analysis of the Revenue Recognition Guidance

Rakesh Kumar

Research scholar,
Deptt. Of Commerce,
Kolhan University, Chaibasa.

Dr. Deepa Sharan

Faculty of Commerce,
Co-ordinator of MBA,
Jamshedpur Women's College
Kolhan University, Chaibasa.

Abstract

The Financial Accounting Standards Board (FASB) and International Accounting Standards Board (IASB) recently issued their long-awaited, substantially converged final standards on revenue recognition. These final standards are the culmination of a joint project between the Boards that has spanned many years. FASB's Accounting Standards Update (ASU) 2014-09, Revenue from Contracts with Customers, will substantially replace the numerous industry based accounting and audit guides, which have been codified in the FASB Accounting Standards Codification (ASC), Revenue Recognition. The new standard provides a robust framework for addressing revenue recognition issues and, upon its effective date, replaces almost all existing revenue recognition guidance, including industry-specific guidance. Given the broad applicability and potentially significant ramifications of the guidance in the ASU, FASB provided significantly delayed effective dates for its guidance. The standard is effective for public entities for annual reporting periods beginning after December 15, 2016, including interim periods therein. The standard is effective for non-public entities for annual reporting periods beginning after December 15, 2017. FASB did not permit early adoption. However, a non-public company may elect to apply the guidance early so long as it is after the effective date for public companies.

Keywords: - Financial Accounting; Substantially; Industry Based; Effective; Guidance

Introduction

Revenue is almost always the single largest item reported in a company's income statement. As with bottom-line income, top-line revenue is significant not only in monetary terms but also in its importance to investors' decision-making process; trends and growth in a company's revenue are barometers of the company's past performance and future prospects. Consequently, revenue recognition has been one of the most important issues confronting standard setters and accountants. One of the critical issues with respect to revenue recognition is timing, i.e., the appropriate point in the sales cycle when revenue should be recognized. India GAAP broadly stipulates that revenue should be recognized when it is realized/ realizable and earned. However, in practice, the timing of revenue recognition is complicated because of the complexity and diversity in the underlying revenue-generating transactions. Companies frequently have opportunities to accelerate revenue through early recognition—for example, by recognizing revenue before transfer of title and/or shipment of product, or at a time when the customer still has the option to terminate, void, or delay the sale. Recently, early revenue recognition has drawn the attention of standard setters. Despite the importance of revenue recognition in financial reporting and the recent attention devoted by standard setters, there is surprisingly little empirical research examining revenue recognition in general and revenue recognition timing in particular. One reason for the paucity of research in this area is the difficulty in obtaining data related to revenue recognition policies. In this study, I exploit a unique situation around the promulgation of Statement of Position (SOP) on Software Revenue

Implementation of Indian Accounting standards

*Rakesh Kumar

** Dr. Deepa Sharan

Abstract

Corporate transparency refers to removing barriers to and facilitating of free and easy public access to corporate information. Accounting standards are methodologies and disclosure requirements for the preparation and presentation of financial statements. Accounting standards are usually developed within the institutional and professional framework of a country, and promulgated by regulatory or professional accountancy bodies. Indian Accounting standards issued by Institute of Chartered Accountants of India is being harmonized with internationally recognized set of benchmark standards such as International Accounting Standards or the U.S. GAAP. The study is an empirical investigation on sample of listed companies to determine the extent of compliance with accounting standards leading to transparency in their financial statements. The paper is based on primary survey of Annual reports. Indian Accounting Standards mandatory for the listed companies are compared with disclosures made by the companies. The paper examines whether a significant relationship exists between disclosure in financial reporting and a number of key corporate characteristics like size, profitability, leverage, age of company etc. The collected data is being analyzed with Regression Analysis [OLS]. Indian companies have shown high degree of compliance with disclosure requirements of Accounting Standards.

Keywords: - Corporate Transparency; Accounting Standards; Corporate information; Professional framework.

Introduction

Accounting standards are formulated with a view to harmonize different accounting policies and practices in use in a country. The objective of accounting standards is, therefore, to reduce the accounting alternatives in the preparation of financial statements within the bounds of rationality, thereby ensuring comparability of

* Research Scholar, Deptt. Of Commerce, Kolhan university, Chaibasa, Jharkhand.

** Faculty Of Commerce, Co-ordinator of MBA, Jamshedpur Women's College, Kolhan University.

Alternative Investment Markets: Surfing the Market

Deepa Sharan¹, Rakesh Kumar²

¹Dean & Head, Faculty of Commerce, Jamshedpur Women's College,
Kolhan University, Chaibasa, Jharkhand

²Research Scholars, Deptt. of Commerce,
Kolhan University,
Chaibasa, Jharkhand

Abstract

Over the past few years, hedge funds and related alternative investments have gained in popularity as traditional assets such as equities, corporate bonds, and venture capital have lost considerable market value due to the worsening economic conditions. Ideally, a hedge fund offers diversification benefits without a large reduction in expected profit/returns. University endowments in the India have benefited by this approach. In this context, a desirable pattern would be to achieve the expected gains of equity assets or even better, with substantial diversification benefits. While this goal may be elusive in the short run, we show that certain forms of hedge funds – namely funds that follow trends – can play a role in dynamic, multi-period asset allocation. Selected hedge funds employ trend-following strategies in an attempt to achieve superior risk adjusted returns. We employ a look back straddle approach for evaluating the return characteristics of a trend following strategy. The strategies can improve investor performance in the context of a multi-period dynamic portfolio model. The gains are achieved by taking advantage of the funds' high level of volatility. A set of empirical results confirms the advantages of the look back straddle for investors at the top end of the multi-period efficient frontier.

Keywords: - Diversification Benefits; Efficient Frontier; Hedge Funds; Strategies; Straddle Approach

Growth of Rural Banking in India: A Case Study of Regional Rural Banks in Jharkhand

Corresponding Author

1. Dr. Himadri Bhakat

Former Asst. Prof. (Cont.), Department of Commerce, LBSM College, Karandih, Jamshedpur

2. Dr. Rakesh Kumar

Head Dept of Commerce, Netaji Subhas University, Jamshedpur, Jharkhand

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Type: General Review

Publisher: TOUCAN Research and Development

Abstract

The banking sector is a vital component of the economy. Its functions and services have a considerable impact on modern economic activities. The Indian economy is based on agriculture, and true India is found in villages. The Indian economy is built on the backbone of village economies. Even after 60 years of independence, India's rural economy continues to be hampered by infrastructure and other long-standing farmer issues. It is the rural sector, in fact, which determines economic advancement and industrial development. More than 70% of Indians rely on agriculture; 60% of industries are agro-based; the rural sector contributes 50% of

national income; and the agricultural sector is India's greatest foreign exchange earner. In our country, the Reserve Bank of India (RBI) has established a monetary policy aimed at providing affordable banking services to both the poorest and least paid parties. For a number of reasons, banking services are available mainly in urban areas, but the rural areas of India are not well covered. Rural development plays a major role in the development of the global economy. The researcher would cover several aspects of rural banking and the various challenges faced by the industry.

Keywords: Banking Services; Economic Activities; Foreign Exchange; Industrial Development

Barriers to Digital Finance Adoption: Insights from Semi-Urban India-A Case Study of Jamshedpur

Corresponding Author

1. Dr. Rakesh Kumar

Head, Department of Commerce, Netaji Subhas University, Jamshedpur

2. Dr. Himadri Bhakat

Former Asst. Prof. (Cont.), Department of Commerce, LBSM College, Karandih, Jamshedpur

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Type: General Review

Publisher: TOUCAN Research and Development

Abstract

This study explores the barriers to digital finance adoption in semi-urban India, focusing on the case of Jamshedpur. Despite significant strides in digital finance, adoption remains uneven, particularly in semi-urban regions where factors such as inadequate digital literacy, limited access to technology, and infrastructural deficits impede progress. Utilizing a mixed-methods approach, this research draws on primary data from field surveys and interviews with local stakeholders, as well as secondary data from relevant financial reports. The findings identify critical roadblocks, including trust deficits in digital platforms, resistance to change among traditional business operators, and gaps in government outreach initiatives. The study also

highlights potential enablers, such as targeted digital literacy programs and localized fintech solutions, which could bridge the gap between financial inclusion objectives and on-ground realities. This research provides actionable insights for policymakers, financial institutions, and technology providers to foster equitable digital finance adoption, ultimately contributing to sustainable economic growth in India.

Keywords: Financial Inclusion, Digital Finance, MSMEs, Fintech, Economic Growth, India, Regulatory Framework.

1. Introduction

- **Overview of the Indian Financial Landscape** The Indian financial system has

Role of Blockchain in Banking Sector: An Overview

Dr. Ranjan Kumar Mishra

Associate Professor, Department of IT

Netaji Subhas University, Jamshedpur, Jharlhand, India

Abstract:

"Any financial operation that has low transparency and limited traceability is vulnerable to disruption by blockchain applications."

Bruce Weber and Andrew Novocin

Banking sector has been always acting as an intermediary to perform different type of financial transactions. They have been also providing the trust required for flow of funds. Technology has always be an integral part of banking system. With the advancement in information and technology, banks have consistently adapted their working style. So, banking industry is fully dependent on technologies to perform their day to day operations. Thus, blockchain could be the significant catalyst to help banking industry

Recent advances in Blockchain technology has opened up a vast array of decentralized and distributed systems. The roots of Blockchain originated from cryptocurrency exchange.

The most significant contribution of this technology is it gets rid of the third-party functioning as a mediator in systems that requires trust for any kind of transaction. From this perspective, transaction of money is fundamentally an authorized third-party mediating trade of goods or services. It is a distributed ledger technology which stores all the information in chronological order. This information is present in the ledger in the form of blocks, and each block is attached to the other.

First I will review the conventional applications of Blockchain and next propose a novel economic system in which such value-added items are exchanged without using money and without going through a third party. In the long history of economics from ancient times, the monetized economy system today has a very short record, and it is essentially based on the existence of trustworthy central banks, governments, and organizations. However in line with the recent growing sense of decentralized systems and in keeping with unstable international affairs including the recent money crisis, it is meaningful to consider alternative economic system which can exist without going through any third party.

Keywords: Blockchain, Cryptocurrency, Distributed Ledger.

Introduction:

Traditional financial systems operate with a centralised database, usually with a single point of authority. Blockchain technology, on the other hand, allows for a distributed database that holds a growing number of records. Instead of existing in one place, the ledger is continually updated and synchronised across multiple computers in a network. Therefore, any participant in the network with the proper authorisation can view the entire ledger – without relying on an intermediary or any one authority.

Another key feature of blockchain technology is a "smart contract," which is a self-executing protocol that enforces a previously agreed arrangement. For example, a smart contract could trigger an automatic refund under certain conditions

Impact of Computer Applications in Education

Dr. Ranjan Kumar Mishra

Associate Professor,

Department of IT, Netaji Subhas University Jamshedpur, Jharkhand

Abstract: The present instructive approaches are to a great extent given to encouraging the advancement and usage of computer applications in training. This paper examinations the abilities and skills required for the information based society and uncover the part and effect of utilizing computer applications to the educating and learning forms. Additionally, the point of this paper is to uncover the results of an examination led with a specific end goal to decide the effect of utilizing computer applications in educating and learning Management and to propose new open doors for the procedure change. The discoveries of this examination identified with the educators' and understudies' discernments about utilizing computer applications for instructing and learning could open further inquires about on computer applications in training and their instructive and financial ramifications.

Computers have changed the way we work, be it any calling. Along these lines, it is just yet characteristic the part of computers in training has been given a great deal of unmistakable quality in the current years. Computers assume a key part in each field. They help mechanical procedures; they discover applications in prescription; they are the core of the product business; they assume an indispensable part in training. The employments of computers in instruction are complex. Here, we should talk about the vital features of the part of computers in instruction.

Key words: computer applications, education, educational policy, teaching-learning Management, effects.

Dr. Ranjan Kr. Mishra Impact of Computer Applications in Education

Introduction:

Formal education, preparing and long lasting learning suppliers confront these days a quickly changing Societal and monetary condition. There is an expanding interest to discover better approaches to prepare instructors, understudies and specialists with the capabilities and abilities they requirement for the information based society and economy. Huge parts of the current workforce require re-skilling to guarantee employability because of fast innovative change and an inexorably benefit situated economy. In this specific circumstance, education infers today not just a solitary, computational utilization of new innovations, however the advancement of drew in peer collaborations with a common computer action. The association of informative collaboration, new advancements, the improvement of computer applications, the outline of computer-based undertakings and centered action for students to end up plainly basic scholars and makers of learning is a reality of the new educational model.

Colleges and other advanced education establishments are exceedingly required into learning creation, dissemination and learning. College's aggressive capacity relies upon establishment chance to share, spread and adjust information and also it is made. Present day understudies will require normal refreshing of their insight, aptitudes and skills. Along these lines, educators ought to scrupulously overhaul their courses and receive new instructional techniques and suitable innovations to completely misuse the advantages of online learning conditions, and computer applications in education. Adaptable and creative instructing and learning in light of computer applications will grow and will change the educational procedure. Inside a learning based society the teachers and their associations have an evolving part, in any case, in a similar time, they have to deal with the procedures related with the making of their insight resources and to profit by the utilization of computer applications. In this regard, the aptitudes and abilities required for the information based society and the effect of utilizing computer applications to the educating and learning forms are getting to be plainly essential issues to break down.

Implementation of Artificial Intelligence in the IT Industry and Its Role in Learning

1. Dr. Ranjan Kumar Mishra, Associate Professor(IT), Netaji Subhas University Jamshedpur, Jharkhand
2. Ekta Jha (Research Scholar), Netaji Subhas University, Jamshedpur, Jharkhand

ABSTRACT

This research paper explores the implementation of artificial intelligence (AI) in the IT industry and its significant role in learning. It investigates how AI technology is being integrated into various aspects of the IT industry and analyzes its impact on learning processes. By examining current trends, case studies, and research findings, the paper aims to provide insights into the benefits, challenges, and potential future developments of AI-based learning within the IT industry.

The implementation of AI in the IT industry has brought about transformative changes, revolutionizing traditional practices and offering new opportunities for efficiency and innovation. This paper examines specific areas where AI is being successfully implemented in the IT industry, such as software development, cyber security, data analysis, infrastructure management, and customer support. To show how effective AI technologies are in these fields, real-world case studies and examples are provided. To show how effective AI technologies are in these fields, real-world case studies and examples are provided.

Furthermore, the paper delves into the role of AI in enhancing learning processes. It explores how AI is reshaping traditional learning methods and introducing novel approaches. The focus is on AI-powered educational platforms, intelligent tutoring systems, personalized learning experiences, and adaptive assessments. The impact of AI on continuous learning and up-skilling within the IT industry is also examined.

The benefits of AI in learning are discussed, highlighting how it enables personalized and adaptive learning experiences, improves knowledge retention, promotes active engagement, and provides real-time feedback. However, the study also discusses the difficulties and moral issues related to the application of AI, such as algorithmic prejudice, data privacy, and potential effects on employment. Strategies to address these challenges and ensure responsible AI implementation are explored.



SUSTAINABLE DEVELOPMENT AND THE PART THAT TECHNOLOGY PLAYS

Hurmat Shahin¹, Dr. Ranjan Kumar Mishra^{2*} and Prof.(Dr.)Rajkumar Nayak³

¹Assistant Professor, Department of IT, Netaji Subhas University, Jamshedpur, India

²Assistant Professor, Department of IT, Netaji Subhas University, Jamshedpur, India

³Professor, Department of Education, Netaji Subhas University, Jamshedpur, India

* Corresponding Author: <ranjan@nsuniv.ac.in>

ABSTRACT

Technology is relied on to solve environmental issues worldwide because governments and their advisors are unwilling to make the social and political reforms needed to reduce output and consumption. To counteract the environmental damage caused by increased output and consumption, technology would need to change drastically. Technology has failed. However, without a political reevaluation, such a drastic technological revolution is unlikely. Technology and society are inextricably linked. The dispute over sustainable development hinges on whether technical advancement, even if accomplished, can mitigate economic development enough to avoid other changes. Sustainable development policies aim to transform economic growth. They believe that technology will allow us to find new resources or create alternatives if one runs out. Technology will help us maximize what remains. Sustainable development's economic tools, legislative measures, and consumer pressures target recycling, waste minimization, material substitution, improved industrial methods, pollution control, and resource efficiency. The British Pearce Report recommends recycling and rubbish reduction to reduce resource consumption and environmental damage. "The major feature of a sustainable development path of economic progress is the ability to interrupt the flow of wastes to these resources through recycling, product redesign, conservation, and low-waste technology."

Key words: Sustainable Development, Technology

INTRODUCTION

Because governments and their advisors are almost universally unwilling to make the social and political reforms that would be necessary to decrease growth in production and consumption, there is a huge reliance on technology to solve environmental concerns around the world today. However, very drastic shifts in technology would be required to keep up with and mitigate the mounting environmental damage brought on by rising output and consumption. Previous technological solutions are not adequate. However, it is still unclear if such a dramatic and radical reform of our technological systems is possible or even likely without a reevaluation of political priorities. Neither the development nor the impact of technology can be separated from the larger social context. The question of whether technical progress, even if achieved, can lessen the impact of economic development sufficiently to assure other types of change will not be necessary lies at the heart of the debate over the possible success of sustainable development.

FIRST, LET'S DEFINE SUSTAINABLE DEVELOPMENT.

The ability of future generations to satisfy their own requirements must not be sacrificed for the needs of the present, and this is what is meant by "sustainable development."

Role of Data Mining Techniques in Investment Decision Making

Jayant Kumar ¹ and Dr. Ranjan Kumar Mishra^{1*}

¹*Department of IT, Netaji Subhas University, Jamshedpur*

**Corresponding Author: ranjan@nsuniv.ac.in*

Abstract:

In today's intricate financial landscape, traditional investment methods grapple with mounting complexities and the deluge of information. To address these challenges, financial data mining has emerged as a focal point of academic inquiry in investment realms. This study aims to comprehensively review the varied applications of financial data mining in investment decision-making. It synthesizes existing research while proposing future avenues for advancement. By delving into this scholarly pursuit, the paper seeks to refine methodologies crucial for navigating modern investments adeptly. As the financial terrain evolves, this research aims to offer insights that not only bolster investment strategies but also deepen our understanding of how data mining techniques intersect with decision-making processes. Through blending empirical evidence with theoretical insights, the paper underscores the importance of employing data-driven approaches in investment practices, ultimately fostering a more sophisticated and informed investment environment.

In the ever-evolving financial landscape, traditional investment methods face growing challenges amidst a surge of information. This study investigates the pivotal role of data mining in informing investment decisions. Through a comprehensive analysis of existing research and future prospects, we explore how data mining techniques can enhance decision-making processes in the investment domain.

Keywords: Data mining, investment decision-making, financial analysis, predictive modelling, risk management.

1. Background of the Study:

An Agile Approach to the Software Testing Process

1. Dr. Ranjan Kumar Mishra, Associate Professor(IT), Netaji Subhas University, Jamshedpur, Jharkhand
2. Manjari Jha (Research Scholar), Netaji Subhas University, Jamshedpur, Jharkhand, Jamshedpur, Jharkhand

ABSTRACT

In the dynamic landscape of software development, traditional testing methodologies often struggle to keep pace with rapidly evolving requirements and market demands. The agile approach to software testing has emerged as a promising solution to address these challenges. This paper explores the principles and practices of the agile testing process, highlighting its benefits, challenges, and best practices.

The agile approach to software testing emphasizes collaboration, flexibility, and iterative development. It promotes continuous feedback and adaptation throughout the testing lifecycle, enabling teams to respond swiftly to changing requirements. By incorporating testing activities into every stage of development, from initial planning to final delivery, organizations can ensure high-quality software products that meet user expectations.

This paper delves into the core principles of agile testing, such as early and frequent testing, test automation, and cross-functional team collaboration. It discusses the various techniques and tools used in agile testing, including user stories, acceptance criteria, and exploratory testing. Additionally, it explores the integration of agile testing with other agile methodologies, such as Scrum and Kanban, and discusses the role of testers in agile teams.

While the agile approach to software testing offers numerous advantages, it also presents unique challenges. This paper explores potential obstacles and provides insights into overcoming them, such as managing the balance between speed and quality, addressing resource constraints, and maintaining effective communication within the team.

Keywords: Scrum, Integration, Adaption, Kanban

BACKGROUND OF THE STUDY

In the realm of software development, delivering high-quality software products within tight timelines has always been a challenge. Traditional software testing methodologies, often characterized by sequential and rigid processes, struggled to keep up with the increasing pace of development and evolving customer requirements. This led to a demand for a more flexible and iterative approach to software testing.

Different Correctness Testing Techniques to Find Errors

Ranjan Kumar Mishra, Scholar
Dr. Dharmendra Chahar
Shri JYT University, Churela, Jhunjhunu

ABSTRACT : Software testing is a mechanism which is designed for assessing an aspect or capability of a program and certifies that it encounters the requisite result. There are many methods to software testing, but real testing of complex product is fundamentally a procedure of examination, not purely a matter of creating and following route method. It is often incredible to find all the errors in the program. This major problem in testing thus chunks open question, as to what would be the approach that we should approve for testing. Thus, the choice of right approach at the right time will make the software testing competent and active. In this paper I have tried to describe software testing techniques which are classified as per our requirement. Here we discuss that the software testing techniques and which is best suited for the particular context.

Keywords : Correctness Testing, Performance Testing, Reliability Testing, Security Testing.

INTRODUCTION : Software testing is a set of actions lead with the determined of finding errors in software. It also authenticates and confirms whether the program is working correctly with no bugs or not. It examines the software for finding bugs. Software testing is not just used for finding and fixing of bugs but it also guarantees that the system is working according to the specifications. Software testing is a series of procedure which is intended to make sure that the computer code does what it was designed to do. Software testing is a disparaging process of exasperating to find the errors. The main tenacity of testing can be quality assurance, reliability estimation, validation or verification. The other objectives or software testing includes

- The improved it works the more efficiently it can be tested.
- Better the software can be measured more the testing can be programmed and optimized.
- The fewer the changes, the fewer the interruption to testing.
- A successful test is the one that uncovers an undiscovered error
- Testing is a process to identify the exactness and comprehensiveness of the software.
- The general objective of software testing is to affirm the quality of software system by systematically exercising the software in carefully controlled circumstances.

According to the purpose of software testing can be divided into four ways

- Correctness Testing
- Performance Testing
- Reliability Testing
- Security Testing

SOFTWARE TESTING TECHNIQUES : Software testing is a process which is used to degree the quality of software developed. It is also a process of finding errors in a program and makes it a reasonable task. It is useful process of executing program with the committed of finding bugs. The diagram below represents some of the most predominant techniques of software testing which are classified as per the requirement.

Software Process Models: A Critical Review

Srimanta Santra¹ and Dr. Ranjan Kumar Mishra^{2*}

¹Reserach Scholar, Department of IT, Netaji Subhas University, Jamshedpur

²Associate Professor, Department of IT, Netaji Subhas University, Jamshedpur

*Corresponding Author: ranjan@nsuniv.ac.in

Abstract:

Software process models are fundamental frameworks that guide the development and management of software projects. This paper presents a critical review of various software process models, analysing their strengths, weaknesses, and applicability in contemporary software engineering practices. The review encompasses traditional models such as the Waterfall model, Incremental model, and Spiral model, as well as modern agile methodologies like Scrum and Kanban.

The complexity of the software development process, which involves not only technical knowledge and skills but also a wide range of other factors like human, managerial, quality assessment, and financial considerations, has made modelling software processes an extremely difficult problem that has been the subject of constant debate in the software development community for the past 30+ years. Even yet, the circumstances of producing. Although software varies widely from case to case, many of the scenarios have certain similar characteristics, which have led to the development of different software process models to handle these common themes. This paper reviews the most widely used software process models in practice, ranging from traditional to agile, and evaluates them using metrics and case studies.

Keywords: Software Process; Software Development Life Cycle; Traditional Models; Agile Models, Process Metrics.

1. Introduction:

Software process models serve as guiding frameworks for organizing and executing software development projects. With the ever-increasing complexity and diversity of software applications, the selection of an appropriate process model is critical for ensuring project success. This introduction provides a comprehensive overview of software process models,

Machine Learning: A Solution of Real World Problems

*¹MD. Safat Alam and I Dr. Ranjan Kumar Mishra**

¹Department of IT, Netaji Subhas University, Jamshedpur

**Corresponding Author: ranjan@nsuniv.ac.in*

Abstract:

Machine learning (ML) stands at the forefront of technological innovation, offering promising solutions to a myriad of real-world problems across diverse domains. In today's data-driven world, the ability to extract meaningful insights from vast amounts of data has become paramount, and ML algorithms excel in this endeavour. From healthcare to finance, transportation to manufacturing, the applications of machine learning are virtually limitless. In healthcare, ML algorithms analyze medical imaging data to detect diseases early, assist in drug discovery, and personalize treatment plans for patients. Similarly, in finance, ML models sift through massive datasets to detect fraudulent activities, optimize investment strategies, and predict market trends with remarkable accuracy. Transportation systems leverage ML to enhance safety and efficiency, powering autonomous vehicles that navigate complex environments, predict traffic patterns, and optimize routes in real time. Moreover, ML plays a pivotal role in manufacturing, streamlining production processes, optimizing supply chains, and reducing operational costs. The methodologies of machine learning, including supervised learning, unsupervised learning, and reinforcement learning, provide versatile tools for tackling various real-world challenges. Despite its transformative potential, machine learning encounters several challenges, including data quality issues, algorithm bias, and ethical concerns. Biased datasets can lead to skewed predictions, exacerbating social inequalities and perpetuating discrimination. Ensuring fairness, transparency, and accountability in ML systems is imperative for fostering trust and mitigating potential risks. However, with continuous advancements in deep learning, natural language processing, and explainable AI techniques, the future of machine learning appears bright. As ML continues to evolve, its integration with other emerging technologies such as block chain and IoT will unlock new opportunities for solving complex real-world problems and driving societal progress. Machine learning represents a powerful tool for addressing real-world challenges, empowering organizations to leverage data-driven insights, make informed decisions, and drive positive societal impact.

Selection of Software Testing Methods depends upon the Software Projects

Mr. Ranjan Kumar Mishra, Scholar

Shri JYT University

Dr. Dharmendra Chahar

Abstract : Software testing is the process to uncover requirement, design and coding errors in the program. It is used to identify the correctness, completeness, security and quality of software products against a specification. Software testing is the process used to measure the quality of developed Computer Software. Software is becoming a key factor in most of the modern systems and devices that support important business processes in our modern society. It is an essential component of many embedded applications that control various sensitive applications such as air traffic control systems, rockets, automated banking systems, security systems and so many other applications. The failure of those systems can result into severe damage. It obvious that software testing technologies are essential for software testers. Even though there are several software testing methodologies and techniques to support the quality of software but to find relevant parameters for their applicability conditions remains an open question. We can define software testing as an activity aimed at evaluating an attribute, or capability of a program to determine, that it meets its required specification. Software testing can provide an independent view of the software to allow the business to appreciate and understand the risk of software implementation. This paper attempts to shed light on decision criteria, by describing various software testing techniques and their distinctions. The finding shows that these methodologies and techniques do not have direct influence on the quality of software but the choices we make on selecting relevant procedure for the application.

Keywords :- Software testing, software quality and standards, agile methodologies, software development, Software implementation.

INTRODUCTION : Software testing identifies defects, flaws or errors in the application code that must be fixed. We can also define software testing as a process of accessing the functionality and correctness of a software through analysis. The main purpose of testing can be quality assurance, reliability estimation, validation and verification. Software testing is a fundamental component of software quality assurance and represents a review of specification, design and coding. The main objective of software testing is to affirm the quality of software system by systematically testing the software in carefully controlled circumstances, another objective is to identify the completeness and correctness of the software, and finally it uncovers undiscovered errors.

In recent years software development has become a great field of interest due to its role in the technological innovation. Software development industries are very good at adopting the latest technology trends and development practices so as to cope with rapid growing technology. All large organizations are now integrating their systems and as a result the need of real-time systems and regular software improvement is growing dramatically. The main challenge remains to software development industries is to find a proper software development methodology and testing techniques that can sustain the existing situation in market. The traditional software development methodologies seemed to slow down software development processes due to existing time constraint situation. This study attempts to tackle the existing problem in the software development market ("Selection of relevant software development methodology and testing technique") and propose some solutions. We believe that choice of software

Applications of Emerging Technologies in Digital Libraries

Anjoo kumari¹, Lovely Patel¹ & Dr. Ranjan Kumar Mishra^{1}*

Department of IT, Netaji Subhas University

ABSTRACT

The emergence of digital libraries has profoundly transformed the landscape of information management, access, and preservation. In this era of digital transformation, the integration of emerging technologies has played a pivotal role in enhancing the capabilities and utility of digital libraries. This abstract explores the multifaceted applications of emerging technologies, including Artificial Intelligence (AI), Machine Learning (ML), Natural Language Processing (NLP), Augmented Reality (AR), Virtual Reality (VR), and blockchain, within the realm of digital libraries. By examining case studies and discussing current trends, this abstract elucidates how these technologies are revolutionizing information retrieval, content curation, user experiences, preservation, security, and inclusivity in digital libraries. Digital libraries have evolved into dynamic and interactive platforms that serve as repositories of vast digital collections, accessible to users worldwide. They have become indispensable tools for knowledge dissemination and retrieval in the digital age. The integration of emerging technologies, including AI, ML, NLP, AR, VR, and blockchain, has redefined the landscape of digital libraries. These technologies have enhanced information retrieval, content curation, user experiences, preservation, security, and inclusivity. However, it is essential to address challenges such as data privacy, bias, and technological barriers, while ensuring that ethical considerations remain at the forefront of digital library development. As digital libraries continue to evolve, these emerging technologies hold the potential to create more dynamic, inclusive, and user-centric knowledge repositories, shaping the future of information access and management. The synergy between digital libraries and emerging technologies promises to usher in a new era of knowledge dissemination and exploration, benefiting users across the globe.

Keywords: Digital Libraries, Emerging Technologies, AI, ML, NLP, AR, VR, Blockchain



ANALYZING SOFTWARE PROCESS MODELS IN SOFTWARE DEVELOPMENT: A
COMPARATIVE STUDY

¹ Anjoo Kumari, ² Kunal Hazra, ^{*3} Dr. Ranjan Kumar Mishra
¹ Asst. Professor, Department of IT, Netaji Subhas University, Jamshedpur, India.
² Asst. Professor, Department of IT, Netaji Subhas University, Jamshedpur, India.
^{*3} Associate Professor, Department of IT, Netaji Subhas University,
Jamshedpur, India.

^{*3} Corresponding Author: ranjan@nsuniv.ac.in

ABSTRACT

The success or failure of software development hinges on the choice of software process models, which serve as crucial factors in the entire development process. These models encompass multiple stages, including requirement gathering, designing, development, testing, and implementation. This paper provides a comprehensive survey of commonly used process models, aiming to serve as a guiding resource for researchers to explore potential future research directions. The analysis delves into each of the five process models, highlighting their distinct factors and parameters in a concise manner for the convenience of researchers.

This comparative study examines different software process models in the context of software development. The analysis aims to provide valuable insights for software developers and project managers in making informed decisions. The study focuses on popular models including the Waterfall model, Spiral model, Agile methodologies (Scrum, Kanban, and Extreme Programming), and the Rational Unified Process (RUP). Key factors considered include project requirements, flexibility, adaptability, risk management, team collaboration, and overall project success. The findings highlight the strengths and weaknesses of each model, emphasizing the importance of aligning the selected model with project characteristics. The study contributes to the understanding of software process models, software development, comparative analysis, Waterfall model, Spiral model, Agile methodologies, Scrum, Kanban, Extreme Programming, Rational Unified Process (RUP), project requirements, flexibility, adaptability, risk management, team collaboration, and project success.

Key words: Software Process Models; Development, Software Development Life Cycle (SDLC)

BACKGROUND OF THE STUDY

The study on "Analyzing Software Process Models in Software Development: A Comparative Study" aims to address the importance of selecting appropriate software process models in the field of software development. The choice of a suitable process model greatly influences the success and efficiency of software projects. This background section provides an overview of the factors that make software process models significant and the motivation behind conducting a comparative analysis.

Software development involves a systematic approach to create, maintain, and enhance software products. To ensure the successful completion of projects, organizations adopt different software process models that outline the steps and activities involved in the development lifecycle. These models provide structure, guidance, and control throughout the software development process.

Various software process models have been proposed over the years, each with its unique characteristics, strengths, and limitations. Examples of widely recognized models include the Waterfall model, Spiral



A Comparative Study of Different Software Process Models

Dr. Ranjan Kumar Mishra¹ and Madhu Kumari²

¹Assistant Professor, Deptt. of IT, International School of Management, Patna, Bihar, India.

²Assistant Professor, Deptt. of IT, International School of Management, Patna, Bihar, India.

¹ranjaninmi4u@gmail.com, ²madhuksinha123@gmail.com

Abstract: Software Development Life Cycle (SDLC) is used in the software industry to design, develop and produce high-quality, reliable, cost-effective and timely software products. This is also known as the software development process model. Various SDLC process models are available. In this paper we have tried to describe the different SDLC models according to their best use. Many research papers have been written in this regard. We will also use his knowledge or conclusions in this paper. The main purpose of this paper is to clarify some important SDLC models such as Waterfall Model, Iterative Model, and Spiral Model. The main purpose of this paper is to explain the advantages and disadvantages of these SDLC models. We will also explain what kind of software application is most suitable for the SDLC model.

Key Words: Waterfall Model, Iterative Model, Spiral model.

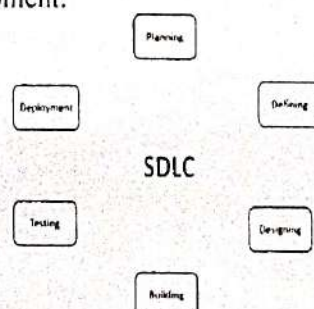
Article History

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Corresponding author: Dr. Ranjan Kumar Mishra, Email id: ranjaninmi4u@gmail.com

Introduction

All SDLC processes have a limited set of functions that can be used to develop software products. The SDLC process has a complete plan to explain how to design, develop, maintain and enhance the capabilities of a software product. The SDLC process describes methods that improve the overall software quality and development process. The following figure shows the different stages of the life cycle of a typical software development.



FUNDAMENTALS OF SOFTWARE TESTING: A STUDY

Dr. Ranjan Kumar Mishra¹, Dr. Indiwatsal Singh²

^{1,2}Assistant Professor, International School of Management, Patna, Bihar

Abstract

The software provides complete sets of enhancements for the development of a standalone system, a client server, and Internet-enabled applications. Software testing has three main objectives: verification, validation, and defect detection. Test software works with software under controlled conditions; to (1) ensure that it works "as defined" (2) to detect errors (3) and to ensure that what is specified is exactly what the user really wanted. This paper discusses various issues related to software testing basics.

I. INTRODUCTION

Software testing is more than just finding fault. Test software works with software under controlled conditions, verifying, detecting errors, and verifying that what is specified is exactly what the user actually wanted. Ensuring inspection or testing of items, including software, compliance and compliance by evaluating results in accordance with previously defined requirements. Error Detection. Inspection should deliberately try to make things go wrong to find out if things happen when they should or things do not happen when they should. Verification looks at system configurations — i.e. the process of checking what is defined is what the user really wanted. In other words, authenticity checks to see if we are building what the customer wants / needs, and checks to see if we are building the right app. Both verification and validation are required, but different elements of any test function. The definition of testing in accordance with the ANSI / IEEE 1059 standard is to test the process of analyzing a software object to determine the differences between existing and required conditions (i.e. errors / bugs / bugs) and to evaluate the features of the software object.

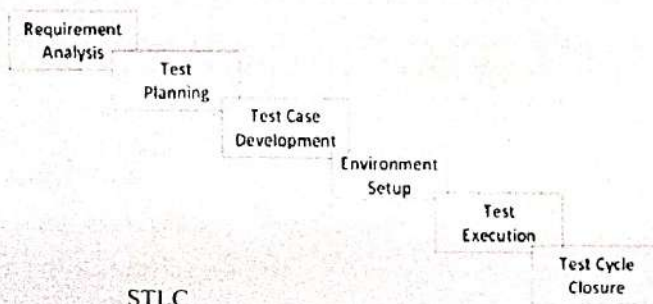
Testing helps to verify and verify if the Software is working as intended. This includes using Static and Dynamic methods to test the application. Software testing should not be confused with error detection. Troubleshooting is the process of analyzing and detecting bugs when the software is not performing as expected. Although the identification of other bugs will be clarified by playing with software, the software testing method used is a comprehensive way to identify bugs. So debugging is a test-based operation, but you can't replace the test.

However, there is no guaranteed test number for all bed bugs. Other common tasks associated with software testing are statistical analysis and power analysis. Sharp analysis examines software source code, detects problems and collects metrics without actually creating the code. Power analysis monitors the performance of the software during the process, providing information such as tracking, time profiles, and coverage information.

II. SOFTWARE TESTING FUNDAMENTAL

Testing is the process of making a plan with the intention of finding fault. A good test case is one that has a higher chance of finding an undisclosed error. A successful test is one that finds an undisclosed error. Reduce the risk of product failure. The test should systematically open various categories of errors with a minimum amount of time and a small amount of effort.

The second advantage of testing is that it shows that the software appears to be operating as specified in the specification. Information collected through testing may also provide an indication of the reliability of the software and its quality. However, testing may not indicate a defect - it may only indicate that there are software issues Software Testing Life Cycle (STLC). Software Testing is not a just a single activity. It consists of series of activities carried out methodologically to help certify software product. These activities (stages) constitute the Software Testing Life Cycle (STLC) as shown in figure 1.



Overall Impact of Computer Applications in Education Sector

Dr. Ranjan Kumar Mishra

Assistant Professor, Department of Computer Science, International School of Management, Patna

Abstract: The present instructive approaches are to a great extent given to encouraging the advancement and usage of computer applications in training. This paper examinations the abilities and skills required for the information based society and uncover the part and effect of utilizing computer applications to the educating and learning forms. Additionally, the point of this paper is to uncover the results of an examination led with a specific end goal to decide the effect of utilizing computer applications in educating and learning Management and to propose new open doors for the procedure change. The discoveries of this examination identified with the educators' and understudies' discernments about utilizing computer applications for instructing and learning could open further inquires about on computer applications in training and their instructive and financial ramifications.

Computers have changed the way we work, be it any calling. Along these lines, it is just yet characteristic the part of computers in training has been given a great deal of unmistakable quality in the current years. Computers assume a key part in each field. They help mechanical procedures; they discover applications in prescription; they are the core of the product business; they assume an indispensable part in training. The employments of computers in instruction are complex. Here, we should talk about the vital features of the part of computers in instruction.

Key words: computer applications, education, educational policy, teaching-learning Management, effects.

Selection of Software Testing Methods depends upon the Software Projects

Mr. Ranjan Kumar Mishra, Scholar

Shri JIT University

Dr. Dharmendra Chahar

Abstract : Software testing is the process to uncover requirement, design and coding errors in the program. It is used to identify the correctness, completeness, security and quality of software products against a specification. Software testing is the process used to measure the quality of developed Computer Software. Software is becoming a key factor in most of the modern systems and devices that support important business processes in our modern society. It is an essential component of many embedded applications that control various sensitive applications such as air traffic control systems, rockets, automated banking systems, security systems and so many other applications. The failure of those systems can result into severe damage. It is obvious that software testing technologies are essential for software testers. Even though there are several software testing methodologies and techniques to support the quality of software but to find relevant parameters for their applicability conditions remains an open question. We can define software testing as an activity aimed at evaluating an attribute, or capability of a program to determine, that it meets its required specification. Software testing can provide an independent view of the software to allow the business to appreciate and understand the risk of software implementation. This paper attempts to shed light on decision criteria, by describing various software testing techniques and their distinctions. The finding shows that these methodologies and techniques do not have direct influence on the quality of software but the choices we make on selecting relevant procedure for the application.

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In recent years software development has become a great field of interest due to its role in the technological innovation. Software development industries are very good at adopting the latest technology trends and development practices so as to cope with rapid growing technology. All large organizations are now integrating their systems and as a result the need of real-time systems and regular software improvement is growing dramatically. The main challenge remains to software development industries is to find a proper software development methodology and testing techniques that can sustain the existing situation in market. The traditional software development methodologies seemed to slow down software development processes due to existing time constraint situation. This study attempts to tackle the existing problem in the software development market ("Selection of relevant software development methodology and testing technique") and propose some solutions. We believe that choice of software

Impact of Blockchain in Higher Education

Dr. Ranjan Kumar Mishra¹, Er. Manish Bhanot²

Assistant Professor, Department of Computer Science
International School of Management, Patna, Bihar, India¹

Assistant Professor, School of Engineering & Technology
RNB Global University, Bikaner, Rajasthan, India²

ABSTRACT:

The Blockchain is undoubtedly one of the most transforming technologies of the current scenario. Since the time it surfaced till date we have seen its applications grow multiple folds. The prime reason for this success rate is the multitude of benefits that Blockchain has to offer. The roots of Blockchain originated from cryptocurrency exchange.

"The Blockchain is a whole new world in itself. It has many things to offer us, from development to innovations. Every industry is undergoing this change, and many of these changes are triggered by Blockchain"

Earlier, digital money transaction was the only application of Blockchain, however, over the period, it has transformed, and now we see myriads of application in the fields of healthcare, medicine, politics, academics and many more. Blockchain is a distributed ledger technology which stores all the information in chronological order. This information is present in the ledger in the form of blocks, and each block is attached to the other. Thus, if anyone wants to alter or change the information, it becomes almost impossible. This feature of Blockchain makes it find application in almost all the areas where there is any kind of exchange. This can be monetary or information or data.

"The Blockchain is a whole new world in itself. It has many things to offer us, from development to innovations. Every industry is undergoing this change, and many of these changes are triggered by Blockchain"

Keywords:

Blockchain, Cryptocurrency, Distributed Ledger

Different Correctness Testing Techniques to Find Errors

Ranjan Kumar Mishra, Scholar

Dr. Dharmendra Chahar

Shri Jyoti University, Churela, Jhunjhunu

ABSTRACT : Software testing is a mechanism which is designed for assessing an aspect or capability of a program and certifies that it encounters the requisite result. There are many methods to software testing, but real testing of complex product is fundamentally a procedure of examination, not purely a matter of creating and following route method. It is often incredible to find all the errors in the program. This major problem in testing thus chunks open question, as to what would be the approach that we should approve for testing. Thus, the choice of right approach at the right time will make the software testing competent and active. In this paper I have tried to describe software testing techniques which are classified as per our requirement. Here we discuss that the software testing techniques and which is best suited for the particular context.

Keywords : Correctness Testing, Performance Testing, Reliability Testing, Security Testing.

INTRODUCTION : Software testing is a set of actions lead with the determined of finding errors in software. It also authenticates and confirms whether the program is working correctly with no bugs or not. It examines the software for finding bugs. Software testing is not just used for finding and fixing of bugs but it also guarantees that the system is working according to the specifications. Software testing is a series of procedure which is intended to make sure that the computer code does what it was designed to do. Software testing is a disparaging process of exasperating to find the errors. The main tenacity of testing can be quality assurance, reliability estimation, validation or verification. The other objectives or software testing includes

- The improved it works the more efficiently it can be tested.
- Better the software can be measured more the testing can be programmed and optimized.
- The fewer the changes, the fewer the interruption to testing.
- A successful test is the one that uncovers an undiscovered error
- Testing is a process to identify the exactness and comprehensiveness of the software.
- The general objective of software testing is to affirm the quality of software system by systematically exercising the software in carefully controlled circumstances.

According to the purpose of software testing can be divided into four ways

- Correctness Testing
- Performance Testing
- Reliability Testing
- Security Testing

SOFTWARE TESTING TECHNIQUES : Software testing is a process which is used to degree the quality of software developed. It is also a process of finding errors in a program and makes it a reasonable task. It is useful process of executing program with the committed of finding bugs. The diagram below represents some of the most predominant techniques of software testing which are classified as per the requirement.



COMPARATIVE STUDY OF INVESTMENT METHODS IN JAMSHEDPUR:
TRADITIONAL VS MODERN METHODS

Rochak Kumar¹, Mousumi Rawani² and Ankita Kumari³

¹Assistant Professor, Department of Commerce, Netaji Subhas University, Jamshedpur

²Assistant Professor, Department of Commerce, Netaji Subhas University, Jamshedpur

³Assistant Professor, Department of Commerce, Netaji Subhas University, Jamshedpur

ABSTRACT:

The act of putting money into something with the prospect of profit is known as investing. There are numerous methods to invest, and the ideal technique will depend on one's own objectives and risk tolerance. Investing in India has become more of a necessity than a way of life. The Indian economy is developing, and there are various chances for investment. Understanding individual investor activity could be immensely beneficial in understanding stock market anomalies and enabling regulators and researchers in responding to varying investor behaviour. Today, the investment range is truly broad. This paper looks into the current investment habits of the people of Jamshedpur. The study's main goal is to determine the risk-taking ability of the people of Jamshedpur and explore whether they seek long-term growth, high profits, or liquidity. The study shows that the investors are aware of all types of investment possibilities, including traditional, low risk, moderate risk, and high risk investments. Among all assets, bank savings and Public Provident Funds are seen as the safest and most desired, while equity investments are the most profitable in proportion.

KEYWORDS: Investor, Traditional Investment avenues, Modern Investment avenues, Portfolio.

INTRODUCTION:

Achieving your financial objectives and growing your money over time can both be done via investing. The act of investing involves putting money into something with the hope of receiving more money back in the future. When someone makes an investment (such as one in real estate or bank fixed deposits), they are effectively generating an asset. As compensation for the investment, one may be entitled to a portion of the asset's earnings or may be able to recoup their investment by selling the item for a profit.

It's crucial for investors to conduct their homework and comprehend the dangers before making any decisions. There is no assurance that an investor will profit from their investments. In fact, if the market declines, there is a decent probability that one could lose money. However, investing may be a terrific strategy for someone to increase their wealth and meet their financial objectives provided they are ready to take on some risk.

Basic steps to get started with investing:

1. Choose your financial objectives
2. Determine the level of risk tolerance
3. Make research
4. Begin modestly

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Impact of Demographic Variables on Customer Buying Behaviour with reference to Malls & Standalone Retail Stores in Jamshedpur

Sumukh Capore¹, Dr. Sayak Gupta²

¹Research Scholar, Department of Management, Netaji Subhas University, Jamshedpur

²Assistant Professor, Department of Management, Netaji Subhas University, Jamshedpur

ABSTRACT

Retail has emerged as one of India's fastest growing businesses. The number of malls in India is expected to grow as the country's retail sector expands. The purpose of this article is to explore the impact of demographic variable on customer buying behavior. The study aims to determine how respondents' demographics influence their preference for malls over standalone retail stores and associated criteria. A self-structured questionnaire was used to collect data from 300 customers in Jamshedpur. The convenience sampling was used in this study. The study focuses on developing retail formats, including malls and standalone retailers. Chi Square is a statistical analysis for analyzing the association between demographic variables and customer buying behavior were performed for data analysis. The study findings show that Gender, Age, Qualification, Occupation, Income, and Family Nature have remained important for the most part and affect store choice. The survey also reveals that people prefer malls for apparel purchases and standalone retail stores for food and groceries.

Keywords: Retail Sector, Malls, Standalone Retail Stores, Retailers, Store Choice, Apparel, Food and Groceries

1. Introduction

Retail is becoming one of India's economic foundations. According to Kearney (2010), it is the world's fourth-largest economy and the third-most desired shopping destination in terms of purchasing power parity (ppp), behind only China and the United States. India's retail business is divided into two basic categories: organized and unorganized. In the past, Indian retail evolved to match the country's distinct needs. Since the 1990s, India's retail scene has shifted significantly

A Review on Green Marketing

Shoaib Parwej¹, Dr. Sayak Gupta²

¹Research Scholar, Department of Management, Netaji Subhas University, Jamshedpur

²Assistant Professor, Department of Management, Netaji Subhas University, Jamshedpur

ABSTRACT

Green marketing is a phenomenon that has grown in prominence in the modern day and is regarded as a critical approach to sustainable development. Consumers are getting increasingly worried about the environment and related global challenges. The main focus of this article is on the concept, need, importance, and challenges of green marketing. To comprehend the importance of Green Marketing, data in this article has been collected from a variety of sources, including books, journals, websites, and newspapers. This article seeks to define Green Marketing and how a business can obtain a competitive advantage over competitors by implementing a Green Marketing Campaign. It investigates the primary drivers of Green Marketing. This study covers the current state of Green Marketing in India as well as its future, concluding that Green Marketing will continue to increase in both practice and demand.

Keywords: Green Marketing, Sustainable Development, Competitive Advantage

1. INTRODUCTION

In today's society, environmental conservation poses significant obstacles. The earth's ecological balance is influenced by industrial production processes and consumer consumption patterns. Over the last few decades, we have faced a serious environmental challenge across the world. The majority of consumers understood that their consumption patterns had a direct influence on the environment, and they began to take action to save the environment. Consumers' purchasing habits have evolved, and they now choose to purchase ecologically friendly items. The movement in customer purchasing habits toward environmentally friendly items created a new universe of potential for businesses.

At this point, every company enterprise began to include sustainability into all levels of organizational activity. Marketing is one of the business domains in which environmental

A Study on Stress and Its Effects at Workplace:

A Literature Review

Papiya Biswas¹, Dr. Sayak Gupta²

¹ Research Scholar, Department of Commerce, Netaji Subhas University, Jamshedpur

² Assistant Professor, Department of Management, Netaji Subhas University, Jamshedpur

ABSTRACT

Stress management in workplace has emerged as a critical concern due to its significant impact on employee well-being and organizational productivity. This study's systematic review examines the Stress. The authors will list the main sources that contribute to work-related stress and discuss how they affect workers' physical and mental health as well as productivity at work. Lastly, the author go over a number of stress-reduction strategies, including improving work environments, changing organizational culture, attending stress-reduction or stress-coping programs, and obtaining social support.

Keywords: Stress Management, Employee well-being, Organizational Productivity, Workplace Stress, Stress Reduction Strategies

1. INTRODUCTION

Throughout the entire human lifespan, stress is a common occurrence. It has been experienced by people throughout history. Stress is a unique aspect of life and has been extensively depicted in fine arts and literature across different time periods [1]. The complexity of the human social, personal, and ecological environment contributes to the widespread presence and inclusiveness of stress in human communities. Human interactions with surrounding issues occur simultaneously and in multiple ways, leading to stress expression diversity [2].

Numerous researchers have given their own definition of stress over the period of time are as follows: -

The Effect of Endorsement by Famous People on Consumer Behavior with Special Reference to Clothing Brands

Deepak Ranjan Sahoo¹, Dr Sayak Gupta²

¹Research Scholar, Department of Management, Netaji Subhas University, Jamshedpur

²Assistant Professor, Department of Management, Netaji Subhas University, Jamshedpur

ABSTRACT:

Within the apparel industry in particular, this research seeks to understand how famous people endorsements affect buyer behavior. The study looks at how famous people's endorsements affect consumers' perceptions of brands, their choices to buy, and their loyalty to those brands as a whole by examining data from surveys, focus groups, and sales records. Results show that endorsements greatly raise awareness and trust in a company, which in turn may boost sales and customer loyalty. Factors including the endorser's overall brand fit, the genuineness of the endorsement, and the consumer's connection with the celebrity all play a role in determining how successful these endorsements are. Marketers looking to optimize their advertising strategy via the use of Famous People endorsements will find these insights beneficial.

Keywords: Famous People, Effect, Endorsement, Consumer Behavior, Clothing Brands

1. INTRODUCTION:

It is very uncommon for well-known people to become very effective salespeople. The most tried-and-true method for companies to establish a connection and link in the minds of customers is to have a well-known and recognizable face associated with them. Celebrity endorsement is a marketing strategy that uses well-known people to promote a product. When customers see their favorite actors or sports figures promoting a product, it instantly gains credibility.

They don't have to be megastars on a global scale, but these famous people should be well-known to the people they're trying to reach. In the ideal world of advertising, celebrity endorsements receive billions and trillions of dollars every year and are highly recommended. We see celebrities everywhere: on TV, in movies, on the radio, in publications, and

Literature Review on Payments Banks and Rural Marketing of Financial Products

Ashok Kumar Pandey¹, Dr. Sayak Gupta²

¹Research Scholar, Department of Management, Netaji Subhas University,
Jamshedpur

²Assistant Professor, Department of Management, Netaji Subhas University,
Jamshedpur

Abstract

This comprehensive literature review investigates the development, operational dynamics, and influence of payments banks within the context of rural marketing for financial products. It consolidates various studies to understand how payments banks promote financial inclusion, tackle rural financial challenges, and improve financial literacy. The review examines regulatory frameworks, marketing strategies, and empirical evidence regarding the effectiveness of payments banks in enhancing rural financial accessibility. Furthermore, it identifies the constraints faced by these banks and offers recommendations for future enhancements.

Key Words: Operational Dynamics, Payments Banks, Rural Marketing, Financial Inclusion, Regulatory Frameworks, Marketing Strategies

1. Introduction

Payments banks represent a significant innovation in the financial sector, especially in developing economies where large portions of the population remain unbanked or under banked. Designed to provide basic banking services, payments banks aim to reach underserved populations, particularly in rural areas, thereby playing a crucial role in financial inclusion. This literature review aims to provide a thorough understanding of the role of payments banks in rural marketing of financial products, evaluating their effectiveness, identifying challenges, and proposing potential solutions.

2. Literature Review

Garg and Kapoor [1] performed research to determine the possibilities and challenges that payment banks face in India. The study's findings suggested that payment banks were more imaginative and revolutionary, with several opportunities to improve performance. Nazneen

A Study on Consumers' Perception of Social Media Influencer with reference to Cosmetics Products in Jamshedpur

Ankita Mandal¹, Dr. Sayak Gupta²

¹Research Scholar, Department of Management, Netaji Subhas University, Jamshedpur

²Assistant Professor, Department of Management, Netaji Subhas University, Jamshedpur

ABSTRACT

Influencers on social media have gained popularity as marketing tools because of their ability to raise awareness of and create discussion about brands. This study's primary goal is to evaluate social media influencers' efficacy by looking at their Attractiveness, Expertise, Content Quality, and Trustworthiness. To accomplish the study's goals, both quantitative and descriptive research methods were applied. Using the convenience sampling technique, 375 respondents' data were gathered, organized, and examined using SPSS software. The results have demonstrated that the Attractiveness, Expertise, Content Quality have significant impact on Purchase Intention. However, Trustworthiness showed an insignificant impact on Purchase Intention. The findings will help cosmetics marketers and retailers better understand how social media influencers connect with their goods. This study contributed new insights to our knowledge of the key characteristics associated with social influencer engagement.

Keywords: Expertise, Attractiveness, Content Quality, Trustworthiness, Social Media Influencer, Purchase Intention.

1. INTRODUCTION

A user who has a sizable social media following and built authority in a certain field is known as a social media influencer. Influencers can use their reach and authenticity to spread information that persuades people. They have the power to affect their followers' beliefs, actions, and shopping choices. Influencers are frequently regarded as trend-setters, and the companies and brands they support can greatly benefit from their advice and support. The phrase "social media influence" in marketing refers to a person's capacity to shape the opinions of others within an



**MITIGATING THE ETHICAL DILEMMA OF MONITORING REMOTE WORKING
EMPLOYEES THROUGH WORK DESIGN PERSPECTIVE**

Mr. Babu Sudarshan, Dr. Puja Prasad, Dr. Sayak Gupta

(Department of Management, Netaji Subhas University, Jamshedpur, Jharkhand)

Abstract

Monitoring employees who work remotely is a highly delicate subject that raises various complex issues. There are numerous questions surrounding employee workplace monitoring, such as its definition, who carries it out, and why organizations implement it. The COVID-19 crisis has rapidly accelerated the global adoption of remote work, pushing many businesses to embrace this practice for the first time. Consequently, these organizations have had to quickly adapt to this new work arrangement, leaving them with limited time to establish plans or evaluate whether remote work can contribute to long-term sustainability and employee satisfaction. The objective of this paper is to outline the concept of employee monitoring and its impact on employees' goal-oriented behavior, productivity, physical and emotional well-being, as well as employers' trust in their employees. Furthermore, this research delves into the legal and ethical concerns that arise from monitoring individuals in the workplace, while also offering recommendations to promote fairness and an unbiased approach when formulating future workplace strategies.

Keywords: Employee monitoring, remote working, legal & ethical implications, employee well-being, privacy, motivation

Introduction

Problem Statement

The ongoing COVID-19 pandemic has significantly transformed the way we work, acting as a catalyst for change. As individuals and employers adapt to the "new normal" of remote work, the pandemic has brought about a shift in their working dynamics and left a lasting impact on the business mindset. For a business to thrive, profitability plays a crucial role, and employee productivity is directly linked to it. In the traditional framework, when employees work on-site within the office premises and a fixed schedule, managing and monitoring their performance becomes easier. Communication channels are less noisy, and individual responsibility and accountability are not easily dismissed due to external factors. However, when the pandemic struck, everything was turned upside down. Communication lines, work methods, physical workspace, and the means of tracking accountability and monitoring employee productivity, all had to be redefined within a legal framework.

While remote work has been experimented with by many organizations over the past two decades, evidenced by the rise in freelancers, gig workers, and the growth of internet platforms, the pandemic presented a unique and unprecedented crisis. Many businesses were unprepared and concerned about the anticipated decline in productivity and its impact on overall business performance as a result of the sudden shift from office-based work to working from home. Consequently, there has been a significant increase in the number of employees working remotely, as well as a surge in businesses adopting software solutions to monitor their employees.

In the past two years, there has been a noticeable increase in the adoption of monitoring and management



AN ANALYTICAL STUDY ON THE TRANSFORMATION OF RETAIL SECTOR IN INDIA

Sumukh Capore¹, Dr. Sayak Gupta^{2*}

¹Research Scholar, Department of Management, Netaji Subhas University, Jamshedpur

²Assistant Professor, Department of Management, Netaji Subhas University, Jamshedpur

*Corresponding Author Email: cal.sayak@gmail.com

Abstract

The Indian Retail Industry is the fifth largest in the world. Comprising of organized and unorganized sectors, Indian retail industry is one of the fastest growing industries in India, especially over the last few years. Though initially the retail industry in India was mostly unorganized, however with the change of taste and preferences of consumers, the Industry is getting more popular these days and getting organized as well. The Indian Retail Industry is expected to grow from US\$330 billion in 2007 to US\$640 billion by 2015. According to the 10th Annual Global Retail Development Index (GRDI) of A.T. Kearney, India is having a very strong growth fundamental base that's why it's the perfect time to enter into Indian Retail Market. Indian Retail Market accounts for 22% of country's GDP and it contributes to 8% of the total employment. The total retail spending is estimated to double in the next five years. Of this, organized retail –currently growing at a CAGR of 22%- is estimated to be 21% of total expenditure. The unorganized retail sector is expected to grow at about 10% per annum with sales expected to rise from \$309 billion in 2006-07 to \$496 billion in 2011-12. This paper focused on changing face of Retail Industry, organized or unorganized retail industry, major players in retail industry and also highlights the challenges faced by the industry in near future.

Keywords: - Retail Industry, Consumers, Growth, GDP, Employment

1. Introduction

India's Retailing Boom has acquired further momentum, dynamism and vibrancy with international players experimenting in the Indian market and the country's existing giants taking bold innovative steps to woo the consumer. At the same time, the early entrants are redefining their strategies to stay competitive and suit the new market landscape. The next few years are liking to witness rapid growth in the organized retailing sector with several leading international players establishing their presence in India by adjusting their formats to suit local tastes and buying behaviour while regional players have stepped up their defenses and are striving to gain edge over global players by using their knowledge of local markets. Clearly the next wave of the retail boom is upon us.

Retailing is one of the pillars of the economy in India. Over the past few years, the retail sale in India is hovering around 33-35% of GDP as compare to 20% in the US. The Indian retail industry is the fifth largest in the world. Comprising of organized and unorganized sectors, Indian retail industry is one of the fastest growing industries in India, especially over the last few years. Though initially, the retail industry in India was mostly unorganized, however with the tastes and preferences of the consumers, the industry is getting more popular these days and getting organized as well.

Retail market in India is estimated to reach USD 1.1 trillion by 2020 from USD 672 billion at present, with modern trade expected to grow at 20 per cent per annum. It further added: "FMCG market in India is expected to grow at a CAGR (compound annual growth rate) of 21 per cent and is expected to reach USD 103.7 billion by 2020 from USD 49 billion in 2016". Retail and FMCG markets in India are



EFFECT OF SOCIAL MEDIA INFLUENCERS MARKETING ON CUSTOMER PURCHASE INTENTION BASED ON DEMOGRAPHIC VARIABLES IN JAMSHEDPUR CITY

Ankita Mandal¹ and Dr. Sayak Gupta^{2*}

¹Research Scholar, Department of Management, Netaji Subhas University, Jamshedpur

²Assistant Professor, Department of Management, Netaji Subhas University, Jamshedpur

*Corresponding Author Email: cal.sayak@gmail.com

Abstract

With the growth of limitless computing, what occurred to be public television materialized as an internet-connected schedule used by all marketers as “market transmission” to purchase and sell to consumers. Marketers are also certain of the great impact on the ability of internet-connected influencers to facilitate brands and fruits and surpass enormous audiences i.e. it make productive, competent investments at the same period. Buying construction courtesies outcomes in many socially accountable public being associated with internet influencers. Influencers can develop advantages that formulate judgments, hypotheses, philosophies and behaviors. This type of analysis is a research analysis whose objective is to specify the form of people attached to the Internet that impacts the purchasing goals of services. A connected to the internet exploration was used to gather data through Questionnaire. The Convenience sampling method under non probability sampling technique was used. The Collected Primary data was analyzed with the help of Percentage. The findings disclose that, shopping decisions are influenced by social media influencers marketing, Influencer Marketing on social media significantly affects general purchase habits based on Demographic Variables in Jamshedpur City.

Keywords: Social Media Influencers Marketing, Customer Purchase Intention, Market Transmission, Demographic Variables

1. Introduction

In comparison to different techniques, social media influencers are a victorious method to boost consumer confidence. Nonetheless, social media influencers are peeked at as minor intrusive and more attractive than additional traditional online advertisements like pop-ups and banners, which consumers commonly strive to thwart. Influencers are now considered delegated references thanks to technological advancements (Freberg, Graham et al., 2011). To manipulate their audience toward a distinct brand, influencers are used to establish two-way communication across online platforms like Facebook, Youtube, Instagram, etc. There is no extended debate about whether or not one requires an online existence because most customers use the internet every day. Having a website is today more of a need for firms than an embryo of competitive gifts. The world of the internet is always transforming, necessitating adaptation and endless advancement. The usefulness of swapping from conventional media advertising to online media advertising has been remarked on by certain enterprises. As a result, there was a rise in spending on social media platforms, particularly influencer marketing. Influencer marketing is becoming more widely known used, which is motivating further research because it continues to create several worries and issues among academics and industry specialists. However, the bulk of recent marketing studies only take into statement measurable characteristics, such as the number of supporters or the reach, and none of them described the comparable importance of measurable and



**“EFFECT OF CELEBRITY ENDORSEMENT ON CUSTOMER PERCEPTION FOR
SELECTED PRIVATE BANKS AT SMART CITY OF ROURKELA”**

Deepak Ranjan Sahoo¹, Dr. Sayak Gupta^{2*}

¹Research Scholar, Department of Management, Netaji Subhas University, Jamshedpur

²Assistant Professor, Department of Management, Netaji Subhas University, Jamshedpur

*Corresponding Author Email: cal.sayak@gmail.com

Abstract

Celebrity Endorsement as a part of Advertisement and Branding Strategy is common for all consumers in the Indian market. All the firms and industries use this celebrity, may it be film stars or sport persons as a celebrity to endorse their brand and become a brand ambassador for their selected products in the market across the globe. Many Researchers have worked on the impact of celebrity endorsement for different industries like FMCG, health care, Electronics segments and many more.

In this Research paper, Authors attempt to study the effect of celebrity endorsement on customer perception towards some selected bank in smart city of Rourkela. Total 300 sample size was selected for this study but only 278 respond was recorded and another 22 respond were rejected due to incomplete data. Descriptive and statistical method were used to analysis the data. Researcher found that Celebrity has the power to change their perception with a mean value of 4.10, whereas the most insignificant observation is they purchase the banking products because it is endorsed by their favourite celebrity with a mean value of 3.82. Researcher recommended that bank should adopt good advertisement strategy along with reputed celebrity for their brand ambassador of their brand.

Keywords: Celebrity Endorsement, Customer Perception, Branding, Private Banks.

Introduction

Banking Industry in India has a Vital role in developing the Economy of our Country. The various banking related products and services provided by banks in India having total 34 in numbers from which 12 are Indian government banks and 22 are private sector banks. These banks provide their services in both rural and urban areas at equal preferences. At present Rourkela, one of the smart cities in Odisha having total 26 banks including PSU & Private sector banks) which provide both financial related services to customers.

Advertisement which a power tool use celebrity endorsement a way to create awareness in the mind of the customer and to know the customer perception on that celebrity endorsing specific brands. Many customers adopt celebrity as their role mode many it be movie stars, TV serials actors or sport persons as they influence the customer mind for purchasing the specific products they are related with those brands. Celebrity appearance and looks captures the mind of the customer for remarkable memory of that customers.

Some private banks having their brand ambassador represents to large population of our country. Celebrity endorsement which shows trust and faith at different circumstances also associated with customer perception on this celerity too. Some celebrity endorsement by private banks is listed below (Selected 4 banks).

Sl. no	Name of bank	Name of celebrity	Profession	Tag line
1	IDFC FIRST	Mr. Amitabh Bachchan	Fim star	Always you First

Analysis of the Performance of Tata Steel: A case study of Steel Workers Welfare Society, Jamshedpur

Dr. Mritunjay Mahato*

*Assistant Professor & Head, Department of Commerce,
Netaji Subhas University, Jamshedpur, Jharkhand (India)
Email: - mritunjaymahato2012@gmail.com*

Dr. Puja Prasad

*Assistant Professor & Head, Department of Management,
Netaji Subhas University, Jamshedpur, Jharkhand (India)
Email: - puja88prasad@gmail.com*

Dr. Sayak Gupta

*Assistant Professor, Department of Management,
Netaji Subhas University, Jamshedpur, Jharkhand (India)
Email:- cal.sayak@gmail.com*

Abstract

This paper examines the performance of Tata Steel in Steel Workers Welfare Society and to analysis the short term, long term and profitability position of the company. The secondary data has been collected from websites of the company over a period of 4 years from FY 2017-18 to FY 2020-21. Income statement, Position statement and Ratio analysis were used to examine and analysis of the company position. The study reveals that the company's profit has marginal result of increased expenses and COVID-19 and the working capital of the company fell down because the company has relied heavily on non-current assets. The study also shows that the short term financial position of the company has not satisfactory because the company has not fulfilled the ideal point of the ratios, The long term financial position of the company has also been not satisfactory and the Profitability position of the company has earned profit on the proportionate percentage for gross profit ratio, Net profit ratio and return on shareholders' investment.

Keywords: - Tata steel, Income Statement, Position Statement, Ratio Analysis.

1. Introduction

Tata Steel is an Indian Multinational Steel-production organization headquartered in Mumbai, Maharashtra, India. It is one of the best steel delivering organizations all around with a yearly unrefined steel limit of 23.88 million tons (in FY 17) and the 2nd biggest steel organization in India with a yearly limit of 9.7 million tons after SAIL. Established



N-glycosylation, a leading role in viral infection and immunity development

Vijay Kant Pandey¹ · Rajani Sharma² · Gopal Kumar Prajapati³ · Tapan Kumar Mohanta⁴ · Awdhesh Kumar Mishra⁵

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Abstract

N-linked protein glycosylation is an essential co- and posttranslational protein modification that occurs in all three domains of life; the assembly of *N*-glycans follows a complex sequence of events spanning the (Endoplasmic Reticulum) ER and the Golgi apparatus. It has a significant impact on both physicochemical properties and biological functions. It plays a significant role in protein folding and quality control, glycoprotein interaction, signal transduction, viral attachment, and immune response to infection. Glycoengineering of protein employed for improving protein properties and plays a vital role in the production of recombinant glycoproteins and struggles to humanize recombinant therapeutic proteins. It considers an alternative platform for biopharmaceuticals production. Many immune proteins and antibodies are glycosylated. Pathogen's glycoproteins play vital roles during the infection cycle and their expression of specific oligosaccharides via the *N*-glycosylation pathway to evade detection by the host immune system. This review focuses on the aspects of *N*-glycosylation processing, glycoengineering approaches, their role in viral attachment, and immune responses to infection.

Keywords Posttranslational modifications · *N*-glycan · Glycoengineering · Viral infection · Immune response

Introduction

Glycosylation of protein is a ubiquitous and essential form of co-translational and posttranslational modifications involved in numerous biological processes. This is an enzymatic process in which sugar moieties are covalently attached to the side chain of an amino acid residue [1, 2]. Depending on the attachment of sugar moieties, they can be categorized as (1) *N*-glycosylation (saccharides linked to the amide nitrogen

of asparagine (Asn) side chain); (2) *O*-linked glycosylation (saccharides linked to OH group of serine (Ser) or threonine (Thr), hydroxyproline side chains); (3) Phosphoserine glycans (saccharides linked to the phosphate of a phosphoserine); (4) *C*-linked glycans (a rare form of glycans added to carbon on tryptophan side chain); (5) Glypiated glycans (addition of a glycosyl-phosphatidylinositol (GPI) anchor that links proteins to lipids through glycan linkages); and (6) Other *O*-linked glycans found in cytoplasmic/nucleoplasmic proteins, such as *O*-linked *N*-acetylglucosamine (*O*-GlcNAc), *O*-fucose, and *O*-mannose [3, 4].

In this review, we focus on *N*-glycosylation which is predominant among all classes of glycosylation and occurs in all three domains of life. Based on signaling present on protein, the process of *N*-glycosylation starts in the endoplasmic reticulum (ER) and enters to Golgi Apparatus (GA) where specific structural elements such as core fucosylation and branching are introduced [5]. Initially, it was reported that glycosylation is limited to eukaryotes while active processes are also seen in prokaryotes [6]. It was reported that nearly 70% of eukaryotic cell proteins are glycosylated, and 20% of all proteins are lipid-modified [7]. *N*-glycosylation is associated with protein functioning and its folding [8]. Nowadays RNA also serves as a scaffold for glycosylation.

✉ Rajani Sharma
rsharma@rnc.amity.edu

✉ Awdhesh Kumar Mishra
awadhesh.biotech07@gmail.com

¹ Department of Agriculture, Netaji Subhas University, Jamshedpur, Jharkhand, India

² Department of Biotechnology, Amity University Jharkhand, Niwarpur, Ranchi 834002, India






³ Promea Therapeutics Pvt. Ltd, Hyderabad, India

⁴ Medicinal Sciences Research Center, University of Nizwa, 616 Nizwa, Oman

⁵ Department of Biotechnology, Yeungnam University, Gyeongsan, Gyeongbuk 38541, South Korea

Review

Friedelin: Structure, Biosynthesis, Extraction, and Its Potential Health Impact

Santosh Kumar Singh ¹, Shweta Shrivastava ² , Awdhesh Kumar Mishra ^{3,*} , Darshan Kumar ¹ ,
Vijay Kant Pandey ⁴ , Pratima Srivastava ¹, Biswaranjan Pradhan ⁵, Bikash Chandra Behera ⁶,
Ashutosh Bahuguna ⁷ and Kwang-Hyun Baek ^{3,*} 

¹ Department of Biotechnology, ARKA Jain University, Jamshedpur 832108, Jharkhand, India; dr.santosh@arkajainuniversity.ac.in (S.K.S.); dr.pratima@arkajainuniversity.ac.in (P.S.)

² School of Pharmacy, ARKA Jain University, Jamshedpur 832108, Jharkhand, India; dr.shweta@arkajainuniversity.ac.in

³ Department of Biotechnology, Yeungnam University, Gyeongsan 38541, Republic of Korea

⁴ Department of Agriculture, Netaji Subhas University, Jamshedpur 831012, Jharkhand, India; pandeyvijay00@gmail.com

⁵ S.K. Dash Centre of Excellence of Biosciences and Engineering and Technology, Indian Institute of Technology, Bhubaneswar 752050, Odisha, India; bp21@iitbbs.ac.in

⁶ School of Biological Sciences, National Institute of Science Education and Research, Bhubaneswar 752050, Odisha, India; bikash@niser.ac.in

⁷ Department of Food Science and Technology, Yeungnam University, Gyeongsan 38541, Republic of Korea; ashubahuguna@gmail.com

* Correspondence: awdhesh@ynu.ac.kr (A.K.M.); khbaek@ynu.ac.kr (K.-H.B.); Tel.: +82-53-810-3029 (A.K.M. & K.-H.B.); Fax: +82-53-810-4769 (A.K.M. & K.-H.B.)

Abstract: Pharmaceutical companies are investigating more source matrices for natural bioactive chemicals. Friedelin (friedelan-3-one) is a pentacyclic triterpene isolated from various plant species from different families as well as mosses and lichen. The fundamental compounds of these friedelane triterpenoids are abundantly found in cork tissues and leaf materials of diverse plant genera such as Celastraceae, Asteraceae, Fabaceae, and Myrtaceae. They possess many pharmacological effects, including anti-inflammatory, antioxidant, anticancer, and antimicrobial activities. Friedelin also has an anti-insect effect and the ability to alter the soil microbial ecology, making it vital to agriculture. Ultrasound, microwave, supercritical fluid, ionic liquid, and acid hydrolysis extract friedelin with reduced environmental impact. Recently, the high demand for friedelin has led to the development of CRISPR/Cas9 technology and gene overexpression plasmids to produce friedelin using genetically engineered yeast. Friedelin with low cytotoxicity to normal cells can be the best phytochemical for the drug of choice. The review summarizes the structural interpretation, biosynthesis, physicochemical properties, quantification, and various forms of pharmacological significance.

Keywords: friedelin; phytochemicals; extraction methods; anticancer; neuroprotective; antimicrobial



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1. Introduction

Plants in the form of whole plants, vegetables, fruits, whole grains, and nuts provide various phytochemicals like phenolic compounds, terpenoids, alkaloids, pigments, and other natural antioxidants [1,2]. These phytochemicals are nonnutritive substances that possess large health-protective benefits [3]. Over 80% of the world's population relies on the traditional medical system to treat their health issues [4].

Friedelin (friedelan-3-one) is a pentacyclic triterpene first isolated from bark in 1807 using alcohol and called “cork alcohol” [5]. Later it was isolated from various plant species from different families [6–8] and also reported to isolate from lower plants like mosses [9], lichen [10,11], algae [12], and fungi [13]. In recent years, a substantial number of research studies have demonstrated extraordinary pharmacological actions of friedelin such



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A review on assessment and management of dementia

Dibya Tiru^a, Bimlendu Kumar Roy^b, Prasanjit Mukherjee^c & Vijay Kant Pandey^{d*}

^aDepartment of Pediatrics, Vananchal school and college of Nursing, Garhwa, Jharkhand, India

^bDepartment of Biochemistry, Babu Dinesh Singh University, Garhwa, Jharkhand, India

^cDepartment of Botany, K.O. College, Gumla, Jharkhand, India

^dDepartment of Agriculture, Netaji Subhas University, Jamshedpur, Jharkhand, India

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Abstract- Dementia is a syndrome characterized by progressive deterioration in several cognitive domains, resulting in substantial functional impairment. Dementia is one of the most expensive and disabling diseases associated with aging, although it is frequently misdiagnosed in basic care. In the long-term care situation, dementia is a common but potentially underdiagnosed condition. Targeted screening for dementia should be standard practice, as a dementia diagnosis will help the patient's care. The assessment of dementia should be done in stages and suited to the demands of the particular patient. Care for cognitive changes, behavioral changes, functional problems, and emotional concerns are all part of dementia management. It also includes the management of various illnesses in light of the dementia, as well as consideration of the wants and desires of the patients. Dementia management entails caring for cognitive changes, behavioral changes, functional problems, and emotional concerns. It also includes the management of other conditions in light of the dementia, consideration of the caregiver's requirements and well-being, and a focus on advanced care planning. This all-encompassing approach to dementia treatment may reduce the disease's morbidity and mortality rate. Along with a clear prognosis and consideration of quality of life issues, this care approach provides patients and their families with vital information and services. This review specifically examines assessment, aetiology and explores strategies for management of dementia.

Key words: Dementia, Assessment, management, morbidity, mortality

INTRODUCTION

Dementia is a complex and progressive condition characterized by a decline in cognitive function that affects a person's ability to perform everyday activities. It is an acquired loss of cognition in multiple cognitive domains sufficiently severe to affect social or occupational function. It's not a specific disease but rather a syndrome with various underlying causes.¹ The most common type of dementia is Alzheimer's disease, but there are others like vascular

dementia, Lewy body dementia, and frontotemporal dementia. Alzheimer's disease is the most common cause of dementia, but often several other conditions causing dementia are present on brain autopsies.² The symptoms of dementia include memory loss, impaired reasoning, and changes in behavior. As the condition advances, individuals may struggle with communication, face challenges in problem-solving, and experience personality changes.³ Dementia can be emotionally challenging for both the affected individuals and their loved ones. Early diagnosis and appropriate management are crucial in providing

*Corresponding author :

Phone : 9006761775

E-mail : pandeyvijay00@gmail.com

A Review on Physico-Chemical Parameters of the Quality of Water

Timbrel Menen Tigga¹, Vijay Kant Pandey^{2*}

¹Research Scholar, Department of Zoology, Netaji Subhas University, Jamshedpur, India

²Department of Agriculture, Netaji Subhas University, Jamshedpur, India

*Corresponding Author

ABSTRACT

On this planet, water is one of the natural resources that are considered to be the most valuable. All living things, the majority of natural systems, human health, the production of food, and the growth of the economy all benefit from its presence. Water is becoming extremely polluted with a wide variety of toxins as a result of the rapid growth of the world's population, the spread of industry and improved agricultural methods, and other activities caused by humans. In the current scenario, the water from the river has turned into wastewater as a result of the removal of the garbage from the area through which it flows. Water is an essential resource for the continued existence of humans. The integrity of the water supply is critical to the maintenance of good health. A wide variety of pollutants, both chemical and microbiological, can compromise the quality of drinking water and make it unsafe to consume. These pollutants are the root of many significant health issues. Having access to clean water is crucial in the fight against disease and in the pursuit of improved personal satisfaction. This review paper discusses a variety of physicochemical parameters such as pH, Electrical conductivity, Total Hardness, Turbidity, BOD, COD, Total alkalinity, Chloride, Sulphate, Phosphate and DO. that are relevant to thinking about the quality of water.

Keywords: Physio-chemical parameters, Electrical conductivity, BOD, COD

INTRODUCTION

Almost 70% of India's surface water resources and an increasing percentage of its groundwater reserves are contaminated by biological, toxic, organic, and inorganic contaminants, making water pollution a severe issue in India. In many instances, these sources are no longer fit for human consumption or other uses, including as irrigation or industrial purposes. This demonstrates that decreased water quality can lead to water scarcity by reducing its availability for human and ecological usage [1, 2]. In recent years, the need for residential water has multiplied due to population growth, agricultural expansion, and industrial expansion. Not only has improper waste disposal and excessive resource extraction harmed the quality of tap water, but also ground water. There is a wide range of causes for water contamination. The sewage from cities and industrial waste from factories are the two biggest polluters of rivers. There is not a single city in India with sufficient sewage treatment facilities. Almost 10% of our wastewater is treated before being released into local waterways. The result is the contamination of subterranean water supplies, surface water systems, and aquatic ecosystems [3, 4]. The water that flows through these pipes and into our homes is typically highly contaminated and hosts disease-causing microorganism. Another important

Antioxidant and anti-proliferative effect of overnight soaked water extract of fenugreek

(*trigonella foenum-graecum*) seeds

Mousumi Ghatak*¹ Pramod Kumar Singh*¹

¹Netaji Subhas University, Jamshedpur, Jharkhand, India

Affiliation: Research Guide and Head, Netaji Subhas University, Jamshedpur, Jharkhand

Abstract:

Fenugreek has been the subject of clinical trials in recent years as a potential nutraceutical. Fenugreek plants have been demonstrated to have immunomodulatory, hypocholesterolaemic, hypoglycaemic, gastro- and hepatoprotective. Pharmacological properties of fenugreek have been investigated in order to determine the role in diabetes management and cardiovascular health is due to the presence of bioactive compounds that may be responsible for such a novel work. In this research, we evaluated the presence of phytochemicals and their antioxidant activity.

Introduction:

Around 80% of people around the world, particularly in underdeveloped nations, still rely on medicinal plants to treat and enhance their general health (Kamboj et al., 2000). This is primarily owing to the widespread perception that plant-derived medications have no negative effects, are inexpensive, and are readily available locally (Gupta and Raina, 1998). According to a survey published by the World Health Organization (WHO), herbal therapies are used two to three times more than conventional medicines around the world (Evans, 1990). Fenugreek (*Trigonella foenum-graecum* L.) is a dicotyledonous annual crop of the *Fabaceae* family (subfamily *Papilionaceae*). *Trigonella* means triangle, possibly due to the triangular shape of its blossoms, and *foenum graecum* means "Greek hay," implying its use as a feed crop in the past (Petropoulos, 2002). Fenugreek has also been utilised as a medicinal plant in various regions of the world for over two thousand years. Fenugreek has been used in Indian Ayurvedic and Traditional Chinese Medicines for centuries, where it is used as a galactagogue or lactation stimulant in women after childbirth, as well as for treating wounds and tired muscles (Thirunavukkarasu, 2003).

Herbs and spices have long been used to improve the flavour. It has been used to increase the flavouring and colour, and also modifies the texture of food materials. However, the bioactive phenolic content of these plant-based products is currently attracting interest. In order to establish the phenolic profiles accurate quantification of major phenolics was performed by multiple reactions monitoring in a triple quadrupole mass spectrometer. (Vallverdú et al., 2014).

Materials and Methods:

Fenugreek seeds were procured from local market of Jamshedpur, Jharkhand. Seeds were soaked in water in the ratio of (1:10) overnight. On next day extract were filtered and stored in freeze at 4°C.

Methods:

Qualitative analysis of phytochemicals was done using the methods of (Soetan, 2008). Antioxidant activity of different phytochemicals was done using the methods of (Liang et al., 2002 and Hitoshi et al., 2004). Antibacterial activity was done using MIC inhibition.

Results:

The aqueous extract of fenugreek seeds contained a significant level of these phytochemicals in the current investigation. All of the phytochemicals investigated in this study have been shown to have antioxidant activity and are therefore helpful to humans. The extract contains a high amount of tannins, phenolics, flavonoids, and alkaloids, whereas carbohydrates, glycosides, coumarin, and quinine are present in less amounts. Phytochemical ingredients found in samples are recognised to be biologically active chemicals with antibacterial, antioxidant, antifungal, anticancer, and antidiabetic properties (Soetan, 2008).

Sample	Presence/Absence
Steroids	+++++
Phenols	+++++
Saponins	+++++
Alkaloids	+++++
Glycosidic	+++++
Tannins	+++++
Flavanoids	++
Coumarin	+++++
Quinone	+++

Table 1. Qualitative test of Phytochemicals.

Antimicrobial test:

Fenugreek seeds contain a wide spectrum of phytochemicals as shown in the above table. The extract had high levels of alkaloids, flavonoids, saponins, terpenoids, and tannins. These are all the types of plant secondary metabolites that are most typically found in plants and have been shown to have a positive impact on plant defence. (Soetan, 2008). The fluctuation in phytochemical levels could be caused by a variety of variables. They could be affected by factors such as location, season, and extraction process. Phytochemical synthesis and accumulation are influenced by species, age, season, and environmental conditions, according to Ezeabara & Egwuoba (2016). Plant organs such as fruits, flowers, leaves, stems, and roots acquire phytochemicals. Flavonoids (Crozier et al; 2006) and alkaloids (Zulak et al., 2006) serve a defence role in the plant against herbivores and diseases. The results of phytochemical antibacterial activity are shown in the table below.



Fig 1. MIC of Plant phytochemicals

The sensitivity tests of aqueous extract reveal that bacterial strains have a beneficial effect, with variable diameters depending on the dose. The *E. coli* strain's inhibitory zone measured 17 mm when the extract concentration was 25 mg/ml, 22 mm when the concentration was 50 mg/ml, and 28 mm when the concentration was 100 mg/ml. The widths of inhibitory zones are found to be proportional to the concentration of crude extracts. The major substances involved in antioxidant action are phenolics, which are found in plant photochemicals. (Soetan, 2008).

Antioxidants activity:

An antioxidant is a chemical that prevents other molecules from oxidising. Although oxidation reactions are necessary for life, they can also be harmful. The highly reactive substances formed in the body as by-products of regular processes or those that enter the body from the environment are released by free radicals produced during oxidative processes. Oxidative stress is caused by a lack of antioxidants or inhibition of antioxidant enzymes, which can damage or destroy DNA cells. Antioxidants are substances that prevent oxidative damage to cells and bodily tissues by inactivating oxygen species/free radicals. Plant foods provide multiple health benefits by maintaining a balance between oxidants and antioxidants in the body, which helps to prevent oxidative stress. Glutathione, vitamin C, vitamin A, and vitamin E are just a few of the nutrient/non-nutrient antioxidants found in plant/animal meals. Antioxidants are extensively utilised as dietary supplements, and their effectiveness in preventing diseases including cancer, coronary heart disease, and even altitude sickness has been studied. The antioxidant activity of the extracts was measured as a percentage of DPPH radical scavenging activity, with higher values indicating more antioxidant activity. The extract has a 54 percent antioxidant activity, with the maximum activity. (table 2). There is a good linear association between the aqueous extract and DPPH radical scavenging in our results. These findings suggested that the radical scavenging potential of seed aqueous extracts is mostly determined by their phytochemical content.

Samples	DPPH (%) Inhibition
100 μ l	54%

Table 2. DPPH Inhibition

Discussion:

The purpose of this study is to evaluate the biological activities of fenugreek seeds soaked overnight in water. On evaluating the aqueous extract, it is found that extracts have better antioxidant and

antibacterial activities. Furthermore, this study provides the home made remedy for numerous degenerative diseases. The aqueous extract is now considered to be the best extracting solvent for recovering powerful antioxidant components from fenugreek, employing that the related extracts had a promising potential for the isolation of natural antioxidant and antibacterial compounds. Furthermore, the results presented would undoubtedly aid in determining the potency of the examined fenugreek sections, particularly the seed extract, for medical health functions as well as functional food and nutraceutical uses. The bioactive chemicals in fenugreek have been demonstrated to have antidiabetic, antifertility, anticancer, antibacterial, antiparasitic, lactation stimulant, and hypocholesterolemic properties, according to the literature. According to the findings of the current investigation, the water extract has the capacity to kill hazardous pathogenic microorganisms. As a result, fenugreek may be a valuable source of physiologically active chemicals for the development of new antibacterial medications. The pharmacological action of these phytochemicals identified in fenugreek extract is investigated in this study.

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Conflict of Interest: Authors have no any conflict of interest.

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EVALUATION OF DNA DAMAGE AND MECHANISM OF REPAIR IN TYPE 2 DIABETES MELLITUS.

Mousumi Ghatak¹, Pramod Kumar Singh^{2*}

¹Research scholar, Dept. of Zoology, Netaji Subhas University

^{2*}Associate Professor, Dept. of Zoology, Netaji Subhas University

*Corresponding Author: pramod@nsuniv.ac.in

Abstract:

Type 2 diabetes mellitus (T2DM) and its consequences may be linked to DNA damage, mostly through oxidative stress. It is unclear how DNA repair issues may be affecting the overall level of DNA damage in T2DM, which may be linked to genomic instability leading to cancer. The alkaline single cell gel electrophoresis (comet assay) was used to assess the degree of DNA damage and oxidative stress in Type 2 diabetes mellitus (T2DM) Wistar mice. In Diabetes induced animals there were higher levels of baseline endogenous and oxidative DNA damage than did control animals. The amount of alkylative DNA was the same in both the experimental animals and the controls. Compared to healthy controls, diabetes animals showed increased sensitivity to the DNA damage caused by streptozotocin induced diabetes mellitus. Our findings imply that type 2 diabetes mellitus may be linked to increased levels of oxidative DNA damage, greater vulnerability to mutagens, and lower DNA repair effectiveness. These characteristics could be factors in the association between diabetes and cancer, and measurements of DNA damage and repair, as determined by the comet test, could be indicators of the likelihood of developing cancer in people with diabetes.

Keywords: Type 2 diabetes mellitus; DNA damage, Cancer; Comet assay

Introduction:

Type 2 diabetes mellitus (T2DM) can be brought on by an increased level of oxidative stress, which is brought on by hyperglycemia through activation of the sorbitol system and glycoxidation as well as by a restriction of the hexose monophosphate shunt, which reduces glutathione synthesis [1-4]. Patients with inadequate glycemic control can clearly see this [5]. Reactive oxygen species (ROS), which are an accumulation of the byproducts of oxidative stress, can harm biological macromolecules like proteins, lipids, and DNA. Patients with diabetes may have weakened antioxidant defenses, including lower antioxidant levels and activity of superoxide dismutase, catalase, and glutathione peroxidase. As a result, individuals may be more susceptible to oxidative stress-related illnesses, such as atherosclerosis, the most serious complication of diabetes and the leading cause of early mortality [6, 7]. Diabetes is associated with the most often observed DNA damage, 8-hydroxy-2-deoxyguanosine (8OHdG) [8]. It can be produced by a number of different ROS, such as hydroxyl radicals, singlet oxygen, peroxy radicals, and peroxynitrite, ONOO, which can cause strand breaks, among other DNA damage and alterations to the DNA bases [9,10]. Clinical indicators and certain DNA damage in diabetes may be associated [11].

Diabetes mellitus and cancer risk may be related, according to epidemiological statistics, although the mechanism behind this link is unclear [12-14]. Hyperinsulinemia and hyperglycemia may negatively affect proliferative activity in postmenopausal women, most likely promoting the production of transforming growth factor beta [12]. A greater level of glycosylated haemoglobin, a higher body mass index, and the use of medicine to manage diabetes are all associated with colorectal cancer [13].



Perturbation in glucose and insulin control may also influence colorectal carcinogenesis. The role of insulin and insulin-like growth factors, which are key drivers of proliferation and apoptosis, may also be taken into account when examining the potential relationship between diabetes and cancer [14]. These parameters may be altered in numerous animal models to affect colon cancer genesis. High insulin and insulin-like growth factor levels have also been linked by human research to a higher risk of colorectal cancer. Additionally, eating habits that promote insulin resistance or secretion, such as eating a lot of sugar, having a high glycaemic index, and consuming a lot of saturated fats, may raise your chance of developing colon cancer [14]. The effect of diabetes on the prognosis of cancer patients is yet another issue. Increasing evidence suggests that diabetes may be linked to a greater mortality and cancer recurrence rate, which may make cancer that also, coexists with diabetes more likely to advance quickly and therefore more challenging to treat [15–17].

In the present work we tried to evaluate the extent of DNA damage and their repair through the aqueous extract of oyster mushroom.

Material and methods:

Male Wistar strains of rats, weighing about 150–200 g were used in the experiments.

Division and distribution of animal:

All 32 male Wistar rats were divided into 4 groups, containing 8 animals each. The division of groups was as follows:

Group 1: Normal control (NC), n= 8 Group 2: Diabetic control (DC), n= 8

Group 3: Diabetic rats treated with aqueous extract of mushroom extract, n= 8

Group 4: Diabetic rats treated with allopathic drug, glibenclamide, n=8

Methods:

2ml of fresh whole blood in collected in the tube and detect with 1:5 RBC lysisbuffer. Centrifuge at 3000rpm for 10 min, the supernatant is discarded to get lymphocytes; isolated lymphocytes are suspended in 1ml PBS.



Two solutions 1% normal melting agarose (NMA) and .7% low melting agar (LMA) were prepared in PBS.



Frosted microscopic slides were first prepared with 1% NMA covered immediately with a layer. Large cover slip and kept at 4c until the agarose had solidified.



After the removal of cover slip mixture of LMA and cell suspension were rapidly added on top of the 1st agarose layer and allowed to solidify.



Finally a third layer of .7% NMA was added the slides were emerged in precooled freshly prepared lysis buffer for 30min .in the dark to lyse the cell. After lysis the slides were placed in a horizontal electrophoresis and until filled with freshly prepared chilled electrophoresis buffer for 30min. After



30min electrophoresis was conducted on dark for 30min and 25volt.

Subsequently the slides were washed with the neutralizing buffer.

Just before visualization each slides was stained with ethidium bromide (EtBr) (20ug/ml).rinsed with water and covered with a cover slip.

The slides were examined under fluorescence microscope. The length of the comet test was taken as a measure of DNA damage.

Results and Discussion:

The comet assay was performed by taking fresh blood from the animals of each group in order to measure the degree of DNA damage in diabetic animals and also to measure the degree of recovery in animals of treated groups. Comets with long tails were clearly observed in case of diabetic control group animals which indicated the DNA damage due to the oxidative stress caused by streptozotocin (Fig: A) whereas in normal animals there was no such comet observed (Fig: B) The normal control group had circular nucleus indicating lack of DNA damage. In treated diabetic group, the lesser number of comets were observed with shorter tail length as compared to diabetic control group. Comets with long tails were clearly observed in case of diabetic control group animals which indicated the DNA damage due to the oxidative stress caused by streptozotocin (Fig: A) whereas in normal animals there was no such comets observed (Fig: B). In aqueous extract treated diabetic group (Fig: c) the number of comets in the slide were observed with shorter tail length as compared to diabetic control group. Recovery to the DNA damage in the treated group animals and the recovery to the DNA damage is more in oyster mushroom extract and glibenclamide treated animals than that of the animals of other treated group.

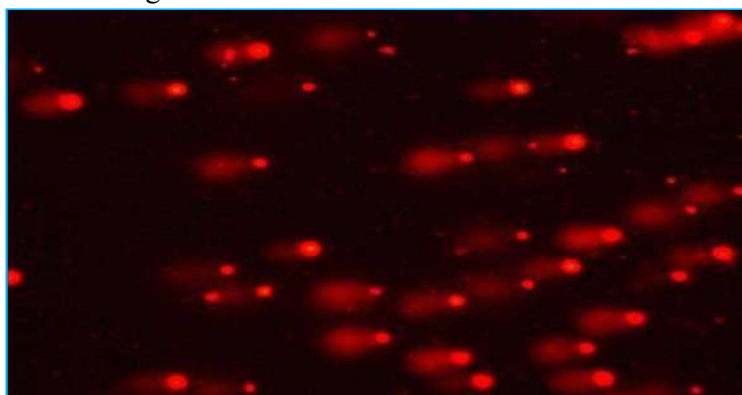


Figure A: DNA damage in Diabetic Group of animals.

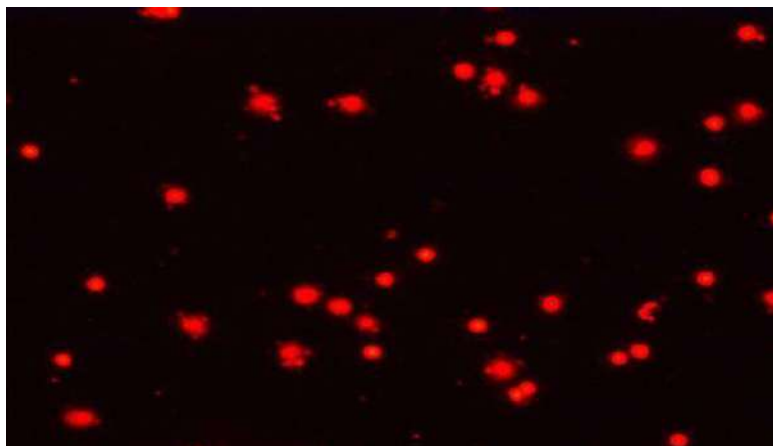


Figure B: Comets in Normal animals

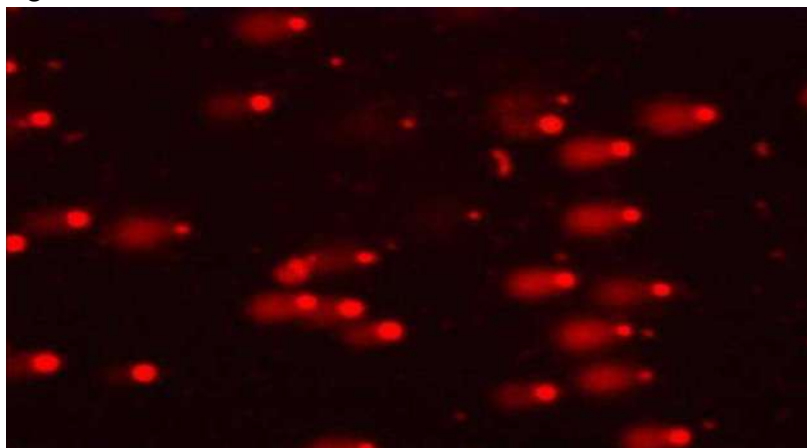


Figure C: Effect of Oyster mushroom treatment on DNA damage induced by Streptozotocin

Conclusion:

Being overweight, atherosclerosis, retinopathy, nephropathy, and other consequences are all possible with type 2 diabetes mellitus, a complex condition. There is mounting evidence that diabetes and cancer may be related. This connection may relate to the development or outward manifestation of cancer. In the current study, we looked at whether T2DM patients' mutagen sensitivity and DNA repair effectiveness differed from those of non-diabetics. We also assessed the degree of DNA damage caused by alkylation, oxidation, and base damage in each of these groups. Together, these investigations were designed to provide light on the following basic question: Does diabetes' link with cancer result from cellular reactions to DNA damage? Our findings concur with others that demonstrate elevated levels of DNA damage in diabetic patients' blood cells. However, other information suggests there is no correlation between diabetes and a higher level of DNA damage. For at least three reasons, it is advised to exercise caution when interpreting any of these findings. First off, diabetes is a condition that may involve a variety of abnormalities, some of which can be challenging to identify and whose effects on DNA are unknown. Second, type 1 and type 2 diabetes mellitus are viewed as distinct diseases, and both types of diabetes can have different processes underlying the induction of DNA damage. Glycaemic control appears to be involved in this process. Another issue arises in the case of 2DM due to the disease's age-onset. It occasionally happens in people who are significantly older than 50, an age that is frequently



linked to a wide range of physiological abnormalities and may typically be linked with a progressive deterioration of DNA repair. Both 2DM patients and controls, which ought to be age-matched, are affected by this. Third, depending on whether the cells are mononuclear or polymorphonuclear, diabetes patients' leukocytes may be differently sensitive to oxidative DNA damage. Our findings imply that T2DM may be linked to increased levels of oxidative DNA damage as well as increased vulnerability to mutagens and diminished DNA repair effectiveness. Observed vulnerability in diabetes individuals may, of course, be influenced by DNA repair itself, but additional factors may also be at play. Additionally, the existence of tiny molecules that scavenge free radicals, such as ascorbate, vitamin E, and glutathione, has a significant impact on how the cell responds to external mutagens. Our research did not examine these two components of antioxidant protection, and we believe that it should be pursued while taking these two factors into consideration. In our study, we concentrated on DNA repair, and we do think that the sluggish DNA repair rate in diabetic cells may be an indication of a general lack of antioxidant defense. Our findings imply that a panel of risk factors for diabetes-related cancer may include measurements of the degree of endogenous DNA damage, susceptibility to exogenous mutagens, and the effectiveness of DNA repair using the comet assay. The aqueous extract of mushroom is effective treatment against DNA damage,

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COMPARATIVE STUDY OF WATER SAMPLES OF TWO DIFFERENT REGIONS IN JAMSHEDPUR

**Dr. Pramod Kumar Singh*, Mousumi Ghatak, Kapura Murmu, Kanchan Nag, Puja
Kumari, Surupa Mukherjee, Aanchal Chaurasia**

Netaji Subhas University, Jharkhand India.

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***Corresponding Author**

Dr. Pramod Kumar Singh

Netaji Subhas University,
Jharkhand India.

ABSTRACT

Water is essential for everything we do, including drinking, washing, cleaning, and other activities. Without water, life is unimaginable. We need to understand whether the resources we are utilising are appropriate and sufficient for us in order to thrive on the planet. With this concept, we attempted to concentrate on a study that could inform us of the water quality we use on a daily basis. We conducted a number of experiments to determine the chemical and microbiological status of the water in order to concentrate on the study. Through chemical and microbiological research, we were able to identify in this

study which places and water samples were deemed safe for human consumption.

KEYWORDS: Water, Chemical, Microbial.

INTRODUCTION

In terms of water resources, India has a network of resources like rivers and snow, which is a form of blessing for the nation and can therefore meet the needs (Bhawan, 2005). Due to their heavy reliance on rivers, the Indian population places a high value on water. Water resources are used for a variety of purposes, including drinking, irrigation, aquaculture, and power generation. Water resource management is realising the necessity of ongoing hydrological studies on Indian waterways due to the extensive utilisation of fresh water resources. The presence of various disease-causing bacteria in drinking water and recreational water is discussed in a number of studies, including one from the All India Institute of Medical Sciences (AIIMS), New Delhi. The usage of this water results in a number of serious illnesses. According to reports, human activity is the primary cause of pollution in the Indian River system (Goer et al; 1995). Studies of physical, chemical, and microbiological features

are crucial to understanding the relevance of water as a significant ecological element. Surface water microbiological characteristics are significantly impacted by sewage plant discharges and runoff from unincorporated areas. To evaluate the surface waters microbiological quality faecal coliforms (FC), the most prevalent bacterial indicator of faecal contamination, are used as indicator organisms in most cases. These organisms are frequently discovered in water that has been tainted by faeces from both humans and animals. Total coliforms (TC) are made up of both other bacterial groups and bacterial species with faecal origin (e.g. bacteria commonly occurring in soil). Coliforms are analysed to determine the general hygienic condition of the water and any potential risk of infectious diseases from it. High FC and TC counts in water are typically exhibited as diarrhoea, sometimes accompanied by fever and other secondary problems. Children and adults frequently bathe in streams and rivers in the neighbourhood, as is the case with swimming in rivers. The fact that water-borne diseases often have low infectious doses is widely acknowledged. Additionally, there is a great likelihood that you will consume a dose that will make you sick from a bacterium. Water makes up 75% of the human body, which is why it is regarded as essential to life. One of the most vital elements on earth is water. One of the main components that support life on earth is water. As is obvious, water plays a crucial role in our diet by assisting the body's many metabolic processes and regulating our body temperature. Because of its similar density to cell protoplasm, water is special. Water helps people lose weight since it has no calories.

Water is regarded as the essential element that most directly affects the quality of our lives because it is the universal solvent. Without water, life is unimaginable. The same way that water circulates throughout the human body, it likewise does so on land, carrying away waste while transporting, dissolving, and replenishing nutrients and organic matter. The body further regulates the actions of fluids, tissues, cells, lymph, blood, and glandular secretions. Water serves as a vector for diseases brought on by bacteria, viruses, protozoa, and worms. In order to be regarded as potable, water must be pathogen-free. Additionally, it shouldn't contain any other toxic substances, such as pesticides, insecticides, or herbicides, synthetic fertilisers, or heavy metal ions. It shouldn't taste or have an offensive odour.

The infections that are spread by contaminated water are known as waterborne diseases. Over 2 million people per year pass away from the diseases cholera, typhoid, and dysentery, which are transmitted by contaminated water and a shortage of water for hygiene (Mishra and Tripathi, 2000).

MATERIALS AND METHODS

Materials

pH meter, Test tubes, pipettes, auto pipettes, conical flask, glass rod, funnel, beaker, petri plates, burette, measuring cylinder, filter papers, MacConkey broth, filter papers, etc. Water samples were taken from the different areas of Jamshedpur, Jharkhand.

Methods

Chemical analysis of water

To identify and measure the chemical constituents and properties of water samples, water chemistry analyses are performed. The goal of the analysis and the intended use of the water will determine the type and sensitivity of the analysis. The analysis findings give information.

Following tests are performed for chemical analysis of different water samples and calculations are done accordance with WHO 2007:

- pH
- Total dissolved solid
- Total suspended solid

Microbial analysis

Worldwide, water-borne infections are a major contributor to illness and fatalities. The protection of the public's health depends on routine microbiological testing of drinking water sources, recreational waters, and environmental waters. The primary goal of this microbiological analysis experiment was to identify various bacteria and fungi (vu et al; 2014).

RESULTS

According to the chemical analysis, the pH of the well and ground water in region 1 (Bhilai pahari, Jamshedpur) was found to be acidic (Table 1). The ground water in Region 2 (Talsa, Jamshedpur) was also discovered to be acidic (Table 2). When Total Dissolved Solid (TDS) analysis was carried out, it was found that Region 1 displayed the maximum value of 1600 for well water (Table 1). It was noted that the maximum value of 3000 for ground water for Region 2 (Table 2). Total suspended solid (TSS) measurements were made, and it was found that Region 1 displayed the highest value of 2500 for well water (Table 1). It was noted that the maximum value of 1000 for ground water in Region 2 (Table 2). When microbial growth

analysis was conducted, it was found that Region 1 displayed the highest growth of microorganisms in municipal water (Fig.1). It was discovered that well water from Region 2 had the highest rate of microbial growth (Fig.2).

Chemical analysis

Region 1

Water sample	pH	TDS	TSS	Microbial growth
Well water	6.38	1600	2500	+++
RO water	7.00	400	0.00	nil
Ground water	6.70	800	1500	++++
Municipal water	7.32	400	0.00	Maximum

Region 2

Water sample	pH	TDS	TSS	Microbial growth
Well water	7.00	2500	1000	maximum
RO water	5.72	1000	0.00	Nil
Ground water	6.5	3000	500	++
Municipal water	7.40	0.00	0.00	+++

Figures

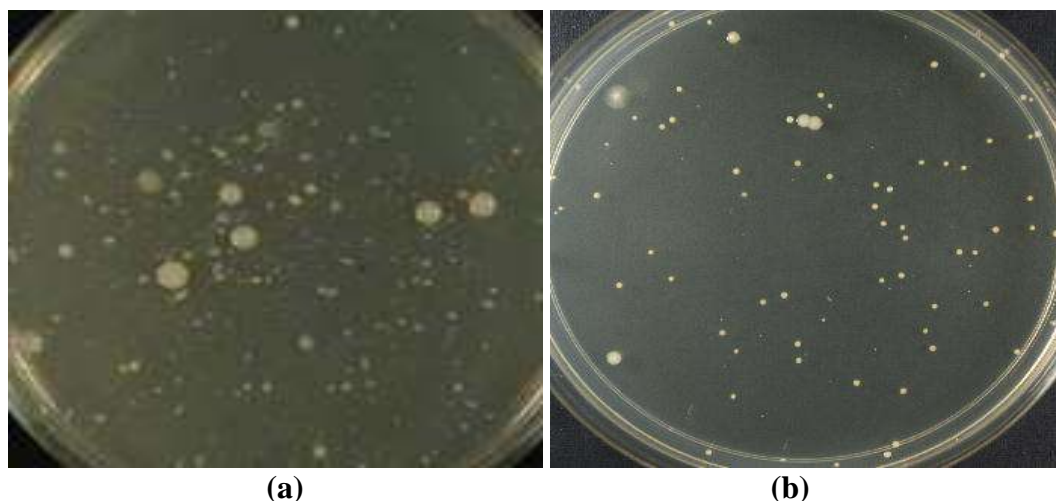


Fig. 1: (a) Pictorial representation showing maximum number of microbial colonies in Region 1. (b) Pictorial representation showing maximum number of microbial colonies in Region 2

DISCUSSION

A conclusion that can be drawn from the chemical and microbiological study of several water samples from two distinct regions is that water samples from Region I have perfect pH levels that are equivalent to the studies of (Kulthanan et al, 2013). When compared to water samples from Region II, Region I's water samples may be regarded as safe in terms of the chemicals

they contain. Based on the microbiological study of the two regions' water samples, Region II's agar plates showed the least amount of microbial growth. This can therefore be regarded as potable. Region I water samples did not exhibit any growth on agar plates. However, increase was seen in the water samples from Region II. Therefore, there are no harmful bacteria in Region I. (Ambili and Sebastian, 2015). Overall assessment: Chemical analysis-wise, Region I is secure.

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**DIABETES CARE THROUGH PLANT HERBS****Khushboo Jyoti* and Mousumi Ghatak**

Netaji Subhas University, Jamshedpur, Jharkhand, India.

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Corresponding Author*Khushboo Jyoti**

Netaji Subhas University,
Jamshedpur, Jharkhand,
India.

ABSTRACT

Diabetes mellitus is a metabolic disorder resulting from a defect in insulin secretion, insulin action, or both. A consequence of this is chronic hyperglycemia (that is elevated levels of plasma glucose) with disturbances of carbohydrate, fat and protein metabolism. Long-term complications of diabetes mellitus include retinopathy, nephropathy and neuropathy. The risk of Cardiovascular disease is also increased. Plants are used by people since very early time for food, clothes and even though as a source of medicine. Plants derived products have been popular all over the world for the centuries. Some

herbs have beta-cells regeneration stimulating power. In addition to maintaining normal blood sugar level, some herbs are also reported to possess antioxidant activity, cholesterol-lowering action and restore the liver glycogen level. In this review we attempted to characterize the plants helpful in reducing the diabetes mellitus.

KEYWORDS: Diabetes mellitus, hyperglycemia, cardiovascular disease, plant phytochemicals.

INTRODUCTION

Plants are used by people since very early time for food, clothes and even though as a source of medicine. effect (Malviya et. al, 2010). Plants derived products have been popular all over the world for the centuries. Some herbs have beta-cells regeneration stimulating power. (Chauhan, et. al, 2010). In addition to maintaining normal blood sugar level, some herbs are also reported to possess antioxidant activity, cholesterol-lowering action and restore the liver glycogen level. Tribal and other people of different countries used different type of plants for the treatment of diabetes (Jarald et. al, 2008). The ethno botanical information reports about 800 plants that may possess anti-diabetic potential and more than 1200 species of plants have been screened for activity on the basis of ethno pharmacology or on random basis. (Jung et.

al, 2006). Herbal anti-diabetic drug mainly belongs to plant, marine algae and fungi to phylogenetically advanced classes of compounds (Warjeet Singh, 2011). Medicinal plants that are the most effective and the most commonly studied in relation to diabetes and its important functions are described in this literature.

1. *Swertiacharita*

Swertiachirayita is a medicinal plant indigenous to temperate Himalaya. It is known to have antipyretic, hypoglycemic, antifungal and antibacterial properties. Hexane fraction of *S. chirayita* (250 mg/kg body wt.) induced significant fall in blood sugar and significant increase in plasma IRI (Chandrasekhar *et al.*, 1990). Similarly, Petroleum ether, dichloromethane and methanol fraction of *Swertiachirata* showed hypoglycemic effect on Swiss albino mice (Alam *et al.*, 2011). Ethanolic extract of *Swertia* was also found to have beneficial effect on cholesterol and triglyceride level along with anti-diabetic activity (Arya *et al.*, 2011).



Swertiacharita

2. *Gymnemasylvestre*

Gymnemasylvestre is a woody, climber, native to India. The leaves of this plant have been used in India for over 2000 years to treat madhumeha, or “honey urine.” Chewing the leaves destroys the ability to discriminate the “sweet” taste, giving it its common name, gurmara, or “sugar destroyer.” Plant constituents include two resins (one soluble in alcohol), gymnemic acids, saponins, stigmasterol, quercitol, and the amino acid derivatives betaine, choline and trimethylamine (Kapoor LD. 1990). *Gymnemasylvestre* is a stomachic, diuretic, refrigerant, astringent, and tonic (Kapoor LD. 1990). It has been found to increase urine output and reduce hyperglycemia in both animal and human studies. *Gymnema*’s antidiabetic activity

appears to be due to a combination of mechanisms. Two animal studies on beryllium nitrate- and streptozotocin-diabetic rats found *Gymnema* extracts doubled the number of insulin-secreting beta cells in the pancreas and returned blood sugars to almost normal (Prakash et al., 1986, Shanmugasundaram et al., 1990). *Gymnema* increases the activity of enzymes responsible for glucose uptake and utilization (Shanmugasundaram et al., 1983) and inhibits peripheral utilization of glucose by somatotrophin and corticotrophin (Gupta et al., 1964). Plant extracts have also been found to inhibit epinephrine-induced hyperglycemia (Gupta, 1961).



Gymnema sylvestre

3. *Eugenia jambolana*

In India decoction of kernels of *Eugenia jambolana* is used as household remedy for diabetes. This also forms a major constituent of many herbal formulations for diabetes. Antihyperglycemic effect of aqueous and alcoholic extract as well as lyophilized powder shows reduction in blood glucose level. This varies with different level of diabetes (Sheela et al., 1992). The extract of jamun pulp showed the hypoglycemic activity in streptozotocin induced diabetic mice within 30 min of administration while the seed of the same fruit required 24 h. The oral administration of the extract resulted in increase in serum insulin levels in diabetic rats. Insulin secretion was found to be stimulated on incubation of plant extract with isolated Islets of Langerhans from normal as well as diabetic animals. These extracts also inhibited insulinase activity from liver and kidney (Acharekar et al., 1991).



Eugenia jambolana

4. *Terminalia chebula*

The dried ripe fruit of *Terminalia chebula* (Combretaceae), which is a native plant in India and Southeast Asia, is commonly known as black myroblans in English and Harad in Hindi and has traditionally been used for homeostatic, antioxidant, diuretic, and cardiogenic treatments. *T. chebula* exhibits in vitro antioxidant and free radical-scavenging activities (Cheng et al., 2003). It is generally assumed that frequent consumption of plant-derived phytochemicals from vegetables, fruit, tea, and herbs may contribute to shift the balance toward an adequate antioxidant status (Halliwell et al., 1995). The attributed anti-hyperglycemic effect of these plants is due to their ability to restore the functions of pancreatic tissues by causing an increase in insulin output or inhibits the intestinal absorption of glucose or to facilitate the metabolites in insulin dependent processes. Hence treatment with herbal drugs has an effect on protecting β -cells and smoothing out fluctuation in glucose levels (Jia et al., 2003, Elder, 2004). In general, there is very little biological knowledge on the specific modes of action in the treatment of diabetes, but most of the plants have been found to contain substances like glycosides, alkaloids, terpenoids, flavanoids etc., that are frequently implicated as having antidiabetic effects (Loew et al., 2002).



Terminalia chebula

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Diabetes And Its Connection To Oral Health Issues

Mousmi Ghatak¹, Khushboo Jyoti², Dr. Bijendra Rai³, Dr. Pramod Kumar Singh^{4*}

^{1,2,4*}Netaji Subhas University, Jamshedpur, Jharkhand, India

³Govt. Holkar Science College, Indore, M.P. India

***Corresponding author:** Dr. Pramod Kumar Singh

*Netaji Subhas University, Jamshedpur, Jharkhand, India drsingh2030@gmail.com

Abstract:

Chronic metabolic disease known as diabetes mellitus is a major source of morbidity and mortality in the modern world and is currently on the rise. Patients with diabetes may experience several health consequences, including retinopathy, neuropathy, nephropathy, cardiovascular diseases and oral complications. Diabetes-related oral problems include periodontal disease, dental caries, oral infections, abnormalities of the tongue; salivary glands, delayed wound healing, halitosis, and lichen planus. Oral problems are associated with uncontrolled diabetes, including excessive salivary glucose levels, impaired neutrophil function, neuropathy, and small artery damage. Patients with diabetes have a decline in their quality of life due to oral problems. Even higher blood glucose levels are a result of complications such as periodontal disease, which has a reciprocal association with diabetes mellitus. The purpose of this article is to raise awareness about the oral health of diabetics and to emphasize the significance of keeping good oral hygiene, implementing preventative measures, identifying oral difficulties early on, and managing these patients' oral complications appropriately using a multidisciplinary approach.

Key words: Diabetes Mellitus, Neutrophil, Neuropathy, Periodontal

Introduction:

A chronic, non-communicable metabolic disease called diabetes mellitus is characterized by abnormal insulin secretion, action, or both. The metabolism of fat, protein, and carbohydrates is disrupted when there is insufficient insulin. Diabetes Mellitus develops as a result of both environmental and genetic causes. The end effect of decreased insulin secretion, decreased glucose utilization, or increased gluconeogenesis is hyperglycemia and detrimental alterations in several organs. [1,2]. Diabetes is categorized into the following general categories: Type 1 diabetes, Type 2 diabetes, and certain types of diabetes brought on by other factors such as exocrine pancreatic disease, diabetes brought on by chemicals or drugs, and monogenic diabetic syndrome (d) Diabetes mellitus during pregnancy. [3]. Currently, 422 million people worldwide suffer from diabetes mellitus. There are 1.6 million deaths annually that are directly related to diabetes. [4]. The International Diabetes Federation has estimated that 693 million people between the ages of 18 and 99 would have diabetes by the year 2045, based on data from research conducted around the globe. [5]. As diabetes becomes more common, complications are expected to have a major negative influence on society and the economy. [6–10]. Diabetes can cause severe hypoglycemia or ketoacidosis, which are acute consequences. Retinopathy, neuropathy, cardiovascular disease, and nephropathy are a few examples of chronic disease consequences. [11–14].

One area of the body where chronic hyperglycemia affects people is the mouth cavity. Diabetes mellitus-related oral health complications are brought on by impaired neutrophil function, microangiopathy, neuropathy, decreased collagen production, and decreased collagenase activity. [15]. Over 90% of diabetic patients experienced oral problems, according to a research. [16]. An additional systemic review has found that patients with Diabetes Mellitus have higher rates of oral mucosal disorders than people without the disease: 45–88% of patients with Type 2 diabetes compared to 38.3–45% of non-diabetic subjects, and 44.7% of type 1 diabetics compared to 25% of the non-diabetic population. [17]. Diabetes Mellitus can lead to issues in the oral cavity, including tooth decay, gingivitis, oral candidiasis, altered taste, geographic tongue, fissured tongue, dry mouth, infection predisposition, oral lichen planus, and poor wound healing. [18–23]. One of the oral consequences of Diabetes Mellitus that gets worse because of hyperglycemia is periodontal disease. In addition, there is a reciprocal association between diabetics' blood glucose levels and systemic inflammation brought on by periodontitis. [24]. Periodontal disease incidence and prevalence are impacted by diabetes mellitus. Uncontrolled diabetes is characterized by the formation of deep pockets and loss of attachment, and people with diabetes have a high prevalence of periodontitis, ranging from 34% to 68%. [25, 26]. Uncontrolled diabetes increases the chance of alveolar bone loss eleven times over in healthy individuals. [18]. Xerostomia, or dry mouth, is a condition that has been linked to diabetes. A meta-analysis encompassing 32 studies revealed that 46.09% of individuals with diabetes experienced xerostomia, and another study discovered that diminished salivary flow affected 92.5% of diabetic patients. [27, 28]. Dysphagia, dental caries, mouth discomfort, and dysgeusia are eventually caused by this condition, which tends to reduce the quality of life for diabetics. [28–31]. Patients with diabetes have a higher risk of oral infections and delayed wound healing. [32, 33]. Oral bacterial infections are made easier by an elevated

glucose level in the oral cavity and the immunocompromised state of uncontrolled Diabetes Mellitus. [18,32]. Diabetes mellitus patients may experience delayed wound healing because of damaged tiny blood arteries and compromised immune system response to inflammation and infection. [33–35].

Due to hyposalivation and elevated salivary glucose levels, which encourage the growth of the bacteria that cause tooth caries, diabetic people also experience dental caries. [36–38]. These individuals may experience oral health issues such as taste dysfunction, a condition in which diabetics lose some of their capacity to discriminate flavours. [39–41]. One type of neuropathic orofacial discomfort is Burning Mouth Syndrome. [42]. Patients with diabetes may experience fissured tongue, atrophic glossitis, rhomboid glossitis, or benign migratory glossitis. [23, 43, 44].

Oral Manifestations Disease in Diabetes Mellitus

There are four types of periodontal health: pristine (no attachment or bone loss) periodontal health is characterized by the complete absence of physiological immune surveillance and clinical inflammation on a periodontium with normal support. (b) clinical periodontal health, in which the periodontium's natural support is present and clinical inflammation is absent or at a minimal (d) periodontal disease remission or control in a reduced periodontium; (c) periodontal disease with impaired stability in a periodontium. [45]. A persistent inflammatory disease called periodontitis is brought on by pathogenic biofilm that builds up on teeth [46]. It has been proposed that *Tannerella forsythia*, *Treponema denticola*, and *Porphyromonas gingivalis* are the main gram-negative bacteria that cause periodontitis. [47, 48]. The inflammatory loss of periodontal bone can be triggered by *P-gingivalis*. [49]. These bacteria's DNA and lipopolysaccharides trigger the production of inflammatory cytokines by triggering the pathways of nuclear factor κ B (NF κ B) and protein-1. [50 – 51]. Neutrophils are drawn to cytokines, which increases the generation of reactive oxygen species (ROS). Tissue damage is caused by osteoclast activation caused by AP-1 and NF κ B. [52 – 53]. Certain bacteria species may proliferate in diabetic crevicular fluid due to elevated glucose levels. [54]. It has been observed that diabetic patients with periodontitis have much greater levels of local mediators of inflammation, such as prostaglandin E2, TNF α , and IL-1 β , which results in extended osteoclast production and activity. [54–56]. Diabetes-related up regulation of interleukin stimulates osteoclast formation, extending the length of the inflammatory response. [57 – 59]. Additionally, there is an overabundance of RANKL, which stimulates the production and activity of osteoclasts by interacting with receptors on their surface. [60 – 63]. Increased AGE production that interacts with RAGE is present in diabetes mellitus. Thus, more RANKL receptor activator is formed, which further encourages osteoclast generation. [64]. Additionally, AGE-RAGE interaction enhances the production of inflammatory cytokines and activates NF κ B. [65]. Compared to healthy people, diabetic patients' neutrophils release more super-oxides. [65]. Through oxidative stress, increased ROS significantly contributes to the death of periodontal tissue. [64]. In diabetics, TNF α , AGEs, and ROS production cause osteoblast apoptosis. [66]. A caspase-3-dependent pathway enables the death of fibroblasts and epithelial cells caused by periodontal infection in individuals with diabetes mellitus. [67]. Diabetes Mellitus causes enhancement and apoptosis, which impair repair and cause the loss of the epithelium barrier's protective properties. [68- 70]. Uncontrolled Diabetes Mellitus patients are more prone to periodontal disease, also known as gum disease, which encompasses a variety of disorders affecting the gingiva, ligaments, and bones that support teeth. 71 -75]. Dental plaque bacteria cause localized gingival inflammation, which if left untreated leads to chronic periodontitis with gingival, ligament, and bone loss that forms "pockets" in the deeper periodontium. Tooth loss could result from this. [76 – 80]. Hyperglycemia influences the course of periodontal disorders, and periodontitis negatively impacts blood glucose levels as well. This worsens the consequences of diabetes. [24]. Increased cytokines in the saliva and crevicular fluid of periodontal and gingival tissue; oxidative stress accompanied by the production of advanced glycation end products in a hyperglycemic state; and excessive inflammation ultimately lead to the destruction of periodontium. [81]. Diabetes also impairs the development of new bone in the periodontium and raises the expression of RANKL. [82]. Conversely, periodontal disease exacerbates blood glucose management in patients with Type 2 diabetes. Through the release of pro-inflammatory cytokines, it produces systemic inflammation, leading to bacteremia and insulin resistance. [83]. The inflammatory periodontium serves as a persistent reservoir for bacteria, their byproducts, and inflammatory mediators such as TNF α , IL 1, and IL 6 that impact glucose metabolism. [84]. By killing pancreatic β cells, opposing the action of insulin, and changing the intracellular signalling of insulin through NF κ B, the systemic inflammatory cytokines generated as a result of periodontal inflammation also cause insulin resistance. [85]. When comparing diabetic individuals with Type 2 diabetes who underwent dental treatment for periodontal disease to those who did not, improvements in glycemic control were noted. [86]. When compared to diabetic patients who did not receive dental treatment for periodontal disease, patients with Diabetes Mellitus who underwent non-surgical treatment of the periodontium showed improved glycemic control in a meta-analytic study involving nine randomized clinical trials. [87].

Salivary Dysfunction

Xerostomia is the subjective issue of dry mouth, while hyposalivation is the objective decrease in salivary flow. [29]. Systemic disorders such as diabetes mellitus, rheumatoid arthritis, systemic lupus erythematosus, Sjögren syndrome, metabolic disorders such as anaemia, bulimia, dehydration, infections such as HIV/AIDS and HCV, neurological disorders such as Parkinson's disease and depression, and other conditions like sarcoidosis are associated with Xerostomia. [29, 88, 89]. Research has revealed a connection between Xerostomia and Diabetes Mellitus (Type 1 and

Type 2). [28, 30, 31]. Xerostomia may arise in people with uncontrolled diabetes because to problems such as autonomic neuropathy, structural alterations in the salivary glands, and inflammatory changes brought on by hyperglycemia. [15, 90]. The amount and makeup of saliva may decrease as a result of this. [91]. Xerostomia patients experience peeled and cracked lips, glossitis, cervical caries, and dry buccal mucosa. When dysgeusia, dental caries, periodontal disease, mouth discomfort, and dysphagia finally emerge in Xerostomia patients, their quality of life gradually declines. [29].

Infections of the Oral Cavity

Diabetes mellitus patients have weakened immune systems, which makes them more vulnerable to infections of the oral cavity (owing to defence function impairment). [91,92]. In teeth, the bacteria mix with food to generate plaque, which can lead to dental cavities, gingivitis, halitosis, and mouth sores. [32]. When diabetics have an oral infection, *P. gingivalis*, *Propionibacterium acnes*, *Actinomyces israelii*, *Peptostreptococcus prevotii*, *Fusobacterium nucleatum*, *Saccharomyces cerevisiae*, *Streptococcus sanguis*, *Prevotella intermedia*, and *Streptococcus intermedius* are frequently found bacteria in the oral cavity. Bacterial growth is promoted by the elevated glucose levels in the saliva of diabetes individuals. [18]. Uncontrolled diabetes increases the risk of bacterial infections reoccurring and spreading from the mouth to other parts of the body. Previous research has shown that people with diabetes can get deep neck infections. [93–97].

Poor Wound Healing of the Oral Cavity

Patients with uncontrolled diabetes have poor oral wound healing and related long-term consequences. [33]. Diabetes-related chronic problems are caused by damage to tiny blood vessels. [34]. The food supply to cells that carry out an inflammatory role and protect against infectious pathogens is hampered by an inadequate blood supply. [92]. Healthy tissue replaces dead or damaged tissues when there is inflammation. The body's defence cells are paralyzed by transient blood sugar surges, leaving the body with little defence against infection and inflammatory processes. Hyperglycemia impairs the ability of uncontrolled diabetic patients to repair and regenerate tissue. [33, 35].

Dental Caries

Dental caries is an infectious disease of the teeth caused by bacteria, primarily Streptococci mutans that attaches to the tooth and produces acid from sugar, dematerializing the tooth structure. Dental caries can be caused by a variety of reasons, including fermentable sugar, microbial flora, and environmental variables. [98]. Prior research has shown a connection between diabetes mellitus and the development of dental caries. [28,99]. Dental caries production in Type 1 Diabetes Mellitus has been linked to elevated salivary glucose levels, decreased salivary flow, changes in the biochemical makeup of saliva, a reduction in the salivary buffering effect, poor oral hygiene, a cariogenic diet, and pre-existing dental plaque. [100]. Dental caries is more common in those who consume sugar without any limits than in people whose blood glucose levels are under control. [43]. As people age, dental caries in the cementum of their teeth grow more common, and older patients with Type 2 Diabetes Mellitus have been reported to have caries of the radicular portion of their teeth. [34]. Hyposalivation was cited as a cause of poor oral hygiene in Type 1 diabetic patients in a study comparing their cleanliness to that of a control group. [101]. In 2017, a study found that using sugar-free toothpaste raised salivary pH and decreased salivary glucose levels in people with diabetes mellitus. The study also recommended tight blood glucose management to maintain good oral hygiene.[102]. Patients suffering with Diabetes Mellitus are particularly vulnerable to dental caries because of hyposalivation and elevated salivary glucose levels, which might be a sign of insulin insufficiency. [36]. Saliva's protecting, buffering, and cleaning properties are lost in diabetics. [37]. The basement membrane of the salivary glands alters when the microvasculature is damaged. Therefore, there is an increase in glucose leakage from the duct's cells, which raises the amount of glucose in saliva and the crevicular space. This alteration leads to a decrease in fibroblast activity, which in turn causes an increase in plaque development. Dental plaque changes the glucose in saliva into lactic acid, which lowers the pH of saliva. [103,104]. This low pH promotes the growth of aciduric bacteria, which in turn reduces the growth of oral protective bacteria. The natural environment is shifting in a way that benefits the bacteria that cause dental caries. This lowers pH even further, and the cycle keeps repeating. [37, 38].

Taste Dysfunctions

A person's ability to recognize food taste influences their diet, nutrition, quality of life, and may even contribute to the onset of chronic diseases. [105]. There are at least five different types of taste sensations: umami, bitter, sour, sweet, and salty. [106]. The taste buds and papillae in the oral cavity contain taste receptor cells that detect taste. Signals are sent from taste molecules to taste receptors and then to the brain through the cranial nerve. [107]. Unhealthy eating habits may result from the malfunction of one or more taste receptors, which change how one perceives flavour. [108]. Research has indicated that diabetes mellitus (type 1 and type 2) causes a loss in the ability to distinguish and recognize taste sensations. [39–41]. Diabetics without neuropathy have also been reported to have taste impairment. [109].

Burning Mouth Syndrome

The International Association for the Study of Pain has certified burning mouth syndrome as a neuropathic orofacial pain disorder characterized by oral mucosal burning pain, typically affecting the anterior two thirds of the tongue

without obvious mucosal disease. [42]. The mucosa of the oral cavity is experiencing tingling and burning that has no apparent cause. [110]. In patients with peripheral neuropathy who have type 2 diabetes, this syndrome has been reported in 18.8% of cases. [112]. In individuals with type 2 diabetes, uncontrolled diabetes and diabetic peripheral neuropathy were revealed to be significant predictors of symptoms similar to burning mouth syndrome. [42]. Increased excitability of the trigeminal nerve was observed in diabetic peripheral neuropathy patients compared to healthy individuals in a 2019 study comparing the nociceptive function of the oral cavity in these patients. Peripheral neuropathy in diabetic patients may result in hyperesthesia and pain perception in the mouth cavity. [112]. Long-term burning pain in the mouth makes it difficult for sufferers to maintain good oral hygiene, which exacerbates the condition of diabetic patients' oral health. [43].

Tongue Abnormalities

The tongue is an organ made up of vallate, filiform, and fungiform papillae muscles. It moves food within the mouth cavity with the creation of boluses for swallowing, facilitates speaking, and uses taste buds on the papillae to operate as a taste organ. [113]. Individuals with diabetes mellitus may experience anomalies in their tongues. According to a 2019 study, people with type 2 diabetes have thick yellow fur and a blueish tongue. The study also recommended screening the tongue for the disease in order to identify it early. [114]. A characteristic observed in diabetics is fissured tongue. On the dorsal tongue surface, this condition is characterized by grooves that vary in depth and size. When material gets lodged in these crevices, symptoms show up. [43,115]. Fissured tongue was found to be associated with diabetes mellitus in a study conducted in 2015. [115]. Reduced salivary flow rate and xerostomia can lead to the production of fissured tongue. [116]. The absence of fungiform and filiform papillae on the tongue's dorsal surface causes atrophic glossitis, a disorder that eventually changes the tongue's appearance and texture to become smooth and soft. Rhomboid glossitis is a condition caused by an oral candida infection in people with diabetes mellitus. [44]. An erythematous tongue lesion anterior to the circumvallate papillae is indicative of this glossitis. The rhomboid-shaped lesion, also known as a kissing lesion, is located along the dorsal surface of the tongue along the midline. It is smooth, shiny, and depapillated. [117]. Diabetes Mellitus individuals can also have benign migratory glossitis. [113]. This benign condition is characterized by redness (erythema), atrophy of the filiform papillae, and a border of white, hyperkeratosis that is serpiginous. [23].

Halitosis

One of the early signs of diabetes is halitosis, or foul breath, which is a characteristic ketone scent in diabetics. Sulphide compound odour might also result from periodontal disease. Oxidative stress brought on by elevated blood levels of methyl nitrate and fatty acids results in halitosis. [45]. According to a 2015 study, halitosis affected 23.3% of the study participants who were diabetic. [118].

Oral Lichen Planus and Oral Lichenoid Reaction

A persistent inflammatory skin lesion is called lichen planus. [119]. The lesion is characterized by itchy, flat-topped, polygonal, violaceous plaques and papules that can occur throughout the body, including the oral cavity. The oral cavity lesion manifests as white elevated lines that form a bilateral, symmetrical lace-like pattern. Patients with diabetes have been observed to have oral lichen planus in 120 studies. [46,47]. An oral lichenoid reaction is another mucosa-related alteration that could negatively impact oral hypoglycemic medications given to diabetic patients. [48, 49]. The autoimmune condition known as oral lichen planus causes the basal cells of the oral cavity's epithelium to undergo apoptosis, which is facilitated by cytotoxic T lymphocytes. [121]. Oral lichen planus patients may experience pain and burning in their mouths, which can make it difficult for them to swallow and eat. [48]. Given the potential for malignancy, oral lichen planus must be diagnosed and treated to stop the development of oral squamous cell carcinoma. [49].

Other Oral Complications

Prior research has demonstrated that diabetic individuals had little knowledge of the risks associated with oral health and were unaware of the reciprocal relationship between diabetes mellitus and periodontal disease. [122–126]. Several barriers kept the carers from offering effective treatment in a 2017 study on the knowledge and behaviors of diabetes care providers in dental health care. These included a lack of appropriate referral systems, guidelines or dental health screening tools, and insufficient understanding of the reciprocal relationship between diabetes and oral health. [53]. Nonetheless, prior research has indicated that patients with diabetes who receive information on oral health from healthcare providers and have improved education in this field have a solid understanding of oral health. [126,127]. Patients who have more knowledge about the connection between diabetes and dental health adopt healthier dental habits. [128]. Diabetic neuropathies are a varied set of illnesses that are the most common main consequence of diabetes mellitus. Diabetic neuropathies that resemble diffuse neuropathy include autonomic neuropathy, mononeuropathy, radiculopathy, and distal symmetric polyneuropathy, which is the most prevalent kind of diabetic peripheral neuropathy. [129,130]. DSPN is the most common type of diabetic neuropathy, making for to 75% of the complications. [131,132]. A number of variables, such as age, the length of diabetes, and diabetic retinopathy, may raise the chance of developing diabetic peripheral neuropathy. [33]. Diabetic neuropathy can affect about 50% of people with diabetes. [34]. Potential pathophysiological factors of diabetic neuropathy include oxidative stress, inflammation, damage to the

vasa nervorum, the small blood arteries that supply the nerves, neuronal injury, and damage resulting from metabolic disturbances. [129–137]. Neuropathic pain, which can be searing, shooting, tingling, or lancinating in character, and paresthesia that gets worse at night are symptoms of diabetic peripheral neuropathy. When exposed to certain stimuli, including shoes and bed linens, there could be an increased reaction to pain. Such pain can impair one's quality of life, cause disabilities, and interfere with day-to-day functioning. [38, 138–140]. Patients with diabetes are frequently diagnosed with cardiovascular problems such as peripheral artery disease and cardiac myopathy later in the course of their illness. [141]. Patients with Type 2 diabetes who have both obstructive and nonobstructive coronary stenosis have shown signs of advanced atherosclerotic alterations in their coronary arteries. [142,143]. Acute coronary syndrome and the loss of myocardial muscle regeneration function are further complications. [143]. Vasoactive amines change the response, which has a negative impact on the heart. [142–144]. Arrhythmias in the ventricle and atria are brought on by a disruption in the genesis and propagation of action potentials in cardiac muscle, which results in automaticity and re-entry mechanisms. The high rate of congestive heart failure associated with diabetes mellitus is caused by pump failure brought on by anomalies in the heart muscle brought on by inflammation and cardiac fibrosis. [144,145]. Changes in diet and lifestyle can help prevent or postpone cardiovascular problems in people with Type 2 Diabetes Mellitus. [146]. Diabetic Retinopathy is a consequence of Diabetes Mellitus that carries a risk of blindness. [147]. Diabetic Retinopathy can occur as a result of prolonged diabetes, high blood pressure, and inadequate blood glucose regulation. [148]. Diabetic retinopathy is largely caused by the generation of free radicals, advanced glycation end products (AGE), and inflammation brought on by hyperglycemia. [149]. There are two forms of diabetic retinopathy: proliferative diabetic retinopathy, which poses a threat to vision, and non-proliferative diabetic retinopathy. [147]. The causes of visual loss in Diabetic Retinopathy include complications from Proliferative Diabetic Retinopathy such as tractional retinal detachment, vitreous haemorrhage, neovascular glaucoma, and diabetic maculopathy. [150]. In diabetic patients, vascular leakage due to microangiopathy results in macular edema and capillary blockage, which causes retinal ischemia and an increase in vascular endothelial growth factor. Thus, these alterations lead to neovascularization and proliferative diabetic retinopathy. [151,152]. Strict glycemic management in diabetic individuals can stall the eventual progression of non-proliferative diabetic retinopathy into proliferative diabetic retinopathy. [153].

Conclusion

In the modern world, diabetes mellitus has become a serious epidemic. Oral health issues are among the consequences caused by this metabolic condition. A diabetic's quality of life is likely to be negatively impacted by oral problems. These oral difficulties would cause the person to experience difficulty speaking, chewing, swallowing, and unpleasant mouth sensations. They also have an increased risk of oral infections due to taste anomalies, which make them, consume more sugar and salt and worsen their glycemic control, ultimately harming their dental health. Hyperglycemia in diabetic individuals is associated with a number of oral problems, primarily when there is inadequate control of blood glucose levels. Simultaneously, issues like as periodontitis because blood glucose levels to rise and other health difficulties to worsen. When the periodontium is free of inflammation, an individual can function normally without experiencing any negative effects from a former illness, either physically or mentally. This state is known as periodontal health. Diabetes Mellitus compromises periodontal health, meaning that diabetics with periodontitis experience worsening and persistent periodontal inflammation. The reciprocal association between Diabetes Mellitus and Periodontitis stems from the discharge of pro-inflammatory cytokines such as TNF α and interleukins, which exacerbate periodontal disease and induce insulin resistance. Through the death of pancreatic β cells, bacterial endotoxins from contaminated periodontium and systemic inflammatory cytokines lead to insulin resistance and hyperglycemia. It is important to raise awareness of these oral health issues since good dental hygiene can lessen their frequency and severity. Taking care of these oral cavity issues in diabetic individuals requires a multidisciplinary team that includes doctors and dentists. The blood glucose level and general health of the oral cavity can be maintained under control with routine dental and medical visits via prevention, early detection, and appropriate care.

Recommendation

The human body is severely affected by the relationship between Diabetes Mellitus and oral cavity issues. It is necessary to raise awareness of the oral health issues that diabetics face. Patients with diabetes should get education regarding the heightened dangers to their oral health, as well as tips for maintaining good oral hygiene and scheduling frequent dental checkups. Every time a patient with diabetes visits a dentist or physician, a periodontal screening should be performed. Strategies for managing and assessing diabetic patients at risk should be implemented in order to prevent the emergence of such oral problems. To effectively treat these diabetic patients' oral health, dentists must collaborate with medical professionals in related professions. The Diabetic Association can provide handbooks that explain diabetic care difficulties and assist dentists in identifying better indications and symptoms that call for a referral or annual screening. This will therefore enable a proactive approach to diabetic care that goes beyond the purview of their field. Additionally, pamphlets on maintaining dental hygiene for those with diabetes might be made available to the general public. Doctors and dentists should never stop emphasizing to their diabetic patients how crucial glycemic control is to preserving their quality of life.

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Therapeutic efficacy of water extract of Oyster Mushroom in streptozotocin induced diabetic Wistar rats

Mousumi Ghatak¹, Dhananjay Yadav², Sung Hae Kim³, Pramod Kumar Singh¹

¹Department of Zoology, Netaji Subhas University, Jamshedpur, Jharkhand, India; ²Department of Life science, Yeungnam University, Korea; ³Department of Molecular Biosciences, The University of Kansas, Lawrence, KS 66045, USA

Abstract. *Back ground and aim:* Currently, there are a lot of allopathic medications on the market that are very effective at controlling diabetes, but they eventually cause side effects. Plant derived products have proven to be effective and safe in the treatment of diabetes mellitus due to the presence of active bioactive compounds which have attracted scientists into the look insight of the natural products. Oyster mushroom is a low – calorie, fat free, fibre-rich food high in various vitamins and minerals such as copper, niacin and phosphorus. Hence, the present study was evaluated the potential effect of anti-hyperglycemic, anti-hyperlipidemic and anti-oxidative properties of oyster mushroom extract in streptozotocin induced diabetes. *Methods:* 32 rats (N=32) were given a standard diet and divided into four groups namely Group 1: normal control (NC), n=8, Group 2: Diabetic control (DC), n=8, Group 3: A dose of 200 mg/kg BW of oyster mushroom aqueous extract treatment for diabetic rats, n=8, Group 4: Glibenclamide treatment for diabetic rats or rats treated with allopathic drug, n=8. All the biochemical estimations were done at two different intervals, one after the induction of diabetes and second after completion of (21-day) therapy. *Result:* The present study was investigated for the quantitative analysis of phytochemicals, antioxidants, α -amylase inhibitory activity and antidiabetic properties of aqueous extract of oyster mushroom. Quantitative analysis of aqueous extract shows phenolics, flavonoids, tannins, alkaloids and saponins as bioactive compounds. Furthermore, using DPPH radical scavenging activity, hydrogen peroxide scavenging activity, total antioxidant capacity, and anti-haemolytic activity were found to be 54.41 ± 1.18 , 11.87 ± 1.21 , 29.23 ± 3.12 , and 14.42 ± 4.89 (activity measured in % inhibition). In the next phase of our study, we evaluated the α -amylase inhibitory activity of the extract in a dose dependent manner and found the inhibition of $(89.96 \pm 4.6\% \text{ at } 1000 \mu\text{g/ml})$. Finally, oyster mushroom extract was administered to diabetic rats (200 mg/kg) for 21 days to examine its anti-hyperglycemic, anti-hyperlipidemic and anti-oxidative properties. *Conclusion:* A significant reduction in triglyceride, total cholesterol, and low-density lipoprotein-cholesterol (LDL-C) was demonstrated by the extract. Furthermore, oyster mushroom aqueous extract improved high density lipoprotein- cholesterol (HDL-C) levels as well antioxidant enzymes.

Key words: Streptozotocin, Wistar rats, type -2 diabetes, Oyster Mushroom

Introduction

Lack of insulin and insulin dysfunction cause diabetes, a life-threatening disease characterized by elevated blood glucose levels (1). The treatment of diabetes mellitus, especially type-2 diabetes, is

necessary to control blood sugar levels.; if not treated caused major complications like cardiovascular diseases, nephropathy and neuropathy which is the major threat of mortality and serious morbidity in the developing country (2, 3). Many allopathic drugs are available in the market which is excellently working

in the control of diabetes but ends with side effects after prolonged use (4-6). However, plant derived products have proven to be effective and safe in the treatment of diabetes mellitus due to presence of active bioactive compounds which have attracted scientists into the look insight of the natural products (7-10). The fungi are among the most popular natural resources due to their low calories content but their high content of proteins, carbohydrates, fibres, vitamins and minerals, as well as their essential bioactive compounds that are reported to aid in the prevention of diabetes mellitus and many more diseases (11-13). Mishra and Singh, 2010 (14), studied how an aged Swiss albino rat's lipid profile, lipid peroxidation, and liver function were affected by dried mushrooms and mushroom extract. Dried mushrooms and their extract can increase antioxidant status throughout aging and reduce the emergence of age-related illnesses caused by free radicals (14). A similar study in which rats fed 10% dried mushroom, 300 mg mushroom extract, and 300 and 600 mg L-carnitine had lower total lipids, including triglycerides, total cholesterol, low-density lipoprotein, and very low-density lipoprotein, as well as liver enzymes and lipid peroxidation. Furthermore, 10% dry mushroom and 300 mg L-carnitine supplementation improved rat liver tissues (15). The consumption of oyster mushrooms decreases total cholesterol, total triglycerides, and low-density lipoprotein, while increasing high-density lipoprotein levels (16). According to research by Alam et al., 2009 (17), feeding hypercholesterolemic rats 5% powdered oyster mushrooms (*Pleurotus ostreatus*, *P. sajor-caju*, and *P. florida*) decreased the plasma levels of triglycerides by 45%, 24%, and 14%, and total cholesterol by 37%, 21%, and 16%, respectively. Besides containing medicinal importance oyster mushrooms also have macronutrients, micronutrients (vitamins) and non-nutrients such as phenolics which is associated with anti-oxidants properties (18). Oyster mushroom are a low-calorie, fat free, fiber-rich food high in various vitamins and minerals such as copper, niacin and phosphorus (19-20). Hence, the present study was evaluated the potential effect of anti-hyperglycemic, anti-hyperlipidemic and anti-oxidative properties of oyster mushroom extract in streptozotocin induced diabetes.

Material and Methods

Experimental design

32 rats (N=32) were given a standard diet and divided into four groups namely Group 1: normal control (NC), n=8, Group 2: Diabetic control (DC), n=8, Group 3: Aqueous extract treatment for diabetic rats, n= 8, Group 4: Glibenacamide treatment for diabetic rats or rats treated with allopathic drug, n=8. All the biochemical estimations were done at two different intervals, one after the induction of diabetes and second after completion of (21-day) therapy.

Preparation of water extract of mushroom and other analysis

Using the method described by Sze Han et al. 2015 (21). We prepared aqueous extracts of oyster mushrooms. A dose of 200 mg/kg BW of juice was administered daily to mice (22). The powder form of Oyster mushroom was obtained from the OMCAR India, Gwalior M.P. The Folin-Ciocalteu colorimetric method of Mallick and Singh 1980 (23) was used to estimate the total phenolic content (TPC) of the sample. Tannins were measured as tannic acid equivalents (24). Alkaloids and flavonoids were detected by methods described by Harborne, 1973 (25). Determinations of Saponins were performed by the methods of Brunner (1984) (26). α -amylase inhibitory activity was measured using the methods of Miller, 1959 (27). Various antioxidant parameters including scavenging of free-radicals DPPH, hydroxyl radicals; hydrogen peroxide scavenging, total antioxidant capacity; anti-lipid per-oxidation and anti-haemolytic activity was done according to the standard procedure of Shabbir et al., 2013 (28).

Induction of diabetes

To induce diabetes in overnight fasted rats (Bro-sky and Logothelopoulos, 1969 (29), a freshly prepared STZ solution in 0.1M citrate buffer, pH 4.5 was intraperitoneally injected. An ACCU-CHEK sensor glucometer was used at 72 hours following streptozotocin injection to confirm hyperglycemia or increased blood glucose level. For various biochemical analyses,

blood samples from experimental rats of each group were collected from bleeds of the retro-orbital plexus of the rats in each group.

Blood collection

All the biochemical estimations were done at two different intervals, one after the induction of diabetes i.e. in pre-treated animals (0-day estimation) and second after completion of 21 days of therapy i.e. in post treated animals (21 days estimation).

Biochemical analysis

Various lipid profiles were studied, such as the total cholesterol (TC) measured by Stockbridge et al., 1989 (30), the triglyceride (TG) concentration by Fossati and Prencipe (1982) (31), HDL-cholesterol calculated by Lopes-Virella et al., (1977) (32), and low density lipoprotein (LDL) and very low density lipoprotein (VLDL) dosed by Freidewald's Formula. A variety of kidney function tests were performed, such as serum creatinine calculated by Bowers and Wong (1980) (33), serum urea calculated by Fawcett and Scott (1960) (34) and serum uric acid calculated by Fossati et al., (1980) (35). The serum glutamic-pyruvic transaminase (SGPT) as well as serum glutamic-oxaloacetic transaminase (SGOT) were calculated by Reitman and Frankel (1957) (36), and the serum bilirubin was calculated by Fuehr (1964) (37). All these parameters were estimated by using kits manufactured by Crest Biosystems, Pvt. Ltd. India.

Oxidative stress markers in blood

Oxidative stress enzymes like GSH were calculated using Ellman 1959 (38), superoxide dismutase (SOD) was calculated using Winterbourn, 1975 (39).

Thiobarbituric acid reacting substance (TBARS) was calculating using Ohkawa et al., 1979 (40), Catalase was calculated using Sinha 1972 (41), and protein concentration was estimated by the method of Lowry et al; 1951 (42).

Statistical analysis

An ANOVA with Tukey's post-hoc analysis of variance was performed using Sigma Stat 3.5. Statistical significance was determined at $p < 0.05$ among eight animals in each group, with results expressed as mean \pm SEM. A value of was considered significant and results are expressed as mean for eight animals in each group.

Results

Using streptozotocin inducement of diabetes, this study evaluated oyster mushroom extract for its anti-hyperglycemic, anti-hyperlipidemic, and antioxidative properties. Detailed results are presented below.

Screening of phytochemicals

The aqueous extract of mushroom was tested for the evaluation of phytochemicals showed (Table 1), in terms of phenols, tannins, flavonoids, saponins and alkaloids using Gallic acid standard. The major constituents found were phenols and flavonoids whereas tannins, glycosides and saponins were reported less in amount. All these phytochemicals are reported as potent antioxidant activity (43).

Antioxidant property of aqueous extract of Oyster mushroom

The antioxidant properties of aqueous extract of oyster mushroom are shown in the Table 2.

Table 1. Phytochemical constituents of Oyster mushroom.

	Phenolics (mg/gm)	Flavonoids (mg/gm)	Tannins (mg/gm)	Alkaloids (mg/gm)	Saponins (mg/gm)
Aqueous extract of oyster mushroom	0.84 \pm 0.03	0.69 \pm 0.01	0.29 \pm 0.04	0.04 \pm 0.03	0.002 \pm 0.02

All values are the average of three determinations. (Means \pm standard deviation SD). Significant at ($P \leq 0.05$).

Table 2. Antioxidant activities of Oyster mushroom.

S.No	DPPH (%Inhibition)	H2O2 (% Inhibition)	Total AO (%Inhibition n)	Egg Albumin (%Inhibition)	Goat Liver (%Inhibition)	Antihemolytic activity (% Inhibition)
Aqueous extract of oyster mushroom	54.41±1.18	11.87±1.21	29.23±3.12	32.58±2.54	46.78±0.08	14.42±4.89

All values are the average of three determinations. (Means± standard deviation SD) Significant at ($P \leq 0.05$).

Table 3. α -amylase inhibitory activity.

Sample concentration ($\mu\text{g/ml}$)	α -amylase inhibition activity (%)
100 μl	13.85±0.05
200 μl	18.12±0.03
300 μl	27.35±0.03
400 μl	33.87±0.02
500 μl	46.74±0.05
600 μl	58.69±0.02
700 μl	68.22±0.53
800 μl	72.63±0.04
900 μl	87.23±0.04
1000 μl	89.96±4.6

On analysing the different antioxidant properties of extract, it shows activity ranging from (14.42±4.89 to 54.41±1.18). The free radical activity was calculated using the DPPH hydroxyl radical-scavenging activity and found to be (54.41±1.18). The total antioxidant capacity (TAC) was found to be (29.23±3.12). The lipid per oxidation assay was analysed using the egg albumin and goat liver and found the inhibition of 32.58±2.54 and 46.78±0.08 respectively. Haemolytic activity was performed using the goat erythrocytes and found the inhibition of (14.42±4.89) (Table 2).

Evaluation of α -amylase inhibitory activity

α -amylase is an enzyme which helps in the breakdown of starch into free glucose, and absorbed by the small intestine. Nowadays, the inhibition of this enzyme is one of the most important approaches to treating type 2 diabetes mellitus. So, the food grains

Table 4. Effect of 21 days therapy on fasting blood glucose levels.

Treatment Serum	Glucose Level	
	0-Day (mg/dl)	21-Day (mg/dl)
Normal control	86.64±1.76	79.32±0.03**
Diabetic control	475.75±6.54	465 ±3.28
Diabetic+Glibenclamide (0.5 mg)	446.23±3.58	144.75±1.95**
Diabetic+Mushroom extract (200 mg/kg) body weight	463.88±0.02	393.46±0.89**

Data was analysed by paired t-test. Value is statistically significant at $P < 0.05$ (*)

are tested for the α -amylase inhibitory activity and identified as staple food for the treatment of diabetes. In this research we also attempted to characterize the α -amylase inhibitory activity of the extract in a dose dependent manner and found the inhibition of (89.96±4.6 % at 1000 $\mu\text{g/ml}$) (Table 3).

Evaluation of anti-diabetic potential of aqueous extract of mushroom

On analysing the results, the streptozotocin induced diabetic rats exhibited significantly higher fasting blood glucose levels (475.75±6.54 mg/dl) as compared to those of normal rats (86.64±1.76 mg/dl) (Table 4). After 21- day therapy of mushroom extract, in diabetic Wistar rats, fasting blood glucose levels decreased by about 15.18% compared to pretreatment levels. The fasting blood glucose levels in diabetic rats treated with glibenclamide showed reduction of 67.56 % compared to pretreatment values.

Effect of water extract of mushroom on plasma insulin levels

Plasma insulin level was checked by the methods proposed by Baskaran et al., 1990 (44) (Table 5).

The plasma insulin levels increased from mean pretreatment value of 0.33 ± 0.03 to 0.35 ± 0.01 $\mu\text{g/L}$. The plasma insulin levels of glibenclamide treated group increased from 0.33 ± 0.03 to 2.14 ± 0.04 $\mu\text{g/L}$. The increase in plasma insulin level of glibenclamide treated groups was significant at ($P < 0.05$).

Evaluation of anti-hyperlipidemic potential of mushroom extract

Compared with the normal control rats, diabetic rats showed significantly higher levels of total

cholesterol (TC), TG, LDL, and VLDL, while HDL levels were significantly reduced (Table 6). The administration of aqueous extract of mushroom showed significantly reduction of TC, TG, LDL and VLDL as 20.84%, 29.81%, 35.54%, and 29.81% and increased of 29.05 % of HDL was obtained compared with diabetic control group (Table 6).

Effect of aqueous extract of mushroom on biomarkers of toxicity

On evaluating the results of kidney biomarkers showed the increased level of serum urea, uric acid and creatinine, in diabetic control groups of rats induced by STZ as compared with control group (Table 7).

The levels of urea, uric acid and creatinine were significantly increased by 60.65%, 69.87 % and 27.90% respectively. Interestingly, diabetic rats treated with mushroom extract for 21 days showed significant ($P < 0.05$) reductions in urea, uric acid, and creatinine levels, respectively, by 5.23%, 33.99%, and 14.45% (Table 7).

Table 5. Effect of 21 days therapy on plasma insulin levels.

Group	Mean ($\mu\text{g/L}$)
Normal control	2.86 ± 0.08
Diabetic control	0.33 ± 0.03
Diabetic+Glibenclamide (0.5 mg)	$2.14 \pm 0.04^{**}$
Diabetic+Mushroom extract (200 mg/kg) body weight	0.35 ± 0.01

Table 6. Effect of 21 days therapy on Lipid Profile.

Group	TC (mg/dl)	TG (mg/dl)	HDL (mg/dl)	LDL (mg/dl)	VLDL (mg/dl)
Normal control	50.15 ± 3.58	34.10 ± 0.4	23.93 ± 1.1	19.4 ± 0.05	6.82 ± 0.02
Diabetic control	79.35 ± 4.8	98.48 ± 2.1	13.77 ± 1.3	45.89 ± 0.38	19.69 ± 0.06
Diabetic+Glibenclamide (0.5 mg)	$46.60 \pm 3.8^{**}$	$59.79 \pm 3.2^{**}$	$26.81 \pm 1.1^{**}$	$7.84 \pm 0.64^{**}$	$11.95 \pm 0.81^{**}$
Diabetic+Mushroom extract (200 mg/kg) body weight	$62.81 \pm 1.2^{**}$	$69.12 \pm 2.9^{**}$	$19.41 \pm 1.4^{**}$	$29.58 \pm 0.88^{**}$	$13.82 \pm 0.67^{**}$

Data was analysed by one way ANOVA. Value is statically significant at $P < 0.05$ (*).

Table 7. Effect of 21 days therapy on Liver Profile.

Group	UREA (mg/dl)	URIC ACID (mg/dl)	CREATININE (mg/dl)
Normal control	34.46 ± 0.08	$2.39 \pm 0.03^{**}$	$0.43 \pm 0.05^*$
Diabetic control	55.36 ± 1.43	$4.06 \pm 0.05^*$	$0.55 \pm 0.04^{**}$
Diabetic+Glibenclamide (0.5 mg)	51.45 ± 0.09	3.13 ± 0.06	$0.41 \pm 0.03^{***}$
Diabetic+Mushroom extract (200 mg/kg) body weight	52.7 ± 2.38	$2.68 \pm 0.02^{***}$	$0.47 \pm 0.03^{***}$

Data was analysed by one way ANOVA. Value is statically significant at $P < 0.05$ (*).

Table 8. Effect of 21 days therapy on Antioxidant enzymes:

Group	GSH (mg/ml)	SOD ($\mu\text{m}/\text{min.}/\text{mg}$ protein)	CATALASE ($\mu\text{m}/\text{min.}/\text{mg}$ protein)	TBARS (n moles of MDA/ml of blood)
Normal control	3.88 \pm 0.03	73.26 \pm 5.2	4.56 \pm 0.04	387.56 \pm 8.65
Diabetic control	2.69 \pm 0.02	33.34 \pm 0.08	3.84 \pm 0.03	576.22 \pm 11.21
Diabetic+Glibenclamide (0.5 mg)	3.65 \pm 0.04**	55.87 \pm 0.05**	4.15 \pm 0.02**	464.76 \pm 7.87**
Diabetic+Mushroom extract (200 mg/kg) body weight	3.48 \pm 0.01**	50.65 \pm 0.06**	4.08 \pm 0.05**	387.55 \pm 9.25**

Data was analysed by one way ANOVA. Value is statistically significant at $P < 0.05$ (*).

Evaluation of anti-oxidant potential of Oyster mushroom aqueous extract

In normal control and diabetes control rats, oxidative stress markers such as GSH, SOD, Catalase, and TBARS were evaluated. Rats induced with STZ had decreased GSH, SOD, Catalase levels while TBARS levels were higher (Table 8). GSH, SOD, and Catalase levels increased significantly in diabetic rats after 21 days of treating aqueous extract and glibenclamide, while TBARS levels decreased significantly of 32.74%.

Discussion

The present study reveals that water extract of mushroom has many important phytochemicals such as phenolics, flavonoids, saponins and alkaloids which are reported as antidiabetic and antioxidant properties. In this study, administration of aqueous extract of oyster mushroom (200 mg/kg body weight) significantly decreases the elevated blood glucose level; compared to glibenclamide antidiabetic drugs, HDL-C was increased with TC, TG, LDL-C, and VLDL-C. Next, we evaluated the protective effect of mushroom extract against hepatic and renal damage caused by STZ and found the level of hepatic and renal markers near normal levels as compared to treatment with glibenclamide. The study results are in positive correlation with the findings of Prabu and Kumuthakalavalli, 2017 (45) that they found the inhibition of α -amylase with 94.93% reported by administering the methanolic extract of (200 mg/kg bw) oyster mushroom *pleurotus florida*.

In diabetes, hyperglycemia persists, contributing to the production of free radicals, particularly reactive oxygen species (ROS), which are critical to the damage of the pancreas and insulin loss (46). There was a decrease in antioxidant enzyme expression (approx. half of the original value) in diabetes rats followed by an increase in TBARS (approx. twice the original value). Administration of aqueous extract in the diabetic rats, enhances the value of SOD, Catalase, GSH and reduces the levels of TBARS was recorded after the treatment of 21-day therapy. Similarly, Karim et al. 2020 (47), reported that methanol extract decreased blood sugar levels by 9.8% on the 30th day compared to day 0 and 48.71% (in 30-day) in diabetic mice (treated extract) compared with the respective diabetic control animal while ethyl acetate extract reduced blood sugar by 14.56% on 30th day compared with normal control group and a reduction of 50.85% (30-day) was observed in diabetic rats compared with respective diabetic control group (47). Alternatively, the STZ induces diabetes by increasing plasma cholesterol, triglycerides, LDL-C and lowering HDL levels (46). As a result of oral administration of mushroom extract, diabetic rats demonstrated significant decreases in TC, TG, and LDL-C levels and an increase in HDL-C levels.

An antioxidant is a natural substance which acts against the reactive species generated during the oxidation reactions in the human body. Antioxidant acts through the several mechanisms such as transfer of hydrogen atom, transfer of electrons and the ability to chelate the transition metals (48-49). Free radicals are generated during the metabolism of aerobic cells in the body which produces numerous oxidants which

are responsible for the various diseases (50). These oxidants are involved in the destruction of β -cell function and develop a type 2 diabetes (9). Vishwakarma et al., 2017 (51), studied the four species of oyster mushroom (*Pleurotus cystidiosus*, *Pleurotus flabellatus*, *Pleurotus florida*, *Pleurotus ostreatus*) and evaluated their antioxidant property such as free radical scavenging activity, β -carotene-linoleic acid assay and hydrogen peroxide reducing power activity. All the species have good property of antioxidant activity with the increasing concentration of extract. Our results are in agreement with the findings of Vishwakarma et al., (2017); that on analysing the aqueous extract of oyster mushroom it shows considerable amount of phytochemicals such as phenolics, flavonoids, saponins and alkaloids which are considered as natural antioxidants reported in literature (52). Plasma insulin levels were measured in the present study. Compared to normal control rats, STZ-induced diabetic rats showed a significant decline in plasma insulin levels. Treatment of aqueous extract at 200 mg/kg body weight does not increase the levels of plasma insulin as compared with the allopathic drugs glibenclamide (52), found that metformin at a dose of 150 mg/kg could not make a significant difference in plasma insulin levels in diabetic rats, however, 800 mg/kg of petroleum ether extract of Reishi mushroom increased plasma insulin levels by 78.34% so, in future, administration of higher doses of aqueous extract should be checked. The main approach for treating the type 2 diabetes is to control the blood glucose level. This can be achieved by decreasing the breakdown of glucose through the inhibition of enzyme found in small intestine of the human called α -amylase and α -glucosidase (53-54). These enzymes breakdown the oligosaccharides; disaccharides into monosaccharides and released glucose is utilized by the body (55). To evaluate the inhibitory activity against the α -amylase enzyme the aqueous extract of oyster mushroom was tested. In this study we found a dose dependent inhibition of α -amylase with 89.96 % inhibition.

Conclusion

Mushrooms are rich sources of nutrients, fibres and proteins with low amount of lipid and calorific

value which are used by human beings since time immemorial. From the above discussion, Oyster mushroom can be useful in treating the diabetes mellitus and a better option for new therapeutic agents against harmful allopathic drugs. Phytochemicals like flavonoids, saponins, phenolics and alkaloids found in this mushroom reduce free radicals generated in the body as well as oxidative stress. The oral administration of aqueous extract of mushroom produces significant hypoglycemic, antidyslipidemic and antioxidant enzymes which lower the glucose level and total cholesterol level in the experimental animal. However, more critical investigations are required to explore the therapeutic potentials of mushroom with effects on insulin level.

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Conflicts of Interest: None.

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Correspondence:

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Pramod Kumar Singh

Department of Biotechnology, Netaji Subhas University,
Jamshedpur, Jharkhand, India. Pin: 831001

E-mail: pramod.raju21@gmail.com

Polyphenols and their protective effects including mechanisms of action against Diabetes mellitus

Dr. Mousumi Ghatak¹, Dr. Pramod Kumar Singh^{1#}

¹Assistant Professor Department of Zoology, Netaji Subhas University, Jamshedpur

^{1#}Professor, Department of Biotechnology, Netaji Subhas University, Jamshedpur.

Abstract

Diabetes mellitus, particularly type 2 diabetes (T2DM), represents a significant global health challenge characterized by insulin resistance and chronic hyperglycaemia. Recent research highlights the protective effects of dietary polyphenols, naturally occurring compounds found in various plant-based foods, against the development and progression of diabetes. This paper reviews the mechanisms through which polyphenols exert their antidiabetic effects, including the inhibition of amyloid aggregation, modulation of oxidative stress, reduction of inflammation, and enhancement of insulin sensitivity. Evidence from clinical trials and observational studies indicates that polyphenol-rich diets, especially those adhering to the Mediterranean dietary pattern, are inversely associated with T2DM risk. The ability of polyphenols to protect pancreatic β -cells from cytotoxicity and improve metabolic parameters underscores their potential as therapeutic agents in diabetes management. This review aims to consolidate current knowledge on the mechanisms of action of polyphenols and their implications for diabetes prevention and treatment.

Key words : Polyphenol, Type2 diabetes (T2DM), Dietary fibres.

Corresponding author: **drsingh2030@gmail.com**

INTRODUCTION

Dietary polyphenols including phenolic acids, flavonoids, catechins, tannins, lignans, stilbenes, and anthocyanidins are widely found in grains, cereals, pulses, vegetables, spices, fruits, chocolates, and beverages like fruit juices, tea, coffee and wine. In recent years, dietary

polyphenols have gained significant interest among researchers due to their potential chemopreventive/protective functions in the maintenance of human health and diseases. Natural products have been playing an important role in human health. Plants have been traditionally used to combat diseases in the medical traditions of different societies. Therefore, not surprisingly many modern drugs represent plant-derived substances for treating Type 2 diabetes (T2D) mellitus, with multiple prominent examples, such as acarbose, andrographolide, and galegine, which contributed to the discovery of biguanides (Figure 1). With so many successful records, the advantages of natural products-based drug discovery highlight biodiversity of resources, structural and chemical diversity, drug-likeness and biological friendliness, biocompatibility and biological validation, hints on efficacy and safety from application of traditional medicines, opportunities for use as scaffolds for chemical modifications to optimize potency, multi-targeted mechanism of action for diseases of complex etiology, and available to large-scale production by biotechnological approaches.

Phenolics are the intricate category of bioactive molecules produced by shikimate and acetate pathways that occur naturally. Almost all medicinal and edible plants contain phenolic compounds. Among the richest dietary sources of phenolic and polyphenolic compounds are fruits, spices, seeds, and vegetables. Moreover, certain beverages like tea, coffee, and wine contribute significantly to the daily intake of phenolics (Pérez-Jiménez, Neveu, Vos, & Scalbert, 2010). Due to their structural diversity and possessing therapeutic activities, researchers have focused on phenolic compounds exploring their use as medicinal agents. Compounds with one phenolic ring are generally classified as simple phenols, whereas those with more than one phenolic ring referred to as polyphenols (Figure 4). There are four major groups of phenolic compounds: simple phenols (designated as phenolic acid), lignans, stilbenes, and polyphenols (referred to as flavonoids). Among polyphenols, flavonoids represent the wide-ranging metabolites, which include flavonols, flavones, flavanones, isoflavones, and anthocyanins (Figure 3). Phenolic acids are the aromatic carboxylic acid with hydroxyl derivatives that have only one phenolic ring in their structure and are of two types, for example, hydroxybenzoic acid and hydroxycinnamic acid derivatives (Kondratyuk & Pezzuto, 2004). Caffeic, p-coumaric, ferulic, and sinapic acids are the hydroxycinnamic acid derivatives that are more abundant in

plant as compared to benzoic acid derivatives such as gallic acid, protocatechuic acid, and p-hydroxybenzoic acid.

MECHANISMS OF DIETARY POLYPHENOLS AS ANT DIABETIC AGENTS

Accumulated evidences from in vivo and in vitro investigations suggest a significant function of dietary polyphenols in the prevention and management of T2D through the insulin dependent approaches, for instance, protection of pancreatic islet β -cell, reduction of β -cell apoptosis, promotion of β -cell proliferation, attenuation of oxidative stress, activation of insulin signaling, and stimulation of pancreas to secrete insulin, as well as the insulin independent approaches including inhibition of glucose absorption, inhibition of digestive enzymes, regulation of intestinal microbiota, modification of inflammation response, and inhibition of the formation of advanced glycation end products (Table 1). Moreover, dietary polyphenols ameliorates diabetic complications, such as vascular dysfunction, nephropathy, retinopathy, neuropathy, cardiomyopathy, coronary diseases, renal failure, and so on.

Flavonoids

Flavonoids and extracts rich in flavonoids from coffee, guava tea, whortleberry, olive oil, propolis, chocolate, and cocoa have been widely studied as possible antidiabetic agents. Quercetin was the most widely investigated flavonoid in the literatures for the in vivo and cellular antidiabetic effects in animal and cell models (Shi et al., 2019), followed by kaempferol (Alkhalidy et al., 2018), luteolin (Sangeetha, 2019), myricetin (Li et al., 2017), and naringenin (Den Hartogh & Tsiani, 2019). Compared with these aglycones, flavonoid O-glycosides shown less antidiabetic potential (Xiao, 2017). However, flavonoid C-glycosides, such as vitexin, isovitexin, swertisin, apigenin 6-C- β -fucopyranoside, and apigenin 6-C-(2''-O- α -rhamnopyranosyl)- β -fucopyranoside, exhibited positive antidiabetic activity in hyperglycemic animals (Xiao et al., 2016). There is an increasing demand for new therapeutic agents that can control this metabolic disorder and at the same time bring less adverse health effects (Lv et al., 2019). In this sense, phenolic compounds are bioactive ingredients that can be considered as potential agents for diabetes management (Fig. 2). For example, flavonoids (including the

subclasses of flavones, flavonols, flavanones, flavanols, anthocyanidins, isoflavones, and flavanonols) have been reported to maintain the survival and function of pancreatic β -cells through molecular mechanisms that involve the reduction of oxidative stress (by increasing endogenous antioxidant capacity, less ROS accumulation and translocation of pro-inflammatory cytokines in β -cells), increased expression of anti-apoptotic genes (e.g., Bcl-2 protein), and reduced expression of pro-apoptotic genes (e.g., caspase-3 and caspase-8) and DNA damage, protecting them against autophagy, apoptosis, necroptosis and cell damage in hyperglycemic conditions (Ghorbani et al., 2019). Moreover, scientific evidence suggests that phenolic metabolites (derived from flavanol, flavan-3-ols, quercetin, and anthocyanins) and phenolic acids (e.g., ferulic, chlorogenic, and caffeic acids) can reduce ROS levels, inflammation and protein glycation, inhibit key enzymes related to carbohydrate metabolism and T2DM, increase glucose transporter 4 (GLUT 4) expression, and glucose uptake, in addition to activating pathways responsible for insulin signaling and secretion, thereby improving blood glucose levels (Chen, et al., 2019). More details on the mechanisms of action of dietary phenolic compounds will be discussed in the following topics.

Chemical agents that generate oxygen-free radicals like ionizing radiations and activated oxygen cause DNA damage which results in mutations, deletion, and similar lethal genetic effects. Oxidative DNA damage causes the development of various oxidative DNA lesions, which may trigger mutations (Halliwell and Gutteridge, 2015). Because of DNA disruption, base moieties and sugar become more vulnerable to oxidation, resulting in protein crosslinking, base degradation, and single-strand breakage (Zadák et al., 2009). Further, OS exerts deleterious effects on DNA reformation of DNA lesions, which can result in genomic instability and consequently lead to cell death. The guanine (a base of DNA) is most susceptible to oxidation in cellular OS. In the presence of ROS, the oxidation of guanosine to 8-oxoguanosine (8-oxoG) takes place. The formation of 8-oxoG is the most common lesion in the DNA molecule. When 8-oxoG is inserted during DNA replication, it could generate double-strand breaks, which finally causes damage to DNA molecule (Aguar et al., 2013).

Antidiabetic effects of dietary polyphenols.

After ingestion, the phenolic compounds are absorbed in the small intestine (5–10% of the total polyphenols ingested) and metabolized in the liver to methoxy, sulfated and/or glucuronidated metabolites by phase II enzymes prior entering the bloodstream. The chemically more complex phenolic compounds that are not absorbed in the small intestine (about 90–95%) reach the colon, where they are metabolized by the microbiota present in metabolites that are simpler to be absorbed. Colonic fermentation of these compounds also causes significant changes in the gut microbiota, in addition to increasing the production of short-chain fatty acids (SCFAs) that are absorbed by specific receptors present in colonocytes. Once in circulation, metabolites derived from phenolic compounds (by metabolism in the liver or gut microbiota) are distributed to various organs and tissues and can have several antidiabetic effects, including increased insulin secretion, inhibition of digestive enzymes and DPP-IV, decreased oxidative stress, protein glycation, and inflammation, improved insulin resistance, among others.

A randomized controlled trial found that a diet naturally rich in polyphenols improves glucose metabolism in individuals at high risk of diabetes (Bozzetto et al., 2015). A 4-week, double blind, randomized, placebo controlled trial involving 32 T2D patients showed that flavonoid-rich grape seed extracts significantly improved the biomarkers of inflammation, glycemia, and oxidative stress in the events of obese T2D subjects at high risk of cardiovascular (Kar, Laight, Rooprai, Shaw, & Cummings, 2009). A double-masked, randomized controlled trial found that the daily intake of flavanol-containing cocoa might improve the vascular function of medicated T2D patients (Balzer et al., 2008). A randomized, double-blind, placebo-controlled trial with 48 T2D patients revealed that a 12-week daily supplementation of PycnogenolR (125 mg), a French maritime pine bark extract rich in procyanidins and bioflavonoids, could increase diabetes control, reduce cardiovascular disease risk factors, and lower antihypertensive medicine use vs controls (Zibadi, Rohdewald, Park, & Watson, 2008). In a double-blind, 8-week randomized controlled study involving in 80 T2D patients, Brazilian green propolis (226.8 mg/day) rich in polyphenols and flavonoids was found to prevent T2D patients from worsening developments in blood uric acid and estimated glomerular filtration rate (Fukuda et al., 2015). A randomized, double-blind, placebocontrolled trial (34 subjects) showed that the supplementation of acacia

polyphenol (250 mg/day) might improve glucose homeostasis in nondiabetic subjects with impaired glucose tolerance (Ogawa, Matsumae, Kataoka, Yazaki, & Yamaguchi, 2013). Coffee polyphenols can improve peripheral endothelial function following glucose loading in healthy male adults (Ochiai et al., 2014). Coffees with different contents of chlorogenic acids did not show different degrees of influence on glucose or insulin responses in healthy humans (Rakvaag & Dragsted, 2016). Red wine polyphenols were found to have a beneficial effect on insulin resistance and lipoprotein plasma concentrations in a randomized clinical trial involving 67 men with high cardiovascular risk (Chiva-Blanch et al., 2013). A whortleberry extracts rich in anthocyanins significantly lowered the levels of fasting blood glucose, 2-hr postprandial glucose, and HbA1c in a randomized, double-blind, placebo-controlled clinical trial, consisting of 37 T2D patients (Kianbakht, Abasi, & Dabaghian, 2013).

Isoflavones

Significant evidence from epidemiological investigations has shown that soybean isoflavones intake is linked to a lower risk of diabetes (Konishi et al., 2019). Soy isoflavones perform hypoglycemic effects in Goto–Kakizaki diabetic rats via suppression of carbohydrate digestion and glucose uptake in small intestine (Jin et al., 2018) and delay the process of renal interstitial fibrosis in diabetic nephropathic rats (Liu et al., 2018). Among soy isoflavones, puerarin, the 8-C-glucoside of daidzein, showed best hypoglycemic effects via improving insulin resistance and sensitivity, protecting pancreatic beta-cells, exerting ant inflammation activity, decreasing oxidative stress, and inhibiting Maillard reaction and advanced glycation end products formation (Chen et al., 2018; Chen, Yu, & Shi, 2018).

Moreover, puerarin ameliorates diabetic complications, such as cardiovascular complications, diabetic nephropathy, retinopathy, neuropathy, and so on. Genistein benefits type 2 diabetes via remarkably ameliorating hyperglycemia (Fu et al., 2012; Rockwood et al., 2019), enhancing beta-cell proliferation and reducing apoptosis (Gilbert & Liu, 2013), ameliorating cardiac inflammation and oxidative stress (Gupta et al., 2015), Biochanin A showed hypoglycemic effect on streptozotocindiabetic rats (Harini, Ezhumalai, & Pugalendi, 2012).

Biochanin A significantly reduced insulin resistance, improved insulin sensitivity and lipid profile, and attenuates neuropathic pain in diabetic rats (Chundi et al., 2016). Formononetin treatment reduces insulin resistance and attenuate hyperglycemia in T2D, which may be due to increasing expression of SIRT1 in pancreatic tissues (Oza & Kulkarni, 2018). Methylated isoflavones look like they exhibit better antidiabetic effect than nonmethyl forms. However, it needs further investigation in animals and human studies.

CATECHINS

Catechins are natural polyphenols present in edible and medicinal plants, especially in tea leaves (Khan & Mukhtar, 2018). Catechins show a very low bioavailability. After consumption of a single cup of tea, plasma concentrations of catechins rise quickly reaching a maximum after 2 hr, to then gradually decrease to reach the basal levels within 8 hr. Pharmacokinetic studies demonstrated that in human cells p-glycoprotein is responsible for both uptake and excretion of catechins (Vaidyanathan & Walle, 2003); however, due to the high individual variability existing between humans, the pharmacokinetics of catechins may change considerably from person to person (Ullmann et al., 2003). There is a large agreement between researchers in sustaining that catechins have a positive impact on human health. Evidence suggested that the regular consumption of catechins could contribute to prevent gain of weight or the onset of chronic disease such as T2D or metabolic syndrome (Thielecke et al. important hydroxycinnamic acids, such as cinnamic acid, p-coumaric acid, ferulic acid, caffeic acid, chlorogenic acid, and rosmarinic & Boschmann, 2009; Park, Bae, Im, & Song, 2014). In particular, catechins contribute to reduce glycaemia, enhance insulin sensitivity, decrease blood lipids, and reduce white fat at important hydroxycinnamic acids, such as cinnamic acid, p-coumaric acid, ferulic acid, caffeic acid, chlorogenic acid, and rosmarinic deposits.

Cinnamic acid improved glucose intolerance and insulin resistance in streptozotocin (STZ)-induced diabetic rats (Kasetti, Nabi, Swapna, & Apparao, 2012). Ferulic acid reduced blood

glucose level and increased blood insulin level in several diabetic animal models (Jung, Kim, Hwang, & Ha, 2007; Ohnishi et al., 2004). Ferulic acid also increased glucokinase activity (Jung et al., 2007) and decreased glucose-6-phosphatase and phosphoenolpyruvate carboxykinase activities in liver (Son, Rico, Nam, & Kang, 2011). Caffeic acid has been studied extensively in experimental diabetes and related complications. Caffeic acid shows hypoglycemic effects (Celik, Erdogan, & Tuzcu, 2009; Jung, Lee, Park, Jeon, & Choi, 2006), improves insulin level (Cy, Mc, Kc, & Mc, 2010), and enhances glucose intolerance (Bezerra et al., 2012) in diabetic animals.

Chlorogenic acid is the major phenolic components in coffee, which evidently reduces the risk of type 2 diabetes. Chronic dietary chlorogenic acid consumption attenuated cardiovascular, liver, and metabolic changes (Bhandarkar, Brown, & Panchal, 2019). Chlorogenic acid was found to attenuate diabetic complications in animals such as retinopathy via inhibiting retinal neoangiogenesis (Mei et al., 2018) and sensorineural auditory function (Hong, Nam, Woo, & Kang, 2017). However, chlorogenic acid could lower the fasting plasma glucose and HbA1c levels during late diabetes in db/db mice (Jin et al., 2015), and there is no sufficient evidence that decaffeinated coffee-enriched chlorogenic acid can control blood glucose in animals (Faraji, 2018). Chlorogenic acid poorly inhibits carbohydrate-digesting enzymes (Nyambe-Silavwe & Williamson, 2018) and weakly impacted the fasting blood glucose level and blood glucose levels in the oral glucose tolerance tests in *kk-[a.sup.y]* mice (Igarashi, Takahashi, & Sato, 2017). Chlorogenic acid supplementation in a high-fat diet does not protect against features of the metabolic syndrome in diet-induced obese mice (Mubarak, Hodgson, Considine, Croft, & Matthews, 2013).

Caffeoylquinic acids:

PTP1B is one of the most promising targets to improve insulin sensitivity, and overcome insulin resistance in peripheral tissues (liver, muscle, and adipocytes) (Eleftheriou, Geronikaki, & Petrou, 2019). Interestingly, recent studies demonstrated that chlorogenic acid and some caffeoylquinic acid derivatives behave as noncompetitive inhibitor of PTP1B: among all

caffeoylquinic acids resulted the most potent inhibitor, showing a K_i value of about 15 micromolar (Chen et al., 2014; Zhang et al., 2018). These data suggest that caffeoylquinic acids could be used to improve insulin sensitivity in obese or T2D subjects. In keeping with this hypothesis, it has been reported that treatment with chlorogenic acid enhances glucose uptake in both insulin-sensitive and insulin-resistant adipocytes (Alonso-Castro, Miranda-Torres, González-Chávez, & Salazar-Olivo, 2008). Finally, studies conducted on human volunteers showed that the long-term assumption of coffee or extracts rich in caffeoylquinic acids reduces levels of blood glucose, increases the insulin response (Reis, Dórea, & da Costa, 2018), attenuates hepatic insulin resistance (Lecoultre et al., 2014), reduces serum lipids, and favors a reduction of body weight (Martínez-López, Sarriá, Mateos, & Bravo-Clemente, 2019). Together, these evidences support the hypothesis that caffeoylquinic acids have a deep impact on energetic metabolism of humans and can explain why the extracts rich in these compounds are recommended by traditional medicine for treatment of diabetes and obesity (Spínola & Castilho, 2017; Xie et al., 2019).

Anthocyanidins:

Anthocyanidins have a phenolic hydroxyl structure and are a class of hydroxyl donors with strong free radical scavenging ability. Anthocyanidins could reduce blood glucose by enhancing the antioxidant ability of bio-organisms through upregulating superoxide dismutase (SOD), lowering serum malonic dialdehyde, and inhibiting increasing thiobarbituric acid reactive substances (Roy, Sen, & Chakraborti, 2008; Tsuda, Horio, & Osawa, 1999). In vitro experiments indicated that cyanidin-3-glucoside protected cells from high glucose-induced oxidative stress by activating of glutathione synthesis (Zhu et al., 2012). Islet β cells are very sensitive to oxidative stress due to low expression of antioxidant enzymes such as CAT, SOD, and GPx in islets (Evans, Goldfine, Maddux, & Grodsky, 2003). Anthocyanin-rich mulberry extract exerted oxidative stress on islet cells against hyperglycemia through AMPK/ACC/mTOR pathway (Yan & Zheng, 2017). Anthocyanidins could improve insulin resistance by regulating blood lipid through reducing the levels of cholesterol, triglycerides, and low-density cholesterol and increasing the level of apolipoprotein and high-density cholesterol (Shi, Loftus, McAinch, & Su, 2017). Anthocyanidin-enriched bilberry extracts improved insulin resistance in KK-Ay mice, and

reduced total cholesterol and triglycerides in liver and serum (Takikawa, Inoue, Horio, & Tsuda, 2010). Pro-inflammatory factors such as TNF- α and IL-6 were found associated with insulin resistance (Guo et al., 2012). Studies also shown that Cyanidin-3-glucoside inhibited 3T3-L1 cell adipocytes, activated insulin pathway via FoxO1, and inhibited TNF- α -mediated insulin resistance (Guo et al., 2012). Anthocyanins promoted insulin secretion in many ways (Rosanska & Regulska-Ilow, 2011). Cyanidin-enriched purple potato extract promoted insulin secretion by upregulating the expression of intracellular Ca²⁺ signaling pathway and glucose transport-related gene (Glut2) in mouse islet beta cells (INS1) (Sun, Du, Navarre, & Zhu, 2018). Anthocyanidins (delphinidin 3-arabinoside) in fermented berry beverages regulated DPPIV and its substrate GLP-1, increased insulin secretion, and upregulated mRNA expression of insulin receptor-related genes (Johnson & Mejia, 2016). Delphinidin 3-rutinoside could induce GLP-1 release via a calcium-dependent kinase pathway (Kato, Tani, Terahara, & Tsuda, 2015).

The most important findings from our study suggest that the intake of polyphenols may modulate the FG level and weakly affect the HbA1c amount. As it was shown above, total polyphenol consumption influences FG but not significantly. Nevertheless, in the group with high intakes of flavonoids (the main group of polyphenols), the glucose concentration was significantly lower compared to the group characterised by low flavonoid intake. The analysis of the association showed that polyphenols, especially flavonoids, influence the fasting glucose concentration; a negative association was observed between glucose level and total polyphenol, flavonoid, flavan-3-ol and stilbene intake. Anthocyanins and procyanidins are considered as highly bioactive compounds and present in fruits, bark, leaves, and seeds of many plants and plant-derived food. Nabavi and coworkers reviewed the benefits of anthocyanins for diabetic retinopathy. The evidence suggests that the antioxidant and other bioactivities of anthocyanins can mitigate vision loss and retinal degeneration in diabetes. It is still unclear on the beneficial role of anthocyanins in diabetic patients who suffered from retinal complications. Anthocyanins have minimal adverse effects, however, and could be good candidates for future clinical trials. González-Abuín et al. focused on the healthy protective effects of procyanidins on type 2 diabetes and insulin resistance. Procyanidins were found to improve the damage induced by the diet, thus improve glycemia and insulin sensitivity. Human studies, although limited, further

support the hypoglycemic effect of procyanidins. Procyanidins have been found to target several tissues involved in glucose homeostasis. In insulin-sensitive tissues, procyanidins modulate glucose uptake and lipogenesis and improve their oxidative/inflammatory state, the disruption of which plays a key role in T2DM development. In pancreas, procyanidins modulate insulin secretion and production and β -cell mass.

Curcumin

Curcumin is a natural compound extracted from the root of *Curcuma Longa* and is the main component of the Indian curry spice. Curcumin has been consumed in the traditional Asian medicine for centuries because of its anti-inflammatory properties. Curcumin has also antioxidant and anticarcinogenic effects (5-7). Its anti-cancer activity is mainly attributable to the inactivation of hypoxia-inducible factor-1 (HIF-1), as curcumin is known to downregulate HIF-1 α (8) and HIF-1 β (9) and inhibit downstream actions, e.g. angiogenesis mediated by HIF-1. Also, it is able to selectively kill tumor cells or prevent tumorigenesis through interfering with many cellular pathways (6, 10). It represses nuclear factor- κ B (NF- κ B), inhibits adipogenic transcription factors and the cell cycle, and induces apoptosis (11-13). In colorectal cancer, curcumin treatment upregulates p53 expression (14). It has been reported that curcumin inhibits TNF- α -induced expression of Interleukin-1 beta (IL-1 β), IL-6, and tumor necrosis factor (TNF- α) in human keratinocytes. It enhances the secretion of adiponectin (15), inhibits insulin-regulated glucose transporter 4 (GLUT4) translocation and glucose transport (16, 17). Some studies demonstrate that 10–25 μ M of curcumin efficiently inhibited the differentiation of mouse adipocytes. In concentrations of 10–50 μ M, curcumin is able to activate AMP-activated protein kinase (AMPK) (18) and it can also inhibit the activation of MAPK pathway, c-Jun N-terminal kinases (JNK), p38MAPK, and extra cellular signal-regulated kinases (ERK) in adipocytes (19).

Genistein

The isoflavone genistein is a naturally occurring phytoestrogen, which is particularly highly concentrated in soy and soy-derived products; its possible suitability as a pharmacological agent has been studied, as it has been illustrated that people in Asia consuming large amounts of genistein-rich soy products are seldom affected by prostate or breast cancer (104, 105) and Type

2 diabetes (106). In hypoxic conditions, genistein has been shown to suppress the HIF1 α expression, accumulation, and activation of ERK (107, 108). Also, genistein seems to provide a protective effect on myocardial and endothelial cells, as it activates the exocytosis of the cardioprotective neuropeptide calcitonin gene-related peptide. This is due to vanillin receptor 1 (VR1)-mediated action, of which genistein is supposed to be a direct activator (109), apart from capsaicin and gingerol. , the effect of genistein on differentiation of adipocytes has been illustrated with inconsistent results; this is in part due to contradictory actions of genistein with respect to applied concentrations (110, 111, 113-119). In a study, streptozotocind diabetic rats that received a daily intraperitoneal injection of 1 mg/kg bw showed a hypoglycemic effect (120). In a study on mice, 2 and 4 g genistein/kg diet significantly decreased fat pads, cholesterol, and lipid levels. Moreover, it inhibited mRNA expression of PPAR γ , leptin, and TNF α and also increased mRNA expression in case of PPAR α , AMPK, and adiponectin in adipose tissue (121). Furthermore, it enhanced the expression of genes involved in fatty acid oxidation, and at the same time, activated expression of UCP2, which mediates proton leakage by uncoupling ATP synthesis. This lowered metabolic efficiency may also account for the reduced fat accumulation and weight gain in animals receiving a daily genistein dose of about 200, 400, or 800 mg/kg of the body weight (Pandey et al., 2010). Similar to resveratrol, genistein administration decreased the ATP level in adipocytes (Pandey et al., 2010). Recent clinical trials on genistein in males showed an increase in adiponectin levels and a decrease in cholesterol and insulin levels, with doses that can easily be obtained by a soy rich diet. Table 6 displays recent clinical trials testing genistein with respect to diabetic and inflammatory markers.

Adipocytes are the place for energy storage and they produce cytokines including interleukin IL-1 β , IL-6, TNF- α , MCP-1, leptin, adiponectin, and many other molecules; thereby, they are referred to as adipokines. In the context of inflammation, the adipose tissue is infiltrated through macrophages, and it also releases proinflammatory mediators, produces reactive oxygen species, and stimulates T-cell responses for successful defense against invading organisms.

DIETARY POLYPHENOLS, THEIR CHEMISTRY AND SOURCES

Polyphenols are found naturally in fruits and vegetables such as cereals, pulses, drtea, cocoa, coffee and so on (Arts and Hollman, 2005; Scalbert et al., 2005). Polyphenols are classified into

different groups depending on the number of aromatic (phenolic) rings they contain and the structural elements that connect these rings. They are broadly grouped into phenolic acids, flavonoids, stilbenes and lignans (Khan et al., 2021). Plant derived polyphenolic compounds (for example, phenolic acids and flavonoids) occurs in conjugated forms with one or more sugar residues (as glycosides) bound to hydroxyl groups through direct linkages of the polysaccharide or monosaccharide-like sugar to an aromatic carbon (Rudrapal and Chetia, 2017). It is naturally bound to a variety of other molecules, including carboxylic and organic acids, lipids, amines, and other phenolic compounds (Kondratyuk and Pezzuto, 2004)ied legumes, spinach, tomatoes, beans, nuts, peppermint, cinnamon, pears, cherries, oranges, apples, red wine, tea, cocoa, coffee and so on (Arts and Hollman, 2005; Scalbert et al., 2005). Anthocyanidins are the bright coloured (blue, red, or purple pigments) flavonoid compounds found in the flowers, fruits and leaves etc.

Diabetes Mellitus Abnormality in glucose metabolism leads to hyperglycemia and consequently diabetes mellitus (type-1 and type-2). Apart from co-morbidities like heart disease or stroke, chronic complications may develop in diabetes such as diabetic retinopathy affecting eyes cause blindness, nephropathy altered renal functions, and neuropathy causing nerve damage and numbness/paralysis (Rizvi and Zaid, 2001; Rizvi and Zaid 2005; Junejo et al., 2017; Junejo et al., 2018; Junejo et al., 2020a; Junejo et al., 2020b; Hussain et al., 2021; Junejo et al., 2021). Apigenin derivative possesses strong antidiabetic activity extending protection against the variations throughout OS in diabetes (Junejo et al., 2021). Quercetin decreases lipid peroxidation and inhibits cellular oxidation in diabetes (Pandey and Rizvi, 2009). Resveratrol prevents cytotoxicity and OS caused by excessive glucose levels. Resveratrol decreases diabetes-induced kidney alterations (diabetic nephropathy) and thereby increases renal disorder and OS in diabetic rats. Resveratrol reduces secretion of insulin and deferrers insulin resistance onset which may be due to the inhibition of K^+ ATP and K^+ V channels in β cells (Chen et al., 2007; Oyenihhi et al., 2016). The polyphenols of *Hibiscus sabdariffa* weaken diabetic nephropathy in terms of serum lipid profile and kidney oxidative markers (Lee et al., 2009). *H. sabdariffa* also contains flavonoids, protocatechuic acid, and anthocyanins..

CONCLUSION :

Food phenolics are gaining importance in research as they have the potential to improve human health. Over 8,000 polyphenols have been reported from plants, and several hundreds of dietary polyphenols have been found in foods. Owing to their potent antioxidant capacity because of the presence of hydroxyl groups in their structures, polyphenols can effectively scavenge ROS and thus fight against OS induced pathological conditions or human diseases. Evidence from diverse in vitro studies discussed here supports that dietary sourced polyphenols plays a potential protective role in the prevention of neurodegenerative diseases, CVDs, diabetes, cancer, inflammation-related diseases, and infectious illness. However, prospective further research with adequate pre-clinical and clinical investigations could lead to the development dietary polyphenolic compounds as potent therapeutic candidates against various chronic human diseases.

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