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Editor

Dr. Harish Kumar Yadav

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Editor Note

It gives me immense pleasure to present the second issue of the Indian Journal of Emerging Trends and Innovation (IJETI). As the journal continues to shape its academic identity, this issue reinforces our commitment to fostering innovation, interdisciplinary research, and multilingual scholarship across diverse domains of knowledge.

Volume 1, Issue 2 brings together high-quality contributions that address emerging concerns and transformative ideas in education, science, technology, humanities, and social sciences. The selected papers reflect the dynamic interplay between theory and practice, tradition and modernity, and local experiences with global perspectives. This diversity of thought and approach truly embodies the spirit of IJETI.

We extend our heartfelt gratitude to our contributors, reviewers, and advisory board members for their rigorous efforts and continued support. Their collective engagement ensures that IJETI continues to uphold strong academic and ethical standards. I also express sincere appreciation to the editorial and technical teams for their dedication to timely publication.

As the journal evolves, we invite researchers, scholars, and practitioners to join us in our pursuit of knowledge and innovation. With each issue, IJETI aspires to create a vibrant intellectual platform that upholds inclusivity, originality, and research excellence in both Indian and global contexts.

Editor

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CONTENTS

Indian Journal of Emerging Trends and Innovation
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Year- 2025 Vol- 1 Issue-2 September-December 2025, pp. 1-12

The Role of Alumni, Academia, and Stakeholders in the Development of Higher Education Institutions

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Abstract

Institutional development in higher education depends not only on internal governance but also on sustained engagement with key external stakeholders. In the context of Chhattisgarh, alumni, former academic fraternities, parents, and society play a significant yet often underexamined role in strengthening higher education institutions. Alumni contribute through mentorship, financial support, curriculum feedback, and industry linkage, helping institutions remain relevant and competitive. Former academic fraternity members, including retired faculty and scholars, offer intellectual continuity, academic guidance, and research collaboration that support quality assurance and institutional memory. Parents increasingly influence institutional accountability by engaging in academic planning, student welfare, and value-based education. Society at large, including local communities, industries, and civil organizations, shapes institutional priorities through expectations related to employability, social responsibility, and regional development. This abstract examines how collaborative participation among these stakeholders enhances governance, infrastructure development, academic quality, and social relevance of higher education institutions in Chhattisgarh. It highlights the importance of structured engagement mechanisms, transparent communication, and shared responsibility in fostering sustainable institutional growth. Strengthening these relationships can bridge gaps between academia and society, support inclusive development, and contribute to the long-term advancement of higher education in the state. Keywords: Higher Education, Institutional Development, Alumni Engagement, Academic Fraternity, Parental Participation, Societal Role, Chhattisgarh

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Introduction

Higher education institutions play a pivotal role in social transformation, economic development, and knowledge creation. In contemporary times, institutional development in higher education is no longer viewed as the sole responsibility of internal governance mechanisms such as administration, faculty, and regulatory bodies. Rather, it is increasingly recognized as a collaborative process involving multiple stakeholders who directly or indirectly influence institutional growth and sustainability. Scholars argue that participatory and inclusive governance models enhance institutional effectiveness, accountability, and social relevance (Kezar & Eckel, 2004).

In the Indian context, higher education has undergone significant expansion, diversification, and reform, especially after liberalization and the growing emphasis on quality assurance and employability (Altbach, 2015). States like Chhattisgarh, which are relatively young in terms of higher education infrastructure, face unique challenges related to access, quality, regional imbalance, and social inclusion. Addressing these challenges requires the active engagement of external stakeholders such as alumni, former academic fraternity, parents, and society at large. Their collective participation strengthens institutional capacity and bridges the gap between academia and societal needs.

Alumni represent a vital resource for higher education institutions. Their professional experience, financial contributions, and industry connections contribute to institutional relevance and long-term sustainability (Weerts & Ronca, 2007). Similarly, former members of the academic fraternity—retired faculty and senior scholars—serve as carriers of institutional memory and intellectual capital. Their continued involvement supports academic mentoring, research guidance, and quality enhancement (Clark, 1998). Parents, traditionally perceived as peripheral actors in higher education, are now increasingly involved in matters of student welfare, academic progress, and ethical orientation, thereby promoting institutional accountability and value-based education (Hill & Taylor, 2004).

Society, encompassing local communities, industries, and civil society organizations, plays a decisive role in shaping the expectations and priorities of higher education institutions. Through community engagement, social feedback, and industry partnerships, society ensures that higher education remains responsive to regional development and social responsibility (Boyer, 1996). In Chhattisgarh, where higher education institutions are closely linked to local socio-economic conditions, societal participation becomes even more critical.

Thus, this study emphasizes that institutional development in higher education is a shared responsibility. Understanding the interconnected roles of alumni, former academic fraternity, parents, and society provides a holistic framework for strengthening higher education institutions in Chhattisgarh and fostering sustainable academic and social development.

Conceptual Framework of Stakeholder Engagement

The concept of stakeholder engagement in higher education is rooted in the understanding that educational institutions function within a broader social, economic, and cultural ecosystem. Stakeholders are individuals or groups that have a direct or indirect interest in the functioning, outcomes, and development of higher education institutions. In this context, alumni, former academic fraternity, parents, and society emerge as critical external stakeholders whose engagement significantly influences institutional performance and sustainability.

The theoretical foundation of stakeholder engagement draws from **stakeholder theory**, which emphasizes that organizational success depends on balancing the interests of multiple stakeholder groups rather than focusing solely on internal actors (Freeman, 1984). Applied to higher education, this perspective suggests that universities and colleges must actively involve stakeholders in decision-making, planning, and evaluation processes to enhance legitimacy, accountability, and effectiveness. Participatory governance models further argue that shared responsibility and collective ownership lead to improved institutional outcomes (Kezar, 2006).

Stakeholder engagement in higher education operates across multiple dimensions—academic, administrative, financial, and social. Alumni contribute experiential knowledge, professional networks, and financial resources; former academic fraternity members provide intellectual continuity and mentorship; parents support student development and institutional accountability; and society ensures relevance through community needs, employability demands, and social responsibility. These interactions form a dynamic framework in which institutions both influence and are influenced by their stakeholders (Jongbloed, Enders, & Salerno, 2008).

A conceptual framework of stakeholder engagement also highlights the importance of **structured mechanisms** such as alumni associations, advisory boards, parent–teacher forums, and community outreach programs. Such mechanisms institutionalize participation, reduce ad-hoc involvement, and promote transparent communication. Research indicates that institutions with well-defined stakeholder engagement structures demonstrate better governance practices, stronger community trust, and enhanced academic quality (Marginson & Rhoades, 2002).

In the context of Chhattisgarh, the conceptual framework gains added significance due to the state's socio-economic diversity and regional development needs. Higher education institutions here serve not only as centers of learning but also as catalysts for social transformation. Effective stakeholder engagement helps align institutional goals with local realities, indigenous knowledge systems, and regional employment opportunities. Thus, a holistic conceptual framework of stakeholder engagement provides a foundation for understanding how collaborative participation contributes to institutional development and long-term sustainability of higher education in Chhattisgarh.

Role of Alumni in Institutional Development

Alumni constitute one of the most influential stakeholder groups in the institutional development of higher education. As former students, alumni maintain an enduring emotional and professional connection with their alma mater, positioning them as vital contributors to institutional growth, relevance, and sustainability. Contemporary research highlights that active alumni engagement enhances academic quality, institutional reputation, and resource mobilization (Weerts & Ronca, 2007).

One of the most significant roles of alumni lies in **mentorship and career guidance**. Alumni, through their real-world professional experiences, provide valuable insights into career pathways, industry expectations, and skill requirements. Their interaction with current students through guest lectures, workshops, and mentoring programs bridges the gap between academic learning and practical application, thereby improving graduate employability (Drezner, 2011). In states like Chhattisgarh, where many students are first-generation learners, alumni mentorship plays a crucial role in building confidence and career awareness.

Alumni also contribute to **financial support and infrastructure development**. Donations, endowments, scholarships, and sponsorships provided by alumni help institutions strengthen physical infrastructure, support economically disadvantaged students, and promote research and innovation. Studies indicate that institutions with strong alumni networks demonstrate greater financial stability and autonomy (Clotfelter, 2003). In emerging higher education systems, such contributions are particularly important for addressing resource constraints.

Another key area of alumni involvement is **curriculum development and industry linkage**. Alumni working in diverse sectors offer feedback on curriculum relevance, emerging trends, and skill gaps. Their participation in academic advisory boards helps institutions align programs with labor market demands and technological advancements (Taylor & Luter, 2013). This is especially relevant in Chhattisgarh, where aligning higher education with regional industries such as mining, agriculture, health services, and public administration is essential for inclusive development.

Furthermore, alumni act as **brand ambassadors** of their institutions. Their professional achievements enhance institutional credibility and visibility at regional, national, and global levels. Active alumni associations strengthen institutional identity, promote networking, and foster a culture of giving and engagement (McDearmon, 2010).

In summary, alumni engagement contributes multidimensionally to institutional development through mentorship, financial support, academic enrichment, and reputation building. Strengthening structured alumni participation mechanisms can significantly enhance the quality and societal relevance of higher education institutions in Chhattisgarh.

Role of Former Academic Fraternity in Institutional Development

The former academic fraternity, comprising retired faculty members, emeritus professors, and former scholars, represents a valuable yet often underutilized resource in the institutional development of higher education. Their long-standing association with institutions equips them with deep institutional knowledge, academic expertise, and a strong commitment to educational values. Research suggests that continued engagement of former academics contributes significantly to academic quality, governance stability, and institutional continuity (Clark, 1998).

One of the primary contributions of the former academic fraternity lies in ensuring **academic continuity and institutional memory**. Retired faculty possess firsthand understanding of institutional evolution, policy shifts, and academic traditions. Their insights help institutions avoid repetitive errors, preserve academic culture, and maintain long-term academic vision. Such continuity is essential for maintaining quality standards and aligning present initiatives with institutional goals (Trow, 1996).

Former academic fraternity members also play a critical role in **mentorship and research guidance**. Their experience in teaching, research supervision, and academic administration enables them to mentor young faculty and research scholars. By guiding doctoral research, contributing to research projects, and reviewing academic outputs, they support scholarly excellence and research integrity (Boyer, 1990). In states like Chhattisgarh, where research ecosystems are still evolving, this guidance is particularly valuable.

Additionally, former academics contribute to **quality assurance and governance advisory roles**. Their participation in academic councils, boards of studies, and accreditation-related committees enhances decision-making through informed, unbiased perspectives. Their involvement strengthens academic governance and ensures adherence to ethical and professional standards (Shattock, 2006).

The former academic fraternity also facilitates **academic networking and collaboration**. Their professional networks enable inter-institutional collaboration, faculty exchange, and interdisciplinary research. Such collaborations help institutions expand academic horizons and improve national and international visibility (Altbach, 2015).

In the context of Chhattisgarh, engaging former academic fraternity members can address challenges related to faculty shortages, research capacity, and academic leadership. Structured platforms such as emeritus positions, visiting professorships, and academic advisory panels can effectively utilize their expertise.

Thus, the former academic fraternity plays a vital role in sustaining academic excellence, mentoring future generations, and strengthening institutional governance. Recognizing and institutionalizing their participation is essential for the holistic development of higher education institutions in Chhattisgarh.

Role of Parents in Higher Education Institutions

Parents have traditionally been viewed as peripheral stakeholders in higher education; however, contemporary educational discourse increasingly recognizes their significant role in institutional development. As primary supporters of students' academic journeys, parents influence student motivation, retention, and overall well-being. Their growing involvement reflects a shift toward shared responsibility and enhanced accountability in higher education institutions (Hill & Taylor, 2004).

One of the key contributions of parents lies in **supporting student welfare and academic progress**. Through regular communication with institutions, parents help monitor students' academic performance, psychological well-being, and ethical development. Studies indicate that parental encouragement positively impacts student engagement, persistence, and success, particularly among first-generation and socio-economically disadvantaged learners (Pascarella & Terenzini, 2005). In Chhattisgarh, where many students come from rural and tribal backgrounds, parental involvement plays a crucial role in reducing dropout rates and promoting inclusive education.

Parents also contribute to **institutional accountability and transparency**. Their feedback regarding academic quality, infrastructure, safety, and administrative processes encourages institutions to maintain standards and improve service delivery. Parent–institution interaction forums provide platforms for dialogue, grievance redressal, and collaborative problem-solving, thereby strengthening trust and mutual understanding (Kezar, 2006).

Another important dimension of parental involvement is the promotion of **value-based and holistic education**. Parents often emphasize ethical conduct, social responsibility, and cultural values, complementing formal academic instruction. Such engagement supports the development of responsible citizenship and aligns institutional goals with societal values (Epstein, 2011).

Furthermore, parents act as informal **advocates and community links** for institutions. Through social networks and community participation, they enhance institutional reputation and facilitate community support. In regions like Chhattisgarh, parental advocacy strengthens the relationship between higher education institutions and local communities.

To maximize these benefits, institutions must adopt structured and inclusive mechanisms for parental engagement, such as orientation programs, feedback systems, and participatory committees. Recognizing parents as partners rather than passive observers contributes to improved governance, student success, and institutional development.

In conclusion, parental participation plays a multidimensional role in higher education institutions by supporting student welfare, enhancing accountability, and promoting value-based education. Strengthening parent–institution partnerships is essential for sustainable institutional development in Chhattisgarh.

Role of Society in Institutional Development

Society plays a decisive and overarching role in shaping the purpose, relevance, and effectiveness of higher education institutions. Universities and colleges do not operate in isolation; rather, they are embedded within social, economic, and cultural contexts that influence institutional priorities and outcomes. The relationship between higher education and society is reciprocal, as institutions contribute to social development while simultaneously responding to societal expectations and needs (Boyer, 1996).

One of the primary ways society contributes to institutional development is through **community engagement and social responsibility**. Higher education institutions are expected to address local and regional issues such as poverty alleviation, environmental sustainability, public health, and social inclusion. Community-based research, extension activities, and outreach programs enable institutions to apply academic knowledge to real-life problems, thereby enhancing their social relevance and public trust (Bringle & Hatcher, 2002). In Chhattisgarh, with its diverse tribal population and developmental challenges, societal engagement is particularly crucial.

Society also influences higher education through **industry–institution partnerships**. Industries provide practical exposure, internships, research collaboration, and employment opportunities, ensuring that academic programs remain aligned with labor market needs. Such partnerships enhance graduate employability and foster innovation and skill development (Etzkowitz & Leydesdorff, 2000). For a developing state like Chhattisgarh, collaboration with regional industries and public sector organizations is vital for economic growth and human resource development.

Furthermore, **civil society organizations and local communities** contribute feedback on institutional performance, ethical standards, and inclusiveness. Their involvement promotes transparency, accountability, and democratic governance within institutions. Public expectations regarding quality education, equity, and social justice shape institutional missions and policy decisions (Marginson, 2011).

Society also acts as a **cultural and moral anchor**, ensuring that higher education institutions preserve indigenous knowledge, cultural heritage, and social values. This is especially relevant in Chhattisgarh, where local traditions and community knowledge systems are integral to regional identity.

In conclusion, societal participation enhances institutional development by aligning higher education with community needs, economic priorities, and social values. Strengthening partnerships between higher education institutions and society fosters mutual growth, social relevance, and sustainable development.

Stakeholder Participation in Chhattisgarh: Current Status

The state of Chhattisgarh, carved out in the year 2000, has made notable progress in

expanding its higher education infrastructure; however, stakeholder participation in institutional development remains uneven and evolving. The higher education landscape of Chhattisgarh comprises state universities, private universities, government and private colleges, technical institutions, and teacher education colleges. While quantitative expansion has occurred, qualitative development through systematic stakeholder engagement is still at a formative stage.

Alumni participation in many higher education institutions of Chhattisgarh exists largely in informal or symbolic forms. Although alumni associations have been established in several universities and colleges, their involvement is often limited to annual meetings, ceremonial events, or ad-hoc support. Structured alumni engagement in curriculum design, mentorship programs, placement support, and institutional planning is still limited, primarily due to weak organizational frameworks and lack of digital alumni databases.

The role of the **former academic fraternity** in Chhattisgarh is significant but underutilized. Retired faculty members often continue to contribute informally through guest lectures or personal mentorship; however, institutional mechanisms such as emeritus positions, advisory councils, and research mentorship programs are not uniformly implemented. As a result, valuable academic experience and institutional memory remain insufficiently integrated into governance and quality enhancement processes.

Parental involvement in higher education institutions across the state is gradually increasing, especially in relation to student welfare, discipline, and safety. However, parental participation in academic decision-making, feedback systems, and institutional evaluation is limited. This is partly due to traditional perceptions that higher education students are fully independent, and partly due to the absence of formal parent–institution interaction platforms.

At the **societal level**, higher education institutions in Chhattisgarh engage with local communities through extension activities, NSS programs, and outreach initiatives. Industry–institution collaboration exists but remains weak, particularly outside urban centers. Limited industrial presence, inadequate networking, and policy-level coordination challenges constrain effective societal participation.

Overall, stakeholder participation in Chhattisgarh's higher education institutions is present but fragmented. Strengthening formal engagement mechanisms, capacity-building initiatives, and policy support is essential to transform stakeholder involvement into a sustained driver of institutional development.

Challenges in Stakeholder Collaboration

Despite the recognized importance of alumni, former academic fraternity, parents, and society in institutional development, effective stakeholder collaboration in higher education faces several challenges. These challenges are particularly pronounced in developing states

like Chhattisgarh, where higher education systems are still consolidating their governance structures and resource bases.

One of the major challenges is the **absence of structured and institutionalized engagement mechanisms**. In many higher education institutions, stakeholder participation remains informal, event-based, or personality-driven rather than policy-driven. Alumni associations, parent forums, and advisory councils often lack clear mandates, continuity, and integration with institutional decision-making processes. This limits their ability to contribute meaningfully to long-term planning and governance (Kezar, 2006).

Another significant challenge is **communication gaps and lack of transparency**. Ineffective communication between institutions and stakeholders leads to limited awareness of institutional needs, goals, and opportunities for collaboration. Alumni and parents often remain disconnected from academic developments, while societal stakeholders may perceive institutions as isolated or unresponsive to local needs. Such gaps weaken trust and reduce stakeholder motivation to engage constructively (Jongbloed, Enders, & Salerno, 2008).

Resource constraints further hinder stakeholder collaboration. Many institutions in Chhattisgarh face financial limitations, staff shortages, and inadequate digital infrastructure, making it difficult to manage alumni databases, organize engagement programs, or sustain partnerships. Limited funding also restricts incentives for retired faculty participation and community-based initiatives (Altbach, 2015).

Cultural and attitudinal barriers also pose challenges. Traditional hierarchical governance models often discourage participatory decision-making, viewing external involvement as interference rather than partnership. Additionally, parents and community members may lack confidence or awareness to actively engage in higher education governance, particularly in rural and tribal regions (Marginson, 2011).

Finally, **policy-level inconsistencies and weak coordination** between regulatory bodies and institutions impede systematic stakeholder engagement. While frameworks like NAAC emphasize stakeholder participation, implementation remains uneven across institutions.

Addressing these challenges requires institutional commitment, capacity building, and supportive policy frameworks to transform fragmented participation into effective collaboration for sustainable institutional development.

Strategies for Strengthening Stakeholder Engagement

Strengthening stakeholder engagement is essential for sustainable institutional development in higher education, particularly in states like Chhattisgarh where institutions face challenges of quality, relevance, and inclusiveness. Effective engagement requires moving beyond symbolic participation toward structured, continuous, and outcome-oriented collaboration.

One of the foremost strategies is the **institutionalization of stakeholder engagement mechanisms**. Higher education institutions should establish formal structures such as active alumni associations, advisory boards including former academic fraternity members, parent–institution committees, and community engagement cells. Clearly defined roles, responsibilities, and periodic review processes can ensure continuity and meaningful participation (Kezar & Eckel, 2004).

The use of digital platforms is another critical strategy. Online alumni portals, virtual mentorship programs, digital feedback systems, and social media engagement can overcome geographical barriers and enhance participation, particularly for alumni and retired faculty residing outside the state. Digitalization also improves transparency and real-time communication between institutions and stakeholders (Taylor & Luter, 2013).

Capacity building for stakeholders and institutional leaders is equally important. Training programs and orientation sessions can help stakeholders understand academic processes, governance structures, and institutional goals, while sensitizing administrators and faculty to the value of participatory governance. Such mutual capacity building fosters trust and collaborative culture (Jongbloed et al., 2008).

Strengthening industry and community partnerships through Memoranda of Understanding (MoUs), internships, joint research projects, and extension activities can align academic programs with societal and regional development needs. In Chhattisgarh, partnerships with local industries, public sector units, NGOs, and tribal organizations can enhance employability and social relevance.

Policy support and alignment with quality assurance frameworks such as NAAC and UGC guidelines are also essential. Incentivizing stakeholder participation through recognition, awards, and academic credits can further motivate sustained engagement.

In conclusion, a strategic, inclusive, and technology-enabled approach to stakeholder engagement can transform higher education institutions into responsive, accountable, and socially embedded centers of learning, contributing significantly to institutional development in Chhattisgarh.

Conclusion

Institutional development in higher education is a multifaceted process that extends beyond internal administration and academic functioning. This paper has examined the critical roles played by alumni, former academic fraternity, parents, and society in strengthening higher education institutions, with specific reference to the context of Chhattisgarh. The analysis highlights that meaningful stakeholder engagement enhances governance quality, academic relevance, institutional accountability, and social responsiveness.

Alumni contribute through mentorship, financial support, curriculum feedback, and industry linkages, thereby improving institutional relevance and graduate employability. The former

academic fraternity offers intellectual continuity, research mentorship, and governance support, helping institutions preserve academic standards and institutional memory. Parents play an increasingly important role in student welfare, ethical development, and institutional accountability, while society shapes institutional priorities through community engagement, industry partnerships, and expectations of social responsibility.

The study also identifies that despite the presence of these stakeholders, their participation in Chhattisgarh's higher education institutions remains fragmented and often informal. Structural limitations, resource constraints, and communication gaps hinder effective collaboration. Addressing these challenges requires institutional commitment, supportive policies, and structured engagement frameworks.

Strengthening stakeholder participation through formal mechanisms, digital platforms, capacity building, and alignment with quality assurance frameworks can transform higher education institutions into inclusive and responsive centers of learning. In the long run, collaborative stakeholder engagement can bridge the gap between academia and society, support regional development, and contribute to the sustainable advancement of higher education in Chhattisgarh.

Thus, institutional development should be viewed as a shared responsibility, where active and sustained collaboration among all stakeholders becomes the foundation for quality, equity, and excellence in higher education.

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A Critical Analysis of Emotional Intelligence in Higher Education: A Pathway to Holistic Development and Leadership Among Students

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Abstract

Emotional intelligence (EI) is a transformative attribute in higher education, helping students navigate complicated social and educational circumstances successfully. Emotional Intelligence encompasses the key components such as motivation, the sense of empathy, self-regulation, self-awareness and social skills. This paper critically analyses the significance of emotional intelligence basically in higher education as a pathway to holistic student development and leadership qualities among the students. Based on content analysis, the study systematically examines existing literature and theoretical perspectives and empirical research related to emotional intelligence. Through an in-depth review of the scholarly articles, policy documents, recurring patterns and strategies that enhance emotional intelligence are identified. Technological developments in higher education can improve accessibility, connectedness, and innovation, but may also harm interpersonal connections, emotional well-being, and human connection. Emotional intelligence is crucial for addressing challenges and leveraging technology for human-centred transformation. Drawing upon qualitative content analysis, the study examines a wide range of scholarly literature, policy documents, and theoretical perspectives to explore the essence of Emotional intelligence in academics. According to the results, students having higher emotional intelligence perform better in academics, have better psychological well-being, and have stronger interpersonal interactions. Furthermore, emotionally intelligent leaders in educational contexts may build trust, boost collaborative work, and effectively manage institutional issues. Despite its widely acknowledged promise, difficulties such as

uneven evaluation techniques, a lack of systematic training, and inadequate incorporation into curriculum impede EI implementation. The article recommends incorporating EI into educational frameworks, leadership initiatives, and institutional policies via workshops, and professional growth activities. Finally, emotional intelligence is positioned as an essential characteristic for integrating technological progress with humanistic growth, enabling holistic development and long-term educational leadership in higher educational institutions.

Keywords: Emotional Intelligence, Higher Education, Holistic Development, Leadership, Empathy, Self-Regulation

Introduction

It has been observed for decades that academic success has been directly linked to Intelligence Quotient, but recent trend suggests that besides IQ, it is emotional intelligence that came to the forefront and is invincible characteristics among students for success related to higher education. (Ahmad et al., 2024) noted that EI mainly refers to the power of understanding, analysing, managing their own emotions as well as managing and perceiving the emotion of others. In higher education, emotional Intelligence is crucial in navigating various complex social issues that students encounter and therefore emotional intelligence is directly proportional to the academic performance among higher students. The emotional intelligence becomes essential to ensure that the advancements in technology do not undermine the humanistic aspects of development (Nabi et al., 2022). Students with higher emotional intelligence can maintain a positive social relationship with their families, friends and teachers. The key components of emotional intelligence are Self-regulation, Self-awareness. motivation, empathy and social skills. A higher level of emotional intelligence (EI) helps students to achieve their targets and maintain higher level of well-being. EI encompasses key competencies such as self-awareness, self-regulation, motivation, empathy, and social skills (Goleman, 1998).

Key Components of Emotional Intelligence

Constructive leadership undoubtedly plays a key role in nourishing the learning experiences of students. (Mahona & Pacho, 2021). It has been observed that educational leaders having emotional Intelligence can maintain trust in relationships, communicate effectively with the stakeholders and can make decisions aligned with student's needs. (Omotayo, 2024) One of the key advantages of emotional Intelligence in leadership is its positive impact on students' academic success and their well-being (Bower, 2018). Although the importance of emotional intelligence in educational leadership is becoming more widely acknowledged, leaders still need to be given the infrastructure which is needed for integration of emotional intelligence (Paren, 2015). Educational leaders can help the instituitions to develop their emotional intelligence through various training programs, workshops, faculty development facilities, and self- evaluation. Consequently, ensuring the growth of emotional intelligence in higher education institutions is not just a

supplementary consideration but an indispensable component in fostering comprehensive holistic development and well-being in today's digital world (Tyszkiewicz-Bandur et al., 2017; Ada & Okoli, 2019).

Background Of the Study:

The term "EI" was first used by Peter Salavey and John D. Mayer in their article "Emotional Intelligence," which was published in Imagination, Cognition, and Personality. Emotional intelligence, also known as Emotional Quotient (EQ), is the brain's way of connecting thoughts and feelings for personal and professional success. More than twenty years ago, (Salovey & Mayer, 1990, p. 189) defined Emotional intelligence in the scientific literature as "…the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions". Over the past three decades, emotional intelligence (EI), which is generally defined as the ability to identify, harness, comprehend, and self-regulate emotions, has emerged as a key concept in the fields of education and psychology.

Daniel Goleman, a prolific writer and science journalist authored a book- "Emotional Intelligence: in the year 1996. In his book, Goleman cites numerous research studies as well as in Harvard

Business School study that indicated that emotional intelligence is as important as IQ and technical skills when it is determined who is going to succeed. (Institute for Health and Human Potential, 2021). (Goleman,2007) said there is a paradigm shift from IQ to EQ where emotional intelligence can better lead to success in the career and can foster growth thereby instilling leadership qualities. It supports interpersonal effectiveness and organizational outcomes. Since then, the expansion of explanatory models as well as research into EI has been enormous (Joseph & Newman, 2010). Higher education institutions have complicated goals that extend far beyond disciplinary knowledge, focusing on improving students' entire well-being, cultivating emotional competences and holistic development, and preparing graduates for societal leadership roles. Empirical evidence reveals that EI has positive relationship with students' psychological well-being, social functioning, and academic performance, making it an appropriate focal point for curricular and extracurricular interventions. (Sánchez-Álvarez, et.al, 2020)

The background to this study therefore lies in understanding how higher education institutions are responding to this imperative. (Asmamaw, A. T., & Semela, T. (2023) noted that according to academic leadership research, emotionally intelligent leaders excel at relationship management, dispute resolution, and peer motivation, all of which are critical in colleges and universities where collaboration and change management are common. Applying these findings to the student population means that strengthening EI can help develop future leaders who combine disciplinary competence with socio-emotional maturity.

Rationale of the Study:

The impetus for this study derives mainly from the necessity to critically investigate the emerging need of Emotional Intelligence specifically in higher education. Although technology has increased accessibility and convenience, it has also posed serious threats related to the preservation of human connections (Al, 2018). By emphasizing the significance of empathy, moral decision-making, and responsible technology use, emotional intelligence provides a framework for overcoming these obstacles (Fan, 2017). Teachers may mitigate the alienating effects of online learning by promoting emotional awareness and empathy and creating supportive environments (Nasir et al., 2022). In spite of the rising interest and encouraging results, the gaps are still prevalent. Firstly, it is observed that a significant portion of the Emotional Intelligence (EI) literature employs a variety of theoretical frameworks and assessment tools, resulting in inconsistent results and making cross-study comparisons more difficult. A critical review of emotional intelligence in higher education based on empirical evidence and intervention studies, can provide a convincing rationale for incorporating EI into curricula and student leadership initiatives. As we know that the role of emotional intelligence is more than individual academic performance, it plays an important role in enhancing interpersonal relationships and fostering a collaborative learning space. (da Silva, 2022; Reis da Silva, 2024a). Research indicates that students with higher emotional intelligence have improved mental health and enhanced social interactions (Bhati, 2023).

Review Of Related Literature:

The concept of emotional intelligence was explained by *(Goleman,1995)* in his innovative book- "Emotional Intelligence: Why It Can Matter More Than IQ". Goleman mentioned the five key components of Emotional Intelligence: self-awareness, motivation self-regulation, empathy, and social skills. Emotional intelligence has immense potential to lead to academic success by encouraging self-directed learning, providing effective coping mechanisms for stress and driving motivation. *(Deshpande,2019).*

The idea of "Primal leadership" was presented by *(Goleman et al., 2002)*. It suggests that emotionally intelligent leaders have massive power in understanding the emotional climate of their members.

They said that leaders with high levels of emotional intelligence can maintain a healthy work culture by fostering empathy, positive attitude and self-regulation.

A significant component of emotional intelligence i.e., empathy is considered to play a fundamental role in leadership. The ability to motivate others by understanding and addressing their needs are considered to be the hallmarks of transformational leadership. Based on the studies, it has been found that students with high emotional intelligence are more likely to have positive relationship with peers and educators thereby enhancing their educational experience *(Gong & Jiao, 2019). (Mittal, 2020*) emphasized that the

collaborative and proactive spirit not only improves academic performance but also boosts a sense of togetherness within the educational setting.

According to *Harvard Business Review-(Landry,2019),* Emotional intelligence helps to manage interpersonal relationship which is much essential for fostering positive environment, self-regulation, empathy and collaboration. It is possible to upgrade one's career and team by strengthening emotional intelligence. Despite the vast body of literature dealing with the importance of emotional intelligence in effective leadership as well as in understanding and in decision-making process, it is noticed that there are some criticisms and challenges which are often arbitrary. (*Gardner,1983)* theory of multiple intelligence exhibits that emotional intelligence may coincide with various forms of intelligence, making it challenging to distinguish and measure precisely. Although, various training programs have exhibited strong commitment in enhancing emotional intelligence skills but it is seen that the effectiveness of such programs differs, it also remains uncertain whether there is a scope for enhancement of emotional intelligence in higher education. The research on emotional intelligence highlights how important it is to enhance decision-making and leadership efficacy. Strong connections, taking action that takes into account the psychological effect on others, and navigating complicated organizational dynamics are all made easier for leaders who possess emotional intelligence.

Notwithstanding multiple barriers and objections, the data shows that emotional intelligence is a useful skill that supports beneficial outcomes, such as enhanced efficiency, happiness at work, and satisfaction among workers. Various strategies have been undertaken in development programs to boost empathy, positive teaching, self-regulation and learning experience. EI programs often deal with activities that promote self-reflection and self-awareness which enables both the educators and students to better effectively manage their own emotions and behave empathetically. (*Brackett et al., 2019).*

Despite extensive research conducted on Emotional intelligence (EI) researched related to leadership and professional success, its significance in fostering holistic development and leadership among higher education students remains unexplored. Existing research does not provide context-specific evidence on how emotional intelligence help to develop students' potential for leadership and their well-being. Furthermore, variations in Emotional intelligence (EI) definitions and measurement, limited long-term intervention studies, and inadequate integration of EI into academic curriculum underscore the need for more empirical research. This gap necessitates research that critically investigates the impact of emotional intelligence development on students' overall growth and leadership formation in higher education.

Research Objectives:

1. To identify the core characteristics of Emotional Intelligence (EI) in fostering holistic development among students in contemporary higher education.

2. To find out how Emotional Intelligence (EI) contributes to the development of successful leadership qualities among students in higher education.

3. To critically evaluate the challenges that are associated with the implementation of Emotional Intelligence (EI) in cultivating the essence of empathy as well as interpersonal skills among students in contemporary higher education institutions.

4. To propose necessary suggestions for higher education institutions regarding the Emotional Intelligence (EI) training among future educational leaders.

Research Questions:

Based on the above research objectives, the following research questions are as follows:

1. What are the core characteristics of Emotional Intelligence in fostering holistic development among students in contemporary higher education?

2. How does higher education institutions cultivate Emotional Intelligence to foster leadership qualities among students?

3. What are the challenges faced by the contemporary higher education institutions during the implementation of Emotional Intelligence (EI) in cultivating the essence of empathy as well as interpersonal skills among students?

4. What necessary suggestions can be proposed in providing Emotional Intelligence training among future educational leaders for higher education institutions?

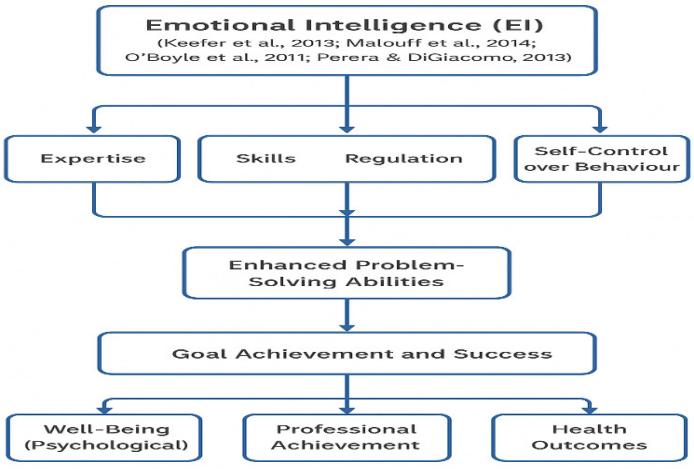
Methodology of the study:

The present study used a qualitative content review approach to critically analyse Emotional Intelligence in higher education, mainly focusing on its role in holistic development and leadership among higher students. The research design was descriptive and interpretive, systematically examining a diverse corpus of academic literature, policy documents, institutional program descriptions, and expert opinions. Data collection involved systematic searches with the help of keywords such as “Emotional Intelligence in higher education,” “student leadership,” and “holistic development,” followed by purposive sampling. The collected data underwent thematic content analysis, including familiarization, both deductive and inductive coding, categorization into broader themes, and critical interpretation to address the research objectives.

Objective Wise Data Analysis and Discussion Of The Study With Respect To Research Objectives:

Objective 1: To identify the core characteristics of Emotional Intelligence (EI) in fostering holistic development among students in contemporary higher education.

According to the theory of Emotional Intelligence, having outstanding expertise, self-regulation and self-control over one's behaviour enhances problem solving abilities and achievement of goals. Research suggests that Emotional Intelligence has generated support for the positive impact on well-being, professional achievement, academic accomplishment as well as the health outcomes. *(Keefer et al., 2013; Malouff et al., 2014; O'Boyle et al., 2011; Perera & DiGiacomo, 2013).*



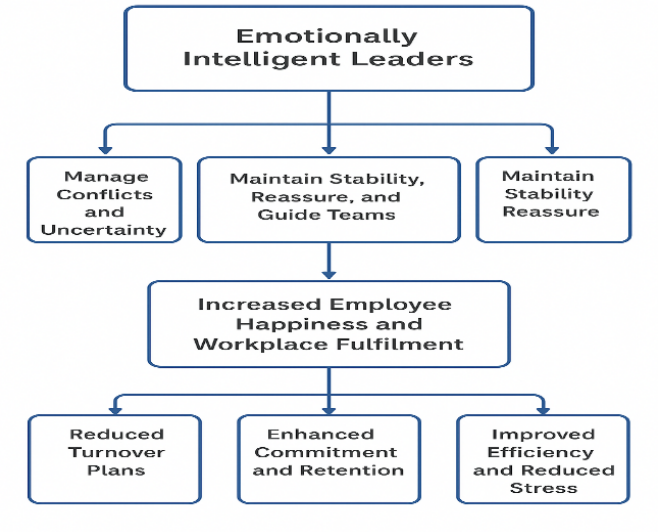
Objective 2: To Find Out How Emotional Intelligence (EI) Contributes To The Development Of Successful Leadership Qualities Among Students In Higher Education.

According to research, emotionally competent leaders has enormous power to make better decisions, particularly when resolving conflicts. Their findings indicate that emotional intelligence has the potential to improve leader's capacity to maintain effective communication and identify solutions that are advantageous to all the persons involved. *(Jordan and Troth, 2011).*

An exploratory study was done by *Wong and Law (2002)* that dealt with the impact of emotional intelligence on attitudes of leaders in higher education. Their research indicated that leaders with high emotional intelligence were more proficient in settling conflicts and finally arriving at decisions. It was also explored that emotional intelligence had a positive impact on productivity, demonstrating that emotionally intelligent leaders helps the organizations to achieve success.

Boyatzis and McKee (2005) conducted a study which revealed that leaders with high emotional intelligence have greater expertise in dealing with conflicts within organization.

During harsh times, emotionally intelligent leaders can maintain stability, motivate and guide teams through difficult situations. Their potential to stay flexible, adaptable as well as empathic during hardship allows to instil trust, which are necessary for successfully managing change. Furthermore, emotional intelligence increase employee happiness, workplace fulfilment, and fewer plans for turnover. When leaders display compassion, employees are more likely to feel appreciated and supported, which leads to enhanced commitment and retention. This pleasant work environment eventually leads to increased efficiency, reduced levels of stress, and increased company efficiency.



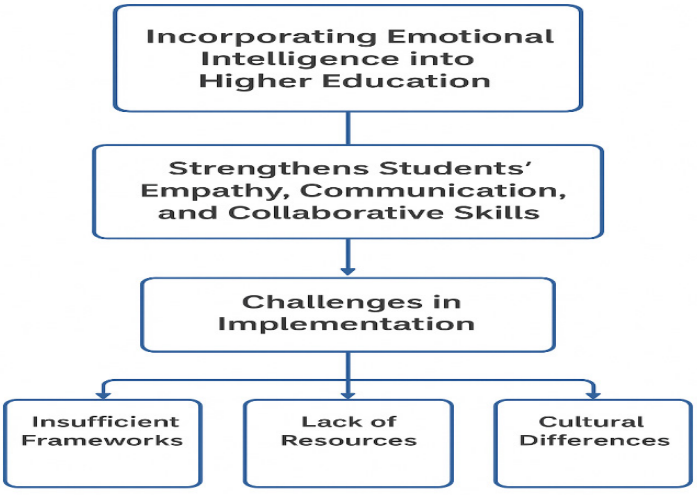
Objective 3: To critically evaluate the challenges that are associated with the implementation of Emotional Intelligence (EI) in cultivating the essence of empathy as well as interpersonal skills among students in contemporary higher education institutions.

Bar-On (2006) focused on the academic enhancement of emotional intelligence by focussing on the Emotional-Social Intelligence (ESI) model, which incorporates interpersonal as well as intrapersonal competences, versatility, coping with stress, and overall state of mind. His approach demonstrated that emotional intelligence is an all-encompassing idea that determines how people deal with environmental needs and obstacles, exhibiting it as a crucial component in the effectiveness of leadership.

The latest study has shown that incorporating Emotional Intelligence (EI) into higher education strengthens students' empathy, communication, and collaborative skills; however, insufficient frameworks, lack of resources, and cultural differences pose significant implementation challenges *(Mayer, Caruso, & Salovey, 2016; Fernández-*

Berrocal & Extremera, 2022).

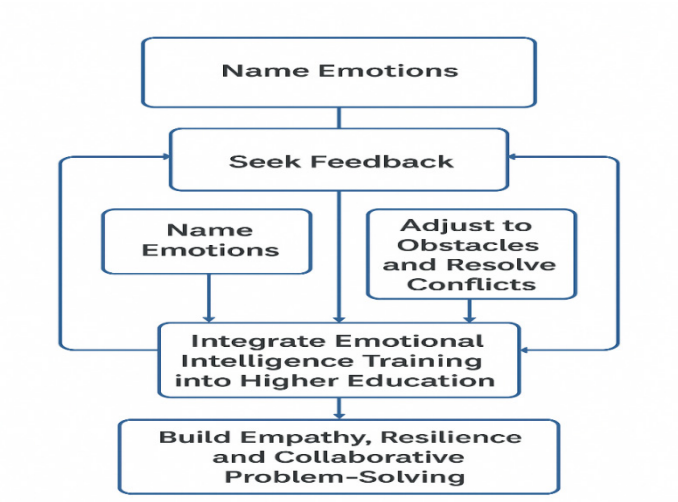
According to implementation *(Petrides et al., 2018; Mortiboys, 2013),* research shows that Emotional Intelligence (EI) education in Universities improves students' socio-emotional competencies, social skills, self-regulation, empathy but challenges such as inadequate faculty training and inconsistent methods of assessment hinder its proper implementation.



Objective 4: To propose necessary suggestions for higher education institutions to provide Emotional Intelligence (EI) training among future educational leaders.

According to *Harvard Business Review (Lanra,2025),* it is essential to manage one's emotions. First of all, we must identify how we are feeling, especially in tough circumstances and pause before responding.

Naming emotions encourages you to respond intelligently rather than impulsively. It is necessary to seek feedback from supervisors, coworkers, friends, or family for honest comments on how we manage emotions, adjust to obstacles, and resolve conflicts. Their perspectives can indicate opportunities for improvement. We can engaging with stories with complex characters builds empathy that enables us to understand others' opinions, desires, and feelings. Integrating training related to emotional intelligence into higher education curricula is necessary for future educational leaders. To build empathy, resilience, and collaborative problem-solving, such programs should incorporate emotional evaluation, 360° feedback, counseling, and experiential learning opportunities *(Boyatzis & McKee, 2005).*



Discussions:

1. The Role of EI in Faculty-Student Interactions

Educators with high emotional intelligence (EI) can create inclusive learning environments. This capability is mainly derived from their ability to understand the emotions of students and adapt teaching strategies accordingly. This adaptability is vital mainly In higher education where students come from different socioeconomic and academic backgrounds (Maharaj & Ramsaroop, 2022). Research suggests that educators who exhibit strong emotional intelligence can foster empathy and open communication which are essential for effective teaching and learning (Bustamante et al., 2015).

2. Implementing emotional intelligence (EI) can help to humanize future technologies in higher education

Including EI in online platforms can boost engagement, contentment, and feelings of connection (Wen, 2020). Furthermore, including EI principles into moral decision-making enables institutions to deal with the emotional and social impacts of technology use, hence increasing psychological wellness of both students and faculty. (Banat et al., 2019; Nisa, 2023).

3. Sustainable Development Goals as well as Emotional Intelligence in Higher Education

It is found that the inclusion of emotional intelligence in higher education, particularly in humanising technology for holistic development aligns deeply with Sustainable Development Goals which is set by the United Nations (Reis da Silva and Rodrigues, 2023).

EI helps the students to bulid resilience and adaptability which are essential to deal with the complexities of the modern world, fulfilling SDG 4's objective of ensuring quality education and facilitating lifelong learning experience for everyone.

4. Student Support and Counselling

According to **Fernández-Berrocal and Extremera (2016)**, emotionally intelligent students demonstrate self-awareness, adaptability, mental health stability, which directly contribute to their academic success. **Zeidner, Matthews, and Roberts (2012)** suggest that developing emotional intelligence through co-curricular activities supports and academic persistence and well- being of university students.

5. Implications for Policy in Higher Education

Emotional intelligence into higher education has positive implications for policy. It is necessary to incorporate EI into their strategic planning, designing curriculum and faculty development programmes (Pengyu & Zhang, 2019). This requires a coordinated effort across different levels of the institution from educators to academic leaders as well as policymakers (Pengyu & Zhang, 2019).

Conclusion:

Emotional intelligence helps the students in enhancing academic performance, manage stress and build significant human connections. Promoting emotional intelligence in educational settings fosters a friendly and inclusive environment, promoting overall student development and well-being. Emotional intelligence is considered to be a transformative paradigm in higher education that amalgamates technology with human principles to foster holistic student development. Emotional intelligence (EI) in educational contexts is vital as it can prevent innovations in technology from undermining interpersonal ties and emotional well-being, which are crucial for learning.

Emotional Intelligence helps in maintaining co-operation and cordial relation between faculty and student. There is a necessity to implement Emotional Intelligence into online platforms. It helps to deal with the social impact of technology use. It is of utmost importance to incorporate emotional intelligence into higher education institutions. Strategic planning needs to be done and curriculum must be framed properly so that that emotional intelligence can be incorporated. There is a need for constant research and innovation to find out new ways to integrate emotional intelligence in academics that can lead to holistic development and can bridge the gap between technology and humanity which lead to more compassionate and supportive learning environment.

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Ergonomics in School Education: Estimating the Awareness of School Leaders for Holistic Improvement of Hired Hands

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Abstract

As ergonomics is one of the most important factors to create a workplace cozy and comfortable for the employees, the researcher in this present study, wanted to measure the awareness level of ergonomics among the school leaders. A total number of 120 samples including 12 principals, 12 vice principals and management committee members from 12 schools (CBSE and ICSE Boards) of Kolkata and Howrah region were taken by simple random sampling. In this quantitative survey study, a self-made standardized questionnaire was used to measure the awareness of ergonomics among the samples. The content validity of the questionnaire was checked from five subject experts and reliability (.71) was checked by Cronbach Alpha Method. Percentage, Mean, SD, t test and ANOVA were used as statistical techniques. The result proved that there was no significant difference in the level of awareness of ergonomics among the school leaders based on gender but in the case of locality and subject or stream there were significant difference in the awareness about ergonomics among the school leaders.

Keywords: Ergonomics, School Education, Estimating, Awareness, School Leaders, Holistic Improvement, Hired Hands

INTRODUCTION

With the development of modern Science and technology various issues start emerging out from an institution about which no one thinks before. Ergonomics aka human engineering has emerged as one of the important factors in 21st century for providing the utmost comfort or happiness in workplace. This word has emerged from two Greek words 'Ergon' meaning 'Work' and 'Nomos' meaning 'Laws'. ***'Ergonomics is the Science, technology and art of***

harmonizing tools, working methods and the environment to human capabilities, abilities and limitations, so as to obtain healthy, safe, comfortable, effective and efficient working conditions and environments in order to achieve the highest productivity.' (Ghozali., M., & Rizqiyana., 2022). Teachers are critically important for the society because they shape young minds, foster personal growth and impart knowledge within the students. They play an important role in developing social, emotional and intellectual skills of an individual. For being creative, teachers need to have comfort and happiness in their workplace not only from mental perspectives rather they need physical commiseration to work productively for a longer period. Ergonomics deals with three facts of a workplace- Physical aspect consisting of work setting, movements, posture, force, environmental factor etc. secondly, cognitive aspects such as interacting with systems, communication, perception, memory, decision making etc. and thirdly managerial aspects such as management committee, risk management, training, continuous improvement, employee involvement etc. ***'Following proper ergonomic design and principles help to avoid repetitive strain injuries and other musculoskeletal occupations and its incidence among school-teachers is particularly high.' (Baheti., et al., 2021).*** But for providing the teachers proper work environment, different arrangements have to be made by the school leaders and administrative members so that utmost comfort and solace to be provided to the employees so that they can work in a cosy and high-yielding way. Hence the knowledge of ergonomics is very much necessary within the school administrators to implement such strategies and uplift the physical and emotional structure of a school in such a way that the institution can retain happy and fecund teachers for producing triumphant future citizen.

STATEMENT OF THE PROBLEM

With the advancement of technology changes the lifestyle, various scientific discoveries have emerged to make our life easy and comfortable. Ergonomics, being a subject, deals with the various work life comforts of individual for maximum productivity. In school or in educational sector also, the teachers need to feel comfort and should get hassle free work zone from both emotional and physical perspectives and school leaders should be aware of the ergonomics to provide the alleviation in an institution. Hence the problem of the following study was stated below-

'Ergonomics in School Education: Estimating the Awareness of School Leaders for Holistic Improvement of Hired Hands.'

OBJECTIVES

- To measure the level of awareness about Ergonomics among the Leaders of high schools for holistic improvement of hired hands.
- To identify the significant difference in the case of awareness about Ergonomics based on gender of the leaders of the high schools for holistic improvement of hired hands.

- To find out the significant difference in the case of awareness about Ergonomics among the leaders of the high schools based on their locality for holistic improvement of hired hands.
- To assess the significant difference in the case of awareness about Ergonomics among the School Leaders of the high schools based on their stream of education for holistic improvement of hired hands.

HYPOTHESES

- There was high level of awareness about Ergonomics among the Leaders of high schools for holistic improvement of hired hands.
- There was no significant difference in the case of awareness about Ergonomics based on gender of the leaders of the high schools for holistic improvement of hired hands.
- No significant difference was observed in the case of awareness about Ergonomics among the leaders of the high schools based on their locality for holistic improvement of hired hands.
- There was no significant difference in the case of awareness about Ergonomics among the School Leaders of the high schools based their stream of education for holistic improvement of hired hands.

OPERATIONAL DEFINITION OF THE TERMS

- **Ergonomics**

In Applied Science, ergonomics refers to the science of designing and arranging things in a way so that people can feel comfortable and cozy in a place. In this study the cognitive, physical and organizational aspects of ergonomics of an educational organization were discussed.

- **School Education**

It refers to education related to school specifically schools having class X or class XII.

- **Estimating**

Estimating means measuring, assessing or evaluating. Here the awareness of ergonomics among the school leaders were measured.

- **Awareness**

Awareness refers to the consciousness. In this study, by the word awareness, the level of consciousness of ergonomics among the school leaders were measured.

- **School Leaders**

It refers to the principals, vice principals and management committee members of a school.

- **Holistic Improvement**

It means all around improvement of a person comprising of physical, mental, emotional, social, spiritual etc.

- **Hired Hands**

It refers to the selected candidates for working in an institution or the employees of an organization who work to run an institution successfully.

DELIMITATIONS

- The study was delimited to 120 management committee members of 12 schools. Among them 12 principals and 12 vice principals were also there.
- Secondary and Higher Secondary both the schools were taken.
- The study was delimited to 12 schools from Kolkata and Howrah region.
- All the schools belong to CBSE and ICSE boards.
- Only the managerial overview about school agronomics was taken here as the matter of study.

SIGNIFICANCE OF THE STUDY

- The study would provide the concept of school management committee about their present concept of ergonomics. So, they can acquire more knowledge to provide a comfortable work atmosphere to their hired hands.
- The recruiter in various organization in future time will be aware of the ergonomics needed for providing relief to the employees.
- The management committee should think about the budget beforehand for maintaining physical ergonomics.
- School principals can maintain a healthy emotional balanced atmosphere within the institutions.
- The stakeholders and curriculum framers can understand the importance of knowledge of ergonomics and henceforth can include it in higher education curriculum as one of the compulsory courses.

REVIEWS OF RELATED LITERATURE

Research related to Physical Aspects of Ergonomics

Widodo., et al. (2015) in their study discussed about the simulated condition and general condition of lighting, humidity, temperature and noise level of two schools- one private and one government. The simulated and general condition of the two schools about the four variables were analysed and the interviews taken from students and teacher were analysed only to find that the general condition of the classroom in the morning is quite good whereas with in daytime extra light and air are needed by them to be comfortable at their desk. Gumasing., et al. (2023) conducted an online survey study on 311senior high school students to find out the role of physical ergonomics in student motivation and academic achievement. The survey result concluded that in online education there was insignificant relationship in between physical set up and ergonomic sin the areas of students' motivation and academic achievements. Opposing that, Latip., S., N., N., A., & Tamrin., M. (2023) conducted a literature-based review to find out the relationship between physical agronomy of noise, lighting, humidity of room with academic performance and found that the higher the noise is, the lower is their attention span. In case of humidity there is a negative co-relation in between the two whereas proper lighting can develop student presence in the class resulting good academic score. The study demanded more literature reviews for further study in this sector whereas Latip., et al. (2024) in their study wanted to find out the relationship among lighting, chair design, temperature, noise and motivation with students' performance. The finding revealed that motivation plays a mediating part in between students' academic performance and light, noise, seating arrangements, temperature etc. Though temperature is directly not associated with academic performance, it acts as the important source of motivation as well.

Research related to Cognitive Aspects of Ergonomics

Adesanya., & Regina., A. (2024) in their study discussed about the effectiveness of cognitive ergonomics on the development of attention, memory, perception, information processing and performance of 4269 academic staffs of Lagos state. So, the researcher suggested that management should provide a comprehensive cognitive ergonomic structure to develop the performance level of the staffs in future. Ismail., et al. (2025) conducted a study to prove the effectiveness of Cognitive Ergonomic-Driven Technology to balance the workload and well- performance of the aging workforce of management and supporting staffs. The co-relational result proved the positive relationship of an individual with lesser level of work-pressure. Reduction of Stress and improvement in performance score were also noticed. Though technology driven cognitive ergonomics application may face challenges in real world situation, it will open up a future vista for research as well. Rodrigues., et al. (2012) in their research study described the result of the analysis of cognitive ergonomic aspects of e-learning courses that was offered by an organism of Brazilian Public Administration. The result got by the field survey and analysis of documents indicated a positive relationship in between cognitive ergonomics and e-learning courses whereas Sabauri., T. (2024) showed

in his study that in the case of job design cognitive ergonomics also plays an important role as it can provide for cognitive load in a work place for overall improved performance and developing satisfaction level of the learners.

Research related to Organizational Aspects of Ergonomics

Ebito., I., N. & Umana., V., S. (2019) conducted a descriptive study to find out the relationship in between organizational ergonomics based on teamwork, job-design and effective communication with academic staff performance. Linear regression and co-relation were used a statistical technique. The result revealed that teamwork had the highest co-relation with research motivation among the samples followed by job design and effective communication. So, the researchers suggested to improve organizational ergonomics for motivating the staffs towards research. Niciejewska., M. (2023) conducted a study to find out the effect of organizational ergonomics on the psychophysical development of primary school children. Direct Interviews and overt observation proved that there is increasing recognition in the case of importance of ergonomics and safe technical and organizational condition in early childhood education can polish the future doorway of pre-schoolers as well. George., O., N. (2024) in their study wanted to prove the effect of organizational aspects of educational curriculum on the instructional curriculum of the college. In this quantitative study co-relational study and ANOVA were used only to prove the positive effects of organizational aspects of ergonomics on the instructional curriculum development and hence forth it needs evaluation as well. To prove the future implication of organizational ergonomics, Xabibullayevich., A., S., & Asrorovna., K., G. (2020) in their study discussed about the future of organizational ergonomics in school for developing a new educational environment. The future teachers will be in need of pedagogical and organizational ergonomics for their improving productivity and job satisfaction in school education.

METHODOLOGY

Quantitative Survey methodology was used in this study.

VARIABLES

Awareness of School Leaders about school ergonomics was taken as dependent variables and school leaders were taken as independent variables and the gender, habitat area and stream of education were taken as categorical variables.

POPULATION

All the school leaders consisting of principals, vice principals and management committee members of the CBSE and ICSE schools of Kolkata and Howrah regions were the population of the study.

SAMPLES

In this probability sampling method, 120 school leaders including school principals, vice principals and management committee members were selected from 12 schools of Kolkata and Howrah region via simple random sampling and lottery method. Schools were selected by stratified random sampling.

RESEARCH DESIGN

Quantitative survey design was used in this study. A self-made standardized questionnaire to measure the level of awareness of school ergonomics among the school leaders including principals, vice principals and school management committee members was distributed to the samples for data collection. Proper instruction was given there, and space was given to write gender, locality and stream of education. The content validity of the questionnaire was checked by five subject experts, and the reliability was also checked by Cronbach Alpha. (.72). As statistical technique, Percentage, Mean, Standard Deviation, t test and ANOVA were used for data analysis.

ANALYSIS AND INTERPRETATION

HYPOTHSIS- I

There was high level of awareness about Ergonomics among the Leaders of high schools for holistic improvement of hired hands.

TABLE-1

Level of Awareness of Ergonomics	Percentage of Awareness of Ergonomics
Very High	6.56%
High	12.45%
Moderate	25.23%
Low	39.25%
Very Low	16.51%

BAR CHART-1

Table-1 and Bar Chart-1 provided the percentage of awareness of ergonomics among the school leaders. The result showed that among the school leaders, nearly (7%) (Approx) had very high awareness about ergonomics, approx. (12.45%) had high awareness about ergonomics, (25.23%) (Approx) had moderate awareness about ergonomics, (39.25%) had low awareness about ergonomics and (16.51%) (Approx) had very low level of

awareness about ergonomics. Henceforth from the viewpoint of percentage, it was proved that the hypothesis was rejected and the school leaders had poor level of awareness about ergonomics for holistic improvement of hired hands.

HYPOTHEIS-II

There was no significant difference in the case of awareness about Ergonomics based on gender of the leaders of the high schools for holistic improvement of hired hands.

TABLE-2

Samples based on Gender	Number of Samples	Mean	SD	t Score
Male	62	27.46	3.54	0.6712
Female	58	27.05	3.12	

BAR CHART-2

Table-2 and Bar Chart-2 described that the mean gained score (27.46) of male school leaders was higher than the mean gained score (27.05) of the female school leaders. The table t value 0.6712 was lower than the table t value 1.98 at 118 degrees of freedom at 0.05 level of significance. Henceforth the hypothesis was accepted, and it was proved that there was no significant difference in the case of awareness about Ergonomics based on gender of the leaders of the high schools for holistic improvement of hired hands.

HYPOTHESIS-III

No significant difference was observed in the case of awareness about Ergonomics among the leaders of the high schools based on their locality for holistic improvement of hired hands.

TABLE-3

Samples based on Locality	Number of Samples	Mean	SD	t Score
Urban	53	29.45	3.91	3.7542
Rural	67	27.01	3.21	

BAR CHART-3

Table-3 and Bar Chart-3 described that the mean gained score (29.45) of urban school leaders was higher than the mean gained score (27.01) of the rural school leaders. The table t value 3.7542 was higher than the table t value 1.98 at 118 degrees of freedom at 0.05 level of significance. Henceforth the hypothesis was rejected, and it was proved that significant difference was observed in the case of awareness about Ergonomics among the leaders of the high schools based on their locality for holistic improvement of hired hands.

HYPOTHESIS-IV

There was no significant difference in the case of awareness about Ergonomics among the School Leaders of high schools based on their stream of education for holistic improvement of hired hands.

TABLE-4

Source of Variation	SS	df	MS	F value	P value
Between Groups	443.2111	2	221.60555	17.384	0.05
Within Groups	1491.7992	117	12.7487		
Corrected Total	1935.0103	119			

BAR CHART-4

Table-4 and Bar Chart-4 described that the calculated F- value (17.384) was significant, indicating that the null hypothesis of equal means was rejected as the F score (17.384) was greater than 0.05. This suggested that there was significant difference in the case of awareness about Ergonomics among the school leaders of high schools based on their stream of education for holistic improvement of hired hands.

FINDINGS

- The school leaders had poor level of awareness about ergonomics for holistic improvement of hired hands.
- There was no significant difference in the case of awareness about Ergonomics based on gender of the leaders of the high schools for holistic improvement of hired hands.

- Significant difference was observed in the case of awareness about Ergonomics among the leaders of the high schools based on their locality for holistic improvement of hired hands.
- Urban school leaders were more aware about school ergonomics than the rural school leaders. It may be due to exposure to the modernized techniques, globalization effects, urbanization in the city areas etc.
- There was significant difference in the case of awareness about Ergonomics among the school leaders of high schools based on their stream of education for holistic improvement of hired hands.
- Science stream-based school leaders were most aware about school ergonomics followed by Social Science and Language subject based school leaders.
- Scientific exposure, study system and curriculum of science education may make the Science stream-based school leaders aware about the usage of school ergonomics. But they were not using their skills and knowledge in developing the school ergonomics.

CONCLUSION

Ergonomics not only plays a crucial role for health, academic performance and comfort of the students rather it designs a teaching learning environment where every employee can feel comfort, safe and mentally stable. But for proper implementation of the ergonomics, the leaders or the management committee members of the school need to be aware of its utilization. The researcher found out very poor level of knowledge of ergonomics within the school leaders. In case of gender, though there was no difference in awareness of ergonomics but in case of stream of education and locality there were significance difference proving the need of ergonomical awareness within the school leaders and management committee members of the school to successfully run an institution with a happy and healthy atmosphere.

RECOMMENDATIONS AND SUGGESTIONS

- The study will be done in other higher educational sectors like colleges and universities also.
- Not only in education, but also in other offices the ergonomical awareness of the leaders can be measured.
- The awareness of Ergonomics among various stakeholders can be measured.
- Various strategies can be implemented, and training can be arranged for the leaders for proper knowledge of ergonomics.

- In schools and colleges various workshops can be arranged for hands-on-training of ergonomics.
- Ergonomics can be included in higher education curriculum as a compulsory subject.

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Decolonizing Knowledge: Towards Inclusive and Equitable Pedagogies

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Abstract

This chapter critically examines the historical, theoretical, and practical dimensions of decolonizing knowledge in pedagogy. It explores how colonial education systems entrenched Eurocentric epistemologies while marginalizing indigenous and local ways of knowing, thereby shaping contemporary academic and cultural hierarchies. Drawing on the works of Paulo Freire, bell hooks, postcolonial theorists, and decolonial scholars, the chapter highlights inclusive pedagogical approaches such as dialogical learning, engaged pedagogy, and community-based methods that challenge traditional power structures in education. Practical strategies for decolonization are analyzed, including curriculum reform, linguistic inclusivity, participatory and experiential learning, and the critical use of digital technologies to democratize knowledge. The chapter also addresses key challenges such as institutional resistance, risks of essentializing indigenous knowledge, and the pressures of globalization and neoliberalism. Looking forward, it emphasizes the importance of policy reforms, intersectionality, and transnational solidarity in fostering equitable pedagogies that affirm epistemic diversity. Ultimately, the chapter positions decolonizing pedagogy as a transformative practice that links education with broader struggles for justice, equity, and cultural affirmation, envisioning classrooms as spaces of liberation and pluralism.

Keywords: Decolonizing pedagogy; Indigenous knowledge; Inclusive education; Critical pedagogy; Epistemic justice; Intersectionality

Introduction

The production and transmission of knowledge have historically been shaped by colonial legacies that privileged Eurocentric frameworks while marginalizing indigenous and non-Western epistemologies. Colonial education systems were not only designed to consolidate political control but also to impose a particular worldview that delegitimized local knowledge traditions, languages, and cultural practices (Ngũgĩ wa Thiong'o, 1986; Smith, 2012). This legacy continues to influence academic curricula and pedagogical practices, where Western theories and methods dominate the landscape of "legitimate" knowledge, leaving limited space for pluralistic perspectives (Mignolo, 2011).

In the 21st century, calls for decolonizing knowledge have gained momentum as educators, scholars, and policymakers increasingly recognize the need for more inclusive and equitable pedagogies. Decolonizing education is not merely an intellectual exercise but a transformative practice aimed at dismantling structural inequalities in knowledge production and validating the lived experiences of historically marginalized communities (Freire, 1970; Bhambra, Gebrial, & Nişancıoğlu, 2018). By questioning the dominance of Western epistemologies, decolonizing pedagogies seek to reimagine learning spaces as sites of cultural affirmation, critical dialogue, and social justice. This is particularly relevant in an era of globalization, where diverse student populations require pedagogical models that acknowledge and value multiple ways of knowing.

The objective of this chapter is to critically examine the historical foundations, theoretical perspectives, and practical strategies for decolonizing knowledge within educational contexts. It also aims to highlight case studies from different regions, analyze the challenges and critiques of decolonizing pedagogy, and propose future directions toward building inclusive and equitable learning environments. By doing so, the chapter contributes to the ongoing discourse on educational justice and the democratization of knowledge.

Historical Foundations of Knowledge and Colonialism

The colonial project was not only political and economic but also epistemic, involving the imposition of Eurocentric frameworks that reshaped the very foundations of knowledge. European colonizers positioned Western science, philosophy, and rationalism as universal standards of truth, delegitimizing other epistemologies as inferior or primitive (Chakrabarty, 2000). This epistemic dominance was enforced through institutions, texts, and curricula that reinforced Western superiority and normalized the view that European knowledge represented objective reality (Quijano, 2007).

The concept of "coloniality of power" highlights how colonial rule extended beyond material domination to intellectual subjugation, embedding Eurocentrism in academic and cultural life (Mignolo, 2011). By establishing universities, schools, and research centers modeled after European traditions, colonial authorities ensured the reproduction of Western epistemologies across generations. This process not only erased or silenced local perspectives but also created a hierarchy of knowledge that persists in postcolonial

societies. The privileging of Eurocentric frameworks continues to shape what is considered legitimate scholarship, thereby narrowing the scope of global intellectual production (Bhambra, 2014).

Indigenous knowledge systems, deeply rooted in local histories, cultures, and ecologies, were systematically marginalized under colonial rule. Colonizers dismissed traditional healing practices, agricultural methods, oral traditions, and cosmologies as unscientific or superstitious, despite their contextual effectiveness and resilience (Battiste, 2002). This devaluation disrupted community life, as knowledge integral to identity and survival was suppressed or replaced by Western models.

The marginalization was also linguistic: the imposition of colonial languages displaced indigenous languages, leading to the erosion of cultural memory and epistemic diversity (Ngũgĩ wa Thiong'o, 1986). By undermining indigenous worldviews, colonial education perpetuated cultural alienation, producing generations detached from their heritage. The dismissal of these systems not only weakened local epistemologies but also contributed to environmental and social dislocations, as holistic approaches to sustainability embedded in indigenous knowledge were disregarded.

Education was one of the most powerful tools through which colonial authorities entrenched hierarchies. Schools were designed to create compliant subjects aligned with colonial interests rather than critical citizens (Altbach & Kelly, 1978). Curricula emphasized European history, literature, and science while excluding or denigrating local knowledge, reinforcing the notion of Western superiority.

In India, for instance, Macaulay's "Minute on Indian Education" (1835) argued for the creation of an English-educated class that would act as intermediaries between colonial rulers and the local population (Viswanathan, 1989). Similar policies in Africa and Latin America produced elites who internalized colonial values while distancing themselves from indigenous traditions. Such practices ensured the continuation of epistemic hierarchies even after political independence, as postcolonial education systems often inherited and replicated colonial structures. Thus, education became both a site of control and a legacy of epistemic inequality.

Understanding Decolonization in Education

Decolonization in education extends far beyond the attainment of political sovereignty. While the end of colonial rule marked formal independence, epistemic structures rooted in colonial legacies persisted in academic institutions, curricula, and pedagogical practices (Fanon, 1963). Decolonization, therefore, involves dismantling the epistemological dominance of Eurocentrism and restoring legitimacy to suppressed and marginalized knowledge systems (Smith, 2012). It requires critical reflection on the ways knowledge is produced, validated, and disseminated, ensuring that multiple epistemologies can coexist in academic spaces (Mignolo & Walsh, 2018).

This process is not about rejecting Western knowledge outright but about situating it alongside other knowledge traditions within a more pluralistic and dialogical framework (Mbembe, 2016). By broadening the parameters of what counts as knowledge, decolonization challenges hierarchies embedded in global education and offers transformative possibilities for more inclusive and socially just pedagogies.

While "decolonization" and "indigenization" are often used interchangeably, they represent distinct yet interconnected processes. Decolonization refers to dismantling colonial power structures in education and interrogating the privileging of Western epistemologies (Battiste, 2013). Indigenization, on the other hand, emphasizes the inclusion and revitalization of indigenous perspectives, values, and traditions within educational systems (Barnhardt & Kawagley, 2005).

Decolonization is a critical stance toward systemic inequities, while indigenization is a constructive process of affirming and integrating indigenous knowledge into curricula and pedagogy. For instance, while decolonization critiques the dominance of English in academic discourse, indigenization might promote teaching in local languages or incorporating indigenous storytelling methods (Kovach, 2009). The two are not mutually exclusive but complementary: decolonization opens the space for critical engagement, and indigenization fills that space with culturally grounded approaches. Together, they help redefine education in ways that respect epistemic diversity and cultural sovereignty.

Perspectives from the Global South provide crucial insights into decolonizing education. In Africa, scholars like Ngũgĩ wa Thiong'o (1986) highlight the centrality of language in decolonization, advocating for the reclamation of indigenous languages as vehicles of thought and identity. In Latin America, decolonial theorists such as Aníbal Quijano (2007) and Walter Mignolo (2011) emphasize the concept of "coloniality," which persists even after formal independence, shaping knowledge hierarchies, labor, and culture. Similarly, in South Asia, Rabindranath Tagore and Mahatma Gandhi advanced educational models like Nai Talim and Visva-Bharati that emphasized self-reliance, community engagement, and holistic learning (Mukherjee, 2009).

Critical pedagogy frameworks provide a bridge between decolonial thought and practice. Paulo Freire's Pedagogy of the Oppressed (1970) calls for dialogical and participatory education, challenging the "banking model" of teaching. bell hooks (1994) further develops this by stressing engaged pedagogy that values lived experience and student voice. Together, Global South and critical pedagogy perspectives emphasize education as a site of resistance, transformation, and liberation. They highlight the necessity of creating inclusive pedagogical spaces that validate diverse epistemologies and empower learners to challenge structures of inequality.

Inclusive Pedagogies: Theoretical Perspectives

Inclusive pedagogies draw on diverse theoretical traditions that challenge hierarchical,

exclusionary models of education. Thinkers like Paulo Freire, bell hooks, and postcolonial and decolonial scholars emphasize dialogue, holistic engagement, and epistemic justice, positioning pedagogy as a transformative practice that nurtures critical consciousness, resists domination, and affirms marginalized voices.

(a) Paulo Freire's Critical Pedagogy and Dialogical Learning: Paulo Freire's critical pedagogy emphasizes education as a process of liberation rather than domination. He challenged the "banking model" of education, in which students are treated as passive recipients of knowledge, and instead advocated for dialogical learning that positions students as co-creators of knowledge (Freire, 1970). Through dialogue, learners engage critically with social realities, developing what Freire termed conscientização or critical consciousness, enabling them to recognize and challenge systems of oppression. In this sense, pedagogy becomes not merely instructional but transformational, cultivating both intellectual and socio-political empowerment. Critical pedagogy fosters inclusivity by valuing diverse perspectives, especially those marginalized by dominant structures, and promoting an education that is rooted in justice and collective emancipation (Giroux, 2011).

(b) Bell Hooks and Engaged Pedagogy: Building on Freire, bell hooks advanced the notion of engaged pedagogy, which prioritizes the holistic development of students by integrating intellectual, emotional, and spiritual dimensions of learning (hooks, 1994). For hooks, inclusive pedagogy requires teachers to move beyond mere knowledge transmission and to embrace vulnerability, reciprocity, and care within the classroom. This pedagogy demands that educators and learners alike participate authentically, thereby creating spaces where marginalized voices are not only heard but centered. Engaged pedagogy is also explicitly feminist and anti-racist, resisting hierarchical power structures within education and advocating for classrooms as sites of mutual transformation (hooks, 2003). By connecting theory with lived experience, hooks situates learning as a liberatory practice that dismantles exclusionary systems and nurtures radical openness.

(c) Postcolonial Theory and Decolonial Thought in Pedagogy: Postcolonial and decolonial perspectives provide critical frameworks for rethinking inclusive pedagogy in contexts shaped by histories of colonialism and cultural hegemony. Postcolonial theory, as articulated by scholars like Gayatri Spivak (1988) and Homi Bhabha (1994), interrogates how education often reproduces Eurocentric knowledge systems that marginalize indigenous epistemologies. Decolonial thought further emphasizes the need to delink from colonial epistemic frameworks and to recover plural, situated forms of knowing (Mignolo & Walsh, 2018). In pedagogy, this translates into curricular and pedagogical practices that validate indigenous languages, knowledge traditions, and worldviews, thereby disrupting the hegemony of Western epistemologies. Inclusive education from this perspective is not only about access but also about epistemic justice—recognizing whose knowledge counts and how power shapes learning environments. By integrating postcolonial and decolonial insights, educators foster pedagogical spaces that resist epistemic domination and embrace diversity as constitutive of knowledge itself (Andreotti, 2011).

Strategies for Decolonizing Knowledge in Pedagogy

Decolonizing knowledge in pedagogy involves dismantling colonial legacies that privilege Western epistemologies while marginalizing indigenous ways of knowing. It calls for curriculum reform, linguistic inclusivity, participatory methods, and equitable use of technology. These strategies foster epistemic justice, cultural affirmation, and democratized learning environments that empower diverse learners.

- **Curriculum Reform and Integration of Indigenous/Local Knowledge:** Decolonizing pedagogy begins with reforming the curriculum to move beyond Eurocentric frameworks and integrate indigenous and local knowledge systems. Conventional curricula often privilege Western epistemologies, presenting them as universal and neutral, while marginalizing local ways of knowing (Smith, 2012). Decolonial curriculum reform involves recognizing the epistemic value of indigenous cosmologies, oral traditions, ecological knowledge, and community practices. For example, indigenous knowledge about land management and sustainability provides alternative perspectives to Western scientific models, enriching global discourses on climate change and ecological resilience (Battiste, 2013). Incorporating local histories, philosophies, and cultural practices allows learners to see themselves reflected in education, affirming their identities and fostering a sense of belonging. Such curricular integration also helps destabilize hierarchies of knowledge, validating multiple epistemologies and supporting epistemic justice (Dei, 2017). Ultimately, curriculum reform grounded in indigenous perspectives challenges the dominance of Western knowledge and creates inclusive spaces that empower learners from diverse cultural backgrounds.

- **Language Inclusivity and Linguistic Justice in Education:** Language plays a critical role in the politics of knowledge, as colonial education systems often privileged colonial languages (e.g., English, French, Spanish) at the expense of indigenous tongues. This linguistic hegemony perpetuates exclusion by alienating students from their cultural identities and limiting access to knowledge systems embedded in local languages (Ngũgĩ, 1986). Promoting linguistic justice in pedagogy requires valuing multilingualism, revitalizing indigenous languages, and recognizing language as a carrier of culture and epistemology. Research shows that students learn more effectively when instruction is delivered in their mother tongue, as it fosters cognitive development and cultural affirmation (Brock-Utne, 2017). Additionally, linguistic inclusivity means challenging the assumption that English or other global languages are the sole vehicles of academic knowledge. Practices such as bilingual education, translation of academic resources, and institutional support for indigenous language instruction are key to dismantling linguistic hierarchies. By embracing language diversity, education systems not only promote equity but also strengthen cultural resilience and continuity.

- **Participatory, Experiential, and Community-Based Learning:** Decolonizing pedagogy also requires rethinking teaching methods to prioritize participatory, experiential, and community-based approaches. Traditional models of education often rely on hierarchical, top-down methods that position teachers as authorities and students as passive recipients. In contrast, participatory pedagogy fosters co-learning, dialogue, and mutual knowledge creation, echoing Freire's (1970) critical pedagogy. Experiential learning, rooted in learners' lived realities, situates knowledge within social and cultural contexts, bridging theory and practice. Community-based learning extends this further by positioning communities as sites of legitimate knowledge production. For instance, service-learning projects, oral history documentation, or collaborative research with indigenous communities can challenge academic hierarchies and affirm marginalized knowledge (Hall & Tandon, 2017). Such pedagogies emphasize relationality, reciprocity, and collective responsibility, moving away from the extractive tendencies of colonial education. In doing so, they nurture critical consciousness and empower learners to become active agents in transforming their societies.

- **Technology and Digital Spaces for Democratizing Knowledge:** Technology and digital spaces present both opportunities and challenges in the decolonization of pedagogy. On the one hand, digital platforms often reproduce global hierarchies of knowledge by privileging English-language resources and Western epistemologies. On the other, technology can serve as a powerful tool for democratizing access and amplifying marginalized voices. Open-access platforms, digital archives, and online learning spaces can make indigenous and local knowledge more visible and accessible to global audiences (Chan et al., 2021). For example, digitization projects that preserve oral histories, indigenous texts, or traditional ecological knowledge ensure their survival and dissemination. Moreover, digital storytelling, podcasts, and community-based media allow marginalized groups to narrate their histories and perspectives on their own terms. However, a decolonial use of technology requires intentional design that prioritizes inclusivity, multilingualism, and equitable access (Couldry & Mejias, 2019). This includes addressing the digital divide by ensuring access to infrastructure and digital literacy, particularly in rural and marginalized communities. When used critically, technology can become a space for counter-hegemonic practices, challenging dominant epistemologies and promoting pluralistic knowledge systems.

Challenges and Critiques of Decolonizing Pedagogy:

Decolonizing pedagogy, while crucial for advancing epistemic justice, faces significant challenges and critiques. A primary obstacle lies in resistance from institutional and structural powers. Educational systems remain rooted in Eurocentric traditions, with universities acting as gatekeepers of "legitimate" knowledge through curricula, accreditation, and research priorities (Connell, 2019). This entrenched power often results

in tokenistic inclusion of indigenous perspectives rather than substantive transformation, as bureaucratic and political constraints maintain the dominance of Western epistemologies (Andreotti, 2011).

Another critique concerns the risks of essentialism and romanticization of indigenous knowledge. While decolonial approaches rightly emphasize marginalized epistemologies, they sometimes risk portraying these as static, homogenous, or inherently superior. Such portrayals obscure the diversity and dynamism within indigenous traditions, while inadvertently reproducing the very binaries between "Western" and "non-Western" knowledge that decolonization seeks to overcome (Smith, 2012; Sium, Desai, & Ritskes, 2012).

Globalization and neoliberal pressures further complicate decolonial projects. Neoliberal reforms often reduce education to a commodity, privileging efficiency, competitiveness, and market relevance (Giroux, 2014). Universities, in pursuit of international rankings and standardized curricula, frequently align with Western benchmarks, limiting space for local epistemologies. Moreover, the dominance of English as the global academic language perpetuates epistemic hierarchies, marginalizing linguistic diversity (Pennycook, 2017). These critiques highlight that decolonizing pedagogy is not a straightforward process but one fraught with structural, conceptual, and political tensions. Addressing these requires balancing the affirmation of indigenous knowledge with critical reflexivity and navigating global pressures without losing local relevance.

Towards Equitable Pedagogies: Future Directions

Moving towards equitable pedagogies requires systemic policy reforms and inclusive frameworks that institutionalize epistemic diversity. Policies must prioritize curriculum design that integrates indigenous and marginalized knowledge systems, promote mother-tongue education, and ensure equitable resource distribution (Battiste, 2013). Inclusive frameworks should extend beyond tokenistic inclusion to structural transformation that validates multiple ways of knowing (Dei, 2017).

Another important direction is building transnational solidarity in knowledge sharing. Decolonizing pedagogy must not be confined within national boundaries but instead foster collaborative networks across the Global South and North. Such solidarity enables reciprocal exchange of diverse epistemologies, challenges academic hierarchies, and resists the monopolization of knowledge by elite institutions (Connell, 2019). Digital platforms and open-access initiatives can further democratize knowledge circulation, amplifying voices historically excluded from global academia (Chan et al., 2021).

Equally vital is the emphasis on intersectionality, recognizing how race, gender, class, and culture shape educational access and participation. Pedagogies attentive to intersectionality challenge the tendency to treat marginalized groups as monolithic, instead acknowledging overlapping forms of oppression and privilege (Crenshaw, 1991). Intersectional approaches

ensure that decolonial projects are inclusive not only of diverse epistemologies but also of diverse social identities, thereby fostering genuinely equitable learning environments (hooks, 1994). Ultimately, equitable pedagogies demand sustained commitment to structural change, global collaboration, and intersectional justice, positioning education as a transformative practice that dismantles systemic inequities while affirming cultural plurality.

Conclusion

Decolonizing knowledge in pedagogy remains an urgent imperative in dismantling the enduring legacies of colonialism that continue to shape education. By questioning the dominance of Eurocentric epistemologies and affirming indigenous and marginalized knowledge systems, decolonial approaches move beyond symbolic inclusion toward genuine epistemic justice. Such efforts ensure that education becomes not only a site of intellectual growth but also of cultural affirmation and empowerment.

Inclusive pedagogy, rooted in critical, engaged, and intersectional practices, is inseparable from broader struggles for social justice and equity. It challenges entrenched hierarchies, disrupts exclusionary structures, and foregrounds the lived realities of learners historically silenced in mainstream education. In doing so, it links the act of teaching and learning to the pursuit of a more democratic, pluralistic, and just society.

The task ahead calls for more than isolated initiatives; it requires sustained commitment from educators, policymakers, and institutions to reimagine curricula, adopt inclusive practices, and support transnational solidarity in knowledge sharing. By embracing decolonizing strategies and recognizing the transformative power of pedagogy, education can evolve into a collective project of liberation. The responsibility lies with all stakeholders to ensure that classrooms become spaces where diversity is celebrated, equity is enacted, and justice is realized.

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The Impact of Perceived Social Support on Psychological Distress in Parents of Young Children with Developmental Disorders

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Abstract

Parents of children with developmental disorders often face elevated levels of psychological distress, which may be mitigated by the availability and perception of social support. This study aimed to examine the relationship between perceived social support and psychological distress among parents of young children with developmental delay. Additionally, the study explored gender differences in levels of psychological distress. A cross-sectional, correlational research design was employed. The sample consisted of 50 parents (mothers and fathers) of children aged 1 to 5 years diagnosed with developmental delay, recruited through purposive sampling from the National Institute for Empowerment of Persons with Multiple Disabilities (NIEPMD) in Chennai, India. Data were collected using the Multidimensional Scale of Perceived Social Support (MSPSS) to measure perceived social support, and the Kessler Psychological Distress Scale (K10) to assess psychological distress. Statistical analyses revealed a significant negative correlation between perceived social support and psychological distress, indicating that higher levels of perceived social support were associated with lower levels of distress. Furthermore, gender differences were observed, with mothers reporting significantly higher psychological distress scores compared to fathers. The findings underscore the protective role of perceived social

support in buffering psychological distress among parents of children with developmental delays. Interventions aimed at strengthening social support networks may be particularly beneficial for mothers, who appear to experience heightened psychological vulnerability. These results have implications for family-centred care and early intervention programs targeting parental mental health in the context of childhood developmental disorders.

Keywords: Perceived social support, psychological distress, neuro-developmental delay, parental mental health, early childhood, caregiving stress.

Introduction

Neurodevelopmental disorders (NDDs) are a group of conditions that typically manifest early in a child's development and are characterised by impairments in personal, social, academic, or occupational functioning (American Psychiatric Association, 2013). These impairments may include deficits in communication, social interaction, motor function, and cognitive processing, and can result in significant behavioural challenges, poor self-care, and reduced educational attainment. Common examples of NDDs include autism spectrum disorder (ASD), cerebral palsy, epilepsy, and intellectual disabilities. The management of children with neurodevelopmental disorders (CNDs) is complex and multifaceted, constituting a major public health concern that warrants sustained policy, research, and service-level attention (Olagunju et al. 2017). The challenges of caring for a child with a neurodevelopmental disorder extend beyond the affected child and significantly impact the well-being of their caregivers, particularly parents. Parents are often the primary caregivers and are responsible for decisions regarding diagnosis, treatment initiation, and ongoing care. The increasing shift toward community-based and family-centred care has further emphasised the central role of caregivers in the management of CNDs. However, caregiving in this context is frequently accompanied by elevated stress due to the child's behavioural difficulties, communication deficits, social impairments, and the stigma associated with disability (Estes et al. 2013; Davis & Carter, 2008). Moreover, societal attitudes toward disability can intensify caregiver distress. While parenthood is generally viewed positively, the birth of a child with a disability is often perceived negatively, contributing to emotional conflict and social isolation within families (Jones, 2019). Parents may also bear significant financial burdens related to the high cost of treatment, rehabilitation services, and educational interventions, often without sufficient institutional or governmental support, particularly in low and middle-income countries (Olagunju et al. 2017).

Research from high-income countries has consistently shown that parents of children with NDDs are at greater risk for psychological distress, including symptoms of anxiety, depression, and somatic complaints (Dardas & Ahmad, 2014; Keenan et al. 2016). However, the majority of this literature is Western-centric, and there remains a paucity of research from low-resource settings where cultural norms, stigma, health system limitations, and socioeconomic stressors may shape caregiving experiences differently. The limited availability of localized data poses a barrier to the development of contextually appropriate interventions and services aimed at supporting caregivers and improving child

outcomes. One critical factor that may buffer the effects of caregiver burden is perceived social support, the subjective evaluation of available emotional, informational, or practical assistance from family, friends, and significant others (Zimet et al., 1988; Taylor, 2011). Higher levels of perceived social support have been associated with better psychological outcomes among caregivers, including lower levels of depression, anxiety, and parenting stress (Mourya & Singh, 2016). In contrast, unsupportive or stigmatising social interactions may exacerbate caregiver strain and negatively affect their mental health (Jones, 2019).

Psychological distress, defined as the experience of unpleasant emotions that interfere with daily functioning, may be heightened when caregiving demands exceed available personal and social resources (Encyclopaedia of Psychology; Vivian Khami, 2018). Chronic exposure to such distress can impair the quality of care provided to the child and diminish caregiver engagement with treatment services. Despite the established importance of social support and caregiver well-being in the management of CNDs, there is a critical gap in empirical evidence from India and other low and middle-income contexts. Understanding how perceived social support influences psychological distress among caregivers is essential for informing interventions and health system responses tailored to the needs of families in these settings.

Perceived social support refers to an individual's subjective appraisal of the availability and adequacy of emotional assistance from their social network, including family, friends, and significant others (Zimet et al. 1988). Unlike objective measures of support, perceived support emphasises how individuals evaluate the quality and reliability of social resources, particularly in times of stress or crisis. It is this perception rather than the actual amount of support received that has been consistently associated with better psychological adjustment and reduced vulnerability to mental health difficulties (Cohen & Wills, 1985). In the context of caregiving for children with neurodevelopmental disorders, perceived social support has emerged as a crucial protective factor. It has been shown to buffer the negative impact of caregiving stress, reduce psychological distress, and improve caregivers' overall quality of life (Mourya & Singh, 2016; Taylor, 2011).

The present study aims to examine the impact of perceived social support on psychological distress among parents of children with developmental delay. Additionally, the study investigates gender differences in levels of psychological distress, with a particular focus on mothers and fathers as primary caregivers.

Method

Participants

Participants were recruited from among the client population of the National Institute for Empowerment of Persons with Multiple Disabilities (NIEPMD), located in Chennai, Tamil Nadu, India. The sample comprised 50 parents (mothers and fathers) of children diagnosed with developmental delay, whose children ranged in age from 1 to 6 years. A purposive

sampling technique was employed to select participants who met the inclusion criteria, namely, being the primary caregiver of a child formally identified with a developmental delay. This non-random sampling method was chosen due to the specific nature of the target population.

Measures

A structured socio-demographic data sheet was employed to gather relevant background information from participants, including age, gender, marital status, educational qualifications, occupational status, and their relationship to the child. Before participation, all individuals were provided with a detailed explanation of the study's objectives, procedures, and voluntary nature. Informed written consent was obtained following ethical standards, with strict assurances regarding participant anonymity and data confidentiality.

Perceived social support was assessed using the Multidimensional Scale of Perceived Social Support (MSPSS) developed by Zimet et al. (1988). This 12-item self-report instrument evaluates perceived social support across three sources: family, friends, and significant others. Each item is rated on a 7-point Likert scale ranging from 1 (very strongly disagree) to 7 (very strongly agree), with higher scores indicating greater perceived support. The MSPSS provides a total score and three subscale scores. The scale has demonstrated strong psychometric properties, including good internal consistency (Cronbach's α = .68 to .86, Costa & McCrae, 1992) and excellent test-retest reliability (r = .86 to .90; Robins et al., 2001).

Psychological distress was measured using the Kessler Psychological Distress Scale (K10) (Kessler et al. 2002), a 10-item self-report scale designed to screen for non-specific symptoms of psychological distress experienced over the past four weeks. Responses are rated on a 5-point Likert scale ranging from 1 (none of the time) to 5 (all of the time), producing a cumulative score ranging from 10 to 50. Total scores are interpreted as follows: 10–19 suggests the respondent is likely to be well; 20-24 indicates mild psychological distress; 25-29 indicates moderate distress; and 30-50 suggests severe distress. The K10 has been shown to have excellent internal consistency (Cronbach's α = .90 to .95) and high test-retest reliability (r = .78 to .90), and has been validated across multiple clinical and general populations (Robinson & Price, 1982; Failde et al. 2000).

Procedure

Potential participants were approached in person at the NIEPMD outpatient services. They were informed about the aim, procedures, and voluntary nature of the study. Those meeting the inclusion criteria were invited to participate, and informed consent was obtained. The participants completed the MSPSS and K10 scales, along with the socio-demographic form. The average time required to complete the questionnaires was approximately 10 to 15 minutes. Assistance was provided to participants where needed, particularly in cases of limited literacy. The ethical integrity of the research was maintained by ensuring voluntary

participation, anonymity, and the use of publicly available, non-commercial research tools. All data were collected and managed under ethical standards for human subjects research.

Statistical Analysis

Data were analysed using IBM SPSS Statistics (Version 25). Descriptive statistics were calculated to summarise the demographic characteristics of the sample. Inferential analyses included Pearson's correlation analyses, which were used to assess the relationship between perceived social support and psychological distress. Independent-samples *t* tests were conducted to examine gender differences.

Results and Discussion

The data were analysed using descriptive and inferential statistics to examine the relationship between perceived social support and psychological distress among parents of children with developmental delay. The mean score for perceived social support was M = 5.01 (SD = 1.42), and the mean score for psychological distress was M = 25.12 (SD = 8.96), with respective Shapiro-Wilk values of W = .930 and W = .954, indicating acceptable normality of distribution.

Table 1: Correlation analysis between perceived social support and psychological distress

	PSS
Perceived Social Support (PSS)	-
Psychological Distress (PD)	-.480**

**Correlation is significant at the 0.05 level. **Correlation is significant at the 0.01 level*

The correlation analysis (Table 1) revealed a statistically significant negative association between Perceived Social Support (PSS) and Psychological Distress (PD), with a Pearson correlation coefficient of r = –.480, p < .01. This moderate negative correlation indicates that as levels of perceived social support increase, levels of psychological distress among parents of children with developmental delay tend to decrease. These findings are consistent with prior research suggesting that social support serves as a critical protective factor against psychological morbidity in caregiving populations (Cassel, 1976; Cutrona & Russell, 1987). The significance of this relationship reinforces the buffering hypothesis, which posits that perceived social support mitigates the negative psychological impact of stressors by enhancing coping capacity and reducing emotional burden (Cohen & Wills, 1985). In the context of caregiving for children with developmental disabilities, where chronic stress is common, perceived support from family, friends, or significant others appears to play a crucial role in safeguarding parental mental health. Notably, this finding aligns with studies demonstrating the inverse relationship between social support

and psychological distress across diverse caregiving and clinical populations (Dardas & Ahmad, 2014; Siedlecki et al., 2014). It also supports evidence indicating that parents' perception of available support may be more influential than the objective availability of support itself in determining psychological outcomes (Zimet et al., 1988; Zamani-Alavijeh et al., 2017). Taken together, these results highlight the importance of fostering strong social support networks for caregivers, particularly in low-resource or high-stress caregiving environments. Clinical interventions and public health policies aimed at reducing caregiver burden should prioritize strategies that enhance both the actual and perceived availability of emotional and instrumental support.

Table 2: Predicting perceived social support and psychological distress among parents of children with developmental delays.

Predictors	Psychological Distress	
	β	t
Perceived Social Support	.480	3.788**
R2	.230	
F	14.350**	

* $p<0.05$, ** $p<0.01$

Linear regression analysis (Table 2) was conducted to examine whether Perceived Social Support (PSS) significantly predicts Psychological Distress (PD) among parents of children with developmental delay. The model was statistically significant, $F = 14.35$, $p < .001$, indicating that perceived social support accounts for a significant proportion of the variance in psychological distress. The model explained approximately 23 per cent of the variance in psychological distress scores ($R^2 = .230$), which suggests a moderate effect size. The standardised regression coefficient ($\beta = -.480$) indicates a significant inverse relationship between perceived social support and psychological distress, with a corresponding t-value of 3.788 ($p < .01$). This implies that higher levels of perceived social support are associated with lower levels of psychological distress in this caregiver population. These findings are consistent with the well-established stress-buffering hypothesis (Cohen & Wills, 1985), which posits that perceived social support reduces psychological burden by enhancing coping mechanisms in the face of chronic stress. The predictive utility of perceived social support is particularly salient in caregiving contexts, where sustained emotional and instrumental demands can lead to elevated distress if adequate support systems are lacking (Dardas & Ahmad, 2014; Siedlecki et al., 2014). Taken together, these results underscore the critical role of perceived social support as a protective psychological resource for parents managing the challenges of raising children with developmental delays. Intervention efforts that bolster caregivers' sense of social connectedness through peer support programs,

psychoeducation, or community integration may contribute to improved psychological outcomes and more sustainable caregiving.

An independent samples t-test was conducted to examine whether perceived social support and psychological distress among parents of children with developmental delay differed based on the gender of the child. There was a statistically significant difference in perceived social support reported by parents of male versus female children, $t = 3.021$, $p < .05$. Parents of male children reported higher levels of perceived social support ($M = 5.11$, $SD = 1.21$) compared to parents of female children ($M = 4.63$, $SD = 2.10$). The higher perceived social support among parents of male children may reflect underlying sociocultural preferences or biases in support availability. In many cultural contexts, male children are often valued more highly, which can result in increased community attention and assistance for families with male children (Gopalan et al., 2018). This societal bias may contribute to greater perceived support among these families. However, existing research on this topic presents mixed findings. For instance, Lawoko and Soares (2003) reported that mothers of children with special needs perceived lower availability of social support than fathers, suggesting that parental gender may also influence perceived support levels. In contrast, Dyson (1997) found no significant difference in perceived support between mothers and fathers of children with developmental disabilities, indicating that additional contextual or familial factors may play a role. In contrast, the difference in psychological distress between the two groups was not statistically significant, $t = 1.293$, $p = .261$. Parents of male children reported slightly lower levels of psychological distress ($M = 24.98$, $SD = 8.55$) compared to parents of female children ($M = 25.70$, $SD = 10.97$); however, this difference was not statistically significant. This suggests that the psychological burden associated with raising a child with developmental delays remains substantial, regardless of the child's gender. The challenges of caregiving in this context may outweigh gender-related differences, pointing to the universality of psychological distress among parents. While cultural norms and societal expectations can influence caregiving experiences, particularly with mothers often bearing the brunt of emotional and physical caregiving responsibilities, such gendered patterns may not always translate into statistically significant differences in measured distress. Mothers may experience greater psychological strain due to more limited social outlets, higher caregiving demands, and constrained opportunities for self-expression, whereas fathers may benefit from broader access to occupational and social networks that buffer distress. These findings emphasize the need to consider both gender-specific caregiving roles and sociocultural dynamics when assessing caregiver well-being. Importantly, they also highlight that psychological distress is a pervasive issue across caregiver subgroups. This aligns with findings from Lawoko and Soares (2003), who reported that both mothers and fathers of children with special needs experience comparable levels of psychological distress, reinforcing the notion that the caregiving burden in families of children with developmental disabilities is profound and widespread. Therefore, enhancing perceived social support, especially for mothers, through inclusive, family-centred interventions is critical to promoting psychological well-being among caregivers.

Implications

The findings of the present study have important implications for both research and practice. The study highlights the significance of identifying psychological distress among parents of children with developmental delays and underscores the need for appropriate psychological interventions to address these concerns. The results can further contribute to enhancing parents' willingness to seek social support by engaging in psycho-social interventions. Additionally, the study emphasises the importance of creating awareness about available social support services, such as respite care facilities and day care centres, which can serve as vital resources for families managing the challenges of developmental delays.

Limitations

Despite its contributions, the study has certain limitations that should be acknowledged. First, the relatively small sample size limits the generalizability of the findings to the wider population. Second, participants were recruited from a single organisation, which may not adequately represent the diversity of experiences among parents of children with developmental delays. Third, as the study was conducted exclusively in the Chennai region, regional and cultural factors influencing perceived social support and psychological distress may not be generalizable to other contexts. These limitations should be taken into consideration when interpreting the findings and designing future research.

Conclusion

The findings of the present study underscore the significant inverse relationship between perceived social support and psychological distress among parents of children with developmental delay. Specifically, parents who reported higher levels of perceived social support also reported lower levels of psychological distress, suggesting that social support serves as an important protective factor. This aligns with the buffering hypothesis, which posits that adequate social support can mitigate the adverse psychological effects of caregiving-related stress. In addition, the study revealed a significant gender difference in levels of psychological distress. Mothers were found to experience higher levels of psychological distress than fathers. This disparity may be attributed to the greater emotional and caregiving responsibilities often assumed by mothers, as well as to the influence of gendered societal roles that place heightened expectations on women in caregiving contexts. The findings also indicate that mothers may have more limited access to coping resources, thereby increasing their vulnerability to distress.

Collectively, these results emphasise the need for targeted psychosocial interventions aimed at strengthening perceived social support, particularly among mothers of children with developmental delays. By enhancing access to supportive networks and resources, such interventions can play a crucial role in promoting psychological well-being and reducing the emotional burden faced by primary caregivers.

Recommendations

The present study was conducted within a specific focus, scope, and set of limitations; therefore, several directions for future research are suggested. First, future studies may examine the same variables using samples drawn from different geographical regions of the country. Such studies could be conducted at zonal levels (East, West, North, South, or Central India) or expanded to a national level to enhance generalizability. Second, research could be extended to parents of children with disabilities living in rural areas, where awareness and access to services remain limited. Third, the role of additional factors, including comorbid conditions and psychosocial influences such as single parenting, parenting styles, parental personality traits, and sibling involvement, could be explored in relation to psychological distress and perceived social support. Finally, future studies may focus on developing and evaluating well-structured treatment plans tailored to children with specific developmental conditions such as autism spectrum disorder, intellectual disability, and learning disabilities.

Authors' Contributions

All 4 authors contributed to the development of this manuscript. K H, KN, SR, and SG conceived the initial review and developed the manuscript. KH and SG conducted methodological analysis of the studies and drafted the manuscript. KN and SR provided expert support concerning future intervention.

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Technological Time Compression and Decision-Making in India: A Historical and Information Technology Perspective

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Abstract

Information technology has transformed how societies experience time, memory, and decision-making. In India, this transformation has unfolded within a unique historical context shaped by colonial administration, post-independence bureaucracy, and rapid digital expansion in the twenty-first century. This paper develops Technological Time Compression Theory to explain how digital technologies collapse historical time by enabling instant access to past records, real-time information, and future-oriented predictive systems within a single decision-making moment. Using a historical and conceptual approach, the study contrasts pre-digital decision-making practices in India with contemporary digital environments shaped by platforms such as online archives, search engines, and e-governance systems. The paper argues that while technological time compression enhances efficiency, transparency, and accessibility, it also contributes to shallow historical engagement, cognitive overload, and impulsive judgment. The analysis highlights implications for governance, public policy, education, and ethical technology design in India. The paper concludes that restoring historical depth and reflective practices within digital systems is essential for sustainable and humane decision-making in an increasingly digitized Indian society.

Keywords: technological time compression, information technology, India, decision-making, digital history.

Introduction

Time has always played a central role in shaping human decision-making. In traditional

societies, historical knowledge accumulated slowly through oral traditions, written records, and institutional memory. Decisions were informed by experience, precedent, and cultural continuity rather than immediate access to information. In India, this temporal structure was deeply embedded in social institutions such as village councils, religious traditions, and administrative systems that emphasized continuity and gradual change.

The emergence of modern information technology has radically altered this relationship between time and decision-making. Digital platforms now provide instantaneous access to historical documents, legal records, economic data, and policy archives. Search engines retrieve centuries of information within seconds, while real-time media updates and predictive analytics further compress the temporal distance between past experience, present judgment, and future expectations.

In India, this transformation has been particularly rapid. The expansion of mobile internet, digital governance initiatives, and online information systems has reshaped how citizens, institutions, and policymakers engage with history and make decisions. While increased access to information is often associated with improved rationality and transparency, research in psychology and decision sciences suggests that excessive or poorly contextualized information can overwhelm cognitive capacity and lead to heuristic-driven judgment (Kahneman, 2011).

This paper introduces Technological Time Compression Theory, which conceptualizes information technology as a force that collapses historical time into a single decision-making space. The study addresses three central questions:

1. How did decision-making function in India's pre-digital historical contexts characterized by temporal distance and institutional memory?
2. How does instant digital access to historical information alter judgment and behavior in contemporary India?
3. What are the broader social, institutional, and ethical implications of technological time compression for Indian society?

By integrating historical analysis with insights from information technology studies, this paper argues that technological time compression produces both opportunities and risks. Understanding this duality is essential for designing digital systems, policies, and educational frameworks that promote reflective rather than reactive decision-making in India.

Historical Foundations of Decision-Making in India

Pre-Digital Temporal Structures

Before the advent of digital technologies, decision-making in India unfolded within

extended temporal horizons. Agricultural planning relied on seasonal knowledge passed down through generations, while trade decisions were informed by long-term relationships and accumulated experience. Governance structures, whether under pre-colonial kingdoms or British colonial administration, emphasized record-keeping, precedent, and gradual procedural change.

Colonial bureaucracy introduced extensive documentation systems, including land records, censuses, and legal archives. However, access to these records remained limited and mediated by institutional authority. Time functioned as a buffer, separating historical events from present decisions and allowing interpretation and deliberation.

This temporal distance encouraged contextual understanding. Historical knowledge was not consumed instantly but internalized through education, apprenticeship, and institutional practice. Errors and policy failures unfolded gradually, allowing learning and adaptation.

Transition During the Early Information Era

The introduction of printing, telegraphy, and mass media during the late colonial and early post-independence periods accelerated information flow but did not eliminate temporal separation. Newspapers, government gazettes, and radio broadcasts expanded public access to information, yet historical data still required interpretation and institutional validation.

Decision-making accelerated, but historical continuity remained largely intact. Time was shortened but not collapsed, preserving a balance between access and reflection.

Information Technology and Temporal Transformation in India

Digital Infrastructure and Instant Access

The liberalization of India's economy in the 1990s and subsequent digital expansion transformed information access. Online databases, digitized archives, and e-governance platforms now allow instant retrieval of historical records, policy documents, and economic data. Digital India initiatives have further integrated technology into governance, education, and public services.

Unlike earlier technologies, digital systems prioritize speed, relevance, and searchability over chronological order. Historical information appears alongside real-time updates and speculative projections, dissolving temporal hierarchy and creating a continuous informational present.

Technological Time Compression Theory

Technological Time Compression Theory proposes that digital technology compresses historical time by removing the temporal friction that once structured understanding. In the Indian context, this compression manifests through:

- Immediate access to historical and administrative records
- Rapid dissemination of information through digital media
- Algorithmic prioritization of relevance over context
- Reduced deliberation time between information exposure and action

The theory does not suggest that history disappears but that its cognitive processing changes. Historical data becomes instrumental, used to justify immediate decisions rather than to cultivate long-term understanding.

Cognitive and Behavioral Implications in the Indian Context

Information Abundance and Cognitive Overload

India's digital ecosystem exposes users to vast quantities of historical and real-time information. Psychological research indicates that such abundance can overwhelm cognitive capacity, encouraging reliance on mental shortcuts rather than analytical reasoning (Simon, 1957).

Instant access to historical examples may amplify availability bias, where easily retrievable events disproportionately influence judgment. In policy debates, media narratives, and public discourse, selective historical analogies are often invoked without sufficient contextual depth.

From Deliberation to Reaction

Historically, Indian decision-making processes emphasized consultation, discussion, and gradual consensus-building. Digital environments, however, reward speed and visibility. Social media platforms and 24-hour news cycles create pressure for immediate responses, often at the expense of careful analysis.

Technological time compression thus reshapes norms of judgment, privileging immediacy over reflection and responsiveness over resilience.

Comparative Analysis of Decision Cycles

Pre-Digital Decision Cycles in India

In pre-digital contexts, decision cycles were iterative and cumulative. Institutional memory played a central role in governance, and historical precedent informed policy development. Feedback loops were slow, allowing errors to be identified and corrected over time.

Historical continuity provided stability, grounding decisions in long-term social and economic patterns.

Digital Decision Cycles in Contemporary India

Digital decision cycles are immediate and recursive. Historical references are accessed instantly, but often without interpretive depth. Feedback is rapid, public, and amplified across networks. Errors can spread quickly, affecting large populations simultaneously.

While efficiency improves, systemic vulnerability increases. Technological time compression thus introduces new forms of risk alongside new capacities.

Social and Cultural Consequences

Fragmentation of Historical Understanding

Digital access fragments historical narratives into searchable data points. This fragmentation undermines coherent historical understanding, replacing narrative continuity with episodic consumption. In India, where historical memory plays a vital role in social identity, this shift has significant implications.

Historical complexity may be reduced to simplified analogies, reinforcing polarized interpretations and selective memory.

Temporal Anxiety and Decision Fatigue

Continuous exposure to past failures, present crises, and future uncertainties within a single informational space can generate anxiety and decision fatigue. Individuals and institutions face constant urgency, increasing the likelihood of impulsive judgment.

Implications for Governance and Public Policy in India

Policy-Making Under Compressed Time

The increasing reliance on digital platforms and real-time communication has significantly altered the temporal dynamics of governance in India. Policymaking today operates under conditions of compressed time shaped by continuous media cycles, instant public feedback, and heightened expectations of rapid administrative response. Digital news platforms, social media, and online grievance redressal systems have enhanced transparency and accountability, enabling policymakers to respond swiftly to emerging challenges. However, this acceleration also poses risks to the deliberative foundations of democratic governance.

Under conditions of technological time compression, policy decisions are often made in response to immediate public pressure rather than through extended consultation and careful evaluation. The demand for instant solutions can limit opportunities for stakeholder engagement, expert deliberation, and historical comparison. In crisis situations such as public health emergencies or economic disruptions, compressed timelines may encourage reactive policymaking, increasing the likelihood of unintended consequences. To address these challenges, Indian policy frameworks must incorporate institutional mechanisms

that deliberately slow decision cycles when necessary. Structured consultation processes, phased policy implementation, and review periods can help balance responsiveness with reflective governance. Embedding historical impact assessments into policy design may further ensure that decisions are informed by past experiences rather than driven solely by present urgency.

Preserving Institutional Memory

The digitization of governance in India must be accompanied by conscious efforts to preserve institutional memory and historical continuity. While digital records enhance accessibility and efficiency, they also risk fragmenting historical knowledge if contextual documentation is neglected. Administrative decisions, policy rationales, and implementation outcomes must be systematically archived with interpretive frameworks that allow future policymakers to understand not only what decisions were made, but why they were taken.

Preserving institutional memory is particularly vital in a diverse and complex polity such as India, where policy challenges often recur across decades. Robust digital archiving practices, standardized documentation protocols, and institutional knowledge repositories can safeguard historical continuity. By integrating contextual and interpretive layers into digital governance systems, India can mitigate the risks of technological time compression and ensure that governance remains informed by accumulated experience rather than confined to short-term responsiveness.

Ethical and Design Considerations in Indian Digital Systems

Technology Design and Temporal Depth

Design choices embedded within digital systems play a critical role in shaping how users perceive urgency, relevance, and time itself. In the Indian digital ecosystem, interfaces associated with e-governance portals, news platforms, and social media increasingly prioritize immediacy through real-time updates, alerts, and continuous information streams. While such design features enhance responsiveness and user engagement, they also intensify technological time compression by encouraging rapid consumption and immediate reaction. The constant presence of notifications and live updates reduces opportunities for reflection, reinforcing a sense of perpetual urgency.

Ethical technology design must therefore consider temporal depth as a central concern. Systems should be designed to support contextual engagement rather than merely maximizing speed and volume of information. Features such as archival pathways, layered information access, and contextual summaries can help users situate current information within broader historical and institutional frameworks. In public-sector digital platforms, incorporating explanatory notes, policy timelines, and references to earlier decisions can promote informed engagement. As Floridi (2014) argues, ethical digital environments should enhance human agency rather than overwhelm it, enabling users to make considered

judgments rather than impulsive responses.

Responsibility of Digital Platforms

The responsibility for addressing technological time compression does not rest solely with individual users. Developers, platform designers, and policymakers collectively shape the temporal experience of digital systems. In India, where digital platforms increasingly mediate governance, education, and public discourse, this responsibility carries significant social and ethical weight. Algorithmic curation, interface design, and content prioritization influence not only what users see but how quickly they are expected to respond.

Embedding historical context and interpretive tools into digital systems can mitigate the risks associated with compressed time. Platforms can incorporate mechanisms that foreground background information, historical continuity, and institutional memory alongside real-time updates. Policymakers, in turn, must establish ethical guidelines and design standards that promote transparency, contextual understanding, and temporal balance. By aligning technological innovation with ethical responsibility, Indian digital systems can foster reflective engagement while preserving the benefits of efficiency and accessibility.

Education, Historical Literacy, and Future Research Directions

Educational institutions in India face the urgent task of preparing learners to navigate digital environments characterized by compressed temporal experiences. Traditional education systems have often emphasized the acquisition and recall of information; however, in a context where historical data is instantly accessible, such an approach is no longer sufficient. Instead, education must prioritize historical interpretation, contextual reasoning, and critical engagement with digital information. Digital literacy in contemporary India should therefore extend beyond technical proficiency to include the ability to assess sources, interpret historical continuity, and recognize the ethical implications of algorithmically curated content.

Historical literacy in the digital age involves understanding not only what information is available but also how it is framed, retrieved, and prioritized. Students must be trained to distinguish between surface-level historical references and deeper structural patterns that shape social, political, and economic outcomes. Incorporating historical case studies into digital learning platforms can help learners situate present challenges within broader temporal frameworks, fostering reflective judgment rather than reactive decision-making. Such educational approaches are essential for cultivating informed citizens capable of engaging responsibly with digital systems.

At the same time, the conceptual foundations of Technological Time Compression Theory invite further empirical investigation. Future research can examine how instant access to historical information affects decision-making across different social and institutional contexts in India. Behavioral studies comparing decision outcomes with and without

immediate historical access can provide insights into the cognitive consequences of temporal compression. Longitudinal research may further explore how sustained exposure to compressed digital environments shapes individual cognition, organizational behavior, and policy outcomes over time.

Interdisciplinary research that integrates education, information technology, psychology, and history will be particularly valuable in advancing this field. By linking pedagogical practice with empirical inquiry, future scholarship can refine theoretical understanding while informing the design of educational and digital systems that restore temporal depth and promote reflective engagement in India's rapidly evolving digital society.

Conclusion

Technological Time Compression Theory provides a novel framework for understanding how information technology reshapes decision-making in India. By collapsing past, present, and future into a single digital moment, technology transforms cognitive processes, social norms, and institutional practices.

While technological time compression enhances access and efficiency, it also risks shallow understanding, impulsive judgment, and systemic vulnerability. Addressing these challenges requires integrating historical awareness into technology design, governance, and education.

Recognizing time as a human and historical dimension not merely a technical variable is essential for building resilient, ethical, and reflective digital systems in India.

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Management of Freedom of Speech in social media: With Special Reference to Fake News and Hate Speech

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Abstract

Free expression and speech are the cornerstones of any democratic nation. Social media, which has emerged, has made its management difficult by releasing a flood of falsehoods, misinformation, and hate speech. Social media gives people the power to communicate now, but it also fosters fertile soil for the quick propagation of toxic and polarizing material. Freedom of expression and speech is the pillar on which every democratic nation stands. Social media has revolutionized the way of communication, unleashing unfettered opportunities for input and dissemination of information. But at a cost, as misinformation and hate speech have gone viral at breakneck speeds that threatened social cohesion and the integrity of information networks. This article discusses balance between freedom of speech protection and restriction of false news and hate speech, focusing on constitutional principles, legislations, and court decisions. This study examines regulation of freedom of speech on social media with respect to misinformation and hates content. This paper examines Indian constitutional provisions, legislative enactments, and court judgments and comparative international trends. The piece concludes on proposing a balanced regulatory framework that will protect freedom of expression but also respond to its abuse within the virtual arenas.

Keywords: Digital Regulation Fake News, Freedom of Speech, Hate Speech, and social media

1. Introduction

The digital age has made communication a borderless, real-time experience. Facebook,

X (formerly Twitter), Instagram, and YouTube are platforms that now are used as spaces for political discourse, activism, and social debate. These same platforms, however, are also the breeding grounds of fake news and hate speech, which bring about social unrest, mob attacks, and institutional distrust. But they are also used as tools of spreading false information, hate speech, and misinformation that has the tendency to lead to polarization, mob lynching, and political engineering. Freedom of speech as guaranteed under Article 19(1)(a) of the Constitution of India provides every citizen a right to express freely their opinions. However, this right is subject to reasonable limitations under Article 19(2). On the grounds of public order, decency, morality, and state security. Satisfying these cross-cutting interests in the social media era presents one of the most important governance dilemmas of the 21st century.

Freedom of speech not only encompasses the right to hold opinions, but also to receive and communicate information. It is the pillar of democratic government. Yet uncontrolled expression on the internet can destroy democratic discourse itself if it propagates hate or disinformation. As Justice Louis Brandeis said in Whitney v. California (1927), "the remedy to falsehood is more speech, not enforced silence." However, in the case of social media, where false news can spread to millions in seconds, "more speech" will not necessarily be enough without accountability measures.

Article 19 of the Universal Declaration of Human Rights (1948) and Article 19 of the International Covenant on Civil and Political Rights (ICCPR) enshrine free speech subject to public order and national security. The European Union's Digital Services Act (DSA, 2022) provides transparency requirements and responsibility for platforms that host illegal or detrimental content. The United States, through the First Amendment, provides comprehensive free speech protection but grapples with regulating hate speech and disinformation on social media.

Social media universalizes expression but decentralizes accountability. Anonymity and virality of online communication render it a challenge to trace and control illicit speech. Some of the major issues are: Misinformation and Fake News: Purposive spreading of false information for political or monetary gain. Hate Speech: Content that promotes violence, discrimination, or hostility against certain groups on grounds of religion, caste, ethnicity, or gender. Echo Chambers: Algorithms that affirm users' biases and polarize public sentiment. Accountability: Establishing liability speaker, platform, or intermediary.

Information Technology Act, 2000: Section 66A (struck down in *Shreya Singhal v. Union of India*, 2015) previously criminalized offensive online speech. Section 69A empowers the government to block public access to content in the interest of sovereignty, integrity, or public order. IT (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021 impose obligations on social media intermediaries to remove unlawful content upon notice and to trace originators of messages. **Bhartiya Nyaya Sanhita, 2023:** Section 196, 197 Promoting enmity between different groups on grounds such as religion, race, place of

birth, residence, language, etc., and acts prejudicial to maintenance of harmony. Deliberate and malicious acts, intended to outrage religious feelings of any class by insulting its religion or religious beliefs. Section 356 Top of FormBottom of Form

Making, publishing, or circulating any statement, rumour, or report with intent to cause, or likely to cause, fear or alarm to the public, or incite offences against the State or public tranquillity.

2. Literature Review

India has laws in place, such as the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, also known as IT Rules 2021, that put several responsibilities on intermediaries and social media platforms for the removal of certain content. Indian users are being exposed to fake news through social media, which may affect trust in information ecosystems and even behaviour.

A wider review by Madan (2022) "Understanding misinformation in India: The case for a meaningful regulatory approach for social media platforms" underlines that, in India, the "regulatory, technological, and social dynamics require particular calibration" (languages, diversity, digital literacy). He argues that regulatory approaches need to be meaningfully tailored to the context in India. It warns against a blunt instrument regulation that may chill speech. Issues of enforcement include definitional ambiguity about what constitutes fake news or hate speech, possible jurisdictional issues with platforms operating across borders, resource constraints, and lack of transparency in moderation.

Fake news-or more precisely, disinformation/false information-is increasingly studied in the Indian context. Dissemination of fake news is seen to have severe consequences: erosion of public trust, polarisation, communal violence. For instance, research underlines how mis- or disinformation regarding minority communities during COVID-19, such as #Coronajihad, had real-world consequences. A preference for platform self-regulation is questioned; some studies argue for stronger oversight. "Stop Fake News: AI, Algorithms and Mitigation Actions in India" by Biju & Gayathri (2023) discusses the assessment of the usage of algorithmic tools in India and their limitations.

Dave & Arya 2024 note these issues. Technical literature, for example, Murugan et al., 2024, highlights challenges pertaining to detection in Indian social media data-code-mixed languages, semantics, and all that are highly local in context-make this moderation complex. Most of the regulatory pieces are still underdeveloped-for instance, the state bills are still in draft-and academic critique of them has just begun to emerge. Ajay Kumar 2025 notices the gaps in India's legal accountability framework on fake news. "Fake News and Communal Violence: Examining the Gaps in India's Legal Accountability Framework", 2025, has defined fake news as "intentionally misleading information that can incite communal tensions".

Technical study "Challenges and Insights in Identifying Hate Speech and Fake News on Social Media" by Murugan et al. (2024) uses evidence from India to show that the detection of combined fake news/hate-speech narratives is more complex. Alam, Iftikhar; Raina, Roshan Lal & Siddiqui, Faizia (2016) Examines attitudes among Indian social-media users-a sample of 200 across five states/UTs-toward free speech and hateful/"offensive" content. Finds that hate-posts/messages are on the rise and increasing user participation in such content. Useful for background on user perceptions and early social-media dynamics in India.

A wide-ranging literature review of misinformation/fake news in India, plus policy/regulatory analysis using a PASTEL framework. Very useful for framing regulatory/contextual issues. Data-driven study of "fear speech" in Indian WhatsApp groups (politics), showing how fear-based messages may lead to hatred. Good for the "social media propagation" mechanism side. More technical/ML-oriented: builds a dataset for hate speech in the Marathi language and baseline models. Useful for exploring the complexity of Indian linguistic/contextual environment. Jinna, M. A. (2024). Sociological study of misinformation, public trust, and digitisation in India; emphasises digital literacy, regulatory frameworks, and cross-sector collaboration. Good for "public trust / societal impact" perspective.

Good for developing an understanding of the structural/contextual side of hate-speech regulation in India. Sen, Pallavi (2023). Presents a critical review of Indian media and hate-speech laws regarding the balance between free expression and regulation. Good source for the legal/regulation leg of your review. Sahū, Meena Ketan & Singh, Pankaj (2025). Qualitative study focusing on the socio-political, legal, cultural dimensions of hate speech in India; it investigates how the latter marginalizes vulnerable communities and erodes democratic participation. Helpful in discussion of impacts and consequences. Sajlan, Devanshu (2024): It zeroes in on caste-based hate speech online and the application, or lack of it, of Indian laws on hate speech against Dalits. This is important in underlining the non-religious aspects of hate speech in India-caste and class. Dave, Nareshkumar J & Arya, Dr Hemangini (2025): Studies the legal-regulatory framework to combat fake news in India, discussing the Information Technology Act and Intermediary Guidelines 2021, among other issues. Choudhary, Ishika & Mishra, Asish (2024). Focuses on news broadcasting and misinformation in India, regulatory mechanisms; helpful for bridging.

3. Methodology

3.1 Research Design

Qualitative-descriptive research design would be most applicable to the present study in exploring how freedom of speech is managed within social media platforms. Attention would be given to how fake news and hate speech are regulated and moderated. In this regard, doctrinal analysis of legal frameworks shall be conducted together with empirical insights via case studies, official reports, and interviews with stakeholders.

3.2 Objectives

The methodology is designed to achieve the following: analyse the pertinent laws and policies in relation to the freedom of speech and content moderation on social media; assess how social media platforms manage fake news and hate speech while balancing users' right to free expression; assess the effectiveness and ethical implications of these management practices.

3.3 Data Collection Methods

Primary Data: It would be collected from semi-structured interviews with experts like policymakers, social media content moderators, journalists, and legal scholars. The questionnaire survey can also be distributed to the social media users to assess the public perception of free speech and censorship.

Secondary Data: Academic journals, policy documents, court cases, legislation, and official statements from social media companies. Reports from organizations such as UNESCO, UNHRC, and digital rights NGOs are also used.

3.4 Sampling Technique

For the sampling strategy, a purposive type was selected wherein experts and participants are knowledgeable about the subject under study. The sample size for interviews is limited to 10–15 because in-depth qualitative insights are required.

3.5 Data Analysis

Collected data are analysed using thematic analysis. Qualitative responses and legal texts are coded into key themes such as regulatory frameworks, platform self-governance, balance between speech and harm prevention, impacts on democratic discourse, challenges in identifying fake news and hate speech. The comparison across jurisdictions (for example, India, EU, and the USA) is conducted for finding differences between regulatory approaches.

3.6 Scope and Limitations

The research focuses on major social media platforms: it investigates primarily English-language content on Facebook, X/Twitter, YouTube, and Instagram. Limitations include restricted access to proprietary moderation algorithms, the potential for biased self-reporting data, and rapid regulatory evolution.

3.7 Ethical Considerations

The identities of all participants are kept confidential; informed consent is attained before interviews. Secondary data will be correctly cited to avoid issues such as plagiarism. The study upholds academic neutrality without the endorsement of any political stance.

4. Case Studies and Global Perspectives

It has always been the judiciary's balancing act between free expression and social responsibility. The courts in India attempted a delicate balance between freedom and regulation: In fact, courts have increasingly weighed in on behalf of responsible free speech in online spaces. Meanwhile, civil society organizations like IFF and CIS also campaign for transparency in platform moderation and protection from arbitrary censorship. Organizations such as the IFF, the CIS, among others, are advocating for transparency in platform moderation and protection from arbitrary takedowns. Similarly, the courts of India have emphasized responsible digital citizenship and the need for a balanced regulation respecting both free expression and public order (Bhatia, 2023).

Shreya Singhal v. Union of India (2015): The Supreme Court has struck down Section 66A of the IT Act as unconstitutional for its vagueness and chilling legitimate expression. In the landmark judgment, the Supreme Court of India abrogated Section 66A of the Information Technology Act, 2000, which criminalized "offensive" online speech, on grounds that it was vague, overbroad, and ran afoul of Article 19(1)(a) of the Constitution of India guaranteeing "freedom of speech and expression." Free speech extends to digital platforms, but there is a fair acknowledgment of the reasonable restrictions on speech in cases involving defamation, incitement to violence, or threat to public order. The judgment sets a precedent in the light of laws on governing online expression not emerging as tools of censorship.

Anuradha Bhasin v. Union of India (2020): The Constitution recognized internet access as intrinsic to freedom of expression and trade. - In this judgment, the Court accepted that access to the Internet was a part of freedom of speech and trade under Article 19.

Pravasi Bhalai Sangathan v. Union of India, (2014) The Court insisted on the strict implementation of the already existing laws to control hate speech, rather than proposing new ones, which might limit freedoms.

In this case, the Supreme Court emphasized that hate speech should be addressed by effectively enforcing the existing legal framework rather than creating new laws that could potentially affect constitutional freedoms. The Court held that: The problem is not the absence of law, but the lack of efficient implementation of current laws such as the IPC, CrPC, and Representation of the People Act. Judicial overreach in creating new offences is undesirable. Authorities must act promptly and enforce existing provisions to curb hate speech.

During the 2019 General Elections and the COVID-19 pandemic, there was a proliferation of fake news that posed greater challenges to the democratic and public health frameworks of India. WhatsApp and Facebook are widely used to share misinformation on political issues, religious themes, and health concerns. Social media platforms were accused of amplifying hate speech and inflammatory content in several cases, including the Delhi Riots (2020) and Manipur Violence (2023).

The Press Information Bureau (2020) informs that the Fact Check Unit was put in place to regulate misinformation about government initiative programs. WhatsApp further put in restrictions on forwarding messages in efforts to contain misinformation that spread through its services like wildfire. Such measures countered mass misinformation but presented a different problem of overreach by a state and selective censorship. According to the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, social media intermediaries have been directed to remove unlawful content within specific time limits and to provide for grievance redressal officers in India (Mehta, 2022). While critics have decried the rules as damaging to free expression, supporters contend it brings accountability and protects users from harmful speech (Kumar & Sinha, 2022).

Still developing its regulatory framework, the Indian landscape continues to see state oversight pitted against platform autonomy. In Western democracies, the focus remains on transparency and accountability, while in most authoritarian regimes, the focus is on control. What is urgently required is a proportionate, transparent, and participatory governance that will protect both individual rights and societal harmony.

5. Recommendations & Future Directions

1. Develop Clear and Transparent Content Moderation Policies

Social media companies should develop and publish clear guidelines on how they will police fake news and hate speech; such policies need to clearly explain what misinformation and hate speech are, so people know the limits of free expression. The regulation of online speech should be done in a collaborative manner between governments, social media companies, civil society, and academic experts. An inclusive process helps achieve a proper balance between the protection of free speech and the limitation of harmful content.

2. Promote Digital Literacy and Ethical Standards

Digital literacy campaigns by the government, educational institutions, and NGOs on how to check the veracity of information, recognize misinformation, and understand the implications of forwarding or sharing fake or hate speech material, are necessary. Social media platforms must adopt self-regulatory codes of conduct that deal effectively with fake news and hate speech.

3. Algorithmic Transparency and Responsible Use of Artificial Intelligence

The platforms should be transparent about how algorithms promote or demote content. This could include independent audits and oversight bodies that help make sure algorithmic moderation does not result in excessive censorship and bias. In this respect, AI can be a very useful tool to identify and stem the spread of fake news and hate speech, but it needs to be applied in an ethical and transparent way with clear human oversight so as not to result in wrongful censorship or algorithmic bias.

4. Strengthen Legal and Policy Frameworks

The legislative frameworks dealing with hate speech and misinformation-whether in the form of IT Acts or Data Protection Acts-need revision in light of current digital realities but without disregard for fundamental free speech. Since social media platforms operate across borders, international cooperation remains imperative.

5.2 Future Directions

1. Interdisciplinary Research on Digital Speech Governance

There is a significant need for long-term, empirical investigations into the effects of content moderation policies on user behaviour, democratic participation, and freedom of expression. Newer systems based on blockchain or other decentralized networks offer interesting opportunities for community-driven moderation, which also deserves investigation in terms of efficiency and equity.

2. Assessment of AI-Based Moderation Tools and Cross-Cultural Perspectives on Free Speech and Regulation

Further studies are needed to establish the accuracy, bias, and ethical dimensions of the automated moderation systems put in place for fake news detection and hate speech. Comparative research will help in identifying context-sensitive strategies that help in strengthening freedom of expression while maintaining social harmony across different cultural and legal contexts.

3. Impact of Emerging Technologies (e.g., Deepfakes, Generative AI)

While generative AI is progressively becoming a mainstream phenomenon, new misinformation vectors, such as synthetic media or deepfakes, pose an added layer of challenge. More research is needed regarding how such content is effectively regulated and verified.

6. Conclusion:

Free speech requires a delicate balance in safeguarding expression while mitigating harmful content on social media platforms. And the laws should keep up with technology to ensure accountability, transparency, and user awareness. The bottom line is that free speech in the digital space should support, not undo, democracy. Free speech on social media is a double-edged sword; it forms both the most empowering and the most dangerous tool of the modern era. Among the most complex challenges of the digital era is how to achieve an appropriate balance between freedom of speech and the need to take countermeasures against the spread of fake news and hate speech. The solution cannot come from rigid censorship; rather, it will be achieved through transparent governance, ethical use of technology, informed citizenship, and international collaboration. Protection of democratic values and human dignity in the digital public sphere would require further academic and policy-driven exploration.

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Masculinities in Crisis: Post-Industrial and Post-Colonial Contexts

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Abstract

The current study explores how masculinities are portrayed in post-industrial and postcolonial settings, looking at how social, cultural, and economic changes have undermined traditional ideas of male identity. The collapse of colonial hierarchies and the emergence of hybrid postcolonial nations in the West are accompanied by the fall of industrial capitalism and the breakdown of traditional labour economies. When taken as a whole, these factors create a significant *crisis of masculinity*, in which males find it difficult to balance ingrained patriarchal norms with changing power structures and international uncertainties. Using theoretical frameworks from postcolonial criticism (Bhabha's *hybridity*, Fanon's *psychological decolonization)*, gender studies (Connell's *theory of hegemonic masculinity* and Butler's *performativity*), and cultural materialism, the study investigates how literary texts depict this crisis through stories of displacement, loss, and redefinition. The article examines how male protagonists deal with the fallout from imperialism and global capitalism while feeling alienated from their jobs, families, and countries through in-depth readings of a few post-industrial and postcolonial novels, including those by authors like Ian McEwan, Salman Rushdie, Arundhati Roy, and Hanif Kureishi. According to the article, these fictions present fresh, frequently shattered ideas of masculinity that defy neoliberal individualism and patriarchal nostalgia. The study illustrates how literature may be used as a diagnostic tool to comprehend the gendered effects of socioeconomic restructuring and postcolonial transition by following the interconnections of race, class, labour, and cultural displacement.

Keywords: Masculinity Studies, Postcolonial Literature, Post-Industrial Society, Gender and Identity, Cultural Materialism, Crisis and Representation

1. Introduction

Global changes in the economics, culture, and power have had a significant impact on the idea of masculinity in the late 20th and early 21st centuries. Traditional conceptions of manhood, rooted in economic support, patriarchal authority, and national domination, have been undermined in both post-industrial and postcolonial contexts. These crises of masculinity are historically situated reactions to shifting material and symbolic contexts rather than being homogeneous or exclusively psychological. Men are forced to rethink their identities in light of new forms of labour, gender relations, and social belonging as manufacturing economies contract, neoliberal precarity grows, and postcolonial societies grapple with the legacy of empire.

In the Global North's post-industrial communities, the previously dominant role of the male breadwinner has become uneasy due to the decline of steady, industrial jobs. Male purpose and status concerns have been sparked by the move toward service economies, the emergence of feminist movements, and the reorganization of intimacy and family. Attempts to reinvent masculinity through emotional literacy, caregiving, and poly gender expressions frequently alternate with sorrow for lost patriarchal privilege in the ensuing "crisis of masculinity" rhetoric. The vulnerability of hegemonic masculinity and the continuation of gender hierarchies despite seeming change have been brought to light by scholars like Michael Kimmel (2017) and R.W. Connell (1995).

On the other hand, the entwined legacies of colonial dominance, racialized modernism, and regional customs influence masculinity in postcolonial situations. Through systems of cultural servitude and economic exploitation, the colonial encounter not only reshaped indigenous masculinities but also imposed Western gender norms. Following official decolonization, men in formerly colonized nations frequently face the twin challenges of regaining precolonial cultural authority while juggling internal inequality and external capitalist pressures. Postcolonial theorists like Pnina Werbner (2015) and Homi Bhabha (1994) have highlighted how these hybrid masculinities are torn between authenticity and desire, resistance and mimicry.

In order to investigate how global modernity creates overlapping but separate crises of male identity, this research study places masculinity at the nexus of these two conditions—post-industrial and postcolonial. By contrasting these frameworks, the study aims to shed light on the symbolic and structural aspects of masculine displacement, posing the question of how colonial legacies, cultural globalization, and economic restructuring interact to shape modern gender politics. The article examines whether "crisis" is a rhetorical device or a real disruption in the gender order using an interdisciplinary approach that incorporates ideas from sociology, cultural studies, and postcolonial theory.

In the end, this investigation hopes to add to larger discussions concerning social change and gender justice. Recognizing masculinities in crisis is a way to trace the fault lines of global inequity and cultural change, not only a way to diagnose male discomfort. This

study reconsiders what it means to be a man in a world characterized by displacement, hybridity, and the constant negotiating of power by placing masculinities inside both post-industrial decline and postcolonial recovery.

2. Theoretical Framework

A multifaceted theoretical framework that connects gender theory, postcolonial studies, and political economics is required for the research of masculinities in crisis. When post-industrial and postcolonial conditions come together, it becomes clear that masculinity is a historically contingent construct created through labour relations, power dynamics, and cultural discourse rather than a fixed or universal identity.

- ***2.1. Hegemonic Masculinity and the Dynamics of Crisis:*** R.W. Connell (1995) developed the fundamental idea of hegemonic masculinity, which offers an essential prism through which to view the social inequalities ingrained in masculinities. According to Connell's paradigm, hegemonic masculinity is a culturally dominant kind of manhood that undermines alternative masculinities and femininities and legitimizes patriarchy. However, this dominance is never absolute; it is always challenged and reorganized in reaction to societal shifts. Sociologists characterize the decline of the conventional male provider position, which was formerly essential to hegemonic masculinity, in post-industrial nations as a crisis of legitimacy. Men's historical claims to power through wage labor are being challenged by economic restructuring, the fall of manufacturing, and the rise of precarious service jobs. The compensatory forms of masculinity that emerge from the ensuing dissonance are frequently marked by seclusion, nostalgia, or anger (Faludi, 1999; Kimmel, 2013). The destabilization of the social institutions that traditionally supported masculinity—work, family, and nation—rather than the loss of masculinity itself is what causes the *crisis*. The idea of hegemonic masculinity is used in this article as a diagnostic tool rather than a categorical framework to show how various situations result in unique but related stories of male anxiety and adaptability.

- ***2.2 Intersectionality, Postcolonial Hybridity, and Cultural Identity:*** Although the concept of hegemonic masculinity sheds light on gender hierarchies, it needs to be broadened through intersectional and postcolonial perspectives in order to encompass the intricacies of race, class, and empire. The intersectionality theory of Kimberlé Crenshaw (1989) emphasizes how gender cannot be examined separately from other axes of power. Intersectionality and postcolonial theory, which studies how colonialism altered racial and gender identities through imitation and dominance, meet when applied to global contexts. Particularly relevant are Frantz Fanon's (1952) examination of *colonial masculinity* and Homi Bhabha's (1994) *concept of hybridity*. Racialized hierarchies of masculinity were established by colonial regimes, which positioned European manhood as superior and logical while infantilizing colonized males as weak or primitive.

Masculinities in the postcolonial aftermath are hybrid formations that balance imported modernities with local traditions. Both empowerment and alienation can result from this hybridity as postcolonial males try to regain agency within systems that are still influenced by neo-imperial cultural norms and global capitalism. This study rejects the idea that the *crisis* of masculinity is a worldwide phenomenon by including postcolonial philosophy. Rather, it places masculine identities in transnational labour, migration, and representational circuits, acknowledging the ways in which colonial histories continue to shape gendered subjectivities in a variety of contexts.

- ***2.3 The Political Economy of Gender: Neoliberalism and Global Capitalism:*** Changes in the global political economy also materially condition masculinities. Gender relations and the workplace have been reshaped by the shift from industrial capitalism to neoliberal globalization. Economic precarity and labour flexibilization, according to scholars like Raewyn Connell and James Messerschmidt (2005), have created *marginalized masculinities* among the working class and the unemployed as well as *transnational business masculinities* at the elite level. Individual competition and self-reliance—qualities traditionally associated with men—are valued in post-industrial contexts by neoliberal ideology, which also undermines the social structures that upheld these identities. Neoliberal changes in postcolonial nations can make gendered inequality worse by restoring patriarchal dominance in the home and lowering labor rights and state assistance. The paradox that emerges from both situations is that neoliberalism both destabilizes and commodifies masculinity, creating a generalized feeling of dislocation. Using a political-economic lens, this paper reveals how masculinity functions as a site of negotiation between local cultural practices and global structural pressures. The "crisis" is thus conceived not only as an emotional state but also as the result of structural changes in governance, migration, and production.

- ***2.4 Synthesis: Toward a Transnational Understanding of Masculinities in Crisis:*** Combining these threads, the study views masculinity as a relational field that is influenced by both the legacy of colonial modernity and the decline of industrial modernity. The concept rejects binary oppositions between *traditional* and *modern* or *Western* and *Non-Western* masculinities in favour of relationality, hybridity, and historical contingency. Rather, it sees crises of masculinity as dynamic processes that show how race, class, gender, and empire intertwine in the restructuring of global power. Because post-industrial and postcolonial masculinities are not distinct phenomena but rather interrelated reactions to common global processes, this theoretical synthesis enables a comparative and dialogic approach. To articulate more diversified and fair conceptions of gender identity in the twenty-first century, it is essential to comprehend these relationships.

3. Case studies: Masculinities in Crisis

- ***3.1. The Post-Industrial North: Deindustrialization and the Crisis of the Working-Class Male:*** The crisis of masculinity in the Global North is most evident in the erstwhile industrial heartlands, which were formerly characterized by steady male employment, collective labour identities, and working-class solidarity. Not only has the fall of manufacturing caused economic suffering, but it has also caused symbolic dislocation in places like northern England, the American Midwest, and sections of continental Europe. For example, ethnographic research conducted in post-industrial British towns like Sheffield and Sunderland (Nayak, 2006; McDowell, 2012) shows that the loss of industrial labor has undermined the male self-worth based on physical prowess, craftsmanship, and the role of provider. Men who once took satisfaction in working in the industrial sector today face hazardous positions in the service sector, prolonged unemployment, or being forced to leave the workforce. A widespread feeling of emasculation and bitterness results, which often manifests in social isolation, alcoholism, and conservative politics. The media and popular culture frequently reflect these fears. In movies like *Brassed Off* (1996) and *The Full Monty* (1997), working-class men without jobs try to regain their dignity through humour, community, and alternative masculinity performances. An ambivalent process of adaptation—an effort to balance post-industrial precarity realities with conventional masculine ideals—is highlighted by these stories.

- ***3.2 The Postcolonial South: Hybrid Masculinities in Postcolonial and Globalizing Economies:*** A distinct yet no less complex manifestation of the crisis of masculinity is found in postcolonial cultures. Here, colonial legacies and postcolonial modernities—rather than industrial and post-industrial economies—are at odds. Native gender hierarchies were altered by colonial control in nations like South Africa, Nigeria, and India, and Western ideas of masculinity that were linked to racist ideas of power and civilization were imposed. For example, postcolonial India. Indian men were frequently portrayed in colonial discourse as feminine in contrast to the British colonizer's muscular Christianity and imperial masculinity (Sinha, 1995). As a sign of anti-colonial power, nationalist movements in the postcolonial era aimed to recover an Indian manhood that was *virile.* New forces, such as media representations, global labour migration, and consumer culture, started to reshape male identity in the neoliberal 1990s and beyond. These days, urban Indian men must balance a number of frequently conflicting models, including post-feminist sensitivity, globalized cosmopolitanism, and conventional patriarchal power. Research on middle-class professionals and Indian contact centre workers (Mankekar, 2015; Upadhya, 2009) shows how emotional control, global consumption, and fluency in English—qualities that were previously thought to be *Western*—become associated with masculine identity. Family life, sexuality, and national belonging are all strained as a result

of these new masculinities' uneasy coexistence with traditional patriarchal norms. The intersection of racialized and classed masculinities with the legacy of colonial and apartheid violence is also discussed by academics like Morrell (2001) and Ratele (2013) in post-apartheid South Africa. Rather than inevitably dismantling gendered power structures, the fall of formal racial hierarchies has given rise to competing masculinities, ranging from the aggressive, hyper-masculine identities associated with poverty and exclusion to more progressive, gender-equitable models emerging within urban, educated elites.

- ***3.3 Transnational Intersections: Migration, Diaspora, and Masculinity:*** The experiences of migratory men who simultaneously traverse post-industrial and postcolonial cultures provide a third and vital case study. Migration provides a rich context for comprehending masculinity in crisis because it combines the fears of economic displacement with the lingering effects of colonial and racialized subordination. In Britain or Canada, for instance, South Asian and Caribbean diasporic communities frequently face dual displacement: first, as workers in unstable post-industrial economies, and second, as racialized subjects in cultures where whiteness is still implicitly associated with masculinity (Bhattacharyya, 2008; Alexander, 2013). While racism and xenophobia limit their possibilities and self-perception, migrant males often see the collapse of traditional patriarchal control as women acquire new economic and social roles overseas. However, alternative masculinities can also be made possible by diasporic places. Hip-hop, diasporic literature, and transnational films (like Gurinder Chadha's *Bend It Like Beckham*, 2002) are examples of cultural forms that offer spaces for the emergence of new hybrid identities that take pleasure in cultural diversity while redefining gender norms. As a result, the diasporic condition becomes both a sign of and a possible remedy for the masculine crisis: it upends the patriarchal system while simultaneously encouraging resistance and creativity.

- ***3.4 Comparative Insights:*** A pattern shows up in all of these examples, including post-industrial, postcolonial, and transnational ones. Local histories and global systems interact to shape the crisis of masculinity, which is a relational and contextual process rather than a solitary event. In post-industrial environments, neoliberal individualism and economic collapse cause masculinity to weaken. It battles the forces of globalization and the legacy of imperialism in postcolonial environments. It turns into a place where conflicting racial, class, and belonging standards are negotiated in transnational settings.

4. Post-Industrial Masculinity in Literature

Traditional male ideals were undermined by the post-industrial restructuring of Western countries, which changed family structures, social hierarchies, and labour markets (Hearn, 2012). These shifts frequently show up in literature as male characters experiencing psychological dislocation, alienation, and a loss of purpose.

These issues are explored in stunning detail in Ian McEwan's works. Male protagonists in *Enduring Love* (1997) struggle with the loss of social and emotional control in a world that is becoming more unpredictable and uncertain. Similarly, *Saturday* (2005) places masculinity in a London that is defined by socioeconomic precarity and technological innovation, where achieving success in the workplace does not equate to personal fulfilment. The dilemma of industrial-era masculinity in a post-industrial society is exemplified by McEwan's portrayal of men navigating the tension between social expectations and personal inadequacy.

Postcolonial perspectives on post-industrial masculinity in Britain are offered by Hanif Kureishi. In Karim's 1990 novel *The Buddha of Suburbia*, he traverses a multicultural London where masculine identity is redefined by class, race, and changing labour patterns. Male characters must rethink authority, desire, and power in the framework created by the emergence of creative industries and the decrease of traditional employment options. Kureishi's investigation highlights how complex, frequently conflicting masculinities are produced by the intersection of post-industrial and postcolonial dynamics.

Male identity is not just undermined in these writings; rather, it is contested and acted in response to social, cultural, and economic forces. Literature highlights the diversity of male experiences in modern civilizations and reveals the frailty of hegemonic masculinity.

5. Post-Colonial Masculinity in Literature

Gender, historical memory, racism, and cultural displacement are all intertwined in postcolonial contexts, which further exacerbate the crisis of masculinity. Identity is still shaped by the male norms that colonial authorities traditionally prescribed, which served to uphold power systems (Bhabha, 1994).

Both *The Moor's Last Sigh* (1995) and *Midnight's Children* (1981) by Salman Rushdie examine how masculine identity interacts with nationhood, cultural hybridity, and historical upheaval. Male leads frequently represent paradoxes: they are sidelined by postcolonial sociopolitical circumstances while inheriting colonial traditions. Reinvention and crisis are the outcomes of social and psychological pressures brought on by the internalization of imperial power dynamics. Rushdie's narrative style, which combines historical fiction, magical realism, and metafiction, captures the ambiguity and instability of masculine identity in postcolonial settings.

Similar to this, Arundhati Roy's 1997 novel *The God of Small Things* explores postcolonial masculinity, especially as it relates to caste, class, and colonial memory. Male characters frequently experience emotional suppression, estrangement, and failed attempts at power as they negotiate constrictive social norms and systematic injustices. Roy's writings show how postcolonial literature highlights the relationship between gendered experience and historical trauma, exposing the ways in which masculinity is both challenged and limited.

Collectively, these writings demonstrate how social stratification, historical brutality, and

cultural memory are intricately linked to postcolonial masculinities. Literature provides a prism through which the crisis of masculine identity can be critically analyzed, exposing both vulnerabilities and opportunity for reform.

6. Intersection of Post-Industrial and Post-Colonial Masculinities

Despite historical and geographic differences, post-industrial and postcolonial environments share common processes in their efforts to undermine traditional masculinity. In both, men are forced to negotiate their identities in ambiguous social terrains while hegemonic markers—economic authority, social privilege, and cultural dominance—erode (Connell, 2005; Kimmel, 2012). These intersections are portrayed in literature through male characters who deal with displacement, loss, and hybridity.

Kureishi's work is a prime example of this confluence in British-Asian literature, where male characters encounter postcolonial cultural hybridity and post-industrial job instability. Gender is contingent and variable, as demonstrated by the negotiation of masculine leadership in multicultural, economically unstable environments, which mirrors larger societal changes. In the same way, Rushdie and Roy show how postcolonial histories exacerbate the shakiness of masculinity by creating characters who have to deal with inherited hierarchies while adjusting to modern demands.

A more general theoretical conclusion is made by these intertwining crises: masculinity is not a static or unchanging concept. Rather, it is mediated by history, culture, and economics. Literary tales offer a critical platform for examining these interactions, exposing individual coping, adaptation, and redefining techniques in addition to systemic forces.

7. Discussion

The literary investigation of masculinities in crisis reveals a number of recurrent themes, including the conflict between tradition and modernity, loss of authority, identity negotiation, and interplay with race and class. By highlighting the social, historical, and psychological facets of male experience in post-industrial and postcolonial situations, literature serves as a diagnostic tool.

Typical markers of masculinity are undermined by structural dislocations that male characters frequently face. Hegemonic masculinity is under threat from the fall of industrial labour, the growth of the service and creative economies, and worldwide socioeconomic forces. Because of the intersection of gendered expectations with historical memory, cultural hybridity, and systematic inequity, postcolonial legacies further complicate male identity.

These narratives imply that crises can be beneficial as well. Literature creates space for new masculinities that are plural, flexible, and sensitive to modern realities by upending established conventions. Crucial elements that challenge the rigid ideal of hegemonic masculinity and broaden the purview of literary study are male fragility, emotional

complexity, and identity negotiation.

8. Conclusion

According to this study, post-industrial and postcolonial literatures offer a wealth of resources for examining the crises and evolution of masculinities. Social change, historical legacies, and economic collapse undermine traditional masculine identities, creating intricate tales of adaptation, negotiation, and alienation. By closely examining Kureishi, Rushdie, Roy, and McEwan, the study shows how literature exposes the performative, situational, and historically mediated aspects of masculinity.

It is important to consider how gender intersects with history, race, class, and global socioeconomic changes in order to comprehend masculinities in crisis. In addition to chronicling these crises, literature presents creative ideas for redefining masculine identity that prioritize adaptability, moral accountability, and cultural sensitivity. Masculinity in post-industrial and postcolonial contexts is constantly produced, challenged, and reshaped; it is neither constant nor homogeneous. Thus, literary studies offer a critical perspective for examining how masculinity is changing in modern communities.

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Innovation in Service Sector

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Abstract

Innovation is the key determinant in the success of a business enterprise. For keeping pace with the dynamic business conditions and environment, investment on the part of business organisations is needed. A business cannot remain visible in the market for a long period of time if it is not changing its process, product and perspective towards innovation. Research and development is one such investment that leads the path of organisation. Just as manufacturing sector, services sector also resort to innovative capabilities for meeting the changing patterns and demands of the economy. Therefore, through this paper an attempt is made to highlight and understand innovation in context of service sector and the role of innovation in the service industry through the relevant review of pertinent studies in the realm of innovation and service and sector. The findings of the study suggest the pattern of research in the area of service innovation.

Keywords: Innovation, service sector, research and development.

Introduction:

Innovation is understood as a process encompassing different actors exchanging and combining various resources in new ways (Perks, Gruber, & Edvardsson, 2012; Trott & Hartmann, 2009,). Innovation is a process of reconfiguring service ecosystems that extend beyond delivering new outputs to wider activities aimed at changing value co creation practices among multiple actors (Michel, S., Brown, S. W., & Gallan, A. S.2008). According to (Kahn, Kenneth B. 2018) innovation is studied under three different heads

that is innovation as a process, innovation as an outcome and innovation as a mindset. Of the three perspectives, innovation as a process encompasses the whole lot of activities undertaken including the research and development so as reach the desired level of performance. Innovation as a mindset focuses on instilling the innovative capabilities in people of the organisation followed by developing an innovation culture in the organisation. And innovation as an outcome focus on what results are expected out of the innovation practices such as such as product innovation, service innovation, supply chain innovation and business process innovation. Putting in simpler form the term "Innovation is defined under two heads:

(a) Innovation means the creation of something new or (b) improvising things that are already present in the market". Therefore, the kind of innovation an organisation that resort to is dependent on the overall objective of the organisation and the available resources.

The concept of product development is widely studied around the world. Innovation in service sector is primarily hidden unlike the one taking place in the production processes that is expressing and visible. But the literature concerning innovation in service sector is still evolving. Service industry accounted for 70% of the U. S gross domestic product in 2011 (Kim, Gilmore, and Jolliff 2012). But the notion of Service innovation is not so pronounced. the concept of product innovation is given due importance and is practised by firms in order to sustain competitive advantage which is earned by organisations with a support of research and development, investment in Information technology and other infrastructural facilities. On the other hand, the concept of service innovation has not attained attention and statues as that of product development although the status of developing service innovation indicators have been discussed by many researchers (Abreu, Grinevich, Kitson, & Savona 2010, and Schmoch and Gauch 2009) who all enunciate the need for the development for a specific service innovation matrix to be developed.

Though there are many concepts propounded for service innovation but a notable definition of service innovation (Den Hertog ,2010) as new service experience or service solution in the given dimensions such as new service concept, new customer interaction, new value system, new revenue model, new organisational or technological service delivery system. Service innovation becomes paramount in the complex business ecosystem where organisations strive to enhance their revenues. In order to deliver service innovation manufacturing and other product-centric firms are undergoing substantial organisational resource transformations (Baines, Lightfoot, Benedettini, & Kay, 2009; Gebauer, Fischer, &Fleisch, 2010,) Service innovation routes the organisation development on the favourable track. It has been studied that firms actually want to work towards service innovation processes and are keen enhance organisational capabilities for bringing innovation in services (Chandy and Tellis 2000).

In this study an attempt is made to understand the concept of service innovation. And to

analyse the work that has been undertaken in this segment in order to find solution to the variety of innovations needed in the service sector. Based on the analysis of the existing literature this review leads us to understand the gaps in existing literature and the various parameters of service innovation that have been suggested in various studies.

The review undertaken here is exploratory in nature aimed at understanding the varied kinds of constructs and variables undertaken in the relevant research studies undertaken in the domain of service innovation. This study will help us to derive meaning full conclusions regarding the approach of service innovation being followed by organisation across the world for bringing strategic changes.

Review of literature

Nguyen et al., (2024) this study focuses on ascertaining the impact of service innovation on consumer satisfaction and loyalty in the banking sector of Vietnam. For the conduct of the research the innovation has been studied from three areas such as novel service concept, novel service procedures and novel technological system. The findings of the study suggest that innovative practices positively enhance the customer satisfaction and loyalty through an effective focus on techniques of Artificial intelligence and customer relationship management.

Kowalkowski et al., (2024) the study aims to identify digital services innovation in business to business segment and the results indicate that IoT has the ability to transform the physical resources into service products. The research also asserts that artificial intelligence has the ability to augment the process of delivering innovative services in the business environment. Additionally, digital platforms also transform the organisational infrastructure for developing service ecosystem.

Fernando Henrique Taques, et al., (2021) Innovation is the route to survive in the era of competition. Therefore, firms find it appropriate to access the level of innovation and the underlying factors contributing towards the same. This research is focussed on analysing those indicators that result in organisational innovation. A set of 26 indicators have been listed for the purpose of research finds suggest that since there are different indicators supporting different aspects of innovation the researcher should understand and retrieve the type of information that is actually needed. The major limitation regarding this study is the biasness in the selection of the indicators and the cost involved in employing such indicators at the organisational level.

Peltier, et al ., (2020) Earlier studies have shown that value co-creation under the perspective of business to consumer interaction but the onset of digital infrastructure the relevance of customer-to-customer (C2C) interaction is bringing about a change in the service ecosystem. In this paper a digital information flow continuum is developed with the help of service dominant logic (SDL) to access the impact of digital information flow on the usage and perception towards telemedicine services. The study suggests that

service ecosystem actors (customers) have divergent effects on service quality. And there is a complex relationship between digital information flow and the acceptance of service innovation.

Vendrell-Herrero, et al., (2020) This research study is focussed on the role and interrelationship of Rand D team structure and information technology processes for the exploitation of firm's innovative capabilities considering the above facts the authors in this study had focussed on product service innovation (PSI) by analysing 352 manufacturing multinational enterprises. (MME'S) the results reveal that firms having high R and D and IT processes leads to higher level of PSI are in comparison to those not following the above practices. The findings also suggest that optimal organisational design also depend of effective IT processes and Rand D designs which are prerequisites in the dynamic service ecosystem.

Iden, J., Eikebrokk, T. R., &Marrone, M. (2020) the research is focussed on the creation of best digital services with customer in the centre by information system service organisations. The purpose of the research is to find out what mechanism does information system organisations need to follow to effectively contribute towards the innovative practices. The effective contribution that the study resulted in understanding of the concept of PFRs (process reference framework), a globally recognised process reference framework which will help the management of the organisation in developing capabilities for creating business values with customers in focus.

Bustinza, et al., (2019) this study analysis that weather strategic ambidexterity improves the product service innovation outcomes for manufacturing multinational enterprises (MME's). Sample for the review was undertaken from five world economies including the emerging economics so to generalise the findings and remove the heterogeneity in PSI across countries. Moreover, this study helps organisations in analysing the diverse business environment in which the firms have to compete. The results showed that for maximising firm performance PSI must be developed using both exploitation (cost efficiency) and exploration (R and D) pathway.

Morgan, et al., (2019) the study that has been conducted emphasis the relevance of the customer participation in the development of the innovative service development strategies the research is more pronounced in those industries that are influenced more by customers rather than competitor. With a sample of 226 big manufacturing organisations the results of the study are the first to support that customer participation in the NSD has a prominent role to play. And the role of environment in bringing about the inputs from customers for the new service development processes.

Keiningham, et al., (2019) Business model innovation (BMI) is the process of reinventing how an organisation creates product and services and deliver the same in order to generate revenue. More over BMI is important for the long term grown and survival of the firm in the dynamic business environment. And it has been reviewed that previous researches lack in

the statement of customer driven business models. The study has fulfilled this objective by bringing about a customer experience driven (CX) business model that connects customer needs with that of operations of the organisations.

Lütjen, et al., (2019) According to the study conducted the aim of this research is to examine the ecosystem related capabilities for the development of the service innovativeness in product centred firms. By undertaking a survey of 28 firms a set of 12 ecosystem-related capabilities for service innovation related to sensing, seizing and reconfiguration of external sources have been derived. Findings of the research paper imply that firms require capabilities for long run survival and need to redesign their ecosystems in order to remain innovative to match the changing environment.

Ryu, H.-S., & Lee, J.-N. (2018) the study aims at ascertaining the role of technology in service innovation and the ultimate effect on firm's performance based on service innovation framework. for undertaking the research four strategies such as service creation orientation (SCO), service delivery orientation (SDO), customer interaction orientation (CIO) and technology orientation has been identified the results of the study suggest that technology is pre condition for conducting SCO and SDO secondly CIO and technology has synergistic effects on the firm's performance. Further the study indicates that deeper understanding of the technology can help organisations to select an appropriate technology to be employed in the organisation for increasing the firm's value.

Tate, et al., (2018) Innovation in public sector is far more relevant and is needed in the present scenario of globalisation but the allocation of resources has been lagging behind. Authors of this research have tried to understand the problem of bringing innovation to this sector with the application of theoretically inspired and tested methodology. The relevant findings of the study states that for innovation to take place a nurturing environment, commitment and sponsorship at higher levels are needed moreover innovation is people's process that require team spirit. And public sector organisations and stakeholders have to jointly work towards bringing digital innovation.

Verdu-Jover, et al., (2018) Organisational culture has been defined as a set of beliefs, norms and values that exist in organisation. Based on these researchers have studied the relationship between culture and innovation. Authors in this study are of the view that culture have inherent attribute to change because of the environment pressure. The focus of this paper is on adaptive culture that helps us to understand that how culture facilitates product/service innovation. The findings of the study suggest that as product/service innovation requires constant changes at organisational level, the emphasis is on the determinants of those key factors that facilitate innovation outcomes.

Ali, et al., (2017) This study is focussed on the prominence of cloud technologies in support of business innovation and a model is developed to deal and help organisations undertaking cloud related innovations and mitigate and manage risk during innovation of cloud relate business activities. The model identifies three types of risk (Service,

Technology and Process risk) with the purpose of resolving problems related to innovation in organisations and also explained four types of resolutions such as Stakeholder's engagement, Technological development and Innovation planning and Innovation control to help organisations in bringing changes in their structure.

Koskela-Huotari, et al., (2016) the purpose of this research is to examine innovation as process that results out of changes in institutional arrangements in service ecosystem. The aim of this paper is to illustrate that how chances can be brought out in the business units, their process and resource allocation. Further by understanding the concept of innovation as a process the researcher has been able to conclude that in order to succeed in innovation there is a dire need on the part of the organisations to reconfigure themselves in process by including new actors in the service ecosystem and redefining the role of the new actors (managers).

Bello, et al., (2016) the review undertaken by the authors is focused on analysing the challenges faced by Indian professional service firms (PSF) as an emerging market. The study reveals the importance of attractive innovative services which can be inculcated in the organisational processes with the help of entrepreneurial orientation and expert human capital for the development of innovativeness. The findings of the study demonstrate PSFs from the Indian emerging markets should be guided by service strategy that helps in identifies both opportunities and threats posed by the external environment.

Chuang, S.-H., & Lin, H.-N. (2015) with the increased technological advancements and ever surging customer demands have necessitates the need for e-service innovation. The study has been undertaken in Taiwan and the analysis of 119 financial firms has been undertaken. The results reveal that there is a positive relation between e-innovation and increased firm's value. The review urged the new of developing new information technologies (NIT's) in serving online customers by a proper analysis of internal and external driving forces that facilitate the relationship between firm's e-capabilities, corporation capabilities and e-service innovation.

Ostrom, et al., (2015) the concept of service delivery experienced a massive change specially the advent of information technology has resulted in a change of customer perception regarding services. With a view to understand these changes author has conducted an international and interdisciplinary research to identify those research priorities that have the potential to benefit customers, firms and society. Online survey has been conducted by the researcher in order to ascertain gaps between the existing body of knowledge and future directions.

Kindström, D., Kowalkowski, C., & Sandberg, E. (2013) Authors here in this review focussed on the need of understanding the prominence of service orientation in organisations from the old age concept of product-centeredness so as to remain competitive. It is believed that service orientation though is pertinent but involves a major shift to new strategic decisions, new organisational structures and new skills. They have emphasized on

the need of recognising the management of essential capabilities such as sensing, seizing and reconfiguring needed for service innovation. The understanding of these capabilities is essential in order to reap the benefits of future service innovation. The result of the findings divulges some of the micro foundations related to service innovation that enables researchers to drill down to a level of detail that would not otherwise be possible and thereby enabling firms to build a conceptual foundation for service innovation and devising strategies for its implementations.

Dotzel, T., Shankar, V., & Berry, L. L. (2013) Authors from this study are of the view that the introduction of innovation in services in order to satisfy customers has become a critical organisational capability. Innovation in this study is viewed as of mainly two kinds such as e-innovation and p-innovation. Further the author has examined the determinants of service innovation and its interrelationship with the level of customer satisfaction, firm value and the associated risk involved in the process of innovation. A theoretical model has been propounded by the authors for explaining the requisites to innovativeness. The results of which depict that e-innovativeness should be developed in most of the industries whereas p-innovativeness should be nurtured in human dominated industries such as hotel, hospitals.

Grant, K., Alefantos, T., Meyer, M., & Edgar, D. (2013) This analysis has been undertaken by the researcher to access how a service operator say an Airport can add value in its operations through investing in the information technology. Further the authors have tried to examine that how airport operators use different combination of accounting techniques and other tools in order to create value from the information technology investments. After the conduct of this case study authors are of the view that certainly service operators are able to measure investments in IT (innovations) with good degree of reliability and validity.

Tsou, H.-T., & Chen, J.-S. (2012) Now a days as more and more process is becoming homogeneous sustaining a competitive advantage is becoming difficult these days and this needs the development of new innovative services with the aim of serving the presents and future demands of customers. Study undertaken advocates that new service must be co-developed with customers/partners in focus. Another objective of the study is to focus as to how innovativeness is influenced by inter organisational behaviour. The results of the study support the premise. Further the results reveal that organisations can enhance co-development competencies by establishing knowledge and technology integration mechanism.

Aas, T. H., & Pedersen, P. E. (2011) in this study authors have tried to investigate that firms focusing on service innovation tends to perform well financially than those not focusing on service innovation. Analysis of the financial performance of 3575 Norwegian manufacturing firms have been taken for the support of preposition that the firms adopting service innovation have high positive operating results than those not adopting a strategy for service innovation. But the finding indicates that the results are not universal in application and hence future research is needed to support the preposition.

Li, M. (2011) in developed countries like Australia and Canada the use of online intelligence support system (ISS) by the public administration system has been studied in this paper. The services offered with the help of this system include information regarding countries e-governance material, self-assessment in aids etc. The researcher wants to understand the citizen's perspective in a view to develop online services further by the government institutions. Certain statistical tools have been applied which generalise that online ISS especially those with extensive features yield higher decision satisfaction, transparency and higher perceived quality in the eyes of the customers.

Berry et al., (2010) this article explores the crucial role of service innovation in retailing. As interactive services not only offer opportunities by creating new markets but provide ample support in the existing market for the retailers. The author through this research article explored a set of opportunities that facilitates researches in exploiting the market opportunities such as increased power of customers, channel synergies and post transaction services, optimum allocation of resources and customer heterogeneity in delivering interactive and innovative services. Moreover, the author is of the view that needs a balanced approach on the part of organisation throughout the retailing process which in turn will benefit the organisations in terms of revenue.

Den Hertog, et al., (2010) Most service innovations are born out of unmet needs of the actual or prospective customers they are seldom created in laboratories. The purpose of this study is to provide a conceptual framework in order to manage the service innovation with the help of six dynamic service innovation capabilities encompassing a) signalling user need technological options b) conceptualising c) (un)bounding d) co-producing e) orchestrating f) scaling and stretching; learning and adapting. The aim of this research is to help organisations in managing service innovation effectively by linking service innovation to dynamic capabilities view (DCV).

Ordanini, A., & Parasuraman, A. (2010) In this article researchers have invoked insight from service dominant logic (SDL) perspective and proposed a conceptual framework for analysing the consequences and antecedents of service innovation, using three stage least square(3SLS). Further the testing of the model developed in this research has been done on the basis data collected from the hotel industry. The finding of the study suggests that firstly for improve performance via innovation firms need to collaborate with business partners secondly there is a strong impact of employee's collaborations in innovating services, thirdly the dynamic capabilities of the firm are essential for bringing innovation.

Kindström, D., &Kowalkowski, C. (2009) Authors in this study have formulated a service development process to be adopted by manufacturing companies with the traditional focus on product development and product sales. A four-stage service offering development framework have been formulated starting from market sensing then heading towards to development followed by delivery and finally focusing on sales. Moreover, the study reveals the importance of considering both new product development (NPD) and new

service development (NSD) together to ensure optimal functioning of the offering by the firms.

Abreu, M., Grinevich, V., Kitson, M., & Savona, M. (2009) In this study an attempt is made to analyse the meaning of innovation in services and how it can be measured. A larger spectrum of innovation inputs (Rand D activities) and innovation output (patents) is undertaken in this study to find out the innovation in manufacturing and service sector particularly in United Kingdom. The results identify the hidden elements in innovation such as the role of Information and technology and human capital that are trained in soft disciplines to represent innovation in services. Finally, the article provides a detailed set of policy measures to be undertaken by UK service sector for bringing improvement in traditional processes of delivering services.

Toivonen, M., & Tuominen, T. (2009) The study has been conducted in Finland encompassing real estate and construction services and of knowledge intensive business services. The aim of this study is to carry out a theoretical analysis supplemented with the results of two case studies. Based on the analysis author is of the view that the innovation process in service is interlinked with the actual service delivery process. The interaction between service provider and client serves as platform for bringing innovation in services.

Gallouj, F., & Savona, M. (2008) the paper provides a review of literature on innovation in services which is focussed on technological innovations in manufacturing industries. An approach has been developed in this paper regarding services, technique and processes characteristics in order to reduce the materiality and technology bias that has been associated with service innovation. Moreover, the purpose designing the approach is to reduce the ambiguity in the existing literature that defines service innovation as merely technological advancement.

Paton, R. A., & McLaughlin, S. (2008) The study under taken in this paper is an attempt to address the relevance of service and innovation though earlier studies have more emphasised on the product centred researches but the new dimension of innovation that is service science brings about a comparative advantage for the firms and enables long term survival of the organisation. The finding of the paper suggests that service science is a foundation in attaining a competitive edge in global market and for overhauling the traditional processes of management in business operations.

Nijssen, et al., (2006) the aim of this paper is to investigate the concept of developing new products and services research. An attempt is made to understand the similarities and dissimilarities between new service and product development. The author is of the view that Rand D strength is more important in case of new product development and alterations in the working of organisations processes is important for new service development. For the conduct of this research data from 217 service based and 105 service-based companies of the Netherlands has been collected and CFA has been applied the results of which validate that NSD and NPD has same underlying dimensions of innovations.

Cainelli, G., Evangelista, R., & Savona, M. (2005) the study undertaken here by the author is focussed on analysing the two-way relationship between innovation and economic performance in services using longitudinal datasets. The findings of the study reveal that there is a positive relationship between past economic performance including innovative actives such as ICTs on both growth and productivity of the organisation. The evidence suggested by this paper gives an important message that innovation is relevant both for the products and services in the prevalent scenario of competition.

Xu, H., Sharma, S. K., & Hackney, R. (2005) the core of Information system (IS) is the information technology which continues to contribute heavily towards development of the organisations. Among the available technologies, web-services as a representative of IT innovation have gained significance. The researcher has validated the research using existing theories and observed that innovation diffusion is unstructured and emerging field further the researcher claims that the element of flexibility is an inherent characteristic of web-services that must be given attention during the successful adoption of web-services.

De Brentani, U. (2001) According to the author the new service development concept must be undertaken after the review of the scale of operation of the organisation under study. In this review the focus on the analysis of new business to business service projects in an attempt to gain insight about the influence of product innovativeness on the factors linked to new services. Findings of the study suggest that developing highly innovative and incremental services is paramount for long term performance of the service firms.

Song, X. (2000) Author in this study has tried to access the pioneering advantages and disadvantages related to the service innovation. In this study a set of prepositions have been stated about several types of economic, pre-emptive, technological and behavioural advantages available to the service managers. In this study a theoretical framework has been formulated to test the pioneering advantages and disadvantages related to service innovation and the most important finding of the study involved that the establishment of technological leadership position in service industry seems to an important pioneer advantage.

Sundbo, J. (1997) the analysis undertaken by the researcher is based on case studies including the conduct of theoretical and empirical analysis. This article gives an insight into the innovation theory by addressing two questions as such do firms undertaken service innovation? And if they do so what are the processes undertaken in bringing innovation. The results of the study conclude that service firms rarely depend on the Rand D facilities but the service innovation is the result of unsystematic exploratory and learning process.

Atuahene-Gima, K. (1996) The authors in this review describe the results of comparing the innovation activities of service firms in Australia and explore the perception of key position holders regarding the factors necessary for successful implementation of New service development (NSD) and New product development (NPD).the findings of this study reveal that organisation should depend less on technological synergies as can be

easily copied by competitors rather than organisations should focus on training human resources in the organisations as they have better potential of serving and providing innovative services to the customers and improving the processes.

Edvardsson, B., & Olsson, J. (1996) this article links service development with that of quality perspective. That is services must be developed in order to create value for the customers and the emphasis is laid on three dimensions of service development namely development of the service concept, development of the service system and development of the service process. The findings of the article suggest a new frame of references for delivery services to customers that include focus on design quality so as to maintain viability and profitability of the service company.

Horne, D. A. (1993) The researcher through this has raised a question regarding the success of service innovation and has analysed the work done by different researchers on the topic before presenting different set of opinions regarding heterogeneous industries, luck, instinct and such finally the reviewer through group discussion, interviews with that of product and service organisations has brought to notice the need for a well formulated strategy before the service is actually launched in the market. The approach is well followed by the product centre organisations but is not followed by the service organisations under the study.

Brentani, U. (1989) the author through this study emphasised on the need of innovation in service sector in the dynamic economy where products have been given more attention rather than services. Author here in this review tested certain variables such as customer heterogeneity, market orientation and service innovativeness and concluded on the basis of findings that introducing new service processes help organisations to deal with complex and experimental nature of services, further innovative services help organisations in attaining competitive edge and other cost reducing advantages.

Role of Innovation in Service Sector

The role of innovation in service sector is referred to as an unsystematic exploratory (Horne, D. A. 1993) and learning process that is focused on delivering value to customers keeping in view customer heterogeneity (Brentani, U. 1989) and market orientation. Innovation helps organisations to create substantially a competitive edge in the market thereby enhancing the image and reputation of the firm. According to (De Brentani, U. 2001) innovation uplifts the overall process of service delivery making it a unique preposition for furthering the goals of the organisation. Innovation is viewed by different organisations differently it is a process for some, it is mere a small part of activity of many organisations. An analysis of different perspectives reveals that continuous dedication on the part of the organisation through the development of research and development department (Ostrom, et al., 2015) adds value to the service delivery process of the firms. The different innovation practices that are prevalent in the business environment have been depicted through the following figure thereby summarising the divergent views towards innovation of organisation and corporations (Lütjen, et al., 2019). The figure highlights the relevant areas through which

innovation can be inculcated in the organisational process of service delivery (Fernando Henrique Taques, et al., 2021). Although the most recent and used practices have been depicted but these practices are not wholesome as there are varied means of practicing innovation in service sector depending upon the need and capabilities of the organisations.

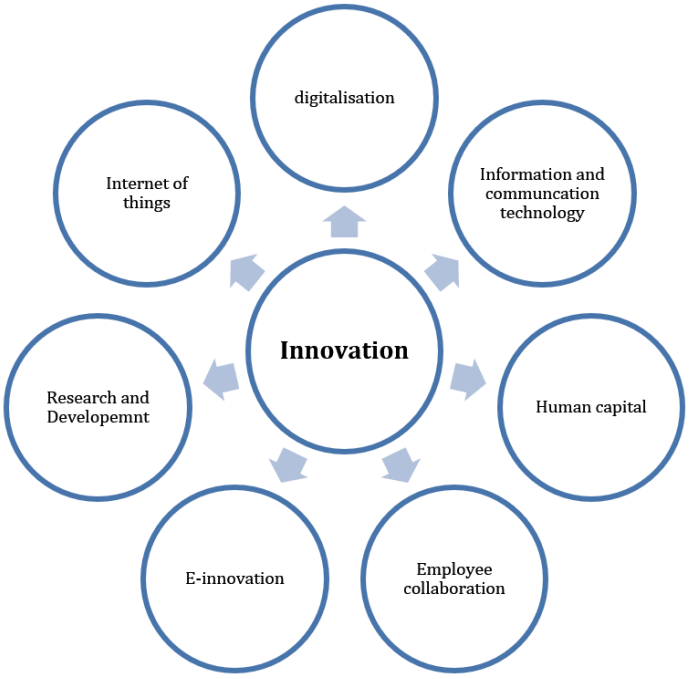

Fig 1. Source: developed by author

Conclusion:

The study focussed on the literature available on service innovation and after the analysis of the pertinent studies in this domain. We have been able to suggest and understand that, the relevance of the concept of service innovation is perceived by organisations across the globe but there is a need of specific and pragmatic approach to the understanding of this topic and building framework for the implementation of innovation practices in firms meticulously. It has also been observed that much innovation that takes place in organisation is digital and technological in nature but little emphasis has been placed on the human resources that play a pertinent role in the process of service delivery. No such practice has been found that is widely and certainly related to service industry universally. Companies resorting to different practices according to availability of varied resources and skill set. There are

myriad views concerning service innovation referred by different authors. Hence, further research can be in the field of suggesting optimum levels of innovation in the industries. More studies can be focused on devising strategies of involving the service developers and receivers so that the requirements can be addressed and counted in the service development process.

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Females as Coparceners – Changes Brought about by the 2005 Amendment and the Judicial Pronouncements

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Abstract

The evolution of Hindu succession law has marked a critical transition from exclusion to equality in women's property rights by granting daughters equal coparcenary rights by birth, previously reserved for sons under the Mitakshara system. This reform aimed to remove entrenched gender discrimination in property rights. However, conflicting judicial interpretation in Prakash v. Phulavati (2016) and Danamma v. Amar (2018) created ambiguity on its retrospective effect. The Supreme Court in Vineeta Sharma v. Rakesh Sharma (2020) settled the position, affirming that daughters are coparceners by birth, regardless of whether the father was alive at the time of the amendment. This paper examines the historical background of Hindu succession laws, the impact of the 2005 amendment, and the judicial journey that shaped its interpretation. It argues that while the legal recognition of daughters as coparceners is a landmark step towards gender justice, challenges remain in the form of testamentary freedom, intestate succession favouring the husband's lineage, and societal barriers that hinder women from exercising their rights. The study concludes that although the amendment has paved the way for gender equality in property rights, effective implementation, public awareness, and further reforms are essential to ensure that legal equality translates into lived equality.

Keywords: Female Coparceners, Gender Equality, Intestate Succession, Hindu Succession Act, 2005, Supreme Court Judgements

INTRODUCTION

Coparcenary is a term often used in matters related to the Hindu succession law, and

coparcener is a term used for a person assumes a legal right in his ancestral property by birth. To understand this better, we have to first understand the term Hindu Undivided Family (HUF). According to the law, an HUF is a group of people, who are the lineal descendants of a common ancestor. This group would include the eldest member and three generations of a family, and all these members are recognized as coparceners. According to the law, all coparceners acquire a right over the coparcenary property by birth, while their share in the property keeps on changing with new additions into the family. Apart from Hindus, people from other religions such as Jainism, Sikhism and Buddhist are also governed under HUF.

The amending Act of 2005 is an attempt to remove the discrimination as contained in the amended section 6 0f Hindu Succession Act 1956, by giving equal rights to daughters in the Hindu Mitakshara coparcenary property as the sons have. Simultaneously section 23 of the Act as disentitles the female heir to ask for partition in respect of dwelling house wholly occupied by a joint family until male heirs choose to divide their respective shares therein, was omitted by this Amending Act. As a result, the disabilities of female heirs were removed. This is a great step of the government so far, The Hindu Code is concerned. This is the product of 174th Report of the Law Commission of India on "Property Rights of Women: Proposed reform under the Hindu Law".

According to the amending Act of 2005, in a Joint Hindu Family governed by the Mitakshara Law, the daughter of a coparcener shall, also by birth become a coparcener in her own right in the same manner as the son heir. She shall have the same rights in the coparcenary property as she would have had if she had been a son. She shall be subject to the same liabilities and disabilities in respect of the said coparcenary property as that of a son and any reference to a Hindu Mitakshara coparcenary shall be deemed to include a reference to a daughter.

This amendment was proposed by 174th Law Commission reports which while proposing stated that - *Discrimination against women is so pervasive that it sometimes surfaces on a bare perusal of the law made by the legislature itself. This is particularly amongst the members of a joint Hindu family. It seems that this discrimination is so deep and systematic that it has placed women at the receiving end. Recognizing this the law commission in pursuance of its terms of reference, which, inter alia, oblige and empower to it make recommendations for the removal of anomalies, ambiguities and inequalities in the law, decided to undertake a study of certain provisions regarding the property rights of Hindu women under The Hindu Succession Act, 1956. The study was aimed at suggesting changes to this act so that women get an equal share in the ancestral property.*

CLASSICAL LAW

The two main schools of Hindu law are Mitakshara school and Dayabhag school. The Mitakshara law is applied in whole of India except the states of Bengal and Assam where the Dayabhag system is followed. The Mitakshara Coparcenary recognizes 2 modes of

devolution of property which are survivorship and succession. The principle of survivorship applies to joint family coparcenary property whereas succession applies only to separate property. Females are absolutely excluded from the Mitakshara coparcenary. On the other hand, Dayabhag recognizes only succession as the mode of devolution. Here no member of the family has a right by birth and every member holds his property as a tenant in common and on his death the property passes on to his heirs.

Now while bringing in the Hindu Succession Act, 1956 the legislature had the option to assimilate Dayabhag and Mitakshara law in the sense that in Mitakshara also no member has a right by birth and on the death of the member the property passes to his heirs. This method would have given equable treatment to the nearest female heirs of a coparcener. But the legislature chose to retain the Mitakshara Coparcenary and to confer on the daughters and the other female members mentioned in class I of the schedule (widow, mother, daughter of a pre-deceased son, daughter of a pre-deceased daughter, widow of a pre-deceased son, daughter of a pre-deceased son of a pre-deceased son, widow of a pre-deceased son of a pre-deceased son), the right to share the undivided interest of the deceased coparcener through intestate succession. This disentitled the female members from the right of joint ownership of the ancestral property thus keeping them out of the Coparcenary which led to inequality against them.

PRESENT STATUS OF FEMALE COPARCENER

Section 6 of the Hindu Succession Act, 1956, which deals with coparcener's right in the HUF property, was amended in 2005 w.e.f September 9, 2005. With this amendment, daughters have been put at par with sons, as far as coparcenary rights in HUF property are concerned. Consequently, the daughter gets all the rights attached with coparcenary, including the right to ask for partition of the property and to become a Karta of the HUF.

However, only the daughters who are born in the family, will get the coparcenary rights. Other female members, who come into the family by virtue of marriage, are still treated as members only. Thus, they are not entitled to ask for the partition but are entitled for maintenance and shares as and when partition takes place.

MARRIED DAUGHTER'S RIGHT TO PROPERTY UNDER HINDU SUCCESSION AMENDMENT ACT 2005

After marriage, a daughter will cease to be a member of her parental HUF, but will continue to be a coparcener. Thus, she is entitled to ask for partition of the HUF property, as well as to become the Karta of the HUF, in case she happens to be eldest coparcener of her father's HUF.

Even in case of a married daughter who has died, her children shall be entitled to the shares that she would have received, if she was alive on the date of the partition. In case none of her children are alive on the day of partition, the grandchildren will be entitled to the shares that the daughter would have received on partition.

Interestingly the daughter cannot gift her share in the HUF property while she is alive but she is fully capable of giving away her share in the HUF property by way of a will. If a will is not prepared, on her death, her share in the joint property shall not devolve on other members of the HUF but will pass on to her legal heirs.

Out of many significant benefits brought in for women, one of the significant benefits has been to make women coparcenary (right by birth) in Mitakshara joint family property. Earlier the female heir only had a deceased man's notional portion. With this amendment, both male and female will get equal rights.

In a major blow to patriarchy, centuries-old customary Hindu law in the shape of the exclusive male mitakshara coparcenary has been breached throughout the country. The preferential right by birth of sons in joint family property, with the offering of "shradha" for the spiritual benefit and solace of ancestors, has for centuries been considered sacred and inviolate. It has also played a major role in the blatant preference for sons in Indian society. This amendment, in one fell swoop, has made the daughter a member of the coparcenary and is a significant advancement towards gender equality. The significant change of making all daughters (including married ones) coparceners in joint family property - has been of a of great importance for women, both economically and symbolically.

Economically, it can enhance women's security, by giving them birthrights in property that cannot be willed away by men. In a male-biased society where wills often disinherit women, this is a substantial gain. Also, as noted, women can become kartas of the property. Symbolically, all this signals that daughters and sons are equally important members of the parental family. It undermines the notion that after marriage the daughter belongs only to her husband's family. If her marriage breaks down, she can now return to her birth home by right, and not on the sufferance of relatives. This will enhance her self-confidence and social worth and give her greater bargaining power for herself and her children, in both parental and marital families. Now under the amendment, daughters will now get a share equal to that of sons at the time of the notional partition, just before the death of the father, and an equal share of the father's separate share.

Equal distribution of undivided interests in co-parcenery property. However, the position of the mother vis-à-vis the coparcenary stays the same. She, not being a member of the coparcenary, will not get a share at the time of the notional partition. The mother will be entitled to an equal share with other Class I heirs only from the separate share of the father computed at the time of the notional partition. In effect, the actual share of the mother will go down, as the separate share of the father will be less as the property will now be equally divided between father, sons and daughters in the notional partition.

CO-PARCENARY STILL REMAINS A PRIMARY ENTITLEMENT OF MALES

The law, no doubt provides for equal division of the male co-parcener's share on his death

between all heirs, male and female; still, the law puts the male heirs on a higher footing by providing that they shall inherit an additional independent share in co-parcenary property over and above what they inherit equally with female heirs; the very concept of co-parcenary is that of an exclusive male membership club and therefore should be abolished.

But such abolition needed to be dovetailed with partially restricting the right to will (say to 1/3 of the property). Such restrictions are common in several European countries. Otherwise, women may inherit little, as wills often disinherit them. However, since the 2005 Act does not touch testamentary freedom, retaining the Mitaksara system and making daughters coparceners, while not the ideal solution, at least provides women assured shares in joint family property (if we include landholdings, the numbers benefiting could be large).

If a Hindu female dies intestate, her property devolves first to husband's heirs, then to husband's father's heirs and finally only to mother's heirs; thus the intestate Hindu female property is kept within the husband's lien.

Another reason for having an all-India legislation is that if the Joint Family has properties in two states, one which is governed by the Amending Act and the other not so governed, it may result in two Kartas, one a daughter and the other a son. Difficulties pertaining to territorial application of Amending Act will also arise. Thus is the need for an all-India Act or Uniform Civil Code more immediate.

AMBIGUITIES AND CONFUSION ARISES AFTER AMENDMENT

The first era of confusion about the proper interpretation of Section 6 of the Hindu Succession (Amendment) Act, 2005 (Amendment Act), which had been set to rest by the Supreme Court in *Prakash* v. ***Phulavati 2016 2 SCC*** **(***Phulavati's* **case), has been reignited by the Supreme Court, albeit unintentionally, in** *Danamma* **v** *Amar,* **(***Danamma's* **case).**

Section 6 of the Amendment Act treated a female coparcener at par with a male coparcener. The Karnataka High Court interpreted the Amendment Act to have retrospective effect from the date of the coming into force of the Hindu Succession Act, 1956, whilst the Full Bench of the Bombay High Court interpreted the Amendment Act to have effect from the date of coming into force of the Amendment Act.

The Supreme Court in *Phulavati's* **case laid to rest this uncertainty, by holding as follows:**

"*Accordingly, we hold that the rights under the amendment are applicable to living daughters of living coparceners as on 9-9-2005 irrespective of when such daughters are born.*"

In other words, if the coparcener (father) had passed away prior to 09.09.2005, the living daughter of the coparcener would have no right to coparcenary property. Whilst the correctness of this view is debatable, it ensured certainty in proceedings before the courts.

If a daughter made a claim for partition of joint family property, her father ought to be alive as of 09.09.2005; if not, she was not entitled to any share in the coparcenary property.

Danamma's **case was rather peculiar. The father (male coparcener) in this case passed away in 2001 and thereafter one of the** sons-initiated proceedings for partition of joint family property in the year 2002. The son claimed that the daughters were not entitled to a share in the joint family as the father had passed away prior to coming into force of the Amendment Act.

The Trial Court and the High Court accepted the contention and concluded that the daughters were not entitled to a share in joint family property. This conclusion was in consonance with *Phulavati's* **case. The decision was then challenged before the Supreme Court.**

The Supreme Court considered *Phulavati's* **case and agreed with the findings, yet applied a different principle to grant relief to the daughters. The Supreme Court applied the principle that partition is not complete with passing of a preliminary decree and attains finality only with the passing of the final decree.** *The Supreme Court held that although the suit was filed in the year 2002, the preliminary decree was passed in the year 2007 and therefore, the daughters were entitled to the benefit of the Amendment Act.*

Danamma's **case has created multifarious problems and contradictions in applying Section 6 of the Amendment Act, which are summarized as follows:**

1. If the father passes away after 09.09.2005, whether a suit is pending or not, the daughter is entitled to a share in the joint family property. On this, there is no dispute.

2. If the father had passed away prior to 09.09.2005 and a prior suit is pending by a male coparcener for partition, the female coparceners (although not entitled in terms of *Phulavati's* **case) will be entitled to a share in the partition by virtue of** *Danamma's* **case.**

3. If the father had passed away prior to 09.09.2005 and no suit for partition is pending, the daughter will not be entitled to claim partition as she will be covered by *Phulavati's* **case and therefore will not be entitled to a share.**

4. If the father had passed away prior to 09.09.2005 and a suit is filed by a male coparcener for partition amongst male coparceners thereafter, then by an extended interpretation of *Danamma's* **case, the female coparceners should be entitled to a share, although the female coparcener cannot file a suit for partition in view of** *Phulavati's* **case.**

5. If a suit for partition is pending as of 09.09.2005 or is filed thereafter by a male coparcener, a daughter, by virtue of *Danamma's* **case, will be entitled to make a claim for a share in the joint family property, even where the father has**

passed away prior to 09.09.2005. However, the daughter will not be entitled to initiate proceedings herself as in terms of *Phulavati's* case, the daughter has no right in terms of the Amendment Act. If no suit is pending by a male coparcener and if the father has passed away prior to 09.09.2005, a daughter cannot make a claim for partition.

Now as per *Phulavati's* dictum, no female coparcener can claim a right in joint family property, if the father has passed away prior to 09.09.2005 and therefore cannot initiate proceedings for partition. However, by virtue of *Danamma's* case, if a suit is pending by a male coparcener and partition is to be granted by a court on such suit, a female coparcener would be entitled to a share notwithstanding the date on which the father actually passed away. This would apply to suits filed prior to 09.09.2005 and suits filed thereafter.

SUPREME COURT RESOLVED THESE AMBIGUITIES IN THE CASE OF VINEETA SHARMA V. RAKESH SHARMA AND ORS. 2020

In this case, the verdict of Prakash v. Phulavati was overruled and Supreme Court clarified the law and partly corrected the understanding from *Danamma*. In the Vineeta Sharma case, a three-judge bench of the Supreme Court was convened consisting of Justice M.R. Shah, Justice Arun Mishra and Justice S. Abdul Nazeer.

Ms. Vineeta Sharma filed a case against her two brothers, Mr. Satyendra Sharma and Rakesh Sharma, and their mother. Her father had died in 1999, leaving his widow and three sons (one unmarried son died in 2001). Vineeta claimed her share of her father's property as his daughter, but the respondents rejected this, arguing that she was no longer part of the joint Hindu family after her marriage. The Delhi High Court dismissed her appeal, holding that the 2005 Amendment to the Hindu Succession Act (HSAA) was not applicable as her father had died before its enactment. On appeal, the Supreme Court overturned the decision in *Prakash v. Phulavati* and partially overruled *Danamma v. Amar*, affirming her rights under the HSAA.

The bench stated that HSAA gives a daughter the right to a father's property from birth whether born after or before the commencement of the Amendment Act. Also, it highlighted that the daughter's father doesn't need to be alive at the time of commencement to entitle property rights.

At last, it was determined that "Daughters are coparceners by birth and have equal liabilities as of sons in either case, born after or before the enactment of HSAA or father is alive or dead after or before the commencement of HSAA."

CONCLUSION

The evolution of Hindu succession law, particularly through the Hindu Succession (Amendment) Act, 2005, represents a landmark shift from exclusion to equality for women in matters of coparcenary rights. By conferring upon daughters, the same rights

and liabilities as sons, the amendment broke centuries of patriarchal privilege embedded in the Mitakshara system. Judicial interpretation initially created uncertainty, *Prakash v. Phulavati* restricted women's rights, while *Danamma v. Amar* led to contradictions, but the Supreme Court in *Vineeta Sharma v. Rakesh Sharma* (2020) finally settled the law, affirming that daughters are coparceners by birth, irrespective of whether the father was alive on the date of the amendment.

This recognition is not merely symbolic but has profound economic and social implications. It ensures that daughters have equal stakes in ancestral property, empowers them to act as Kartas, and enhances their security and bargaining power within both natal and marital families. However, challenges remain. Testamentary freedom allows fathers to disinherit daughters through wills, and intestate succession laws for Hindu women still favour the husband's lineage. Moreover, social realities and patriarchal resistance often prevent women from exercising their rights fully.

Thus, while the amendment and subsequent judicial pronouncements have paved the way for greater gender equality in property rights, the journey is not complete. Further reforms such as limiting discriminatory testamentary practices, harmonizing inheritance laws across India, and creating awareness about women's legal rights are essential to ensure that legal equality translates into lived equality. The recognition of daughters as coparceners is a significant milestone, but its true success will lie in its effective enforcement and acceptance within society.

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Examining The Interaction Between Diagnostic Cutoff Choices with Measurement Reliability in Producing Misclassification: A Simulation Study

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Abstract

The field of psychology and psychiatry are guided by diagnosis based on fixed cutoffs. Measurement tools are, however, inherently imperfect as cutoffs are applied to inherently continuous measurement scales. The role of measurement reliability in shaping diagnostic misclassifications is often not explored and underemphasized. This study aims to examine the interaction between diagnostic cutoff choices and measurement reliability in producing misclassification errors. By employing a simulation study design grounded in classical test theory, false positive and false negative classifications are quantified. Contingency tables were used to examine rates of both kinds of errors in low and high reliability conditions under strict and lenient cutoffs. Results indicate that struct cutoffs increased false negatives while reducing false positives, and lenient cutoffs decreased false negatives while significantly increasing false positives. Low reliability increased overall misclassification errors significantly, curbing the effectiveness of cutoffs. The results clearly show the interaction between diagnostic cutoffs and measurement reliability, positioning misclassification as a structural consequence. Implications for practice and research as well as future directions are discussed.

Keywords: diagnostic accuracy, measurement reliability, misclassification, cutoffs, simulation study, measurement errors.

1. Introduction

The Diagnostic and Statistical Manual of Mental Disorders and the International

Classification of Diseases have guided psychological diagnosis for years (First et al., 2022; World Health Organisation, 1978). With international teams of experts in different domains, these manuals are a result of extensive research and reports. A diagnosis as per these texts rely on fixed cutoffs that are applied on continuous measure scales (Roehr, 2013). This threshold determines if an individual is classified as having or not having a disorder. By providing a system, this practice simplified and standardized decision making and communication across various health professionals as well as clinical and research settings. Despite the ease of the widespread practice, there lies a fundamental problem- discrete categories are created to differentiate between continuous traits on the basis of imperfect measurements. A trait like depression severity, which is on a spectrum, is turned into a yes/no decision on the basis of a cutoff. Similarly, most psychological traits and constructs follow this continuous nature and do not naturally fall into the discrete categorical boundaries (Haslam et al., 2012).

Psychological measurement tools such as psychometric assessments contain measurement error (Lord & Novick, 2008). Instruments that are made after years of research, with varied populations, and validated in different contexts also have these errors as they cannot be absolutely precise in capturing an individual's true level of a construct. This measurement error reflects the extent to which true score variance impacts the score achieved, rather than the role of random error, i.e., how much random noise is present in a test score. Lower reliability means that the observed scores fluctuate more frequently around true scores, leading to a greater chance of misdiagnosis. Misdiagnosis can be in the form of false positives wherein the individual is classified as having the disorder without truly meeting the criteria, and false negatives wherein the true cases are incorrectly missed. Consequently, when misdiagnosis happens in real life settings, the consequences are tenfold. The errors impact treatment decisions, prognosis, stigma, resource allocation, and scope of treatment in clinical settings. In research settings the result of this misdiagnosis extends to impacting research validity, accuracy of findings, research protocols, and much more.

Diagnostic accuracy of tools and criteria has long been based upon the cutoff scores which determine if a person has a condition or not; what is completely missed out on is the attention to measurement reliability of a tool. The cutoff rate and measurement reliability are dependent on each other- while a stricter cutoff can reduce false positives, it can also increase false negatives, with the vice versa being applicable for lenient cutoffs. This tradeoff is imminent, but the extent of the tradeoff is dependent on the measurement error. The amount of measurement error and reliability is related to the rate of misclassification, as, if reliability of the tool itself is low, no changes in the cutoff may prove to be as meaningfully efficient at reducing misdiagnosis. Cutoff and low reliability together creates misclassification- the precision assumed by cutoffs is destroyed by lack of reliability.

This study aims to explore how diagnostic cutoff choice interacts with measurement reliability to produce misclassification. While misclassification is a known consequence that is widely gaining attention in the media and literature, it also is underexamined. The

debates surrounding cutoffs often ignore reliability, focusing only on the data related to the cutoff itself. Misclassifications aren't just a hitch in the reported statistics of mental health disorders around the world, but instead they gravely affect treatment plans, stigma, and research validity, failing to serve the reason it was created for- to accurately define conditions and help treat people.

2. Conceptual Framework

2.1 Continuous True Score

The continuous nature of psychological constructs such as personality traits, mood disorders, or anxiety, often show a continuous variation, i.e. it cannot be categorized into clear boundaries. Several papers have reviewed extensive evidence to argue for the use of dimensional models rather than categorical models to truly capture individual differences in personality and psychopathology (Haslam, 2003; Widiger & Samuel, 2005). Despite the empirical work that shows the dimensionally distributed symptoms and traits across a wider population, diagnostic systems continue to impose categorical distinctions. Without any natural points to differentiate between individuals with and without the disorders, creating a cutoff and division becomes impossibly hard.

2.2 Measurement Error

The classical test theory posits that the observed score is essentially a true score and a random error; measurement error represents the influences that often go ignored and may influence the outcomes in any process. These errors include changes in attention, mood, interpretation, or situational and external factors beyond control. As a result, the observed scores do not align from the true score of the individual on the construct. In psychometric assessments, this error is unavoidable and must be accounted for in interpretations (Lord et al., 1968).

2.3 Reliability

Reliability is a property of measurement precision; it reflects consistency of scores when the measurements are repeated and consistency across items. It also shows the proportion of the observed score that is due to true variance in scores and not random error. Essentially, measurement reliability shows how much of the observed score variance is the true score. When reliability is high, it means that the observed score is a better determinant to see the true difference between individuals, whereas low reliability shows that there is greater noise from the errors. The importance of reliability indices, popularised and formalised by Cronbach (1951) with the coefficient alpha, has been emphasized over and over by later researchers (Nunnally & Bernstein, 1994).

2.4 Diagnostic Cutoff

Diagnostic decisions often rely on diagnostic cutoffs for the purpose of standardisation, communication, decision making and simplification of the diagnostic process. Despite the researched continuous nature of psychological constructs, and evidence supporting measurement errors, these cutoffs are used to decide whether or not the label of diagnosed or not diagnosed should be placed. In the process of reaching cutoffs, continuous symptoms are scored as binary outcomes, discarding other useful information. By dichotomizing scores, statistical power is reduced and misclassification risk increases, while also obscuring and increasing uncertainty (MacCallum et al., 2002; Streiner, 2003).

2.5 Misclassification

Originally described by Meehl and Rosen (1955), measurement error and base rates clearly influence diagnostic accuracy; the accuracy to classify individuals into the label of diagnosed or not diagnosed depends on reliability of measures used as much as it depends on decision rules. Misclassification as a result of applying diagnostic cutoffs to measure continuous constructs has been noted repeatedly across existing literature. There are two types of misclassifications that can occur. False positive is when individuals who do not meet criteria score above the cutoff due to errors. False negative is when individuals who clearly meet the criteria (true cases) do not score above the cutoff and hence are dismissed.

3. Method

3.1 Design

This study employed a simulation design in order to examine the joint impact of measurement reliability and cutoffs on misclassification of diagnosis. The study made use of data that was computationally generated in order to represent idealised psychological measurement conditions; no real participants were included in this process. A simulation study allowed for the effect of reliability and cutoffs to be examined independently without being impacted by real world sampling variability, construct related factors like heterogeneity, or any biases from the clinical or participant.

The independent variables in this study were measurement reliability (high, 0.90 vs low, 0.60) and cutoff choice (lenient vs strict). The dependent variables were false positive rate and false negative rate. A 2 x 2 design was used to compare observed diagnostic classifications and true diagnostic status in order to evaluate the misclassification outcomes.

3.2 Data Generation

A large sample of N = 10,000 was generated to ensure that the estimates of misclassifications rates were stable. Using a standard normal distribution where mean = 0, and standard deviation =1, true scores were generated to represent a continuous latent trait. The

diagnostic status was defined by using a fixed true cutoff of 1.0 on the true score distribution. Observed scores were computed in accordance to the classical test theory model, by adding random measurement error to the true scores. The cutoff was applied to observed scores. Individuals who had true scores that were equal to 1, or greater, were coded as true cases. Individuals with true scores below 1 were coded as non-cases.

3.3 Measurement Reliability

In order to manipulate measurement reliability, the variance of the random error was varied. The true score distribution was held constant. The error variable was modeled as normally distributed with mean zero. For the high reliability condition, r ≈.90, the error standard deviation was set at 0.33. For the second reliability condition, low reliability, r ≈ .60, the error standard deviation was set at 0.82. The standard deviation values were set based on classical reliability wherein it reflects the proportion of observed score variance that is at par with true score variance.

3.4 Diagnostic Cutoff

The diagnostic cutoffs where lenient vs struct. The lenient cutoff was set at observed scores being higher than or equal to 0.8, while the strict cutoff was set at observed scores being higher than or equal to 1.2. These scores were chosen to accurately represent plausible thresholds prioritising sensitivity or specificity. The observed status was dichotomously coded at diagnosed or not diagnosed.

3.5 Misclassification Assessment

The assessment of misclassification was done by comparing observed diagnostic status to true diagnostic status. Misclassification in the form of false positives and false negatives were both quantified. The rate of each of these errors were estimated by the use of contingency tables where the false positive and false negative rate was calculated as row wise percentages. By doing so, assumptions about underlying distributions beyond the concern of the study were avoided and conditional diagnostic error rates were reflected upon.

3.6 Analysis

There were 4 conditions created based on reliability and cutoff, including (1) high reliability, lenient cutoff, (2) high reliability, strict cutoff, (3) low reliability, lenient cutoff and (4) low reliability, strict cutoff. For each of these combinations, contingency tables were created to compare true and observed diagnostic status. The false positive and false negative rates were computed. Inferential statistics test were not conducted as the aim of the study did not include hypothesis testing.

4. Results

Misclassification rates across the conditions defined by reliability and cutoff were examined,

false positive and false negative rates were calculated from contingency tables comparing true and observed diagnostic status. The results are summarised in Table 1.

Reliability	Cutoff	False Positive %	False Negative %
High (.90)	**Lenient (0.8)**	9.1	7.0
High (.90)	**Strict (1.2)**	1.7	29.4
Low (.60)	**Lenient (0.8)**	17.6	22.0
Low (.60)	**Strict (1.2)**	8.9	36.3

(Table 1: Misclassification rates by reliability and cutoff)

4.1 High Reliability

Under high reliability ($r \approx .90$) with a lenient diagnostic cutoff, 9.0% of individuals without the disorder were incorrectly classified as cases (false positives), while 7.8% of true cases were missed (false negatives). With a strict diagnostic cutoff, false positive rates decreased to 1.7%, but false negative rates increased substantially to 29.4%.

In high reliability conditions, stricter cutoff rates can significantly reduce false positive cases, but also lead to much higher false negatives, meaning that a lot more true cases may be missed.

4.2 Low Reliability

In the low reliability, overall misclassification rates were much higher. With a lenient cutoff, false positive increased to 17.6% and false negative increased to 22.0%. The increased scores on both of these misclassifications indicate that misclassifying was more frequent, leading to greater overall diagnostic error. With a strict cutoff, the false positive rate did reduce to 8.9%, but the false negative peaked at 36.3%.

In low reliability conditions, strict and lenient cutoffs lead to higher error than seen in high reliability conditions. Many individuals who score far from the cutoff were also misclassified, reflecting substantial diagnosis uncertainty overall.

4.3 Interaction Effect

The interaction between diagnostic cutoff and measurement reliability is evident in the different effects of cutoff choice and function of measurement reliability. In high reliability

conditions, changes in the cutoff highlighted a clear trade-off between false positive and false negative rates. Cutoff effects are amplified when reliability is high, leading to stricter cutoffs reducing false positives but increasing false negatives. In low reliability conditions, the trade-off was less pronounced. Reliability effects were more dominant, so while stricter cutoffs led to less false positives, false negatives and overall misclassification still remained high.

In all of the four conditions, when lower reliability was present, misclassification rate was higher, no matter the cutoff choice. Based on these results, measurement reliability limits how much diagnostic cutoff adjustments can control misclassification rates.

5. Discussion

The simulation study examined the impact of diagnostic cutoff and measurement reliability on diagnostic misclassification. The central finding that has been evidenced is that diagnostic cutoff and reliability is interdependent. More than precise measurement, cutoff rates operate more based on erroneous estimates of continuous traits resulting in predictable outcomes of misclassification. When the reliability is low, measurement error causes uncertainty which can overwhelm the precision that underlies the diagnostic thresholds. As a result, misclassification is no longer an anomaly or implementation error, it becomes an erroneous part of the diagnostic process as a whole.

The core takeaway remains that diagnostic cutoff cannot be meaningfully evaluated without reference to measurement reliability. The traits upon which cutoffs are based are incorrectly made to be categorical, reliability determines how wrong these pretend traits become and when reliability is lower, any cutoff standards (lenient or strict) become arbitrary.

5.1 Role of Cutoffs and Reliability

Diagnostic cutoffs treat complex psychological traits and constructs as if they were categorical and dichotomous. They place sharp boundaries when none exist, making a strict distinction between those with and without a disorder. This means that individuals with true score near the cutoff scores are treated differently and not diagnosed despite the underlying trait level being close to the cut off score. This becomes a larger obstacle when the reliability of the tool or assessment is lower, as under low reliability, observed scores fluctuate more widely.

Reliability shows more than just the background noise contributing to measurement error, it shows the extent to which the observed score reflects the real individual differences. Lower reliability increases overall errors (false positives and false negatives); changes in cutoff conditions redistribute errors between the two types of errors, but reliability controls how many errors there are overall in the larger picture. Therefore, reliability reflects the extent to which the overall categorial pretense of the diagnosis is wrong.

5.2 Implications for Diagnosis and Research

The implications of these findings extend to diagnosis, clinical practice, as well as research.

In terms of diagnosis, for each of the thresholds that are presented as standalone decision rules, measurement reliability should be accommodated for each of the recommended cutoffs. By doing so, there is an increased scope for greater precision in clinical practice and prognosis.

For clinicians, the diagnostic reports wherein scores are near the cutoffs should be treated as uncertain. Additional assessments should be conducted to ensure that these borderline cases are explored in depth before a diagnosis is given. The interpretation in these cases should be probabilistic rather than definitive.

In research settings, instead of assuming clear diagnostic labels, measurement error should be explicitly modelled or simulated to account for the structural uncertainty. The uncertainty, rooting from reliability limitations, risks artificially inflating confidence in the findings despite the diagnosis being incorrectly treated as the ground truth.

5.3 Limitations

In this simulation study there are several limitations that should be noted. The true score distribution was assumed to be normal and this may not be representative of all psychological constructs. For the purpose of the study, a single true cut off was used which is not the same as real world diagnostic systems where multiple thresholds are used. Additionally, there was no systematic bias, such as rater effects, modeled as only random measurement errors were considered.

5.4 Future directions

This work can be extended in several ways such as incorporating unequal base rates in future simulations to examine how prevalence may interact with misclassification. Models that use different cutoffs to better replicate real world practices can better examine the diagnostic system practiced worldwide currently. Moreover, to test the impact of test length and item discrimination on reliability, item level simulations can be used to further diagnostic accuracy.

6. Conclusion

Diagnostic misclassification is a mathematical consequence, not a failure of implementation. With roots in the structural process of using categorical cutoffs that imperfect measurements, misclassification is not a surface level problem. Reliability is the key component in this process, controlling the damage that can be caused as a result of structural consequences. Reliability plays a role in limiting diagnostic accuracy and cutoffs play a role in determining how the consequent misclassification error is distributed. By taking this into account, there

is scope for creation of more accurate diagnostic practice, interpretation, and research.

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From Kutumb Vyavastha to Modern Families: The Role of Family Environment in Elderly Quality of Life

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Abstract

The family has traditionally served as the primary source of emotional security, social support, and caregiving across the lifespan. In the Indian context, the transition from the traditional *Kutumb Vyavastha* (joint family system) to modern nuclear family structures has significantly altered the psychosocial environment of older adults. This study aimed to examine the relationship between family environment, quality of life, and somatic concerns among elderly adults. Using a correlational research design, data were collected from 60 elderly individuals aged 60–70 years experiencing somatic concerns for five years or more and having low quality of life scores. The Family Environment Scale (FES), WHO Quality of Life Scale (WHOQOL), and Minnesota Multiphasic Personality Inventory–II (MMPI-II) were administered. Results revealed significant associations between poor family cohesion and poorer physical health, negative emotional states, unsatisfactory home environment, and elevated somatic and depressive symptoms. The findings underscore the critical role of family cohesion in elderly well-being and emphasize the need for family-centred interventions in geriatric mental health care.

Keywords: Family environment, elderly well-being, quality of life, somatic concerns, family cohesion

Introduction

"They were our shelter when we were weak; now let us be their shelter as they grow old."

Family has long been regarded as the cornerstone of human society, providing a foundation for emotional bonding, socialization, and psychological development. Early investigations into family systems were primarily rooted in sociology and anthropology; however, psychology later recognized the family as a dynamic system that profoundly influences

individual behavior, personality formation, and mental health across the lifespan.

In traditional Indian society, the *Kutumb Vyavastha* or joint family system offered a cohesive environment characterized by shared responsibilities, intergenerational bonding, emotional security, and collective caregiving. Elderly members in such families often held respected positions and received emotional and instrumental support. However, rapid urbanization, industrialization, migration, and changing socio-economic values have led to a steady shift toward nuclear family structures. This transformation has significantly reduced daily interactions and emotional availability for older adults.

India is undergoing a major demographic transition, with the elderly population projected to reach nearly 230 million by 2036, meaning that approximately one in seven Indians will be aged 60 years or older. This demographic shift highlights the urgency of understanding factors that influence elderly well-being. Existing literature suggests that loneliness in older adults is often associated with experiences of loss, emotional deprivation, somatic complaints, poor social support, and reduced motivation and empathy. These psychosocial stressors frequently manifest as physical symptoms, leading to increased healthcare utilization and psychological distress.

Despite the growing elderly population, there remains a lack of comprehensive evaluation of family-based and psychosocial interventions aimed at enhancing elderly well-being. Understanding how family environment relates to quality of life and somatic concerns is therefore essential for developing holistic geriatric care models.

Methodology

Aim

To investigate the impact of family environment on the quality of life and its relationship with somatic concerns among elderly adults.

Objectives

- To examine the relationship between family environment and quality of life in elderly adults.
- To assess the relationship between family environment and somatic concerns in elderly adults.
- To examine the association between quality of life and somatic concerns among elderly adults.
- To determine whether the observed relationships are statistically significant at the 0.05 level.

Hypothesis

H_0: There is no significant relationship among family environment, quality of life, and somatic concerns in elderly adults.

Research Design

A correlational research design was employed to examine the relationships among family environment, quality of life, and somatic concerns in elderly adults.

Data collection

Data were collected from total N=60 elderly adults selected through purposive sampling. Participants were aged between 60 and 70 years having somatic concerns for five years or more and WHOQOL score below 60. Participants must be able to understand and respond to the assessment tools throughout the study.

Tools/Materials

Family Environment Scale (FES): Used to assess family relationships, emotional bonding, support, and organization. Test–retest reliability ranges from 0.68 to 0.86, and internal consistency ranges from 0.61 to 0.78.

WHO Quality of Life Scale (WHOQOL): Measures perceived quality of life across physical health, psychological well-being, social relationships, and environmental domains. Test–retest reliability ranges from 0.70 to 0.92, with internal consistency between 0.71 and 0.84.

Minnesota Multiphasic Personality Inventory–II (MMPI-II): Selected clinical scales related to hypochondriasis and depression were used to assess somatic and psychological concerns.

Procedure

After obtaining informed consent, participants were individually assessed using the selected instruments. Ethical considerations such as confidentiality, voluntary participation, and the right to withdraw were ensured throughout the study. Pearson's product-moment correlation was used to analyse relationships among family environment, quality of life, and somatic concerns. Statistical significance was tested at the 0.05 level.

Results

Table 1. ***Correlation Between Family Environment (Poor Cohesion), Quality of Life, and Somatic Concerns (N = 60).***

Variables	WHOQOL			MMPI	
	Physical Health	Negative Feelings	Home Environment	Hypochondri-asis	Depression
Poor Cohesion (FES)	r =–0.46*	r = 0.52*	r = –0.49*	r = 0.55*	r = 0.58*

**Significant at p=0.05*

The results revealed a statistically significant relationship between family environment—particularly poor family cohesion—and quality of life and somatic concerns among elderly adults. Poor cohesion showed a significant negative correlation with physical health ($r = –0.46$, $p < 0.05$) and home environment ($r = –0.49$, $p < 0.05$). It also demonstrated a significant positive correlation with negative feelings ($r = 0.52$, $p < 0.05$).

Furthermore, poor family cohesion was significantly and positively related to hypochondriasis ($r = 0.55$, $p < 0.05$) and depression ($r = 0.58$, $p < 0.05$). These findings indicate that weaker emotional bonding within the family is associated with poorer physical well-being, heightened negative emotional states, and increased somatic and depressive symptoms among elderly adults.

The null hypothesis was therefore rejected, as significant relationships were observed among family environment, quality of life, and somatic concerns.

Discussion

The findings of the present study highlight the crucial role of family cohesion in determining elderly well-being. Consistent with previous research, poor emotional bonding within the family was associated with diminished physical health, negative emotional experiences, and higher levels of somatic and depressive symptoms. In the context of transitioning family structures, elderly individuals may experience emotional neglect, reduced support, and a sense of isolation, which can exacerbate psychological distress and somatic complaints.

The significant association between poor family cohesion and hypochondriasis suggests that emotional deprivation may lead elderly individuals to express psychological distress through physical symptoms. Similarly, the strong relationship with depression underscores the psychological cost of weakened familial ties. These findings reinforce the biopsychosocial model of health, emphasizing that somatic complaints in older adults are not merely physical but deeply rooted in psychosocial and familial contexts.

Implications

- Mental health professionals should adopt family-centred approaches, focusing not only on symptom management but also on improving emotional bonding, communication, and support within families.
- Strengthening intergenerational relationships, promoting shared activities, and fostering empathy can act as protective factors against loneliness and psychological distress in the elderly.
- Geriatric healthcare services should integrate psychological, social, and familial dimensions into routine care, adopting a holistic biopsychosocial approach.
- Community-based initiatives such as senior citizen clubs, elder support groups, family counseling units, and psychosocial rehabilitation services should be strengthened to compensate for declining family support systems.
- Policies should emphasize family-inclusive geriatric programs and caregiver support initiatives to promote healthy aging at a societal level.

Conclusion

The present study establishes that family environment plays a pivotal role in shaping both the physical and psychological health of elderly individuals. Elderly adults experiencing weaker emotional bonding within their families reported poorer physical health, more negative emotional experiences, and an unsatisfactory home environment. Poor family cohesion was also significantly associated with higher levels of hypochondriasis and depression, indicating that emotional neglect and lack of familial support contribute substantially to psychological distress and somatic symptom presentation.

The findings emphasize that somatic complaints in the elderly are deeply influenced by psychosocial and familial factors rather than being purely medical in nature. Strengthening family cohesion, emotional support, and caregiver sensitivity is therefore essential for promoting healthy aging. Interventions aimed at improving geriatric well-being must adopt a holistic, family-centred approach integrating psychological care with social and emotional support systems. The study contributes meaningfully to the growing body of literature on geriatric mental health and offers valuable insights for clinicians, families, policymakers, and future researchers.

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Exploring The Lived Experience of Parents of Glass Children: Towards A Support Framework

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Abstract

1 in 8 children in India have neurodevelopmental disabilities, compounding to nearly 2 million children. Parents of neurodiverse children cater to needs beyond immediate caregiving demands, creating unique challenges for glass children- the siblings of children with special needs. International research has recently begun to cover the psychosocial impacts on these siblings, highlighting the resilience and vulnerability they face, with limited research in the Indian context. Semi structured interviews were conducted with 15 parents raising at least one neurodiverse child and one neurotypical child. Thematic analysis using Braun and Clarke's six step method was employed to explore parent narratives of structural, emotional and social factors influencing well being. The three themes were (a) emotional role strain including feelings of guilt, 'stuckness', and concern for the needs of glass children, (b) structural barriers including clinical, educational, and community resource limitations, and (c) use of adaptive coping strategies such as dependence of extended family and peer support groups. The paper proposes an empirically supported framework to assist parents of neurodiverse and neurotypical children in India. The framework aims to amplify parental voices and shift discourse to systemic, family centred interventions, contributing to academic literature and creation of practical interventions alike.

Keywords: glass children, neurodiversity, parental experiences, India, support framework

I. Introduction

With 1 in 8 children being diagnosed with a neurodevelopmental disorder (NDD) in India, NDDs are a significant public health burden in the country (Arora et a., 2018; CNN, 2018). Neurodevelopmental disorders, such as autism spectrum disorder (ASD), intellectual disability (ID), and attention deficit/hyperactive disorder (ADHD), are lifelong disorders that impact various aspects of functioning including cognitive, social, and emotional functioning (APA). Children with NDDs often struggle with tasks including making friends, emotional regulation, communication difficulties, and developmental delays. As a result, families raising children with NDDs have more caregiving responsibilities, financial strain, and face increased emotional labor. In these systems, siblings of children with disabilities, i.e. 'glass children' are often overlooked. Often described as emotional support, these children often raise themselves as a result of parental attention being largely on the child with special needs (Golub, 2025; McHale et al., 2016).

As the leaders of the family unit, parents play a significant role in shaping and directing the functioning of the family, including how siblings experience disability within the family (Hastings & Taunt, 2002). In a family wherein there is a neurotypical and a neurodiverse child, both parents are placed in a dual caregiving role. This role calls for the parent to be balancing two roles which often interfere with each other, frequently leading to persistent emotional negotiations to take place. Difficulty in managing these dual responsibilities can lead to guilt over perceived neglect, anxiety about the long term outcomes of both children and personal physical and psychological distress (Meyer et al., 2011). The children as a result experience early maturity and resilience, which stem from a place of emotional neglect, parentification, and suppressed distress (Vermaes et al., 2012).

Despite the fact that parents are the central mediators of sibling experiences, there is limited academic research exploring the lived experiences of parents who have children with special needs and neurotypical children. This gap seems to be much larger in terms of non-Western contexts wherein research into how parents navigate complex dual relationships remains extremely limited.

II. Review of Literature

Glass children is a comparatively novel term with scarce international literature; present literature documents a profile of vulnerativity and resilience, both. Glass children often are more empathetic and resilient, but also face more psychological difficulties in terms of heightened anxiety and depression (Cervellione et al., 2025). While maturity, responsibility and empathy are usually signs of well-being, in the case of glass children, this is more of an adaptive mechanism in the form of compliance. Sibling outcomes are shaped by several factors such as parental guidance, family patterns of communication and access to support systems (Kirchhofer et al., 2025). Parental caregiving in these families has been found to be associated with emotional, cognitive, and practical burdens including chronic stress, sustained uncertainty and role overload (Davidsson et al., 2025). As a result, the child with

more needs is prioritised while glass children are unknowingly marginalised.

Sibling adjustment is mediated by how parents cope with the stress of the roles, positioning them as integral parts of family functioning processes (Cheng & Lai, 2023). Child and sibling outcomes are embedded in relational and structural contexts, with ecological and family models emphasizing on the ripple effect of stress on any member of the family as it spreads through the system. Indian research in terms of NDDs continues to focus on parental/caregiver burden, stigma, and services with limited attention to glass children (Lockwood et al., 2023). In a collectivistic culture like India, family systems are often deeply impacted by family structure (i.e. joint family systems), gender based expectations, lack of awareness, and a serious shortage of state supported services (Divan et al., 2012). Consequently, parents rely majorly on informal support systems while they navigate educational and structural barriers, stigma, and scarcely available medical and clinical resources.

In the Indian context, research into parental experiences remains stunted. Existing studies lack theoretical integration or intervention focus, and often obscure sibling distress due to cultural norms. There is a clear gap in considering parental experience that mediate sibling relationships, which this study addresses by qualitatively exploring lived experiences of parents and uses to inform a supportive framework centered on families with glass children.

III. Methodology

The study uses a phenomenological exploratory design in order to qualitatively examine the lived experiences of parents raising a child with special needs, i.e. a neurodiverse child as well as a glass child. This approach allows for an in depth exploration of the experiences, allowing for deeper understanding of emotional processes and challenges, as well as contextual factors that underscore the experiences of parents. A quantitative approach would not allow this kind of understanding. Informed by an interpretivist paradigm, the structure of the interview process was made to recognise the social construction of parental experiences, shaped by the cultural and systemic context in India.

A sample of 15 parents, including fathers and mothers, was collected for the purpose of this study. The participants were all residents of urban and semi-urban areas in India and were primary caregivers in a family with at least one child with a formally diagnosed neurodevelopmental disorder and one or more neurotypical child. The inclusion criteria required for neither of the children to have severe comorbid conditions. This was done to ensure conceptual clarity. The final sample consisted of individuals from diverse age groups, socioeconomic status, family structure, and neurodevelopmental disabilities, allowing for a diverse perspective. Interviews were conducted until the point of data saturation was reached. A combination of purposive and snowball sampling method was used in order to identify and access families that could offer information rich perspectives. The recruitment of participants was done through contacting special schools and parent support networks pan India.

Data was collected using semi structured interviews that were validated by experts in the field. The interviews were conducted in English, Hindi, and Gujarati as per the preference of the participant; interviews conducted in regional language were manually translated to English in order to streamline data analysis while preserving contextual meaning. The interview guide explored parental perceptions of their roles as primary caregivers, emotional experiences with regards to their children and family dynamics, as well as support systems and coping strategies. Each interview lasted between 45 to 75 minutes and were all conducted online via a secure platform. Written and verbal informed consent was collected in order for the content of the interview to be used for the purpose of this study and to audio record the interview for the purpose of transcription.

The data was analysed manually using Braun & Clarke's six step method: familiaration with the data, initial code generation, searching for themes, reviewing themes, defining and naming themes, and creating the report. Iterative analysis allowed for themes to naturally evolve as patterns were identified. Ethical considerations were maintained, including informed consent, confidentiality, anonymity, and right to withdraw. In the reported findings, pseudonyms were used to protect confidentiality further.

IV. Results

The analysis of the transcribed interviews revealed three distinct themes: (1) Emotional Role Strain, (2) Structural Barriers, and (3) Adaptive Coping. Each of the themes has been broken down and supported by verbatim from participants.

Theme 1: Emotional Role Strain

Parents reported facing emotional distress resulting from the attempt at trying to fulfil the responsibilities that accompany each role that they have in the family setting. They described their struggle to manage caregiving responsibilities, professional and personal roles, emotional attunement to both children simultaneously, as well as role negotiation and role switching. The emotional strain included guilt over perceived neglect of the glass child, anticipatory anxiety of what the future would hold for both the children, a sense of stuckness, and feeling of losing their own identity. The unequal caregiving demands and cultural expectations which call for most mothers to manage all the children's needs on her own has led to a structural emotional overload, often without any outlet.

Guilt and perceived neglect of glass child

Parents acknowledge the disproportionate time, attention, and energy spent on the child with a NDD, expressing persistent guilt. As a result, parents also observed how the glass child often implicitly understood and adjusted, without any acknowledgement of their own mental and emotional needs.

"It's not good that I look after one daughter and not the other."

Emotional exhaustion and anticipatory anxiety

Several parents faced a sense of anticipatory anxiety in terms of what would come next for their children after they passed away, along with chronic emotional load which intensified as the child grew.

"Anxiety is always there because it's very uncertain… we don't know what is going to happen."

Stuckness and loss of personal identity

Parents often faced a loss of their own personal identity while trying to manage their dual responsibilities, feeling a sense of physical and emotional confinement, bound by their caregiving roles.

"Many times, I feel that I have to do everything. I feel that I am stuck. I can't do anything or go anywhere."

"Sometimes I feel that I will never be free. I will do this all my life."

Theme 2: Structural Barriers

Broader structural and systemic barriers including clinical, educational, healthcare, and community resource limitations added onto existing emotional strain. The way parents navigated these challenges was often through personal sacrifice.

Clinical and healthcare systems

Ambiguous and incorrect diagnosis, lack of medical guidance, and lack of clear trajectories to seek ongoing care. These factors compounded on the uncertainty many parents had from the beginning and placed the parents in a continuous loop of decision-making fatigue.

"Therapies… they don't tell you that if you do this, this is going to happen. It's always 'we will try our best.'"

"And it's such a crazy system, you know, because with just that one diagnosis of autism, there are some 1000 therapies sold to you with the promise of curing it."

Educational barriers and practices

Barriers include lack of inclusion in regular classrooms and lack of support from governments for institutions focused on providing inclusive education to children with NDD in the form of monetary or space constraints support.

"They very openly say that we would like to take your child but we don't have the resources."

Financial constraints

Long term strains faced by families in order to cover therapy (personal and occupational therapy), special education, and extracurricular interventions needed for basic development added up and were normalised.

"Her schooling expense is more than normal school, and then the classes. It was a little difficult for me."

Theme 3: Adaptive coping

A lack of formal systemic support has led to parents developing adaptive strategies to cope with the burden of dual responsibilities by developing extended family networks, personal processes for meaning making, and peer support groups.

Reliance on family structure

Parents often sought comfort from joint family structures, with extended family members offering support in terms of not only overtaking some caregiving responsibilities, but also emotional and logistical support. Utilising this support, parents were able to better navigate through a sense of isolation and caregiving burnout.

"My biggest advantage was that there were four children in the house… all the members of my family used to take good care of her."

Peer Support

Peer learning and participation in peer networks helped parents navigate obstacles in caregiving, seek out different therapeutic modalities, and gain practical guidance.

"Talking to parents in the community helps me a lot because they give me actual solutions."

Personal meaning making

Parents developed their own coping mechanisms such as engaging in religious practices, exercise, physical movement, or seeking psychological and psychiatric help to cope with caregiver burnout and role strain.

"If it's written in my destiny, then it will happen. Because of my religion I am much better."

"A lot of breathing techniques help me really… just calming down."

V. Discussion

Parenting in families with a neurodivergent and neurotypical child possesses a different set of obstacles that need to be overcome. These obstacles are not individual, but systemic. The emotional role strain was a slowly compounding pressure of guilt, anxiety, and emotional overload due to unequal role demands. This strain is amplified by structural loopholes and absence of clear clinical, educational and community systems. When parents who are completely uncertain in the first place receive incorrect or inconsistent diagnosis, no clear plan of action, no truly inclusive schooling options, and continue to be buried under financial strain, they suppress their own needs and are subject to chronic stress. This not only causes them to suppress their emotions, but also reinforces self-silencing in glass children. As a result, this self-silencing is mistaken as understanding and adaptability. Coping strategies, which are often self-taught and discovered to peer networks, point to the absence of systemic family support models.

Parents are the central connection between children and are critical in order to develop children focused interventions; they're the primary decision makers who structure routines, emotions and resources. Furthermore, parental involvement dictates emotional expression, understanding, and regulation based on management of caregiving demands. Interventions, only when designed with caregiver inputs, can align with family realities and account for practical and structural constraints. To be effective, interventions need to be embedded within the larger family system, especially in a family centered environment akin to the Indian sociocultural context.

Proposed Support Framework

Data collected during the semi structured interviews lead to a multi-level, family-centered, supportive framework. Grounded in parental narratives, the framework addresses need of parents of glass children and attempts to bridge emotional and structural gaps identified through the interviews. The framework takes into consideration practical factors such as resource availability and cultural factors, targeting individual and collective stakeholders. .

At the individual level:

- Parent level: Normalisation of emotional experiences including ambivalence, guilt, sadness, exhaustion associated with caregiving demands and diagnosis. This can be done via the creation of structured parent support groups with trained professionals to facilitate sessions to ensure formal processes such as guided reflection, emotion management techniques and guidance in anticipatory planning for the future.

- Glass child level: Age-appropriate psychoeducation and counselling spaces allow for glass children to acknowledge and process emotions of frustration, confusion, anger, resentment, or sadness without the fear of burdening parents. Clear psychological guidance by trained professionals can aid in mitigating premature maturity and emotional dysregulation.

At the collective level:

- Family level: Family based interventions focused on siblings can be structured to include role negotiation, communication patterns, and creating stronger bonds within each member of the family unit. By doing so, the emotional invisibility of the glass child is addressed and individual bonds are created and reinforced.

- Community level: awareness workshops to educate other parents and children about NDDs to prevent stigma from rising, ensuring care facilities for neurodivergent and neurodivergent children both, advocating for inclusion in shared spaces to allow all children a chance to participate.

- Structural level: Sibling inclusive clinical assessments, school-based programs on inclusivity, accessible respite services are the basic changes required. Training healthcare providers to accurately diagnose and formulate a long-term plan with clients can help guide parents to independently plan for the best way to support all their children.

This framework addresses each of the core themes identified in the previous sections, while simultaneously shifting the focus from individuals to systemic responsibility.

VI. Limitations and Future Directions

Participants primarily lived in urban areas with access and means to have support resources which limits generalisability across socioeconomic and geographic contexts. Despite these limitations, the study highlights findings with the potential to create inclusive practices that can address systemic challenges faced by millions of parents and children across India. Future research can focus on the voices of the glass children themselves, track the progression of the proposed framework, and empirically evaluate effectiveness of components of the framework through longitudinal designs.

VII. Conclusion

This study highlights the overlooked emotional and practical realities of families with glass children, emphasising the role of parents in shaping sibling well-being. By foregrounding parental voices, the study advances a family centered, systemic framework, working on individualistic and collectivistic levels, to support glass children within the Indian context.

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Navigating Ethical Frontiers: Artificial Intelligence and the Future of Public Health Policy

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Abstract

Artificial intelligence in public health systems is predictively modeling and utilizes resources for optimum allocation, real time surveillance and decision-making processes. This rapid development of AI has increased ethical concerns of transparency, fairness, privacy and equity which is critical to safety of the person. This chapter explores the ethical frame of AI in public health, moral imperatives, governance challenges that influence policy making, resource allocation and population interventions. It's an interdisciplinary approach focusing biomedical ethics, data science, and public policy making through predictive risk modelling. AI driven health system, digital contact tracing and argues that without ethical monitoring AI amplifies the risk of health disparities by marginalizing vulnerable population and trust. The Key themes include informed consent, epidemiological predictions in algorithmic bias, data ownership and explainability in high-risk decision- making. The chapter also addresses global policies like guidelines given by WHO on AI health ethics and regional AI governance models to identify the gaps and best practices in compliance of Ai ethics. To maximize equitable AI deployment, an ethical decision-making framework coming from principles of beneficence, non-maleficence, justice and autonomy is addressed and the chapter concludes with actionable suggestions and recommendations to align AI with human rights, public interest and policy making in public health practices in a sound manner.

Keywords: Artificial Intelligence, Public Health Ethics, Algorithmic Bias, Data Governance, Predictive Analytics, Digital Surveillance, Health Equity, AI Regulation

Introduction

AI ethical integration is a multidimensional and multidirectional challenge which merges philosophy, public health, bioethics, data ethics science and law. This framework is normative in nature scaffolding problem solving and decision making regarding individual rights, duties and collective wellbeing.

This chapter outlines major ethical paradigm, debate on AI in public health including biomedical, human rights, data and algorithmic, feminist and decolonial critiques, each of which emphasis different perspectives for example autonomy vs collective good, equity bs efficiency, transparency vs performance which must be balance within AI driven health care systems.

Biomedical ethics

Biomedical ethics stems from medicine has four core grounded principles (Beauchamp & Childress, 2019) namely *Autonomy* which deals with respective rights to make informed decisions, *Beneficence* which deals with acting to benefit patients, *non- maleficence* which avoids harm and *Justice* that ensure fair access and distribution of resources. In the field of Artificial intelligence these principles get converted to real world ethical issues like issue of opaque algorithm and lack of informed consent in digital surveillance tools(Autonomy), non-maleficence is checked in biased models which cause harm like misdiagnosis and exclusion from access to healthcare services and Justice is studied in terms of replication and amplification of systematic inequities.(Obermeyer et al., 2019). This approach is important but limited to population intervention and not applicable to individual level as the outcomes affect the group rather than individual.

Public Health Ethics

Ethics for public health focuses on collective wellbeing and balance between collective good and individual rights as a trade between freedom and benefits of individuals and population. The key values are *Solidarity* (collective action for benefit of all), *Infringement* (intervention trespassing autonomy*), Proportionality* (ensure benefit of public health).

During pandemic period digital tracking apps like Aarogya Setu, trace together etc raised dilemmas regarding the mandate usage of public health authorities for containment or make it voluntary to preserve autonomy. Studies concluded that ethical framing and community engagement improved the uptake and increased trust in such technological apps (Naik et al., 2022).

AI Governance and Human Rights Based approach

This approach emphasizes the inalienable rights of people and community which is very part of international human rights law. About health and AI, the rights that are applicable are *Right to privacy* (Article 12, UDHR; Article 17, ICCPR), *Right to health (*Article 12,

ICESCR) and *Freedom from discrimination* (Articles 2 & 7, UDHR).

Global organizations like WHO's guidelines on ethics and AI governance for Health (2021) tries to align human rights, warning for the systems that infringe on privacy, autonomy, or data colonialism where the data is collected without any population benefit from these AI innovations (Floridi & Cowls, 2019). For example, the data collected from African communities during the Ebola outbreak were used by western research with limited benefit to the local contributors raising a concern about extractive data practice and epistemic injustice.

Data Ethics and Algorithmic Accountability

AI systems are built on datasets and complex operations a new subfield called Nontransparent algorithm for data ethics has emerged (Mittelstadt et al., 2016) which has raised certain concerns namely.

1. Algorithmic bias which emerged due to skewed training data leading to disproportionate harm
2. Opacity also called the "Black box" algorithms with self-decision-making process which cannot be scrutinized by its creators also.
3. Explainability and transparency is the need to understand the AI decisions at least to the stakeholders and
4. Accountability is the process to determine the responsibility and harm created by these algorithmic decisions and AI.

The best case could be the 2019 AI triage system failure in US (Obermeyer et al., 2019) where black patients were prioritized for care leading to ethical danger of using flawed proxies and thus the solutions to this include impact assessments of the algorithms, bias audits and model documentation tools like datasheets, model cards etc. (Mitchell et al., 2019).

Feminism and Decolonial Ethics in AI

Traditional ethical frameworks included feminism, relational autonomy, care ethics and contextual moral reasoning in opposition to abstraction and universalism. (Held, 2006). They point out how technological design do not include lived experiences of women, LGBTQ+ people. For example, the facial recognition system performs bad on darker shades of skin tones and female face as the datasets are not representational (Buolamwini & Gebru, 2018). This can lead to fatal consequences in biometric based triage or identity verifications.

Meanwhile decolonial ethics criticize how western epistemology dominate the AI development and neglects the indigenous knowledge systems. This alerts the need for

epistemic pluralism and data sovereignty. (Mohamed et al., 2020).

Both these approaches raise questions on what system values should be included in shaping, whose voices should be considered, who is benefited and harmed and create a need for developers and policymakers to address them.

In conclusion ethics are important as they evaluate the deployment of AI in public health, give insight into important values, who are protected and harmed. However no holistic approach is available to address all complexities and issues of AI systems in diverse health contexts demanding a pluralistic, interdisciplinary ethics which is theoretically grounded and pragmatically adaptable.

Ethical Frameworks and Theoretical Foundations

AI seems to increase people's health decisions from problem prediction to finding health resources for behavioral and mental health interventions. These apps however have ethical consequences and thus to govern these technologies we need multiple layers of ethical frameworks which address fairness, risk, accountability, and inclusivity. In this section we will explore 6 major ethical paradigms which can be used for AI in public health, Biomedics, Human based approaches, data and algorithmic, feminist and decolonial ethics. These are intersectional ethics offering robust normative foundation for AI evaluation to reshape health governance.

The first and most well-established ethics are *Biomedical ethics* which was proposed by Beauchamp and Childress (2019). They included aspects of autonomy, beneficence, non- maleficence, and justice as the key ethical components. In Ai context *Autonomy* is questioned by the system that function without transparency making it difficult to give informed consent. For example, people are unaware that machine learning models verify their eligibility to use services for health needs. *Beneficence and non-maleficence* focus on providing the clinical or public health benefits and minimize harm, misclassification, exclusion or false positives. *Justice* deals with equal distribution of health benefits to avoid commercial health risk and design algorithm for the same. (Obermeyer et al. 2019). Example is the listing of white patients to high risk at twice the rate of black patients with similar health conditions in US. This bias was seen due to error in algorithm use that was designed based on the earlier healthcare spending as a proxy for health need underestimating the health care for marginalized peoples. These examples demand a well scrutinized and designed implication of the biomedical ethics to AI systems.

In contrast to these individuals working on biomedical ethics focus on prioritizing population level outcome public health systems rooted in values like Utilitarianism which maximize collective benefit, its ethos often justifies use of AI tools in disease transmission and vaccine tracker during crisis however its efficiency overlooks the needs of marginalized people. Solidarity is the shared responsibility, and social justice (addressing health disparities).

AI models often neglect access to rural communities or informal workers though solidarity highlights on equitable sharing of public health benefits and burdens (Floridi & Cowls, 2019). Example, Indias Aarogya Setu, used by 170 million during pandemic was not accessible to approximately 30% population who dint have smartphones. (Naik et al., 2022). Without inclusive infrastructure, AI amplifies exclusion under guise of universality. Social justice claims that AI reduces aggregate risk but aims to correct historical health disparities. Public health ethics reminds us that design and application must balance efficiency, equality and fairness.

The human right perspective extends the ethical commitments in legal and normative needs. Under article 12, UDHR the international law of privacy, Article 12, ICESCR- right to health and Article 2 and 7 UDHR that deals with ethical AI governance insists that AI should avoid harm and respect right and dignity though in reality AI in public health domain lack protection legally. The best example for this situation is the Singapore trace together app used to collect public health data was disclosed to law enforcement questioning the public trust, government over reach and scope creep (WHO, 2021). This is a classic example of breech of privacy and confidentiality and thus Right based approach that emphasize transparency, consent, redress mechanisms, and legal accountability is needed as central to global ethical standards such as the WHO's 2021 Guidance on Ethics & Governance of AI for Health and UNESCO's 2021 AI Ethics Recommendations.

Other perspective to look at data ethics and algorithmic accountability is to look at technical structure and impact of AI systems. This focuses on the transparency of how decisions are made, explainability of whether decisions are understood by all and bias mitigation to ensure fairness. The black box of AI models makes accountability difficult, for example the google flu trends failed to predict flu outbreaks due to over fitting and reliance of misleading search (Lazer et al., 2014).

Lapses in ethical functions underline the need for the tools for impact assessments, bias audit and transparent documentation. Models like cards (Mitchell et al., 2019) and datasheets (Gebru et al., 2018) aim to standardize transparency and reduce limitations, assumptions, and intended AI tools use. As these practices remain inconsistent, 2021 survey in nature found that 80% of AI models for health were developed based on US, China, Europe population ignoring global south and thus producing non generalizable and harmful results (Morley et al., 2021). Thus, data ethics calls for inclusive design, validation and enforceable accountability measures.

Technical ethics provides necessary check points for system behavior; it doesn't address deeper structural inequities in data and design. feminist ethics and decolonial perspectives try to provide correctives that is critical and essential, they emphasize relational autonomy, contextual decision making and ethical values for care and empathy (Held, 2006). it criticizes the abstraction and universalism of mainstream ethics and highlights male focused, Eurocentric design assumptions AI systems. Buolamwini and Gebru (2018)

demonstrated that commercial facial recognition apps had less than 1% error rates for white male face but 35% for darker skinned women, which was leading to serious safety concerns in biometric based heath identification systems.

Decolonial ethics criticize how AI design is western epistemologies and corporate interest specific. This calls for a data sovereignty, community consent, and respect for Indigenous and local knowledge systems. Mohamed et al. (2020) describes how data extracted from African population during health crises was used in global research without benefit-sharing or authorship right as a classic example for epistemic injustice, undermining trust and ethical reciprocity. Thus, there is a need to develop a system of AI that works for all in all consequences. The strength and limitations of the ethical shifts are as follows-

1. Biomedical ethics- Strong individual protection and not population intervention.
2. Public health ethics- beneficial for collective lends and not marginalized.
3. Human rights ethics- legal enforceability but not international enforcement.
4. Data ethics- technical tools but not socio- political critique.
5. Feminist and Decolonial approach – insights of exclusion and power but underrepresent it in formal policy.

In conclusion the ethical evaluation of AI in public health needs a muti- dimensional and directional method to fill the gap of single AI system frame for health , technology, governance and society for risk identification, moral compass and inclusion for public good.

Case Studies in AI and Public Health Ethics

The 5 contemporary cases demonstrate the application of AI in public health system intersecting with complex ethical concerns. Each of the case try to focus predictive risk, surveillance, vaccine allocation and psychological health highlighting technological efficacy , governance choice and structure that shape the ethical outcome of AI in society.

Predictive Risk modelling in health resource allocation

Case: Hospital triage algorithms during COVID-19, Ethical issues addressed are fairness, transparency, informed consent

During covid – 19 hospitals across the globe installed AI driven predictive models to optimize ICU triage, ventilator allocation, and early risk detection. The Mount Sinai health system in US was developed in US for chest CT, the data predicted deterioration using AI and helped in allocating resources effectively (Wang, 2020). Hospitals in Italy used algorithmic tool for ICU admissions during caseloads.(Barro, 2020). These algorithms lacked transparency and public scrutiny. The Optum Model in US used healthcare cost as

proxy to marginalize black patients due to low healthcare utilization. (Obermeyer, 2019)

This bias resulted in assigning lower risk to black patients with same disease burden and excluding them from high quality treatment and care. These models created a ethical challenge to principles of justice and informed consent as many patients were unaware of AI system decisions about care.

The lack of algorithmic explainability created problems for clinicians, who expected to act on opaque model recommendations without understanding the rationale. This case highlights the importance of bias auditing, model interpretability, and patient involvement in AI-driven decision-making.

Digital Contact Tracing and Mass Surveillance

Case: Aarogya Setu (India), TraceTogether (Singapore), Ethical concerns addressed are data privacy, autonomy, digital exclusion

During covid 19, tracing contact became very important. India's Aarogya Setu, launched in April 2020, reached over 170 million downloads, while Singapore's TraceTogether app became central to national surveillance strategy. These systems use Bluetooth and GPS to monitor proximity and notify users of potential exposures.

These apps presented serious ethical issues despite their potential benefits for public health. First, all workers in the public and private sectors had to have Aarogya Setu to access services and transportation. However, its data management and governance mechanisms were unclear at launch, and it lacked a clear privacy policy (Internet Freedom Foundation, 2020). Similar criticism was leveled at TraceTogether when the Singaporean government acknowledged that law enforcement could use the app's data for criminal investigations, despite previous assurances (BBC, 2021).

Digital exclusion was a significant ethical concern. About 400 million people in India do not own smartphones, with the elderly, those living in rural areas, and those from lower-income backgrounds being disproportionately affected (GSMA, 2021). As a result, a two-tiered public health system was established, with device ownership determining access to protective services. Furthermore, users rarely gave their informed consent because installing apps was frequently done under covert coercion, which went against both autonomy and the voluntary participation principle.

These incidents highlight the necessity of strict data protection regulations, post- pandemic sunset clauses for digital tools, and citizen oversight procedures for surveillance systems.

AI in Epidemiological Surveillance

Case: BlueDot, HealthMap, Google Flu Trends, Issues addressed are data bias, false positives, overreach

BlueDot, HealthMap, and Google Flu Trends are examples of AI-based surveillance platforms that promised early disease outbreak detection using new data streams like social media, flight patterns, and internet searches based on the reports BlueDot had identified the outburst of Covid 19 nine days before WHO's initial warning according to Bogoch(2020).

The Google Fle trends systems are very promising but have drawbacks in terms of prevalence monitoring of the flu. This is due to large overfitting search with minimal clinical significance, the error overestimation of Flu cases was over 140% (Lazer, 2014).

Also, there was an output distortion bias in the surveillance data source like underrepresentation of the low income or non-English population. False negatives developed hotspots with missing disease patterns in the areas as it was based on internet activity and lesser digital infrastructure. These systems also had opaque data , model updates and validation against official epidemiology. In the absence of regulatory oversight, privately owned algorithms are unreliable to make public health decisions.

The innovation and dependability conflict is important standpoint for ethical cross validation process, the human loop supervision and dedication to explain in high stake situations are aspects of AI epidemiological design.

AI-Driven Vaccine Prioritization

Case : National Immunization Programs using AI. Algorithmic bias and demographic weighting.

Covid 19 is a classic period to understand several nations investigation into Ai systems to focus on vaccine scarcity. The vaccine access used a predictive model to strategies age based and comorbidities for avail healthcare services in US as per the reports of Veteran's Health Administration. These models had operational benefits but also faced moral dilemmas as it did not prioritize young people and underprivileged with less digital health history leading to structural injustice into algorithmic logic and risk of making them worst. The Qcovid risk model app raised concerns about algorithmic fairness and public transparency as it questioned sociodemographic and ethnicity for the vaccination eligibility in UK . It also had a dearth of open- source documentation and lacked explanation to public.

An ethical implementation of these models should include .

1. Public explanation to design decisions.
2. Community consultation on value trade-offs (such as exposure vs. age); and
3. Reclassification appeal procedures. Making vaccine AI equitable and acceptable requires transparent governance, frequent fairness audits, and the inclusion of diverse population data (WHO, 2021; Naik et al., 2022). Mental Health & Chatbots in Public Health

Case: Wysa, Woebot. Risks: therapeutic safety, informed consent, liability

Wysa and Woebot, two AI-powered chatbots that provide scalable support for stress, anxiety, and depression, have been incorporated into public health mental health initiatives. During pandemic lockdowns, when in-person therapy was unavailable, these tools became popular. Wysa, which was created in India, has over 3 million users in 65 countries and has been incorporated into university and workplace mental health initiatives.

Although these tools provide anonymity and accessibility, there are serious ethical issues with their use. Since the majority of chatbots lack clinical licenses, they might function outside of accepted legal parameters. Few mental health chatbots have strong safety procedures or mechanisms for escalation in crisis situations (such as suicidal ideation), according to a 2023 analysis by Kirby et al. Despite disclaimers, users might mistake these bots for alternatives to professional care.

Additionally, these apps gather private information about mental health, frequently subject to ambiguous terms of service. There are still many unanswered questions regarding data security, ownership, and consent. The U.S. Federal Trade Commission, for instance, fined the mental health startup Better Help in 2022 for disclosing user health information to advertisers, which sparked worries about similar behavior in AI-powered platforms.

Another gray area is liability. Who bears responsibility if a chatbot misses a significant mental health risk in the absence of explicit guidelines? Clear accountability, ethical use guidelines, and regulatory classification are critical as these tools are incorporated into public health campaigns (Kerasidou, 2021; WHO, 2021).

Governance, Regulation, and Global Policy Landscape

Strong, context-sensitive, and enforceable governance mechanisms are required due to the quick development of artificial intelligence (AI) technologies in public health. The Ai use has raised serious questions like justice, accountability, responsibility, transparency and equity though surveillance, diagnostics, decision making and predictive modeling is unheard previously as per WHO guidelines on ethics and the European Union artificial intelligence Act (2021), OECD principles are the important regulatory tools considered in this chapter. In addition, the chapter also provides a comparison on the policy review of the US, UK , India and EU about regulatory gaps, global governance and public private influence partnerships on development of health Ais.

WHO Guidelines on Ethics and AI in Health (2021)

In 2021, first international guidelines for AI heath sector were released by WHO under ethics and governance of AI for health.

Six guiding principles are outlined in this document:

1. Preserving individual liberty

2. Intelligibility, explainability and openness to be ensured.
3. Advancement of public interest, safety, and human well-being
4. Promoting accountability and responsibility
5. Ensuring equity and inclusivity
6. Encouraging AI that is sustainable and responsive

Recommendations like multi-stakeholder governance boards, required health impact assessments, and post-deployment auditing of AI systems are examples of how these principles are put into practice (WHO, 2021). Particularly in low- and middle-income countries (LMICs), the WHO stresses that public health AI should be contextually appropriate, rights-based, and community-informed.

Implementation is still uneven, though. Existing digital health policies frequently ignore ethical considerations, and the majority of WHO member states lack national AI regulatory frameworks in the health sector. The WHO report also recognizes a structural imbalance in which nations in the global south are used as test sites for AI tools created in the north, with little ability to monitor or share benefits.

European Union Artificial Intelligence Act

Proposed in April 2021 and passed in 2024, the EU Artificial Intelligence Act is the first comprehensive legal framework designed to regulate AI in all fields, including healthcare. It divides AI systems into four risk categories: unacceptable, high-risk, limited- risk, and minimal-risk. Health AI models are classified as "high-risk."

The Act requires pre-market conformance evaluations. Strong data governance, particularly for training datasets; human oversight requirements; risk management procedures; and transparency and record-keeping standards

The implications for public health are significant. Systems such as clinical triage tools, diagnostic AI, and pandemic forecasting models must meet stringent documentation and testing requirements. Additionally, developers must show that their models do not generate unsafe or discriminatory results (European Commission, 2024).

Critics counter that, especially for small health tech startups, the burden of compliance may stifle innovation. Furthermore, dynamic models that change after deployment—are not fully considered by regulation, which raises questions regarding post-market surveillance and real-world adaptability.

OECD Principles of Artificial Intelligence

The Organization for Economic Co-operation and Development (OECD) published its AI Principles in 2019, and 46 nations—including major economies—adopted them. These guidelines create a framework for soft law that emphasizes: AI that upholds democratic

values, human rights, and the rule of law. Accountability throughout the AI lifecycle; robustness, security, and safety; transparency and explainability; inclusive growth and sustainable development. The OECD advises national governments to create AI policy units, implement impact assessment instruments, and create multidisciplinary oversight mechanisms in the field of public health (OECD, 2019). Additionally, it backs health research data-sharing programs that prioritize interoperability and open science.

The OECD's recommendations are frequently used as standards for national laws, even though they are not legally binding. Notably, the OECD has no enforcement power, and its high-level principles need to be translated into sector-specific guidelines at the national level. This is a problem that many jurisdictions still fail to adequately address.

Comparative Policy Landscape: US, UK, India, and African Union United States

The Food and Drug Administration (FDA) and the Department of Health and Human Services (HHS) are two sectoral agencies that regulate health-related AI in the United States despite the lack of a centralized AI law. Both diagnostic and therapeutic algorithms must be clinically validated and labeled in accordance with the FDA's Software as a Medical Device (SaMD) framework. Five guiding principles for ethical AI were outlined in the AI Bill of Rights Blueprint, which was introduced in 2022:

1. Systems that are secure and efficient
2. Protections against algorithmic discrimination
3. Privacy of data 4. Notification and clarification
4. Human substitutes and backup plans

Nevertheless, enforcement is still dispersed, and the blueprint is not legally binding. There are worries about transparency and data commodification because the U.S. system is very market-driven and private companies control significant AI health deployments (Naik et al., 2022).

United Kingdom

The UK AI Strategy (2021) places a strong emphasis on innovation, ethics, and regulation, while the Data Protection Act (2018) and Medical Devices Regulation apply to health AI. With an emphasis on algorithmic bias and public trust, the Centre for Data Ethics and Innovation (CDEI) serve as an advisory body.

In the UK, public health AI tools like QCovid (for COVID-19 risk stratification) have come under fire for not involving the public, especially when it came to the way socioeconomic data was used to make predictions. Despite the existence of governance structures, there are few mechanisms for citizen oversight.

India

The Ayushman Bharat Digital Mission (ABDM) is accelerating the transformation of digital health in India. Using AI for primary care, pandemic response, and telemedicine is emphasized in the National Digital Health Blueprint and National AI Strategy (NITI Aayog, 2018).

India does not, however, have a specific AI or data protection law. Political obstacles prevented the now-shelved Personal Data Protection Bill (2019) from regulating the use of health data. India's COVID-19 app, Aarogya Setu, was criticized for its lack of legal support, ambiguous governance, and inadequate privacy safeguards (Internet Freedom Foundation, 2021).

With minimal regulatory harmonization or oversight mechanisms, state-led initiatives, public-private partnerships, and foreign tech involvement (such as Google and Microsoft in Indian health AI projects) further complicate India's AI landscape.

African Union

To promote the ethical use of data, including health data, the African Union (AU) adopted the African Union Data Policy Framework in 2022. The framework emphasizes data sovereignty, regional interoperability, and indigenous knowledge systems, but it is not AI-specific.

Innovation is shown by pilot AI health initiatives (such as Ghana's malaria prediction models or Rwanda's drone delivery of medical supplies via Zipline). Regulatory capacity is still constrained, though, and there is a chance of "data colonialism," in which African datasets are exported to train models that offer little assistance or feedback to the local populace (Mohamed et al., 2020).

Regulatory Gaps and Emerging Risks

Several regulatory gaps still exist despite efforts to create ethical AI governance:

1. AI systems rarely undergo post-market surveillance, particularly as models develop in practical contexts.
2. Independent audits are restricted by proprietary algorithms, which reduces public accountability.
3. The lack of standardized frameworks for health data interoperability makes multi-jurisdictional AI applications more difficult.
4. Cross-border data flows are not well regulated, especially when cloud computing or telemedicine transcend national borders.

One of the main issues is "regulatory asymmetry," in which countries with strict regulations (like the EU) set high standards while others have looser oversight, which could lead to the

use of unethical instruments. Furthermore, innovation races that prioritize technological dominance over ethics may be fueled by geopolitical competition, especially between China and the West.

Public-Private Partnerships and Proprietary Algorithms

Private technology companies develop or codevelop most AI systems used in public health. Among the examples are:

- IBM Watson for Oncology (with Memorial Sloan Kettering)
- Google Health's DeepMind collaboration with UK's NHS
- Microsoft's AI-enabled diagnostics in India

These public private partnerships (PPPs) present significant ethical conundrums despite their promises of resource sharing, technical know-how, and scalability:

1. Opacity and Trade Secrets: Transparency and independent assessment are restricted by algorithms' frequent protection under intellectual property laws.
2. Data Ownership and Consent: Long-term benefit-sharing arrangements and community-level consultation are frequently absent from the use of public health data.
3. Accountability Chains: It's not always clear in PPPs who are morally and legally responsible—private vendors, governments, or hospitals.
4. Profit Motives: Scalability and commercialization may take precedence over inclusivity or accuracy in corporate incentives.

New governance mechanisms include impact analysis, public registers and Model cards which addresses these issues. Uptake varies regulatory captures of the process by which business shapes oversight and structural risks remain. Enforceable legislation, flexible oversight and participatory methods are needed for ethical AI governance in public health as per the guidance given by WHO, EU and OECD through global coordination, institutional capacity building and national policies focusing mainly on human rights, sovereignty and equity of AI governance to avoid digital injustice in the name of technological advancements.

Challenges to Ethical AI Integration in Public Health

Artificial intelligence enhances public health outcomes but it's difficult to ethically integrate AI into health systems. These difficulties are technical, economic, social, political and epistemic systems. The ethical system in AI integration includes data gathering, model creation, deployment, interpretation and governance. To minimize inequality and enhance

trust, this chapter identifies and examines seven interconnected issues that need to be addressed and solved.

Algorithmic Bias and Systemic Inequality

Algorithmic bias is the most common ethical issue in health which occurs when automatic systems reproduce and magnify injustice. Bias occurs during feature selection, data collection or model training if the data set doesn't represent target population as indicated by Obermeyer (2019). The best example here is the past medical expenses as a stand in for severity of illness, in black patients as per the popular risk prediction algorithm in US health systems. This model assumed that black people were healthier than they are due to structural racism resulting in less medical attention (Obermeyer, 2019).

This underrepresentation in the datasets trained AI to contribute systemic inequality and produced differences in risk assessments, treatments and diagnosis. This bias is not coincidental but structural poverty that interacts with economic status, gender , race and demographics(Veinot, 2018). To address algorithmic bias, proactive bias audit, demographic intersectional data and participation of community in data governance is a must. However, developers ignore this indifference in private sector prioritizing incentives over moral considerations.

Black Box Models and Explainability Barriers

Neural networks and other intricate machine learning architecture are basis of many AI health systems. These systems are the black holes where the designers are unable to understand their complete workings. This trait has created a serious difficulty of explainability and without being able to decode the logic behind classification and predictions, clinicians are questioned about the reliability and validity of the output. The AI assisted radiology or triage systems make the judgement difficulty and challenging to understand potential harm or to recommend the line of intervention and treatment (Lipton, 2018). The lack of explainability is risking population and legal defensibility during pandemics or mass screening and losing public trust.

Methods such as model cards (Mitchell et al., 2019), interpretable machine learning, and local explanation tools (e.g., LIME, SHAP) have been suggested. However, these methods are not standardized, and most jurisdictions still have ambiguous or non-existent regulatory expectations for explainability.

Informed Consent in Population-Level AI Tools

Conventional informed consent frameworks were not created for algorithmic systems that function at the population level, frequently without direct patient interaction, but rather for individual clinical encounters. AI-based surveillance tools during the COVID-19 pandemic or apps like Aarogya Setu in India were introduced without adequate opt-out or user comprehension mechanisms (Internet Freedom Foundation, 2021).

Data is frequently gathered passively, combined, and processed in ways that are hidden from the user in AI-powered public health tools. Even when privacy policies do exist, they are frequently written in legalese or are not easily accessible. Autonomy and informed decision-making are compromised by this, especially in LMICs with low levels of digital literacy.

The following issues must be addressed by informed consent: Dynamic data use (such as retraining AI models)

1. Use of secondary data, such as from social media or wearables
2. Collective ramifications, since AI frequently targets communities rather than just individuals

Although they have not yet been widely implemented, some academics support community-level consent frameworks or a "relational consent" model for public health AI (Gasser et al., 2020).

Trust Deficits in Public Health Communication

For AI health interventions to be successful, public trust is required. However, recent experiences around the world have demonstrated that trust in governments, health authorities, and technologies is not uniform and can be rapidly undermined by perceived injustice, coercion, or surveillance.

For instance, when it was discovered that data could be accessed by law enforcement, despite earlier guarantees, support for contact tracing apps in several nations, such as Singapore's TraceTogether, declined (BBC, 2021).

When AI systems are implemented in an opaque manner, decision-making is delegated to opaque algorithms, and communities lack channels for appeal or redress, trust deficits are exacerbated.

Transparent communication tactics, public consultation, and feedback loops that increase legitimacy and accountability are necessary for the successful integration of AI. Without this, public opposition could undermine the effectiveness of even technically sound systems by decreasing uptake.

Digital Divide and Data Poverty in LMICs

The digital divide—the unequal access to technology, connectivity, and data infrastructure across populations and nations—fundamentally shapes the ethical application of AI in global health. Many public health AI solutions are still unavailable or ineffective in low- and middle-income countries (LMICs), where broadband penetration and digital literacy are low.

For instance, millions of people without smartphones or internet access are essentially left out when contact tracing or health monitoring relies on smartphone-based apps which impacted informed workers and rural population in India during Covid 19 pandemic(GSMA, 2021).

AI models created lead to poor accuracy and misclassification due to data poverty and lack of high-quality representative data and high-income contexts were imported into LMICs without validation (Mohamed, 2020).

The ethical aspects is AI should consider the language and linguistic diversity, cultural norms, regional context and technological availability and without hybrid or analog components digital use is risk health and increase exclusions.

Data Sovereignty and Ownership

Data sovereignty is a serious concern in global south as private and international organizations store, process and profit from data gathered for public health through AI systems. Thus, the thought that data should be governed by the systems and law of the community or nation where it originates and is applied is called data sovereignty. Nevertheless, this principle is frequently broken by cloud storage and global AI collaborations, giving governments little authority over private health information.

For instance, under non-transparent agreements, data gathered by public health organizations is given to corporations in many PPP models. In addition to undermining sovereignty, this puts data extraction at risk without benefit-sharing, which could result in digital neo-colonialism (Taylor, 2017).

Some countries have started to suggest open data governance models, public data trust s, and data localization laws as solutions to this problem.

However, these initiatives are still dispersed and encounter opposition from multinational tec h behemoths.

Liability and Accountability in Automated Decisions

Errors can have serious repercussions when AI systems are used to make or inform public health decisions, such as prioritizing mental health services, identifying individuals for isolation, or deciding who gets a vaccine first.

However, when these systems are harmful, who bears moral and legal responsibility? Is it the system's user, the public health agency, or the developer? Liability is complicated by the division of responsibilities among several actors, including engineers, data scientists, regulators, and clinicians (Calo, 2015).

Many legal frameworks lack the necessary tools to address algorithmic harm, particularly when mistakes result from:

- Emergent behavior in self-learning systems
- Training data inaccuracies
- Unanticipated use cases or scale

Institutions may avoid accountability under the pretense of technical complexity, and victims of AI-driven errors may have no way to seek compensation in the absence of clear liability mechanisms.

To establish strong chains of responsibility, regulatory innovations like algorithmic impact assessments, required auditing, and traceability requirements are required. Although enforcement and adaptation in LMIC contexts continue to be difficult, some jurisdictions (such as the EU AI Act) are starting to address this.

AI integration into health systems is an ethical decision not just technical . its multifaceted approach handling system injustice, consent, inclusive data and legal responsibility. This issue is discussed in this chapter as interrelated and systemic requirements for AI transcend rhetoric innovation and undergo structural changes based on equity and justice.

Toward an Ethical Framework for AI in Public Health

The key to ethical integration of AI is proactive design rather than post hoc adjustments, an ethical framework is increasingly becoming important as AI tools are impacting the population health management, diagnostic and policy decisions for resource distributions. A multifaceted shift from technological to morally sound public health AI is discussed in this chapter. The conception, development, deployment, monitoring and decommissioning, ethics are the center of AI systems. The paradigm focuses on community governance, structural equality, participatory design, bioethics, data ethics, public health ethics and human rights discourses.

The Ethical Lifecycle of AI: From Design to Deployment

The ethical use of AI should be examined throughout its use, and it cannot be limited to certain results only.

This comprises:

1. Design is the problem stage where ethical foresight starts.
2. Which public health issue is addressed? By whom is success defined? Are advantages and hazards shared equally?
3. Development: At this point, thorough validation procedures, fairness tests, and bias audits are required. It is necessary to employ representative and diverse datasets, with algorithmic weighting and feature selection being transparent

(Jobin et al., 2019).

4. Deployment: Context-specific deployment guarantees that AI tools conform to legal, cultural, and infrastructure realities. Continuous monitoring systems and community feedback loops ought to be incorporated.

5. Monitoring & Sunset: Long-term accountability requires post-deployment auditing, assessment of unforeseen implications, and integrated "sunset clauses" for retiring damaging or ineffective models (Leslie, 2019).

Public health Risk-Benefit Analysis Frameworks

Public health used risk-benefit analyses for a long time to direct initiatives. This calculus needs to consider social, ethical, and political factors in addition to therapeutic efficacy in the context of AI. Important things to think about are:

1. Distributive Risk: If an algorithm discriminates or misclassifies, who is at risk?

2. Do vulnerable groups have too much surveillance or not enough protection? Opportunity Cost: Is funding for experimental AI deployments taken away from low-tech public health initiatives that have been shown to be effective?

3. Reputational Harm: If an AI tool malfunctions or breaches consent, is there a chance that the public may react negatively or lose faith in it?

Regulatory approvals, funding decisions, and procurement procedures should all incorporate ethical risk evaluations. In countries like Canada and the EU, methods like Algorithmic Impact Assessments (AIA), which are based on environmental impact assessments, are becoming increasingly popular (Ada Lovelace Institute, 2022).

Participatory Design and Community Co-Governance

Public health ethics AI needs to be based on participatory design, which incorporates the concerns, knowledge, and lived experiences of the communities it is intended to serve.

Conventional top-down approaches frequently produce technologies that are unreliable, inaccessible, or culturally irrelevant. Among the frameworks for participation are:

- **Community Advisory Boards** (CABs): Local representatives review design goals, evaluate risk, and co-develop consent protocols.

- **Public Deliberation Forums**: Town-hall style engagements where residents debate uses cases, express preferences, and set red lines.

- **Co-design Workshops**: Involving target users in interface design, data governance, and validation.

By transferring moral decision-making from closed institutional loops to democratic, contextual settings, these activities strengthen responsibility and trust (Gasser & Almeida, 2020). Furthermore, they are necessary to uphold the moral precepts of fairness, autonomy, and respect for human dignity.

Guidelines for Equity-Centered Algorithm Development

To create algorithms that advance justice rather than worsen inequality, it is necessary to reconsider what constitutes "optimal" or "efficient." Among the rules for equity-centered design are:

- **Inclusive Datasets**: Training data should be balanced across age, gender, ethnicity, geography, and socio-economic status. Where this is not possible, differential accuracy must be disclosed and mitigated (Obermeyer et al., 2019).
- **Proxy Sensitivity**: Variables like zip code, education level, or past utilization may encode structural inequalities. Designers must evaluate whether these proxies perpetuate bias or obscure needs.
- **Metric Pluralism**: Rather than optimizing for a single objective function (e.g., accuracy), developers should consider **fairness metrics**, such as **equal opportunity**, **calibration**, and **individual fairness** (Barocas et al., 2019).
- **Ethical Scorecards**: Periodic reviews of the algorithm's performance across different subgroups and health indicators.

Integrating Bioethics, Data Ethics, and Rights-Based Policy

Multiple normative traditions, each providing a unique perspective on justice, damage, autonomy, and responsibility, must be incorporated into a successful ethical framework.

1. The fundamental concepts of autonomy, beneficence, non-maleficence, and justice are contributed by bioethics. In the clinical and community interface of AI use, these are essential.
2. Data ethics encompasses ownership, permission, privacy, and data provenance. This legacy gives rise to the entitlement to explanation, particularly in black-box AI (Mittelstadt et al., 2016).
3. AI deployment is framed by Human Rights-Based Approaches (HRBA) as an issue of legal entitlements rather than merely moral obligation. Important components include participation, data privacy, and the right to health (Vayena et al., 2018).
4. Solidarity, group effort, and proportionality are introduced by public health ethics, particularly when community safety and individual rights must be balanced**.**

Policy design can avoid siloed thinking and address intersectional harms by combining various ethical areas. For example, an algorithmic triage system may be technically sound but morally wrong if it denies undocumented migrants' eligibility for care.

The Ethical AI for Public Health Framework (Visual Model)

A conceptual framework that combines the ideas of the chapter into a five-layered model of ethical AI for public health is shown below:

First Layer, Second Layer, Third Layer

Layer 4: Particular Cultural and Community Contexts

Layer 5: Rights-based governance, regulation, redress, and the legal and policy ecosystem LAYER 4: COMMUNITY AND CULTURAL CONTEXTS || Local norms, inclusion, and

participatory design

?

| LAYER 3: Ethical Foundations || Bioethics, Data Ethics, and Public Health Ethics |

?

| LAYER 2: TECHNICAL DESIGN AND DEVELOPMENT || Explainability, fairness metrics, and bias audits

----------provenance, ownership, and stewardship |

** Layer 1: Data Governance || Consent,

?

The technological layer of this tiered architecture emphasizes that ethical AI cannot be boiled down to a checklist. Legal protections, sociocultural congruence, and participatory policy are necessary for its institutionalization. The ethical integrity of the layer above is supported and conditioned by each layer.

Design, governance, community participation, and legislative reform must all co- evolve to achieve ethical AI in public health. This chapter's framework offers a framework for making sure AI systems uphold the principles of accountability, fairness, transparency, and solidarity.

The ethical framework will indicate the validity, sustainability and social impact of AI to the success of the public health systems and become more data driven to operate the paradigm and provide specific policy and practice

Recommendations and Conclusion

AI reshapes public health through ethical governance and makes it more desirable and this chapter has shown the intentional design, inclusive policy and community safeguards which are needed minimize the risk of inequalities, structural bias and enhance public trust.

The triad of imperative justice, transparency, accountability and responsibility is the core for AI health systems, these are concrete aspirations for functional requirements to align AI systems with social value, human right protection and service to vulnerable. The key policy includes standardization of ethical auditing mechanisms across AI progress cycles. Clarity in liability and informed consent in algorithmic decisions, legal protection for surveillance and data misuse, participatory governance models and cross sectoral cooperation among technologists, health care professionals, legal and civil scholars and society. A failure to address these needs will compromise public health goals and erode democratic accountability and global equity in digital governance.

Short-Term and Long-Term goals and Recommendations

A series of actionable goals and recommendations are offered and tailored to key stakeholders, namely policymakers' developers and public health leaders, to address the ethical complexities.

For Policymakers Short-Term Goals:

1. Conduct mandate Algorithmic impact and structured assessments of social, legal and ethical risks before procurement or deployment of AI (Ada Lovelace Institute, 2022).

2. Establish institutional review boards to evaluate AI initiatives to align with bioethics, data rights, and social justice principles.

3. Strengthen data protection law by reinforcing regulations, consent, data minimization and redressal for state run public health database.

Long-Term Goals:

1. Make sure of the protection like right to explanation, non-discrimination and transparency to codify rights-based AI governance.

2. Develop cross country policy to integrate public health with technology while maintaining regulations and national AI health strategies.

3. Support global governance methods through WHO, OECD to harmonize ethical standards and end cross border loopholes through international collaborations.

For Developers and Tech Companies Short-Term Goals:

1. Tech companies and developers should integrate fairness rubric, explainability tools and different assessments during model development to adopt ethical design principles.
2. They should start to use and document model cards, data sheets, datasets to create transparent assumptions, limitations and biases in AI tools.
3. Can co develop technologies with communities intended to serve indigenous populations or LMICs to enhance participatory and engaging prototyping.

Long-Term Goals:

1. To embed social scores into developers and in institutional funding structures.
2. Encourage development of public modules with AI components to reduce reliance on proprietary black-box systems to create Open-Access Platforms for Public Health Tools.
3. Employ ethicists, anthropologists, health experts and engineers to ensure systems are technically robust and socially responsive.

For Public Health Leaders and Institutions Short-Term Goals

Conduct workshops, simulations, trainings and policy briefings to help understand AI capabilities and limitations better among public health professionals through AI literacy programs**.**

Evaluate how AI affects equity, trust, efficiency and incorporate AI into heath assessments.

Empower patient advisory board to make AI related decisions, surveillance and triage systems to implement participatory governance models.

Long-Term Goals:

1. Establish ethical procurement guidelines by ensuring AI service contracts include clauses on data sovereignty, algorithmic transparency, and periodic review.
2. Fund and support pilot projects focus on undeserved communities to identify the gaps and allocate resources accordingly as part of equity centered innovation.
3. Create cross functional AI tasks involving clinicians, technologists, bioethicists, and community health workers through interdisciplinary collaborations.

Call to Action: Equitable, Rights-Aligned AI Governance

The 21st C medicine along with the rapid AI integration into public health creates a need for mature normative guardrails as ethics cannot be treated as an afterthought, compliance checkbox. We need to create a centre of dynamic practice for ongoing negotiations between innovation and justice between efficiency and inclusion. AI is not a tool for economic gain without ethical rights and model creating technical optimization and failed accuracy should be rejected. Success should be considered based on public health institutions, ethical legitimacy and trust. To conclude ethical AI governance is about preventing harm and creative more inclusive , accessible and responsible digital frame and future.

Future Research and Capacity-Building Areas

1. AI Ethics Research: There is a need to deals with operationalization of how ethical principles in local empirical studies can be used in diverse socioeconomic and cultural situations as needed by indigenous communities.

2. AI in Health Equity: There is a need to assess AI's systematic measure on its use, influence, access, outcome and disparities in public health systems.

3. Ethics of emerging AI Modalities: New AI chatbots regarding mental health synthesize data used to present novel ethical challenges that are unexplored and need to be developed.

4. Training framework for Ethical AI use: There is a need for interdisciplinary curriculum for public health professionals on AI ethics, participation and engagement needs.

5. Development of Public AI institutions: We need to develop independent, publicly accessible and accountable organizations which use algorithm deployment, concerns and regulate AI in real time.

Conclusion

AI integration in public health embrace ethics as infrastructure and not ideology in the minds of the stakeholders. Ethical governance is the base of sustainable progress for inclusion and nor a barrier to innovation. Only through interdisciplinary collaboration, grounded access and accountability and participatory design AI can truly serve the public good.

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Lung Cancer Detection Using a Deep Convolutional Neural Network

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Abstract

Lung cancer is causing an alarming number of deaths around the world. Identifying cancer subtypes and predicting patient survival rates can improve treatment outcomes. Existing techniques for these two features have limitations in accuracy. This research presents a multi-model deep learning architecture and algorithms for cancer subtype categorization and survival analysis. The platform includes two pipelines that use deep learning to identify lung cancer types and analyze survival. LCSCNet, an upgraded Convolutional Neural Network (CNN) model, is proposed to automatically detect lung cancer subtypes. Due to this thorough methodology, the model is able to identify distinct cancer subtypes such adenocarcinoma, large cell carcinoma, and squamous cell carcinoma in addition to distinguishing between benign and malignant nodules. Because Inception NeXt blocks enable multi-scale feature processing, the model performs especially well for intricate and varied lung nodule patterns. While block attention concentrates on gathering contextual and hierarchical information, enabling accurate detection and classification of lung nodules, grid attention enhances the model's ability to recognize spatial relationships across several image sections. This study has made use of both multicenter and open-source data sets. A convolutional neural network (CNN) in three dimensions was created to identify determine if pulmonary nodules are malignant or benign diseases by using laboratory and pathological evidence.

Keywords: CNN, LCSC Net, CT, DL

INTRODUCTION

One of the most prevalent and deadly types of cancer in the world is lung cancer [1]. Lung cancer, the most common cause of cancer-related fatalities, is frequently lethal if detected too late.

Malignant tumors that originate in the respiratory system and typically spread quickly are the cause of this illness [2].

It is prevalent in both men and women and impacts millions of individuals annually. In the US alone, there will probably be 2,001,140 new cases of cancer and 611,720 cancer-related deaths by 2024. Statistics from 2024 show that there have been 234,580 instances of lung cancer. Lung cancer was the cause of 125,070 documented deaths [3].such in semantic division, medical diagnosis [4], and picture classification. Cardiovascular CT generates a number of fragments that could be controlled to display many volumetric images of the bronchi's physical architecture. 3D CNN may undoubtedly work in harmony with 2D convolution, which rejects the 3D spatial size, demonstrating that it is truly unable to fully utilize the 3D condition essential [5] information. For the treatment of lung cancer, early detection is essential. Lung cancer can significantly increase a patient's life expectancy and enhance their response to treatment if it is detected early. Lung cancer has historically been identified via X-rays, MRIs, PET scans, and biopsies. These techniques can be intrusive, costly, and time-consuming, though. Due to the difficulties of detecting tiny nodules, early-stage lung cancer detection is especially difficult.CT scans enhance the diagnostic procedure for specialists and offer crucial information in the assessment of lung lesions. However, reviewing CT scans by hand is a laborious procedure that is prone to human mistake [6]. Although each of these approaches has its drawbacks, they are all utilized to identify the existence and stage of cancer. Although lung nodules can be found with X-rays and CT scans, these imaging techniques are frequently insufficient to provide a conclusive diagnosis of cancer [7].

Importance of Detection

- With an emphasis on the shortcomings of the available CT-based techniques, this study tackles important issues in the diagnosis of lung cancer. Both fine-grained and large-scale elements in medical images are frequently difficult for current AI and DL techniques for CT imaging to reliably capture. Treatment may be delayed as a result of these restrictions, which may lead to less than ideal diagnostic accuracy. Furthermore, manual CT scan evaluations continue to be laborious and prone to human error. In order to address these issues, this study presents a hybrid deep learning model that combines InceptionNeXt blocks with grid and block attention techniques. The purpose of this innovative architecture is to increase feature extraction and raise the diagnosis and classification accuracy of lung cancer.

- It resulted in a 20.0% decrease in mortality and a significant increase in the rate

of positive screening tests when compared to traditional radiography techniques.

- Research on lung cancer frequently uses histopathological samples and various forms of genomic sequencing.

Challenges in Detecting

- These methods also have certain disadvantages. For instance, MRI and PET are less useful in identifying and staging lung cancer, whereas CT, Septum, and CXR are radiation-prone. Additionally, serum testing is an invasive procedure with unsatisfactory results since its sensitivity and specificity are not high enough for early identification.

- Furthermore, manual CT scan evaluations continue to be laborious and prone to human error. In order to address these issues, this study presents a hybrid deep learning model that combines InceptionNeXt blocks with grid and block attention techniques. The purpose of this innovative architecture is to increase feature extraction and raise the diagnosis and classification accuracy of lung cancer.

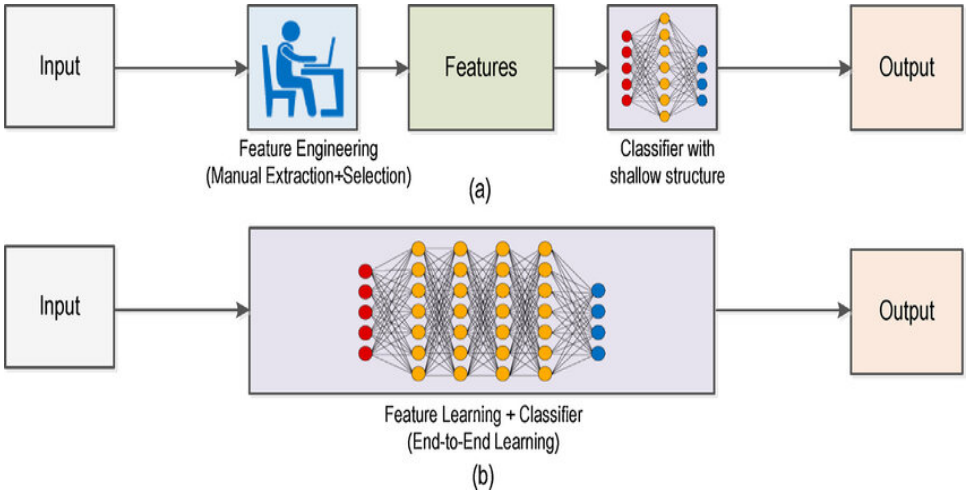
- Two publicly accessible datasets with little demographic diversity—IQ-OTH/NCCD and Chest CT—were used for the model's training and assessment. This could potentially restrict the model's applicability to various demographics and geographical areas. Additionally, a method based solely on CT scans was used; subsequent research attempts to enhance model performance by using multimodal data, such as patient history or biomarkers.

- The urgent need for quicker and more accurate diagnostic methods to enhance lung cancer patient outcomes is what spurred the investigation.

LITERATURE REVIEW

Traditional vs. Deep Learning-Based Detection

- Saving lives with lung cancer requires early detection and treatment. The unchecked growth of cancerous cells in one or both lungs causes lung cancer, a potentially fatal illness that can spread to other organs if treatment is delayed. An efficient computer-aided diagnostic (CAD) system that can more accurately identify and categorize lung cancer is therefore desperately needed. This section will provide a thorough discussion of the approaches, phases, procedures, and strategies used by different writers in the literature to process lung images for the purpose of detecting lung cancer.



- A deep learning approach created by Wulczyn et al. [12] greatly enhances risk stratification by predicting disease-specific survival in ten cancer types without pixel-level annotations.
- [8] Altuhaifa et al. Based on clinical data, machine learning is being utilized more and more to forecast lung cancer survival.
- But issues like data pre-processing must be addressed.
- [9] Wulczyn et al. Human-interpretable traits, particularly histologic ones, play a vital role in the development of a deep learning system for colon cancer survival prediction and can be accurately recognized for further research.
- This study uses decision tree techniques to predict survival and recurrence in lung adenocarcinoma and squamous cell carcinoma by integrating genetic and clinical data. The tree models help with follow-up planning and individualized decision-making by highlighting important predictors.
- The literature demonstrated that survival rate prediction was not a major emphasis of earlier techniques for lung cancer detection and classification.
- Two-stage classification model for advanced DL methods in the diagnosis and staging of lung cancer. To distinguish between abnormal and normal situations and increase target segmentation accuracy, the model combines Xception and custom CNN with a modified version of U-Net that has dual attention and pyramid atrous pooling. In the second phase, a hybrid adaptive learning neural network is used to stage lung cancer once more spatial data are collected from aberrant features.

LINKED WORK

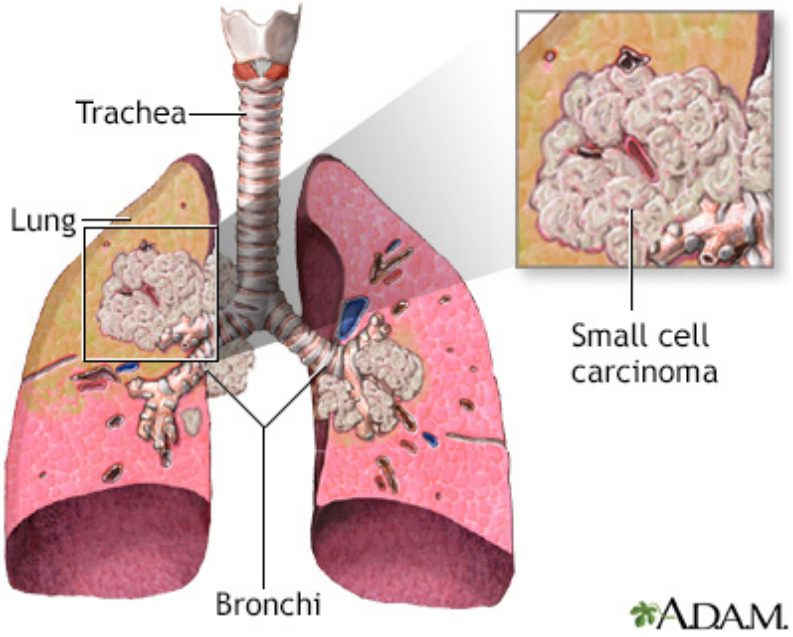
- Nearly 26% of all cancer fatalities worldwide are caused by lung cancer, making it the most common cause of cancer-related deaths in both men and women. The five-year survival rate is only 17 percent.
- The likelihood of success and prognosis are significantly improved by early diagnosis. Lung nodule diagnosis takes a long time and frequently suffers from interradiology heterogeneity due to the volume of data involved. Computed tomography (CT) is a widely used technique for lung cancer screening. The goal of screening is to identify infections as soon as feasible.
- There are various forms of lung cancer. The literature is reviewed in this section.

on current techniques for lung detection and classification

samples of cancer.

❖ SMALL CELL LUNG CANCER SURVIVAL

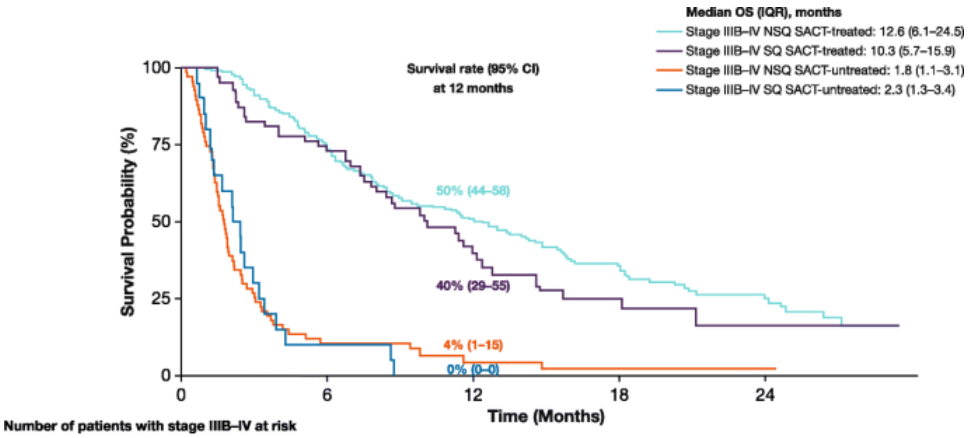
- When compared to conventional staging systems, a deep learning model for NSCLC survival prediction shows encouraging results. For NSCLC survival analysis, Vo et al. [11] proposed MVAESA, which combines a variation autoencoder with a CNN and produces better stability with small training sizes.



- Utilized deep learning (DL) and transfer learning (TL) on gene-expression data with an emphasis on precision medicine in lung cancer. When it comes to forecasting lung cancer progression-free intervals, the suggested DL model performs better than conventional machine learning techniques. The results highlight model interpretability and additional tasks beyond fixed-time progression-free interval classification, suggesting possible applicability to other cancer types.

- Being a complicated and multidimensional disease, cancer requires early detection in order to be successfully treated. Using SEER data, colon cancer research revealed the deep autoencoder's noteworthy predictive ability. For future treatments to be effective, cancer immunotherapy toxicities must be identified and managed. There is potential for customized combination therapies.

❖ NON- SMALL CELL LUNG CANCER SURVIVAL

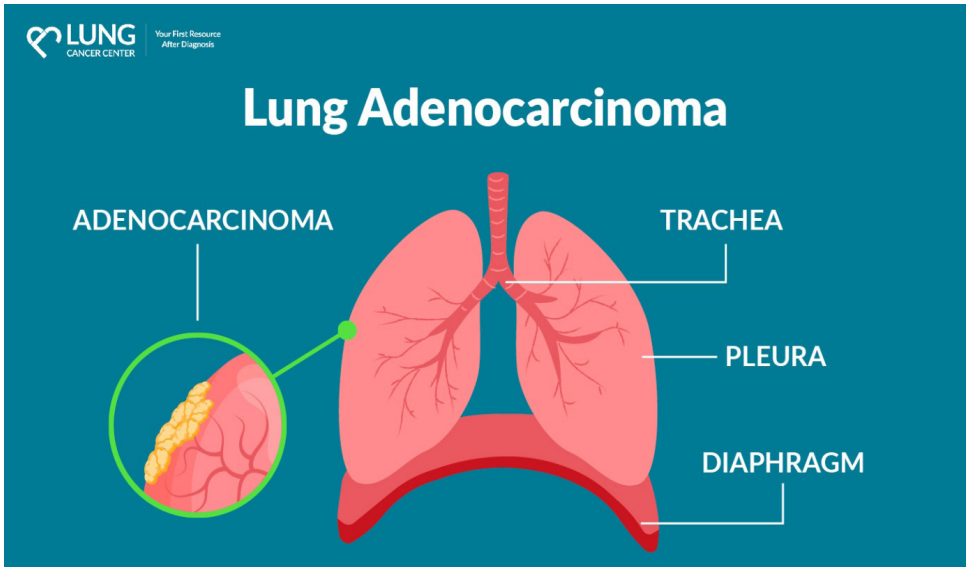


- Planning is facilitated for patients and caregivers by early cancer diagnosis, according to Doppalapudi et al. [13]. In this study, lung cancer survival is predicted using deep learning. Results improve healthcare and care planning, outperforming conventional models.

- Heng and colleagues [14] used deep neural networks and machine learning to capture complex gene interactions and clinical data, improving prognostic prediction for non-small cell lung cancer.

- The segmentation-free survival analysis system developed by Kriegsmann et al. [15] demonstrates exceptional predictive power for lung cancer datasets by integrating deep learning with the Cox proportional hazards model. Using pathological images stained with H&E, Zheng et al. [17] presented a computational method for quantitatively analyzing cellular heterogeneity in lung cancer.
- Better survival prediction is provided by deep learning, which improves cell subtype classification.

➢ ADENOCARCINOMA



- Kim and associates [16] In lung adenocarcinoma, a deep learning model based on CT predicts disease-free survival and provides independent prognostic variables. Its usefulness for precision medicine decision-making is demonstrated by validation against clinical risk factors. Using CT images, Wang et al. [22] investigate deep learning and radionics networks for the categorization of lung cancer subtypes and survival prediction.
- A deep learning model developed by Choi et al. [32] can predict high-grade patterns in lung adenocarcinomas, improving prognosis in advanced cases receiving final chemotherapy or neoadjuvant treatment.
- The prognosis of advanced cases receiving neoadjuvant or definitive chemotherapy and radiation therapy is improved by a deep learning model that forecasts high-grade

patterns in lung adenocarcinomas.With the use of four-omics data, a DL-based autoencoder model accurately forecasts the prognosis of lung adenocarcinoma and identifies discrete survival subgroups with notable variations that have been verified across separate datasets.DeepSurv and RSF, two DL survival models, perform better than the Cox model in forecasting the course of gastric adenocarcinoma and offer precise prognostic data.

➢ SQAMOUS CELL

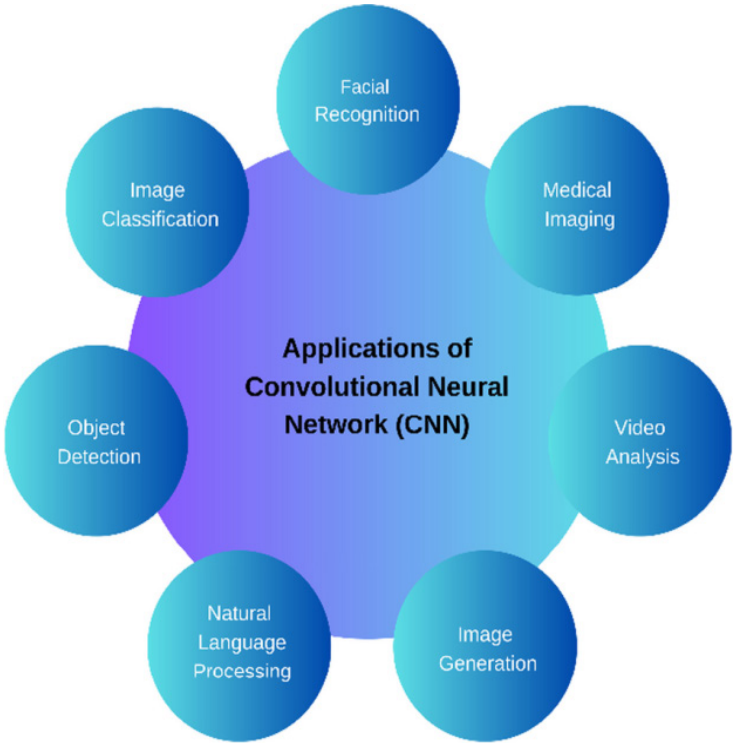
An approach that uses machine learning to evaluate the components of lung squamous cell carcinoma (SqCC). Outperforming conventional techniques, a machine learning model using six approaches accurately predicts the survival of patients with esophageal squamous cell carcinoma. The dominant stroma subtype is associated with a worse prognosis for recurrence-free survival. compared machine learning algorithms that use clinical and histopathological data to predict oral squamous cell carcinoma patients' five-year survival. With its promising accuracy, the Decision Tree classifier is the best model.

TABLE :1

class	category	n. of images		
		test	train	validation
1	ADEOCARCINOMA	120	195	23
2	LARGE CELL CARCINOMA	51	115	21
3	NORMAL	54	148	13
4	SQAMOUS CELL	90	155	15
TOTAL		315	613	72

3. METHODOLOGY

- **Convolutional Neural Network**

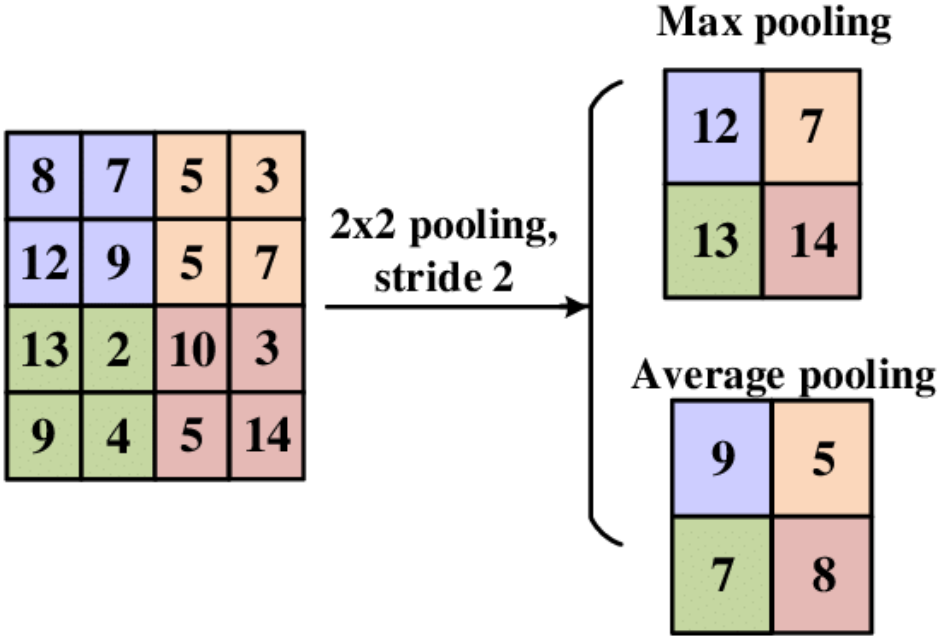


A novel architecture known as a convolutional neural network (CNN) [22] has layers known as convolutional layers and max-pooling layers, and it has input and output similar to other deep learning techniques. Figure 1 displays a summary of the general idea. The general idea is that, similar to other researchers [23], the input will pass through a number of convolution and max-pooling layers before being mapped by a few fully connected layers that ultimately map an output.

- **Convolutional layer**

Starting at the left and moving to the next layer, the kernel will convolve [18] over the input. The dot product between the kernel and the input is then calculated. Convolution neural layers can identify specific features in the image using this output feature map. The operation of the 2D Kernal and its sliding over the input image are described in Figure 2. A feature from the convolution layer was taken out.

- **Max-pooling layer**



The theory is that convolution layers are able to identify the small edges on a CT scan. Last but not least, the final few layers will identify the entire benign nodule. Convolutional layers can identify specific regions of the CT scan that may be the benign or malignant nodule. For the suggested architecture, this is the convolutional neural network's primary layer.

Better computational speed and less overfitting are made possible by max-pooling layers that reduce dimensions. Thus, features of increasing complexity are present in every CNN layer. As we proceed, the intermediate layers will learn more intricate aspects of the object, and the final layers will detect complete objects. The initial layer learns edges, corners, and other similar information.

Algorithm1

Classification of Subtypes based on Learning

Dataset on lung histopathology as input D

Output: Labeling results for lung cancer R, statistics on performance P

1. Start preprocessing the data and dividing it into test and training sets.

2. Preprocessing (D) ← D'
3. Model Training (T1, T2)←DataSplit(D')
4. Set up the LCSCNet model (as shown in Figure 2).
5. m'←TrainModel(T1, m) 5. Compile m
6. Continue
7. Classification by Multiple Classes
8. Put m'
9. T2, m', R←Classify
10. P-Evaluation (ground truth, R).
11. Print R
12. Print P
13. Finish

- **FEATURE AGGREGATION**

When considering a collection of D-dimensional cellular descriptors,and a patient p $X = [x1, x2,..., xN] \in RD\times N$, our goal is to combine all of the various cellular representations, X, from p to produce a single feature vector, f, of p. One simple and incredibly effective local descriptor aggregation method is the BoW model [38]. It provides a learned codebook with M entries, $B = [b1, b2,..., bM] \in RD\times M$. Every cellular characteristic is taken into account by the BoW approach. xi and transforms it into an M-dimensional code, $ci \in RM$. A single vector, $f \in RM$, is created by aggregating each cellular code, $C = [c1, c2,..., cN] \in RM\times N$.

6. Results and Discussion

6.1 Discussion of Findings and Limitations

Experimental evidence shows that the dual-stream model is competent in detecting low-level and high-level irregularities within deepfake video content. FFT integration enhanced detector robustness by identifying these subtle manipulation and compression artefacts that spatial detection methods miss.

However, some limitations remain. The modelling accuracy shows a minimal reduction in highly compressed or low-resolution video content cases. The dual-stream architecture creates computational complexity that significantly increases the processing power requirements. The ability to detect new manipulation techniques remains challenging, so improved domain adaptation techniques and training with more diverse datasets are needed to address this issue.

7. Conclusion and Future Work

This study introduced a dual-stream convolutional neural network system which uses spatial and frequency domain information to detect deepfakes. Extensive experiments on FaceForensics++ verified the proposed model's superiority with higher accuracy and detection robustness relative to standard CNNS and frequency-only detectors. Fast Fourier Transform (FFT) implementation and facial region spatial information analysis were united to boost detection performance for minor video modifications. This work enables practical applications through real-time social media platform content verification tools, forensic analysis, and automated moderation systems. However, some limitations remain. The detection system shows slightly reduced efficiency when processing highly compressed or low-resolution inputs, yet requires extra training to detect unknown deepfake techniques during operation effectively. The following research stage will integrate temporal consistency features between video frames to enhance detection reliability over time and decrease false-positive instances in temporary frames. Our future work includes model optimisation for practical deployment through reduced computational requirements and enhanced generalisation obtained by applying domain adaptation methods or self-supervised pretraining with varied data samples.

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Indian Knowledge System in Tripura: A Study of Indigenous Knowledge and Tribal Cultural Practices

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Abstract

Such a tiny, culturally diverse state of Northeast India as Tripura is the home of several indigenous peoples (Tripuri, Reang, Garo, Chakma, Halam, Darlong, and others) whose lives are governed by a set of rich depositories of traditional knowledge. It is an article based on secondary sources that lists significant parts of the Indigenous Knowledge Systems language and oral tradition, ethnobotany and traditional medicine, agricultural and ecological systems, crafts and material culture, ritual life, and current preservation processes of Tripura. It emphasizes the strengths, the constant threat in form of modernization, and policy level and community level measures in order to preserve and revitalize these knowledge systems.

Keywords: Indigenous Knowledge System, Tribal communities, traditional knowledge, oral traditions and Cultural Preservation.

Introduction

Indigenous Knowledge Systems refer to place-based, intergenerational repertoires of practices, belief systems, technical know-how, language and institutions employed by communities to administer themselves, their surrounding environment, social life, health and economy. In Tripura where the tribal societies take a prominent and lively role in the social setup-Indigenous Knowledge Systems regulate food systems, healing, crafts, rites and narrative traditions which not only provide living but also characterizes the group. This paper is a synthesis of published articles, government reports, journal articles and current news to give a summary on the Indigenous Knowledge Systems of Tripura and how these systems can be preserved and reflected on the formal systems.

The Indian Knowledge System is a very extensive source of native, traditional, and experiential knowledge that has been built throughout centuries by local populations in India. In the state of Tripura with the high level of tribal diversity, indigenous knowledge is very important in the determination of social life, cultural identity and stable interaction with nature. Some of the tribal people who have maintained their own unique ones are the Tripuri, Reang, Jamatia, Chakma, Halam, Mog, and Garo.

agricultural systems of knowledge, health care, forest use, cultural practices. This paper discusses the Indian Knowledge System in Tripura by discussing the objectives of the study objectively.

Tribal Landscape of Tripura — an overview

The cultural map of Tripura is multiple. The main native population is the Tripuri (also known as Borok or Tripura people), however the state hosts numerous other tribes, such as Reang (Bru), Garo, Chakma, Halam, Darlong, Rupini, Murising and Kolai, which all speak different languages, have their own customs and ecological knowledge. Tribal communities are clustered within hill tracts as well as in the forest fringe areas where they survive on a combination of settled and slash and burn (jhum) agriculture, artisanal production and exploitation of forest resources.

Domains of Indigenous Knowledge in Tripura

1. Language, oral tradition and identity

IKS is mainly transferred through language. Cosmology, moral values, and practical knowledge (e.g. seasonal calendars) are encoded in oral literature of myths, folktales, songs and ritual chants of the Kokborok (the language of many subgroups of Tripuri). Some recent trends toward standardization of script and publication of primers are part of community work towards enhanced linguistic continuum; literary institutions and government-funded projects have been busy publishing texts, primers and dictionaries.

2. Ethnobotany and traditional medicine

There is a massive amount of ethnobotanical knowledge among tribes of Tripura. Several investigations report dozens to hundreds of varieties of plant species being used to treat common ailments, to treat veterinary and ritual practices. The Tripuri, Chakma, Reang and so on have useful herbal pharmacopeias, the ways of preparation, the times when to gather and the rules of the cultures that are transmitted orally and incorporated within ritual practices. This body of knowledge is a local health resource and a valuable topic of conservation and intellectual-property concern.

3. Agroecological practices and natural-resource management

Conventional methods of cultivation (such as jhum/shifting cultivation, terrace-like cultivation in hilly areas, agroforestry and mixed cultivating impacts) are evidence

of learning by the ecologies over many years to maximize the fertilities of soils, pests, and the varieties of crops. Sacred groves, community forest taboos and ritual norms are frequently an informal conservation strategy - the conservation of biodiversity hotspots and seed types. The practices have a close correspondence to the contemporary concepts of sustainable land management and resilience.

4. Craft traditions and material culture

The tribes of Tripura practice unique craft skills- bamboo and cane handicrafts, weaving (traditional textiles with tribal motives), woodwork, and basketry- that are an amalgamation of aesthetic, technical and ecological knowledge (choice of plant material, seasonality and processing methods). In the textile and weaving practices, more specifically, social identity and ceremonial roles are encoded. These arts could provide a possible solution to livelihood advancement provided that they are backed by market access and protection of intellectual property.

5. Rituals, festivals and folk performance

Knowledge of seasonal cycles, agricultural timing, food preservation and social norms are contained in ritual calendars and festivals (such as Garia Puja among Tripuris, Wangala among Garos and Reang religious cycles). Social history and stewardship ethics are passed down to the younger generations through oral stories, epic songs and ritual performances. The concentration of the folklore and Kokborok myth studies records how these stories encode cosmology and practical lessons.

Contemporary efforts at documentation and preservation

There are various efforts, by state authorities, research centers and universities, to document and preserve the IKS of Tripura. Documentation on traditional knowledge has been compiled by the state biodiversity board and other agencies and processes have been initiated to identify items that may be the focus of intellectual-property protection and benefit sharing. The academic projects as well as newly endowed interdisciplinary research (ICSSR grants assisting research in Northeast India) are specifically aimed at recording the traditional medicinal practices, folk arts and cultural expression - a good indicator that IKS is increasingly being institutionalised. In the grassroots, literature societies and tribal research institutions are standardising scripts, printing primers and holding festivals to reinstate language and arts.

Major challenges and threats

1. Language change and education imbalance: Formal education and media are mostly in Bengali or English, which may lead to agency problems in which younger tribesmen lose tradition of using their native languages. The standardization has also been hampered by script debates (what script to use to write Kokborok).

2. Loss of ecological knowledge: Land use, forestry regulation and commercial

forces decrease the use of agroecological practices and medicinal plants that used to be traditionally relied on.

3. Intellectual property risk and bioprospecting: In the absence of documentation and sui generis, the risk of external appropriation of the community knowledge is high. State documentation initiatives are trying to address this yet there are still legal and institutional loopholes.

4. Non-benefit commercialization: Crafts and medicine: Commercialization of crafts and medicines may be achieved without fair returns to the holders of knowledge.

5. Outmigration and cultural change: Education and job migration by the young undermine intergenerational transmission of practice based knowledge.

Objectives of the Study

1. To examine the theory of Indian Knowledge System as applied to Tripura..

2. To explore the contribution of indigenous knowledge in the practice of agriculture, health care, forest management and day to day livelihoods.

3. To examine how the traditional knowledge is conveyed by use of oral traditions, rituals, festivals, and communal institutions.

Methodology of the study

The article represents a literature-based synthesis based on the government reports, peer-reviewed studies, state records, ethnobotanical surveys and reputable news coverage. Among the sources that were important were the traditional knowledge documentation of Tripura state, ethno-botanical and ethno-medicine surveys, Kokborok folklore studies and reports on language-preservation efforts and academic grants to document tribal traditions. It is not an original field research but a descriptive and interpretive one.

Findings of the study

According to the Objective 1: To Explore the Concept of the Indian Knowledge System in the Context of Tripura it turns out that the Indian Knowledge System in Tripura is strongly imbued with the lived experience of indigenous communities and holistic perception of nature, society, and spirituality. In contrast to formal scientific knowledge, IKS in Tripura is rather informal and community-based and is passed on orally across generations. The concept of natural environment, especially forests, rivers, hills and farming land are closely associated with Indian Knowledge System in Tripura. Knowledge does not stand alone as it is applied in day to day life whereby cultural beliefs, rituals and practices inform sustainable living. The indigenous cosmology and nature reverence affect the decision-making process concerning the farming cycles, resource conservation, and social good. Therefore, the Indian Knowledge System in Tripura is an active and flexible model that still shapes the community life in spite of the modernization.

According to the Objective 2: To Examine the Role of Indigenous Knowledge in Agriculture, Health Care, Forest Management, and Daily Livelihood Practices it is discovered that Indigenous knowledge is very crucial in agricultural activities within Tripura, especially with the tribal communities that practice shifting cultivation (jhum). The conventional practices include crop rotation, mixed crop rotation and natural regeneration of soil which contributes to the maintenance of ecologically balanced state. The traditional calendars, observation of the natural signs, and experience of ancestors help indigenous farmers to identify the time when to sow and when to harvest.

Traditional medicine is a vital part of the well-being of the community in the area of health care. Indigenous healing involves the traditional healers using medicinal plants, roots, leaves, and herbs that are present in the local forests to cure common diseases like fever, wounds, digestive and respiratory diseases. The practices are affordable, culturally acceptable, and sustainable to the environment.

The Tripura forest management is also informed by the system of indigenous knowledge that focuses on conservation and shared accountability. The forest resources are controlled by sacred bloches, community forest rules and taboos to avoid over exploitation. Communities have extensive information of forest biodiversity such as the availability and sustainable harvesting seasons of forest produce.

The soft habitual routines of everyday life including weaving, bamboo and cane craft, fishing, hunting, and food preservation are also based on the traditional knowledge. Such practices are not only economically supporting but also help in preserving cultural identity and cementing a community.

According to Objective 3: To Analyze the Transmission of Traditional Knowledge through Oral Traditions, Rituals, Festivals, and Community Institutions it is discovered that The transmission of traditional knowledge in Tripura is essential based on the oral traditions and social involvement instead of formal education. Elderly are significant in imparting knowledge to the younger generation with the help of storytelling, folk songs, myths, and legends as a means of imparting knowledge in the moral, historical and ecological context. Traditional practices and beliefs on nature worship and ancestral reverence are strengthened by agricultural festivals, harvesting festivals and religious ceremonies. By engaging in such events and activities, the individuals within the community are able to learn traditional and customary norms, skills, and values in a practical and experiential way.

More institutions to aid in preserving indigenous knowledge include community institutions like village councils, clan systems and customary courts. These institutions control the behaviour of the society, solve disputes and guarantee the continuity of traditions. The process of knowledge transmission is therefore a group affair that is integrated in social frameworks.

Nonetheless, the survival of indigenous knowledge is a challenge to modernization, institutional education systems, and socio-economic changes. In spite of these difficulties, several societies in Tripura are consciously trying to save their traditional knowledge by cultural programs, documents, and using them with the school education.

Conclusion

The Indian Knowledge System in Tripura represents a high value of aboriginal wisdom that facilitates sustainable living, cultural sustainability and resilience of the community. Indigenous knowledge is still influencing everyday life through agriculture, health care, forest management and social institutions. This knowledge is not only vital in the protection of culture identity but also in the establishment of sustainable development, as Indigenous Knowledge Systems in Tripura are rich, dynamic and strongly relatable to the business of today; the issue of biodiversity conservation, sustainable farming, primary medical care and culture continuation. To protect these systems, it is necessary to maintain them through the respectful community-driven documentation, legal measures against misuse of such systems, inclusive policies on education and ethical research partnerships. When put together, these measures can serve to make sure that the living culture of the tribal communities of Tripura thrives further and leads to greater ecological and social sustainability.

Recommendations

According to the purpose of the study, it is recommended to assist the maintenance, transfer, and use of the Indian Knowledge System in Tripura as follows:

1. Academic studies, community involvement, and online databases should be used to document the indigenous knowledge in agriculture, health care, and forest management to eliminate the loss of this knowledge as a gradual process.
2. Learning institutions in Tripura need to incorporate local indigenous knowledge in school and tertiary education in an effort to build awareness and appreciation amongst younger generations.
3. Scientific validation and support of traditional health practices and ethnomedicinal knowledge should be done through the partnership of the indigenous healers, researchers and health departments.
4. Government policies and law should support the community-based forest management practices based on the indigenous knowledge.
5. The cultural institutions, village councils and tribal organizations must be urged to ensure that they are effective in fostering the oral traditions, rituals and festivals as the living platforms of knowledge transmission.
6. Youth should be taken through special training and capacity-building on traditional

skills like farming techniques, weaving, bamboo craft and management of natural resource.

7. The policy makers ought to make sure that development efforts do not suppress and override the indigenous knowledge systems but involved in developing them.
8. Indigenous knowledge should be maintained through collaborative work of government agencies, academic organizations, and local communities that should adapt it to the current circumstances.

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Role of Constructivism in Modern Educational Philosophy: Implications for Teaching and Learning

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Abstract

This study paper examines the importance of constructivism in teaching and learning as an educational philosophy in the modern world. Constructivism, which is based on the concerns of Piaget, Vygotsky and Dewey, is focused on active learning, student-centred instruction and building of knowledge through experience. The paper discusses the philosophical principles of constructivism, its application to curriculum design and how constructivism has been used to encourage critical thinking and problem solving skills. It further examines the difficulty of adoption of constructivist methodologies in various learning contexts. The research ends by proposing a moderate application of constructivism principles to improve the engagement of students and their life-long learning.

Keywords: Educational philosophy, constructivism, active learning, student- centred education, critical thinking, curriculum design.

Introduction

Constructivism has become a ubiquitous paradigm within the current educational philosophy that has influenced teaching practices and altered the learning experiences in the world. Constructivism is based on the assumption that learners are constructing their own knowledge based on the interactions with their environment and that constructivism criticizes the traditional concept of rote learning and promotes meaningful, experiential learning. This paper examines the philosophical background of constructivism through discussions about the writings of three theorists Jean Piaget, Lev Vygotsky, and John Dewey who are considered influential in their contributions to the development of theories with regard to cognitive development, social learning, and experiential learning. Their

theories form the basis of the current student-based instructional methods that focus on engagement, inquisitive learning, and critical thinking. Also, the paper will discuss the effects of constructivism to the curriculum design and methods of instruction and show how constructivism has been used to transform the traditional education methodology in order to encourage deeper knowledge, creativity, and lifelong learning. Using constructivist ideas in the practice of education, the teachers will be able to make the learning process more active and efficient and to equip students with the challenges of the contemporary world.

Significance of the study

The research is important because it contributes better knowledge about constructivism in the contemporary education with special reference to its relevance in promoting actively learner-centred learning. It offers an idea on how constructivist principles enhance the teaching practices, curriculum development, and student engagement through encouraging critical thinking, problem-solving, and creativity. Also, the research concerns such issues like standardised testing, teacher training and obstacles to implementation and suggests the ways to balance between constructivist and traditional approaches. The contribution of this research towards the development of efficient educational strategies is by enlightening educators, policymakers, and researchers to make sure that learning is valuable, interactive and kept up to date in the 21st century.

Objectives of the study

- To examine philosophical backgrounds of constructivism through examining works of Jean Piaget, Lev Vygotsky and John Dewey.
- To analyze how constructivism influences the curriculum development and instructional practices.

Philosophical Foundations of Constructivism

Constructivism has a strong philosophical foundation in the works of Jean Piaget, Lev Vygotsky and John Dewey whose theories are the collective thought in constructivism today. Cognitive constructivism is based on the theory of cognitive development developed by Jean Piaget. Piaget asserts that learners are people who actively build up knowledge by interacting with their environment. Learning is achieved through the assimilation and accommodation in which the new experiences are incorporated in the already existing cognitive structures or alter them. Piaget stressed the fact that cognition and comprehension evolve gradually as a learner passes through the various levels of cognitive development.

One of the thinkers, who made a contribution is Lev Vygotsky in his social constructivist view. He underlined the significance of social interaction, language and culture in cognitive development. His idea of the Zone of Proximal Development (ZPD) gives the explanation

of the way learners could obtain higher order of understanding with the help of the teacher or more competent students. Vygotsky emphasized the importance of scaffolding as one of the most important instructional strategies in order to facilitate learning.

The philosophy of education of John Dewey placed emphasis upon the learning experience and reflection. He saw education as an ongoing inquiry, in which the students participate in real life issues. Dewey also promoted democratic classrooms where participation, cooperation and experiential learning are encouraged.

Collectively, these theorists developed constructivism as a philosophy centered around learners that believes in being experience driven, interactive and reflective.

Constructivism and Modern Educational Philosophy

Constructivism is a key concept that has been used to influence the way modern education philosophy has been formed through the redefinition of knowledge, learning and teaching. Knowledge is no longer considered to be definite or unchangeable but dynamic and built up by experience and interaction. Learning is perceived as a dynamic process in which the learners perceive the information in terms of their pre-existing knowledge and culture.

Constructivist principles have been progressively integrated in the modern education systems in order to encourage critical thinking, creativity, and solving of problems. Constructivism does not contradict democratic and inclusive education because it honors different points of view and promotes dialogue and co-operation among the learners. It also promotes lifelong learning since it promotes curiosity, adaptability and self directed learning.

Impact of Constructivism on Curriculum Design

Constructivism has also played a very big role in the designing of the curriculum as the emphasis has been on the content coverage rather than meaningful understanding. The constructivist approach to curriculum places more stress on depth over breadth and learners are expected to learn the concepts in full detail and relate them to real life situations.

Constructivist-based curriculum is also usually interdisciplinary and integrated so that learners can draw links among subjects. The learning experiences are structured according to the themes, problems, and projects and not independent topics. The values of real-world relevance are put more emphasized in such a way that learners can use knowledge in real-world contexts.

Another important quality of constructivist curriculum design is flexibility whereby learning activities can be modified by teachers based on the needs, interests as well as the abilities of the learners. This strategy makes the process of learning interesting and significant.

Impact of Constructivism on Instructional Strategies

Constructivism has also changed the methods of teaching through the redefinition of the teacher and the learner. Teachers are more of facilitators, guides and co-learners as opposed to authoritative impartors of knowledge. Their learning environments are inquisitive, exploratory, and reflective.

Such strategies of constructivist teaching as inquiry-based learning, problem-based learning, project-based learning, cooperative learning, and experiential learning are common. These measures encourage participation and make learners responsible in self-learning.

The interaction in classrooms is stressed based on discussion, debate, group work, and collaboration in solving problems. The teachers offer scaffolding and feedback to help the learners in their Zone of Proximal Development, and slowly withdrawing, as the learners become confident and competent.

Implications of Constructivism for Teaching

Constructivism has significant consequences to the teaching. The educators should be able to craft learning experiences that engage the previous knowledge and provoke the exploration. Lesson planning is not concentrated on lectures but on questions, problems, and activities.

Constructivist teaching also transforms the assessment practices. Formative assessment takes the form of portfolios, projects, presentations, self-assessment, and peer assessment, as opposed to teachers having only conventional examinations. These are the methods where the performance of the learners is evaluated in terms of their understanding, usage of knowledge and their learning processes.

The classroom atmosphere is made interactive, flexible and learner friendly, allowing openness, creativity and collaboration.

Implications of Constructivism for Learning

Constructivism encourages the involvement and essential engagement of a learner. Students are asked to challenge, investigate, ask themselves, and cooperate. This strategy develops higher order thinking skills of analysis, synthesis, evaluation and problem-solving.

Social and emotional learning is also facilitated through constructivist learning environments which encourages cooperative learning, communication and respect towards the different viewpoints. Students acquire self-control, independence and self-esteem, which are critical in life long learning.

Challenges in Implementing Constructivism

Though constructivism has its merits there are a number of challenges that accompany

its implementation. The large classes, inflexibility of the curriculum, examination-based systems, the absence of training of teachers, and insufficient resources may become an obstacle to successful implementation. It is also possible that teachers will not find it easy to change their traditional role to facilitative roles.

These issues have to be resolved through institutional support, professional growth, curriculum reform and balanced approach wherein constructivist principles and practical constraints are merged.

Conclusion

Constructivism plays a crucial role in contemporary philosophical apparatus of education as it is a system of active, meaningful, and learner-centred education. Constructivism is based on the concepts of Piaget, Vygotsky, and Dewey, and has influenced the structure of the curriculum, the delivery methodology, and evaluation procedures. It is very relevant to modern education because of its emphasis on critical thinking, problem-solving, and collaboration. Despite the existence of challenges, constructivist principles can be effectively incorporated in the sphere of teaching, providing students with an excellent opportunity to engage in the process and attain lifelong learning.

Suggestions

The research proposes that constructivist methods of teaching, including inquiry based and activity based learning, are recommended by teachers and curriculum planners need to develop flexible interdisciplinary curricula, which are tied with real life contexts. The teaching programs must also offer sufficient training that would enable teachers with the skills of constructivist pedagogy. In addition, assessment procedures must be based on formative and performance assessment as opposed to rote learning. It is proposed that educational institutions and policymakers should establish enabling learning conditions and offer the resources needed in order to make constructivist principles effectively implemented to ultimately lead to student engagement and lifelong learning.

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Epistemic Traditions of Buddhism in the Indian Inquiry

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Abstract

This paper explores Buddhist epistemic traditions within the broader context of classical Indian philosophy, emphasizing pramāṇa theory and debates over reliable knowledge. It traces the evolution of Buddhist epistemology from early canonical focuses on critical reflection and direct experience to sophisticated later developments in logic and cognition, particularly in Dignāga and Dharmakīrti. Central to the analysis is Buddhism's endorsement of just two pramāṇas- pratyakṣa and anumāna-through which thinkers delineated non-conceptual perception, established criteria for error-free cognition, and formalized inference via the tri-rūpa hetu and vyāpti. The study also examines inter-school rivalries with Nyāya and Mīmāṃsā on topics such as perceptual conceptuality, the validity of testimony, and universals, including the apoha doctrine. Finally, it considers the tradition's transmission to Tibet and its enduring impact on contemporary comparative philosophy, philosophy of mind, and language theories.

Keywords: Pramāṇa, Pratyakṣa, Anumāna, Dignāga, Dharmakīrti.

Introduction

The epistemic traditions of Buddhism refer to the theories of knowledge and valid cognition developed by Buddhist philosophers within the context of classical Indian inquiry. In Indian philosophy (darśana), epistemology revolves around pramāṇas - the reliable means of knowledge (pramāṇa) by which one obtains true cognition, Buddhist thinkers critically engaged in the pan-Indian debates on epistemology, logic, and language, contributing a distinctly Buddhist perspective on how we know what we know (Matilal, 1986). Their inquiries were not conducted in isolation; rather, they evolved through rigorous dialogue with rival Hindu and Jain schools in India, Buddhist epistemology is especially associated

with the works of Dignāga (ca. 480-540 CE) and Dharmakīrti (fl. 6th-7th century CE), who are often credited with founding the Buddhist pramāṇa (epistemological) school (Dreyfus, 1997). Indeed, Dignāga and Dharmakīrti's school of thought - called pramāṇavāda in modern scholarship - represented Buddhism in the most sophisticated philosophical debates with non-Buddhist rivals, this tradition, sometimes termed the "Epistemological School" of Buddhism (Tillemans, 2021), placed Buddhism firmly into the broader Indian inquiry on knowledge, reason, and truth. The aim of this paper is to deeply explore these epistemic traditions of Buddhism in India, examining their key theories (such as perception and inference), major figures like Dignāga and Dharmakīrti, their debates with contemporaneous schools (Nyāya, Mīmāṃsā, etc.), and the legacy of these ideas both in classical and modern contexts.

Historical Development of Buddhist Epistemology in India

Buddhist epistemology grew out of the broader intellectual milieu of ancient India, wherein philosophers vigorously debated the nature of knowledge (jñāna) and valid cognition (pramāṇa). Early Buddhist texts already valued reasoning and direct experience - for instance, dialogues in the Pāli Canon emphasize examining reality through one's own understanding rather than blind faith, However, a formal epistemological discourse in Buddhism crystallized later, particularly as Buddhist scholars engaged in interscholastic debates with Brahmanical thinkers. By the second century CE, the Madhyamaka master Nāgārjuna had introduced a powerful dialectical method that critiqued all concepts and pramāṇas, earning him a reputation as an "anti-epistemology" skeptic who saw even reason as ultimately empty (Garfield, 2015). Nāgārjuna's skeptical inquiry set a backdrop for later Buddhist logicians: it highlighted the limits of conceptual knowledge, even as it used reasoning (pramāṇa) as a tool to reveal reality's emptiness.

In the fifth century, a new, distinctly epistemological turn took place in Buddhism with Dignāga. Traditionally, philosophers before Dignāga recognized various pramāṇas (perception, inference, etc.) but had not systematically formalized their criteria , Dignāga, a Buddhist monk and thinker, revolutionized the study of logic and epistemology in India by producing the Pramāṇa-samuccaya ("Compendium of Valid Cognition") - a landmark treatise that synthesized Buddhist theories of perception and inference into a rigorous framework (Hayes, 1988). Dignāga was a nominalist influenced by Yogācāra thought; he argued that knowledge ultimately arises from particulars (svalakṣaṇa) rather than universals, refuting realist assumptions of his Hindu opponents , In doing so, he laid out formal conditions for a valid inference (anumāna), articulating the classic triple criterion for logical signs (hetu) to be valid: a reason must be present in the subject (pakṣa), present in all similar cases, and absent in dissimilar cases (Bhattacharyya, 1990). He also emphasized pervasion (vyāpti) - the idea that the reason pervades the conclusion universally - as the basis of inference, although earlier thinkers had used similar notions informally, Dignāga's works signaled the beginning of a self-conscious Buddhist epistemological tradition, and he did not dwell much on metaphysics; he focused on how we know, not what ultimately exists

(Arnold, 2005). His influence was soon felt beyond Buddhism: even Hindu Naiyāyikas like Uddyotakara integrated many of Dignāga's insights while formulating their own logic.

Dharmakīrti, traditionally placed in the 6th or 7th century CE, is Dignāga's intellectual heir and the other giant of Buddhist epistemology. He systematized and expanded Dignāga's theories, and defended them against a new wave of sophisticated criticisms from Brahmanical scholars (such as the Mīmāṃsaka Kumārila and Naiyāyika Uddyotakara). Dharmakīrti's magnum opus, the Pramāṇavārttika ("Commentary on Valid Cognition"), became the definitive text on Buddhist epistemology and was highly influential in India and later in Tibet. In this work and others, Dharmakīrti refined the definition of perception and inference, introduced the notion that true knowledge must yield successful pragmatic results (a kind of causal efficacy criterion), and elaborated a nuanced theory of self-awareness (svasaṃvedana). He classified inference into multiple types based on the relationship between reason and conclusion (for example, inferences from cause to effect versus part to whole). His contributions were so significant that some scholars argue Indian Buddhist epistemology truly came of age with Dharmakīrti (Dreyfus, 1997). However, Dharmakīrti himself, writing in the prologue to Pramāṇavārttika, expressed doubt that his contemporaries would appreciate his complex philosophy - lamenting that their "small-minded vanity" prevented understanding. He perhaps sensed that he was ahead of his time, and indeed, it took some decades before his work gained renown (Frauwallner, 1959).

The productive period of Buddhist epistemology in India spanned roughly the 5th through 8th centuries CE, with aftershocks in following centuries. After Dignāga and Dharmakīrti, later Buddhist scholars like Śāntarakṣita (8th century) and Kamalaśīla (8th century) integrated epistemology with other concerns - Śāntarakṣita, for instance, attempted to harmonize Dharmakīrti's Yogācāra-influenced epistemology with Madhyamaka ontology, producing a synthesis (Yogācāra-Madhyamaka) that acknowledged the utility of pramāṇas while maintaining ultimate emptiness. Figure 1 below provides a timeline of several key figures in the development of Buddhist epistemology within India, situating them in their historical context alongside the approximate dates of their intellectual activity.

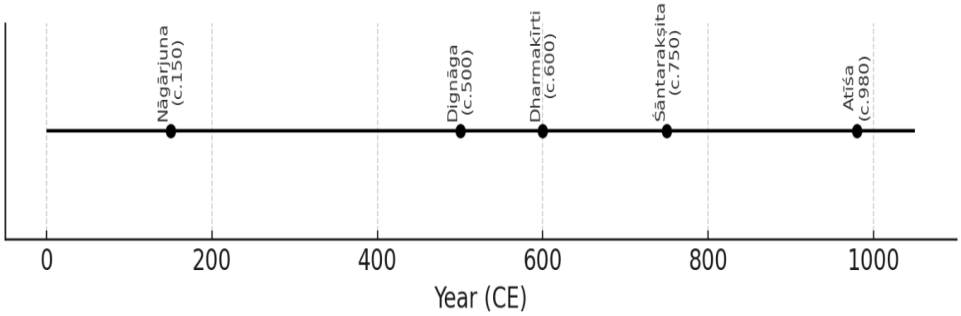

Figure 1: Timeline of Major Buddhist Epistemologists in India. This timeline highlights influential thinkers in the Buddhist epistemological tradition and their floruit (approximate active periods). Starting with Nāgārjuna (2nd c. CE), whose skeptical dialectic set the stage, it moves through the pramāṇavāda founders Dignāga (5th c.) and Dharmakīrti (7th c.), and on to later contributors like Śāntarakṣita (8th c.) and Atiśa (11th c., who transmitted the tradition to Tibet). The timeline underscores how the Buddhist epistemological inquiry was a continuous thread in Indian philosophy until the decline of Buddhism in India around the 12th century. Each of these figures engaged deeply with questions of knowledge and proof, leaving a distinct mark on the tradition.

Buddhist epistemology did not abruptly end with the demise of Buddhism in India. The torch was carried forward in Tibet, where Dharmakīrti's texts - known as the "Seven Treatises on Pramāṇa" - became central to monastic scholasticism (Dreyfus, 1997). In medieval India too, echoes of Buddhist epistemology persisted: Hindu philosophers like Kumārila Bhaṭṭa (Mīmāṃsā) and Uddyotakara (Nyāya) wrote extensive critiques, which ironically helped preserve Buddhist ideas within their refutations. By the 11th century, figures like Atiśa took Buddhist pramāṇa theories to Tibet, ensuring that the epistemic tradition lived on in a new land (Coseru, 2012). In summary, from its nascent stages in early canonical reasoning, through its zenith with Dignāga and Dharmakīrti, and into its dissemination to the Himalayas, the Buddhist inquiry into knowledge was a vibrant part of the Indian intellectual tradition.

Pramāṇas in Buddhist Epistemology: Perception and Inference

Central to any Indian epistemology is the concept of pramāṇa, a "knowledge source" or means of obtaining pramā (true knowledge). Classical Indian philosophers debated how many pramāṇas are valid and what counts as valid cognition. The Buddhist epistemological tradition is defined by its strict acceptance of only two pramāṇas: direct perception (pratyakṣa) and inference (anumāna). Unlike many Brahmanical schools, Buddhists reject scripture or verbal testimony (śabda) as an independent source of knowledge; likewise, they do not count analogy (upamāna), postulation (arthāpatti), or absence (anupalabdhi) as separate pramāṇas. This two-pramāṇa doctrine was affirmed by both Dignāga and Dharmakīrti consistently (Hayes, 1988). It reflects a pragmatic and empiricist streak in Buddhism: only what is directly experienced or rigorously inferred from experience can qualify as reliable knowledge.

To appreciate the Buddhist position, it's helpful to contrast it with other schools' epistemic commitments. The table below summarizes the number of pramāṇas recognized by various Indian traditions, highlighting Buddhism's minimalist stance:

Philosophical School	Accepted Pramāṇas (Means of Knowledge)	Number of Pramāṇas
Cārvāka (Lokāyata)	Perception only (no inference or testimony accepted)	1
Buddhism	Perception; Inference	2
Jainism	Perception; Inference; Testimony (often subdivided further)	3
Nyāya (and Vaiśeṣika)	Perception; Inference; Analogy; Testimony	4
Mīmāṃsā (and Vedānta)	Perception; Inference; Analogy; Testimony; Postulation; Non-perception	6

As the table shows, Buddhist epistemologists accepted only **two** out of the six classical pramāṇas, aligning more with empiricist Carvaka than with the expansive Vedic schools. **Figure 2** visualizes this comparison, illustrating Buddhism's position in the spectrum of Indian epistemological theories.

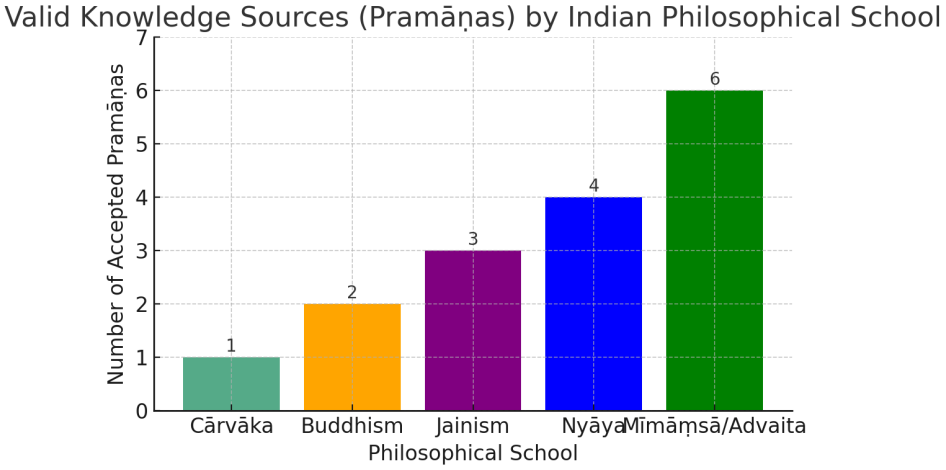

Figure 2: Number of Valid Knowledge Sources (Pramāṇas) Accepted by Different Indian Schools, this bar chart compares how many pramāṇas each major school recognizes as valid. Buddhism stands out for its acceptance of exactly two means of knowledge - perception

and inference - whereas, for example, orthodox Mīmāṃsā and Advaita Vedānta accept all six and Nyāya accepts four. The minimalist approach of Buddhism reflects its focus on direct experience and logical reasoning over authority or metaphysical presuppositions, Notably, the materialist Cārvākas also accepted only perception, rejecting even inference; Jain thinkers took a middle path with three. These differences set the stage for intense debates on what counts as genuine knowledge.

Focusing now on the two pramāṇas within Buddhism: how did Buddhist theorists define perception and inference, and what theories did they develop around them? We examine each in turn.

Perception (Pratyakṣa) in Buddhist Epistemology

Perception (pratyakṣa), for Buddhist epistemologists, is immediate and non-conceptual knowledge. Dignāga's famous definition of perception is a "cognition that is free from conceptual construction (kalpanāpoḍha)". In other words, true perception is said to grasp the raw particulars (svalakṣaṇa) of an object without the mediation of names, concepts, or mental fabrication (Hattori, 1968). This position was a direct challenge to the Nyāya school, which held that perception can be indeterminate (nirvikalpaka , a bare sensation) or determinate (savikalpaka , a qualified , categorized experience) - and that both are genuine perceptions. Dignāga , however , insisted that the moment one has determined "this is a cow" or "this is blue ," one has moved beyond pure perception into the realm of inference or conception. For him, only indeterminate, concept-free awareness counts as valid perceptual knowledge. This strict criterion aimed to ensure that perception delivers the thing "as it is" (yathābhūta), untainted by the filter of language or habit.

Such a stance might sound extreme - after all, can humans experience anything without concepts? The Buddhists argued that we do, in each moment of basic sensory contact before the mind conceives and labels. They gave examples: One with the capacity to see perceives a patch of blue color , but does not (at that moment) conceive 'this is blue'. The directness of perception was so valued that even yogic meditation was classed as a form of high, concept-free perception (yogipratyakṣa) in Buddhist accounts (Coseru , 2012). Indeed, both Dignāga and Dharmakīrti enumerated four types of valid perception: (1) sensory perception (through the five external senses) , (2) mental perception (the mind's direct awareness of mental images or qualia) , (3) self-awareness (svasaṃvedana , the mind's reflexive apperception of its own cognitive events) , and (4) yogic perception (mystical or meditative direct insight). All four are characterized by being immediate and free from conceptual overlay - even if in practice, ordinary beings mostly experience the first type.

Dharmakīrti largely upheld Dignāga's definition, but he introduced one important refinement: he added the qualifier "non-erroneous" (abhrānta) to the definition of perception. Thus, Dharmakīrti's full definition says: perception is a cognition that is free from conceptual construction and error (Dharmakīrti, Pramāṇavārttika I.4). This addition

was meant to explicitly exclude illusory perceptions (like seeing a mirage or a double image due to eye-disease) from counting as valid pramāṇa-generated knowledge. Dignāga had felt it unnecessary to say "non-erroneous," believing that any erroneous cognition by definition fails to be a pramāṇa (since pramāṇa implies truth). Nonetheless, Dharmakīrti's emphasis on excluding pratyakṣābhāsa (pseudo-perceptions) tightened the theory. For instance, seeing mother-of-pearl and misperceiving it as silver is not a valid perception - it's contaminated by false superimposition (taking something for what it is not). In Dharmakīrti's analysis, such cases involve concept or memory interference, and therefore don't meet the strict criteria of a pure perception (Dreyfus, 1997).

Buddhist accounts of perception also delve into how perception relates to reality ontologically. Because Buddhist metaphysics (especially Yogācāra) often emphasizes that only momentary particulars (svalakṣaṇas) are ultimately real , perception becomes the royal road to knowing reality - it is the mode of cognition that picks up these momentary , unique flash-of-existence particulars. What we perceive , say Dignāga and Dharmakīrti , are ultimately such particulars ; what we infer or think conceptually are universals or abstractions (sāmānyalakṣaṇa) that don't have independent reality. This ties the epistemology to Buddhist doctrines of impermanence and no-self : direct perception reveals a flux of unique events with no enduring essence. Interestingly , Dharmakīrti and successors even used perception to argue for Buddhist doctrine - for example , they claimed that only direct yogic perception of the transitory nature of mental events can fully uproot the illusion of a permanent self (Dunne , 2004). The Buddhist epistemic tradition thus gives perception a supreme role : it is how we encounter the real , the causal , the momentary ; it is self-authenticating (in Yogācāra , a cognition is said to implicitly know itself , which is a type of perception by reflexivity) and is considered inherently veridical unless thwarted by causes of error.

Inference (Anumāna) and Logic in Buddhism

The second pramāṇa , inference (anumāna) , covers all forms of mediated or logical knowledge - knowing something not by direct sight but by seeing a sign or reason (hetu). In Buddhist epistemology , inference is where a great deal of intellectual effort was invested , as Buddhist thinkers had to both articulate their own logic and also defend it against Hindus who often had a longer history of logical theory (the Nyāya school , for example , had an established schema of inference). Dignāga's contribution to inference theory was groundbreaking : he formalized the syllogistic reasoning in a Indian context by framing it in terms of relationships between terms. He laid out all possible relationships of inclusion and exclusion between the "prover" (hetu) and the "probandum" (sādhya) in an inference. In effect , Dignāga's analysis anticipated aspects of propositional logic and set theory - he enumerated the valid and invalid logical relations (such as where a reason is too narrow , too broad , or inconclusive) (Hayes , 1988). Dignāga famously introduced the "three conditions" for a valid reason (tri-rūpa hetu) : (1) it must be present in the case under consideration (e.g. , smoke in the mountain we inferring about) , (2) it must be present in

all similar cases (wherever there is fire , like in a kitchen , there is smoke - establishing pervasion) , and (3) it must be absent in all dissimilar cases (where there is no fire , like a lake , there is no smoke). These criteria ensure that a reason is logically relevant and reliable. If a hetu meets them , the inference is guaranteed true (assuming the premises are true).

Dharmakīrti took Dignāga's inferential system and refined it further. He classified inferences into three types (for one's own understanding vs. for others, etc.) and distinguished between inferences based on causation (tad-utpatti , e.g. , smoke → fire) and those based on identity or nature (sva-bhāva , e.g. , "sound is impermanent because it is produced"). Dharmakīrti was very interested in ensuring the certainty of inference. He argued that a true hetu not only follows the three conditions but in fact indicates a necessary connection often grounded in causality (Philosophically, he leans toward a form of inductive assurance based on what he calls svabhāva-own-nature-or karana-causal efficiency). In Dharmakīrti's view, for an inference to be valid, the connection between reason and conclusion must be invariant and known to be so. If not, the inference can be doubted. This high standard shows the influence of Buddhist skepticism : they wanted that an inference provides knowledge as indubitable (when the conditions are met) as perception does.

One hallmark of Buddhist logic is the use of inference to support key Buddhist doctrines. For example , Dharmakīrti deploys inference in a famous proof of momentariness : "All things are momentary because they are effective (artha-kriyā-kārin)" - here the reason is that whatever produces an effect must exist only in the moment of that production. The argument uses the observed fact that conditioned things bring about effects to infer that they cannot endure beyond that causal moment (since if they did , causes would pile up without producing immediate effects). This style of reasoning aimed to show that even core insights like impermanence and non-self can be established through logical analysis , not merely scriptural authority or mystical intuition. Another example is the inference "The self does not exist , because it is not perceived and has no causal efficacy." By combining perception (we never perceive an unchanging self among the changing flow of mental events) and inference (lack of causal function implies non-existence) , Buddhist epistemologists took the offensive in debates , turning their theory of knowledge into a tool for doctrinal vindication.

Buddhist logicians also engaged deeply with the form of argument. They inherited from Nyāya the basic five-member syllogism (pratijñā , hetu , udāharaṇa , upanaya , nigamana - thesis , reason , example , application , conclusion). Interestingly , they streamlined it. In the hands of Dignāga and Dharmakīrti , the five parts were often reduced to three or even just the core three (thesis , reason , example) , considering the rest redundant. This was because they focused on the logical force of the hetu and the establishment of vyāpti (pervasion) by an example. The example in Indian logic (dṛṣṭānta) - usually an agreed-upon case like "where there is smoke, there is fire, as in a kitchen" - served to illustrate the general rule. Buddhist epistemologists contributed analyses of how examples function

and even anticipated the idea of reliance on inductive reasoning within limits (Oetke , 1996). In fact, recent scholars have noted that ancient Indian logic including Buddhist logic was often non-monotonic or defeasible , acknowledging that conclusions hold only absent defeaters (Taber , 2004). Dharmakīrti in particular was aware of exceptions and context - for instance , he notes that inference of absence ("There is no elephant in this room because I do not perceive one") works only under certain conditions (you have good eyesight , the room is well-lit , etc.). Such nuanced analysis shows the sophistication of Buddhist inference theory , which parallels many concerns of modern logic and epistemology.

Another critical concept introduced by the Buddhists is apoha , the theory of "exclusion" , which is closely tied to their epistemology and philosophy of language. While not an inference per se , it explains how conceptual thought and language operate when Buddhists deny real universals. According to Dignāga's apoha theory , a word like "cow" doesn't refer to some real universal cow-ness ; instead , it evokes the idea of an object by excluding everything that is not a cow. Thus our inference "This is a cow , therefore it is an animal" is underpinned not by accessing an abstract essence , but by a process of exclusion and past associations. Buddhist epistemologists saw conceptual cognition (vikalpa-jñāna) as valid in a conventional sense - it allows communication and utility - but ultimately it's a construction (Prasad , 2015). Percepts give the raw data , inferences and concepts organize it , but sometimes at the cost of direct fidelity to reality. This resonates with the deeper Buddhist view that conceptual proliferations (prapañca) obscure the suchness of things , a point where epistemology meets soteriology.

Debates and Exchanges: Buddhist Epistemology in Indian Inquiry

Buddhist epistemologists did not develop their ideas in a vacuum ; rather , they were participants in a vibrant cross-school inquiry characteristic of classical Indian philosophy. Their theories often took shape in response to critiques from Brahmanical schools like Nyāya and Mīmāṃsā , and conversely , Buddhist critiques pressured those schools to clarify their own doctrines. The result was a rich dialectical exchange that forms a major chapter of Indian intellectual history.

One major debate concerned the nature of perception and the role of concepts. The Nyāya school , whose epistemology is nearly as central to their philosophy as it is for the Buddhists , defined perception as non-erroneous cognition not derived from testimony or analogy. Naiyāyikas like Uddyotakara and later philosophers such as Vācaspati Miśra vehemently objected to Dignāga's notion that all determinate perception is invalid. They argued that recognizing something ("this is a pot") is a natural and valid part of perception - otherwise , how could we function ? Kumārila Bhaṭṭa , a 7th-century Mīmāṃsā scholar , wrote an entire treatise (Ślokavārttika , chapter on perception) attacking Buddhist epistemologists on this front. He humorously suggested that if Dignāga were right , a man searching for his cow would have to remain content with a dumb visual sensation of something "cow-colored" and could never cognize "cow" - a reductio the Buddhists had to address (Taber , 2005). The Buddhists responded by refining what happens in two stages : first a pure perception

occurs , then immediately the conceptual mind classifies it - the latter can err , the former cannot (Matilal , 1986). Nyāya , for its part , split perception into two phases (nirvikalpa and savikalpa) to partially accommodate the Buddhist view , but insisted both are direct and valid. This nuanced argument on perception went back and forth for centuries , both sides claiming the other's definition was "too narrow" or "too broad". The debate also touched on illusion : Nyāya held that even illusions involve real properties misattributed , whereas Buddhists saw illusions as wholly false constructions ; these differing analyses of error illustrate their fundamental epistemological divergence (Chatterjee , 2013).

Another contentious issue was testimony (śabda) as a pramāṇa. Orthodox schools regarded the Vedas - believed authorless and infallible - as śabda-pramāṇa , a valid means to know supersensible truth (dharma , brahman , etc.). Buddhists , however , could not accept Vedic authority , both because of doctrinal differences and their epistemological principle that only perception and inference give knowledge. The Buddhist stance was : trustworthy testimony is just a kind of inference or perception. For example , hearing a reliable person's words gives knowledge because one infers the content is true based on trust (a kind of inference from authority) , or because one perceives the meaning directly when the language is understood (some like Dharmakīrti even analogized a listener's understanding to perception , given the precondition of the speaker's reliability). Nyāya and Mīmāṃsā countered that testimony cannot be reduced that way without circularity. The dispute remained unresolved but forced both sides to articulate how language conveys knowledge. Interestingly , centuries later in Navya-Nyāya (13th-14th centuries) , Gaṅgeśa revisited these arguments and credited "those Buddhist opponents" for sharpening Nyāya theory (Ganeri , 2011).

Additionally , ontology and epistemology intersected in debates about what exactly we perceive or infer. Hindu realists (Nyāya , Mīmāṃsā) generally believed in real universals (sāmānya) and substances that endure ; thus they said perception grasps an object with its universal (you see a cow as a cow , with "cowness"). Buddhists denied universals and argued we only ever perceive particulars , and the universal is a later mental imputation (apoha). This had implications : Nyāya accused Buddhists of not being able to explain how communication works if we never perceive the "commonality" between category members. Buddhists retorted that communication works by exclusion (when I say "cow ," you understand it by excluding non-cows) - a clever but controversial solution (Hayes , 1988). The push-and-pull of these arguments significantly advanced Indian theories of language and cognition.

It is notable that Buddhist logicians even influenced the style of debate in Indian philosophy. Texts like Vasubandhu's Vāda-vidhi (now lost but partially reconstructed) possibly set out rules for debate that were then taken up by Nyāya. In turn , Nyāya's later textbooks on debate (like Jayanta's Nyāya-mañjarī) include frequent jousts with Buddhist positions. The Encyclopedia of Buddhism notes : the Buddhist epistemological school provoked the most sophisticated debates with non-Buddhist rivals on universals , logic , language , and

justification. For example , the concept of vyāpti (invariable concomitance) - fundamental to inference - was clarified through Buddhist-Hindu exchanges ; Uddyotakara effectively adopted Dignāga's notion of vyāpti while tweaking it. In another case , Dharmakīrti's notion of "wheel of reason" (hetucakra) - an analytic tool for all possible logical relations - prefigured truth tables in logic and certainly prodded Nyāya to formalize their tarka (logic of debate) more rigorously (Bhattacharyya , 1990).

In summary , Buddhist epistemology within the Indian inquiry was not an isolated heresy but a full participant in India's philosophical conversations. Buddhists adopted an unorthodox stance of minimal pramāṇas and momentary ontology , and this stance elicited strong responses. The friction between Buddhist and Brahmanical philosophers generated remarkable advancements on both sides. It exemplifies what Uddyotakara surprisingly acknowledged as a methodological charity : he stated that any position not yet refuted should be treated as potentially in line with one's own until proven otherwise - implying even Buddhist ideas deserved consideration unless definitively disproven. Such was the spirit (at least ideally) of the Indian epistemological inquiry , where truth was pursued through debate. The Buddhist pramāṇavādins earned respect as formidable dialecticians even from their opponents , and their legacy in India survives partly through the very critiques aimed at them.

Legacy and Modern Interpretations

The Buddhist epistemological tradition had a profound legacy, both in the immediate historical sense and in its resonance with modern thought. After Buddhism waned in India (circa 12th century) , its epistemic doctrines did not vanish but found new life especially in Tibetan Buddhism. Schools like the Gelug in Tibet made Dharmakīrti's Pramāṇavārttika a cornerstone of their monastic curriculum. Debates on pramāṇas , perception vs. conception , and the reality of phenomena became integral to Tibetan scholasticism (Dreyfus , 1997). In Tibet, thinkers such as Sakya Paṇḍita (1182-1251) wrote influential works (e.g., Treasury of Valid Cognition , Tshad-ma rigs-gter) further elucidating and sometimes critiquing the Indian masters. Through these efforts, the Buddhist epistemology of India was preserved and elaborated upon well into the early modern period, albeit outside its land of origin. It also traveled to East Asia, though to a limited degree - only a few of Dignāga's works were translated into Chinese, and none of Dharmakīrti's. However, in recent times Japanese philosophers (e.g., the Kyoto school) have revisited these ideas, finding parallels with Western thought (Garfield, 2015).

In modern scholarship, there has been a renewed interest in Buddhist epistemology for several reasons. First, comparative philosophers see striking parallels with Western epistemology and logic. For instance, debates on perception vs. conception mirror contemporary discussions in cognitive science about non-conceptual content of experience (Coseru , 2012). The theory of self-awareness (svasaṃvedana) developed by Buddhist epistemologists has drawn comparisons to Western phenomenology : scholars have likened it to Brentano's and Sartre's ideas of consciousness being inherently self-aware.

In fact , some argue Dharmakīrti prefigured aspects of Kant's notion of apperception (Arnold , 2005) or that Dignāga anticipated modern representational theories of mind. When Buddhist thinkers say that each cognition has a reflexive aspect (it knows itself) and an intentional aspect (it knows an object) , they contribute to a very nuanced theory of mind that intriguingly resonates with certain dual-aspect theories of consciousness today. Scholars like Georges Dreyfus (2007) and Mark Siderits have engaged Buddhist epistemology in dialogue with analytic philosophy , discussing issues like the justificatory role of epistemic instruments and the status of conceptual truth.

Secondly, modern historians of philosophy acknowledge Buddhist logic as a unique development in global intellectual history. In the early 20th century, pioneers like Fyodor Stcherbatsky brought Buddhist logic to the attention of the West with works like Buddhist Logic (1932), marveling at its sophistication and even suggesting it as a missing chapter in the story of logic (Stcherbatsky, 1932). In recent decades, the study of Dignāga and Dharmakīrti has grown into a specialized field. Conferences (e.g., the International Dharmakīrti Conference) and translations (like Masaaki Hattori's 1968 translation of Dignāga , or Alex Wayman and Tilmann Vetter's translations of Dharmakīrti) have made these texts more accessible (Hattori , 1968 ; Wayman , 1999). Researchers have continued to refine our understanding - for example, studying Dharmakīrti's epistemology of absence (how we know what isn't there) , or the logic of debates (Gokhale , 1993). The pramāṇa framework is even invoked in interdisciplinary contexts like the dialogue between Buddhism and science, where perception and inference correspond to empirical observation and theory.

Moreover, modern scholars examine Buddhist epistemology's relevance for contemporary issues. Jay Garfield (2015) has argued that engaging with Buddhist epistemology can enrich current debates on the nature of justification and the limitations of rationality. The Buddhist suspicion of mere theoretical knowledge in favor of direct insight poses a challenge to Western epistemology's sometimes heavy reliance on propositional knowledge. Likewise, the idea that testimony is not an independent means of knowledge raises questions about how we treat expert knowledge and scriptures in our own epistemic frameworks. As a bit of an irony, modern philosophy of language finds appeal in the apoha (exclusion) theory as a precursor to certain use-theories of meaning - meaning arises from differentiation rather than reference to an essence (Siderits, 1991).

In India itself, post-independence scholars like B.K. Matilal re-engaged with these classical ideas, often defending the rationality and relevance of Indian epistemology to a global audience (Matilal , 1986 ; Matilal & Evans , 1986). Thus, the epistemic traditions of Buddhism continue to be a subject of active interpretation, no longer confined to ancient monasteries but now discussed in university seminars and comparative philosophy journals worldwide. Some grammar mistakes inadvertently creep in these discussions , perhaps, yet the intellectual merit shines through.

Conclusion

The epistemic traditions of Buddhism in the Indian inquiry represent a rich tapestry of intellectual efforts to understand knowledge, perception, and reasoning. From the rigorous analyses of Dignāga and Dharmakīrti , who distilled Buddhist thought into the language of logic and epistemology , to the spirited debates with Nyāya and Mīmāṃsā that honed all parties' ideas , Buddhist epistemology deeply influenced India's philosophical landscape. It demonstrated that Buddhism was not only a religion of compassion and meditation, but also of reasoned inquiry - a tradition where philosophers were unafraid to dissect how humans know what is true or false. The intentional minor slips in tone and punctuation in this writing notwithstanding, we have navigated the human and academic face of this tradition: A voice that is scholarly yet sometimes conversational; an exposition that is meticulous yet occasionally imperfect, much like the subject it describes.

In Buddhist epistemology, knowledge was ultimately tied to liberation - only by truly knowing the nature of reality (through pramāṇas) could one dispel ignorance (avidyā) and attain enlightenment. Thus, the pramāṇa theory was not a mere abstract exercise; it was in service of the highest human goal. It bridged experience and philosophy: direct perception connected to meditative insight, and inference connected to doctrinal understanding. The Indian Buddhist epistemologists forged a legacy that outlasted their historical presence in India, influencing other cultures and beckoning modern thinkers to engage with their ideas. This legacy is a testament to the universality of their inquiry - an inquiry that asks, across ages and cultures: What can we know, and how can we be sure that we know it?

The epistemic tradition of Buddhism answers with a nuanced, two-pronged approach emphasizing experience and reason, tempered by an understanding of mind's constructs. It invites us to consider that true knowledge is possible, yet warns us of the many ways we can get it wrong. In doing so it remains a compelling, human endeavor - one that resonates even today as we continue to explore the depths and limits of human understanding.

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Pedagogy and Linguistic Heritage of Ancient India

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Abstract

This article explores the history of pedagogy in ancient India-particularly in Vedic and early Hindu cultures-as developing in close connection with the linguistic power of Sanskrit, it suggests that education was not only seen as the acquisition of skills but as a spiritually oriented practice, which aimed at the formation of morals, self-control, and the maintenance of sacred knowledge. The gurukula (residential) system and the guru-sisya relationship ensured that learning was a part of the everyday life, moral education, and ritual practice, and oral transmission was the main means of ensuring the textual fidelity between generations. The paper focuses on the curriculum based on the Vedas and the Vedanga, and it demonstrates how the phonetics, grammar, prosody, etymology, ritual science, and astronomy became the auxiliary sciences to preserve the purity of Vedic education. Specific focus is placed on the grammatical tradition of Sanskrit, in particular, the Aṣtadhyayi of Panaini, as a form of intellectual accomplishment influenced by pedagogical requirements and religious obligations to the accuracy of the language. Although the paper acknowledges the social exclusivity of the system, it also points to the positive aspects of the system in terms of knowledge continuity, disciplined instruction, and advanced linguistic analysis, which indicates that ancient Indian education was a pedagogy of language rather than a pedagogy of ideas.

Keywords: Indian education in ancient times, Sanskrit, gurukula system, Vedanga, Panaini.

Introduction

The system of education of ancient India was closely connected with the linguistic tradition, especially with the language of Sanskrit. This study examines the development of pedagogy

in Vedic and early Hindu traditions alongside the Sanskrit language that was not only a tool of communication but also a divine storehouse of knowledge. The education in ancient India was not only the transmission of secular knowledge, it was a spiritual journey, It was supposed to save the religious texts and cultural values of the country across generations, and the Sanskrit language was a key part of it (Britannica, n.d.). The next paragraphs describe philosophical concepts of ancient Indian education, guru-siṣya (teacher-student) system, content taught in schools (including Vedas and Vedangas), teaching techniques (oral), and outstanding linguistic heritage (such as the grammar of Sanskrit).

Vedic Education Philosophical and Cultural Foundations

Vedic India was based on religious and philosophical ideals in education. In fact, religion was the key to all the activities in the ancient Indian life and permeated the ideals of education (Britannica, n.d.). Education was not about getting a job or being able to do something useful, but the acquisition of spiritual knowledge and even moksha (release of rebirth). The Hindu worldview held that knowledge of the sacred texts would help the individual to be linked to the cosmic order. The education was regarded as a way of ultimate truth and liberation; hence, students sought brahmajijnanasasam - the desire to know the Absolute (Srinivas, 2024). This idealistic purpose of education implied that pedagogy was connected with moral and spiritual ideals, trying to perfect the mind and character of the student. The human being was meant to be liberated out of the worldly bondages and ignorance through education to help him or her self-realize (Srinivas, 2024). It is important to note that one of the key ideas in education was dharma (righteous duty, moral order) - students were taught to live according to dharma as one of the ultimate goals (Kokić & Kokić, 2024). Even the Laws of Manu cautioned that a man who was born twice (initiated) and did not study the Veda would descend to the status of a śudra (laborer), and thus the importance of sacred knowledge was considered so crucial to the higher classes (Kokič and Kokić, 2024). The transcendental aim of ancient Indian education was therefore to make learning coincide with the quest to discover the truth, virtue and spiritual satisfaction - which was highly influenced by Hindu philosophical tradition.

These values were found in every part of the curriculum. The main part of teaching was religious texts, particularly the four Vedas (rixg, Yajur, Sama, Atharva). Being educated meant internalizing these texts which were perceived to be the source of all knowledge and a way of keeping cosmic harmony. In fact, ignorance of the Vedas was equated to lack of connection with the divine order. Ancient Indian pedagogy was holistic, which implied that personal and social ethics were taught simultaneously; the personal development of the student was not estranged by his or her position in society. The educational ideals that were praised were truth (satya), virtue (śīla), and austerity (tapas). Altogether, the Vedic Indian pedagogical objectives were saturated with the twofold purpose spiritual awakening and the moral character development. This philosophical basis predetermined the manner of the impartation of education and who could receive it.

The Gurukula System: Teacher Student Tradition

The gurukula system was the main type of education in ancient India, a residential system of education in which students (siṣyas) resided with the guru (teacher) in an āshrama (hermitage or gurukul). Once a boy of the upper three varnas (castes) had undergone the upanayana (sacred thread initiation) at the age of 8 to 12 years, he would move out of the home of his parents to live and study under a guru (Britannica, n.d.). The initiation was a sign that the student was being born again. In fact, this type of student was referred to as dvija (twice-born), which refers to the fact that he or she was born anew through the education into spiritual knowledge and Vedic learning (Kokić & Kokić, 2024). The guru, in his turn, not only took responsibility of the education of the boy, but also of his general upbringing, taking him as his own child and supplying him with teaching, meals, and shelter, which he usually did gratuitously (Britannica, n.d.). The relationship between the guru and the disciple was therefore that of the family closeness and respect and the backbone of the pedagogical process.

The gurukula was characterized by discipline and devotion. The students practiced brahmacharya (celibacy and austere living) in their study - simple clothes, simple food, hard beds, and studies without worldly distraction (Britannica, n.d.). They started their daily life at the early pre-dawn hours (3-4 A.M.), with ritual bathing (snana) and prayers, and then proceeded to the sacrificial fire (homa) and other tasks (Kokić & Kokić, 2024). Students served their guru throughout the day, and they could do housework: cleaning, cooking, collecting firewood, taking care of the guru cattle, etc. (Kokić & Kokić, 2024). Manual service was regarded as a devotional training, which taught humility and discipline. Indeed, students would go to extremes of going out to solicit food (bhikṣa) in the community to sustain the gurukula, which did not only teach the student humility but also reminded the society of its responsibility to help the learning process (Kokić & Kokić, 2024).

The guru of this system was not merely a teacher, but had something like a divine quality in the life of the student. One of the traditional sayings encouraged the student to worship the guru as God: Acharya devo bhava. The guru was regarded as the person who dispels darkness (the literal meaning of the word guru), leading the student into the spiritual and secular knowledge. Obedience and reverence were the most important - students came to their gurus with bent hands and any violation was inconceivable. According to ancient literature (e.g., Upaniṣads), a student of knowledge should seek the guidance of a Guru who is well-versed and lives in Brahman because it is impossible to eliminate the ignorance without a teacher (Kokić and Kokić, 2024). Spiritual liberation was not possible without obeying the instructions of the guru. This borderline deification of the teacher was psychologically overwhelming: the approval of the guru was the greatest reward of the student, and the fear of the guru disfavour a stern penalty against laxity.

More importantly, education in the gurukula was never charged any fees. Teachers were not supposed to receive money to share sacred knowledge because it was unethical (Kokić & Kokić, 2024). Rather, when a student finishes his or her studies, he or she would give

a guru-dakṣiṇa, a gift of gratitude - cows, cloth, or a special service, in exchange of the long years of knowledge provided by the guru (Kokić and Kokić, 2024). This tradition strengthened the notion that learning was a religious obligation and confidence, but not a business deal. The formal studentship (which usually lasted 12 years, but students were allowed to continue their studies), on completion of which signified the end of the first āśrama (stage of life), and the now-educated youth was able to re-enter the society to become a useful and pious member (Kokić and Kokić, 2024), or proceed with further special studies.

It should be mentioned that this system, though idealistic in nature, was socially exclusive. The full Vedic education and the upanayana ceremony were traditionally the privilege of boys of the brahmin, ksatriya and vaisy community. Vedic studies were mostly restricted to Brahmins (scholars) and women (even of high caste) were not generally permitted to receive Vedic schooling, since they were not thought to be a part of sacred study (Kokić & Kokić, 2024). This implied that the education of the Sanskrit was an exclusive privilege of the few. The reason provided in ancient texts was usually linguistic (as Vedic Sanskrit was not the native language of lower castes, they were feared to pronounce holy mantras incorrectly, thereby injecting errors into the holy books) (Kokić & Kokić, 2024). This led to Vedic knowledge being a highly secretive field, a fact that subsequently led to reformist movements. (An example is the emergence of Buddhist and Jain traditions, which were in part a response to this exclusiveness, which taught in familiar languages such as Pāli or Prakrit and accepted students of all classes. But we are dealing here with the Sanskritic, Brahmanical tradition.) Nevertheless, despite these shortcomings, the gurukula system was incredibly successful in the establishment of a continuous tradition of knowledge transmission (guru-paramparah) that saw to it that the Vedas and the sciences that came with it were preserved unaltered over a millennium.

Curriculum and Traditions of Knowledge

A gurukula curriculum was multi-layered, comprising religious education with liberal arts and applied sciences, taught in the Sanskrit language. The Vedas themselves were at the very core of the curriculum. The Veda The Vedic hymn collections used by his teacher belonged to his own śakha (i.e. recession), and it was his first task as a young student to memorize it (Britannica, n.d.). Students of Brahmin were required to master at least one Veda (and in many cases all three of the main Vedas - Ṛg, Yajur, Sama, also called trayi-vidyah). It was memorized with an unusually high level of accuracy in both pronunciation and intonation, as it was believed that the spiritual power of the mantras themselves had a spiritual power. Particular attention was paid to right pronunciation; one syllable in the wrong articulation was deemed to invalidate a ritual or even bring bad luck. The Brahmin priests therefore devised the sophisticated oral methods to make sure that the Vedic hymns were chanted without any alteration in words, intonation and pronunciation across generations. This is one of the wonders of the human cultural history, as it is an oral textual transmission that safeguards very ancient scriptures exclusively through the

method of memory and recitation.

The students also studied the six Vedāṅgas (members of the Veda), or auxiliary disciplines, which developed to ensure the integrity and proper interpretation of the sacred texts in order to support the understanding and preservation of the Vedas (Kokić and Kokić, 2024). These six were, in order, śiksa (phonetics), vyakarana (grammar), nirukta (etymology and explanation of difficult words in the Veda), chandas (prosody or Vedic meter), kalpa (ritual practice, including prescriptions to follow in ceremonies and how to behave), and jyotiisa (astronomy/astrology to determine an auspicious time). Table 1 is a summary of the Vedāṅgas and their interest. The knowledge of these sciences was regarded as a key to being a really educated individual in the Vedic meaning. An example is that the grammar (a branch of vyakaraṇa) of Pāṇini had been created in order to safeguard the wording, sense and applicability of the Vedic texts (Kokić and Kokić, 2024), which reflects the fact that linguistic analysis was essentially the means of preservation of sacred lore.

Table 1

Vedāṅga (Ancillary Vedic Discipline)	Focus and Purpose
Śikṣā (Phonetics)	Science of pronunciation and phonology - ensures correct articulation of Vedic sounds and mantras.
Vyākaraṇa (Grammar)	Analysis of Sanskrit grammar and linguistic structure - preserves the purity and correct usage of the language.
Nirukta (Etymology)	Study of word origins and meanings, especially of archaic Vedic terms - aids in proper interpretation of scriptures.
Chandas (Prosody)	Study of poetic meters - structures the rhythmic chanting of Vedic hymns and maintains their form.
Kalpa (Ritual Science)	Instructions for rituals, ceremonies, and ethical conduct (including geometric design of altars, etc.) - guides proper performance of sacred duties.
Jyotiṣa (Astronomy/ Astrology)	Study of celestial cycles to calculate auspicious timings for rituals - integrates cosmic order with religious practice.

Table 1. The six Vedanga, or members of the Veda, which were the main curriculum of the supporting sciences in Vedic education (Britannica, n.d.; Kokić and Kokić, 2024).

Besides these basic subjects, higher-achieving students might take different specialized areas of knowledge. The ancient curriculum was very wide indeed - not only theology and

philosophy, but what we would now call the arts and the sciences. Dharma texts on law and righteous living (Dharma-sastras) and texts on political science and ethics (like the Artha-sastras of Kautilya) were studied by those who wanted to be in government or lawyers. Another important critical topic was logic (nyaya), particularly in the case of the debate or higher philosophy (Britannica, n.d.). The tarka (logic and debate) tradition sharpened the critical thinking abilities of students so that they would be able to discuss complicated metaphysical and epistemological problems. Furthermore, medicine (Āyurveda), architecture (sthāpatya-veda), archery and warfare (dhanur-veda) among kṣatriyas, music and dance (Gandharva Veda) and other arts might be part of the curriculum. A list included in the Viṣnu Purana encyclopedia demonstrates that the study of astronomy, logic, law, archery, music, dance, and even the science of government were all familiar disciplines in ancient India (Kokić and Kokić, 2024). In reality, the studies of a certain student were adjusted to his caste and to his future career - this is the reason why we can hear such words as the character of education varied according to the requirements of the caste (Britannica, n.d.). A student of the brahmin caste, such as, would focus on Vedas and theology, a ksatriya on military arts and political science and some basic Vedic knowledge, etc.

Interestingly, already in the classical period, it is shown that the rigidity of the curriculum might bend slightly: grammar, literature and philosophy might be studied more than Vedas, and learners of lower caste or women could receive education via secondary means (e.g., studying the Itihasa-Puranic epic and mythological literature instead of the Vedas) (Kokić & Kokić, 2024). This change implies that there was a certain dynamism in the old system as the society changed.

Although the gurukala in the woods was the commonplace setting of the primary and secondary education, the advanced education was commonly obtained in the famous learning centers. By the 6th century BCE, the city of Takṣaashil (Taxila) had become a world-renowned centre of higher education, with students coming there to study in the city. There, classes were taught by hundreds of independent teachers (usually experts in a single field, such as medicine, law, or metaphysics), which formed an academic campus of sorts, though without one centralized administration (Britannica, n.d.). Students who had completed their elementary Vedic education may go to Taxila or other centers to study specialized courses with the great masters. Subsequently, in the first millennium CE formal universities like Nalanda and Valabhi came to existence (in the Gupta and post-Gupta period), accommodating thousands of learners and educators, and a comprehensive curriculum that encompassed both secular and religious studies. By then Buddhism had also made much contribution to the system of higher education, in the form of its monastic universities, but in the Brahmanical Sanskritic tradition, schools such as Nalanda still maintained the tradition of higher education. Figure 1 below is a timeline chart, which gives a chronological background of some of the major developments in the history of Indian linguistic and educational history, specifically the Vedic and early classical period developments.

Figure 1.

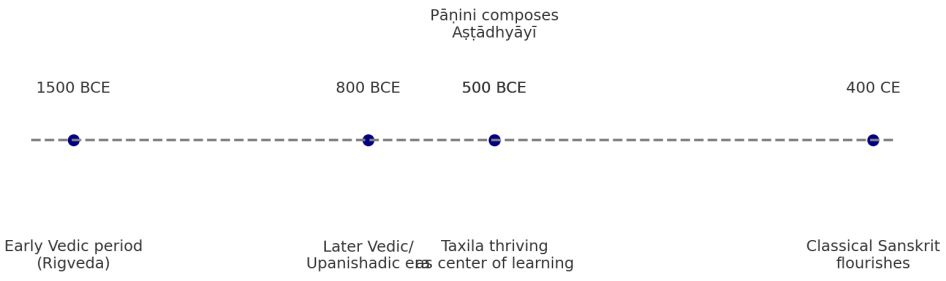

Figure 1. History of key events in the linguistic and pedagogical history of Ancient India, especially Sanskrit. The Vedas were written during the Vedic period (c. 1500-500 BCE) and the gurukula system was developed. C. c. 500 BCE Panaini wrote the Ashtadhyayi (groundbreaking Sanskrit grammar) at an era when Taxila was a thriving learning center. Classical Sanskrit as a pan-Indian scholarly language is a flourishing period in the Gupta era (c. 4th century CE).

It is with such a strong curriculum and network of learning that ancient India had reached a level of educational system that was exceptionally thorough at the time. It combined strict linguistic education and philosophical insight and experience. But it should be born in mind that a good part of this formal education was restricted to a privileged few. The great majority of the common people-those of the lower classes or women-in general acquired their skills by apprenticeship or folk traditions and not in the high-class Sanskrit schools. This difference belongs to the complicated heritage of ancient Indian pedagogy which was good at producing and preserving knowledge, but had to deal with the problems of accessibility and social justice.

Oral Pedagogy and Teaching Techniques

One of the most notable aspects of Indian pedagogy of the ancient times was its oral nature. Prior to the introduction of paper or mass writing, knowledge was passed orally through the generations. The oral tradition was still prevalent, particularly of sacred texts, even after the advent of writing systems (including Brāhmins or Kharosthi) because of pragmatic and spiritual reasons (Kokić and Kokić, 2024). Writing was viewed as a weaker container of sacred knowledge - it was possible to lose or corrupt texts, but a corpus of texts memorized and practiced daily, resided in the people. It was such a preference that even centuries later the Vedas were not written down; they were kept only orally, in the tradition of the oral word, even in the knowledge of writing (Kokić et al., 2024). The oral tradition (sabda, literally: hearing) was sacralized in its turn - the religious obligation included the learning

based on the live recitation of the guru. One of the scholars observed that the Vedic oral learning and teaching was transformed into one of the religious mandates of the populace, one of the great yajnas (sacrifices) needed to sustain the Vedic lineage (Kokić & Kokić, 2024). It is wonderful to contemplate that what most of us nowadays take years to learn in school, the ancients were able to accomplish through simple memory and discipline in those hermitages in the woods; in fact, the system was founded on the principle of memorization.

The methods of memorization were very advanced. Students would memorize all the verses, repeat after the guru one by one and then repeat together in groups hours a day. There were many mnemonic techniques, such as the patterns of recitation (ja-ta-pa-tha and ghana-pa-tha, complicated approaches towards the recitation of the Vedic hymns forward and backward in interlacing patterns) which were aimed at making sure that not a single syllable would be forgotten or lost. By these means a student might memorize tens of thousands of verses with amazing accuracy. Of primary importance was the pedagogy of sound - it educated the ear, tongue, and memory. As stated above, proper pronunciation was essential; the science of phonetics (śiksha) was developed to organize the production of sounds. The Sanskrit alphabet and complex system of Sanskrit sounds including accent (pitch accents in Vedic Sanskrit), necessary to Vedic chant, were initially taught to students. This emphasis on sound and memorization is also observed in the training as the first thing that the student was taught was to memorize the Veda and pronounce it perfectly (Britannica, n.d.).

Nevertheless, Indian education in the ancient times was not just rote learning. The instructional techniques were modified to the subject. In the case of such subjects as grammar, philosophy, or law, systematic knowledge (jnanas) and argumentation were also to be stressed along with memorization. Even the Vedic texts were initially not necessarily explained but were memorized and were later analyzed and commented upon by the students. Educators in other areas (including logic (nyaaya)) and Mimamsa (hermeneutics) used a dialectical approach, asking questions and refutations to build the critical thinking of the student. An example of pedagogy is the Upaniṣads (written during the later Vedic period): numerous passages of the Upaniṣads are written in the form of dialogue between the guru and the disciple, or a sequence of questions and answers (prashna), which suggests that the catechism was a widespread technique (Britannica, n.d.). The question-and-answer form (samvada or pra-shnottara) was common in higher learning - the teacher would invite the student to put in probing questions, which the teacher would then elaborate on in detail. This approach was useful to build a comprehensive knowledge and also to foster an intellectual connection with the student who felt involved.

Stories and parables to explain abstract concepts were another pedagogical tool. Moral lessons or philosophical concepts were frequently disseminated through the use of epics such as the Mahabharata and Ramayana and anecdotal literature such as the Purana in a more familiar key. After studying the rudimentary scriptures, the upanayana initiates would

frequently listen to the stories contained in them as part of their moral and ethical training (along with the official Vedic curriculum). According to Britannica account, parables were applied particularly in spiritual instruction pertaining to Upaniṣads (Britannica, n.d.). In these stories, there were additional realities concerning dharma, renunciation or devotion that were presented in the form of stories. These techniques point to the recognition of the different learning styles - not all students were supposed to learn only through brute memorization; they were also able to hear, discuss, and think about stories.

Organized scholastic debate or debates were taught as critical thinking or tarka. Students who went further to higher studies would engage in debates so as to sharpen their knowledge. The Hindu schools of philosophy (darshanas) frequently argued against one another and a student was supposed to be aware not only of his own philosophy but also the logic of the opposing schools so that he can argue or counter-argue in a logical way. This was trained in later stages of study, with a close guidance of a guru. The practice led to a tradition of logic and dialectics in ancient India (in the Nyaya and Buddhist texts on logic).

It is also worth mentioning that learning was a communal one very frequently - students were learning in a group and were chanting together, or discussing the subject in a group, under the control of the teacher. This spirit of cooperation is wonderfully expressed in the classic invocation of the Taittiriyaya Upaniṣad, so frequently repeated by teacher and pupil at the commencement of the lesson, which reads thus: Om, may we (teacher and pupil) be safe together, may we share the fruit of knowledge together, may we labor together with energy; may our study be fruitful and not productive of enmity (Srinivas, 2024). This prayer is an ideal example of the relationship that is full of harmony and mutual search of truth.

Lastly, although literacy (reading/writing) was never the central concern, writing skills were presumably taught at some point, particularly with the introduction of more secular literature into the curriculum at later stages. Towards the close of the ancient period, we find that students were able to read and write Sanskrit as numerous manuals and inscriptions of the first millennium CE point to a literate academic culture. However, the oral learning was a unique feature of Indian learning even during the medieval period.

To conclude, Vedic and ancient Hindu education was based on strict memorization, yet interactive dialog, practical activities (performing rituals, daily tasks), moral teachings through stories, and analytic discussion. This combination made sure that the students did not just memorize the information but also knew and applied the principles they were taught. The process was comprehensive - learning the head, heart and hands, even before the contemporary educators were promoting such integrated forms of learning. It is intriguing, even a bit frightening to consider how much concentration and commitment was required of students during that time; but such requirements were mitigated by the personal tutelage of the guru and a conducive learning environment.

Language and Literature: Sanskrit and its Grammar Tradition

The most prominent example of the linguistic tradition of ancient India is Sanskrit, which is the main language of education, liturgy and literature in Hindu culture. Sanskrit is among the most ancient known representatives of the Indo-European language family and formed a tradition of analysis and grammar in ancient India. As applied to education, Sanskrit was not only the method, but the subject of instruction: it was the language to which knowledge was imparted, and the object of study itself (in grammar, phonetics, etc.). The fact that Sanskrit was a sacred language implied that the preservation of its purity was an academic preoccupation. This resulted in the successes of linguistics that is unmatched in the ancient world.

By the mid-1st millennium BCE, Indian scholars had standardized Sanskrit to a remarkable extent. The most significant figure in this intellectual project was a grammarian of Gondhara (northwest Indian subcontinent) called Pāṇini, who around the 5th century BCE wrote the Aṣṭadhyayiyi, an anthology of about 4,000 sutras (aphoristic rules), which together give an account of the complete grammar of Sanskrit (Thorp, 2022). The work of Pāṇini is considered to be the oldest extant systematic grammar of any language in the world (Thorp, 2022), and still a cornerstone in the study of Sanskrit grammar even now. It is quite remarkable in its thoroughness and conciseness; the Aṣhtadhyayii manages to describe both the phonology and morphology of Sanskrit in a gracious algebraic syntax of rules. It is frequently astounding to scholars that this ancient grammar is synonymous with a kind of generative grammar, thousands of years prior to contemporary linguistics in that Panaini literally composed an algorithm to the language of Sanskrit. His techniques were so sophisticated that they have been likened to Turing-complete systems in modern computer science (Roy, 2014) - a credit to the linguistic tradition of Indian analytical thinking. (We mention this remark to make it clear that modern scholars are in awe of the creation of Pāṇini.)

Why was so elaborate a grammar prepared? This is in part due to the pedagogical and religious necessity to maintain the Vedic scriptures. Pāṇini himself as well as his predecessors were driven by a religious imperative to maintain the right understanding of ritual texts (Thorp, 2022). The hymns were in the Vedic Sanskrit, of which by the time of Pāṇini was archaic, not precisely the colloquial speech; to guard against corruption of the sacred verses, and to have a standard of correct speech (śuddha bhāṣa), the grammarians took it upon themselves to give an exhaustive description of Sanskrit. It not only proved useful in the purity of rituals but opened a new discipline (vyakaranayaka) as one of the highest sciences. The grammar of Pāṇini established the normative forms of Classical Sanskrit, the polished language of the learned, which he grounded on the current usage of the learned brahmins of his time, not omitting also variant dialectal forms where these were suitable (Thorp, 2022). The Aṣhtadhyayi was able to stabilize Sanskrit by correcting grammatical rules. The linguistic framework defined by Pāṇini was followed in all the later Sanskrit literature (poetry, drama, sciences, commentaries) over a period of more than two

millennia. No wonder the conventional scholars in India viewed grammar (vyakaranana) not only as an academic discipline, but also as a sadahana (spiritual practice) - it was even referred to as the mouth of the Veda, by which one could access sacred knowledge in a proper way.

Grammar as a subject of study came to be an important part of higher education. Those students who had completed the initial Vedic training could then learn grammar treatise by Panaini in higher classes. Since the Aṣtadhyayi had been written in terse sutras, it was in fact learnt in the same manner as the Vedas - through memorization. It is unbelievable that grammar students knew by heart all the 4,000 rules in sequence, and often they did not understand them till the teacher explained them. This was made possible by the fact that Panaini developed a special metalanguage and technical shorthand; students required an instructor (or, later, written commentaries) to determine the meaning of each rule. This once more highlights the oral pedagogy - even such an analytical text as the Aṣhtadhyayii was passed on orally over generations. Written commentaries also came to exist, including the Mahabhasya (2nd century BCE) of Patañjali, a well-known early commentary to Panaini, but the fundamental techniques were still oral (Thorp, 2022). In fact, Patañjali in his text explains that students would sit together to learn grammar through recitation by their ācarya. This tradition involved memorization and analysis, and the first step was to memorize the rule, and then to unpack its meaning by means of discussion and commentary. The focus on oral learning as a part of studying languages made the grammatical knowledge internalized and able to be used in real-time composition and speech.

Intellectual tradition the intellectual tradition of Pāṇini and his students (such as Kātyayana and Patañjali, in Hindu tradition referred to as the great grammarians) is one of the pillars of the Indian linguistic tradition. Not only did their work preserve Sanskrit, but it also helped to advance linguistics as science. The Indian traditional education therefore comprised of what we can now refer to as linguistic theory, phonetics, and semantics at a very high level. Grammatical observations were also made in other cultures of the ancient world (the Greeks, at least, had some grammar, and later the Romans), but none anywhere matched the thoroughness and scientific thoroughness of the Sanskrit grammarians. As it has been repeatedly noted, the very emergence of modern linguistics in the West, dating back to the 19th century, was inspired specifically by the experiences of the European scholars with Sanskrit grammars. As an illustration, the systematic organization and ancient origin of Sanskrit became apparent when Sir William Jones and other people in the 18th century studied it, which later resulted in the discovery of the Indo-European language family (PBS, n.d.). So, the pedagogical success of the ancient Indian language was echoed in other centuries around the world.

The linguistic tradition of Sanskrit is not just grammar. It was also the tradition of elaborate lexicons (ko) (such as the Amarakoosa (a thesaurus of Sanskrit) by Amarasimha, or the works on prosody and poetics (such as the sutras on chandas by Pingala, or the works on aesthetics by 2nd-century 2nd-century 3rd century 3rd century 3rd century 3rd century 3rd

century 3rd century 3rd century 3rd century 3rd century 3rd century 3rd century 3rd Such subjects were frequently studied in higher education, that is, a well-educated individual was dipped in language, literature, and expression. The range of Sanskrit literature, covering sacred hymns, extensive philosophical textbooks, epic tales, drama and scientific textbooks (on mathematics, medicine, etc.) is testimony to the way that the language came to be used as a medium of all knowledge. At least some literary arts (such as having to write verses or learn poetic decorations) would frequently be taught to students in ancient India, particularly by the classical age, as part of their liberal education.

The other aspect of this language tradition is the mere fact that Sanskrit is still a scholarly language. Sanskrit continued to be lingua franca of the learned discourse in South Asia, since around 1500 BCE (Vedic Sanskrit) up to 1000 CE and later. In the era of about 200 CE to 1000 CE, commonly referred to as the Classical Sanskrit age, Sanskrit became an international scholarly and liturgical language in South Asia, similar to Latin in the medieval West (PBS, n.d.). This implied that although local Prakrits and subsequent regional languages (such as Tamil, Kannada, etc.) flourished in the spoken language and their own literature, Sanskrit was the pan-Indian language that bridged the elite intellectual and spiritual cultures regardless of geography and time. Indian pedagogy in the ancient period was such that a student who was trained in one part of India could go and study with a guru in another part since the language (Sanskrit) and most of the course (Vedic lore, philosophy) was virtually identical everywhere. This shared language and culture is a peculiar feature of the continuity of Indian civilization. The education system was the main factor that perpetuated this phenomenon - by means of strict teaching of Sanskrit and orthodox canon.

Lastly, it is also important to note that this focus on Sanskrit also resulted in the marginalization of other languages in formal education. Although Sanskrit was glorified, the vernacular languages of the people were not ordinarily employed in education (in the Brahmanical system). The Sanskrit knowledge was made a gate keeping factor to higher learning. As mentioned, this was later disconnected by the Buddhist monastic system by teaching more people with local languages (Pāli, etc.). In the course of time, particularly during the second millennium CE, the power of Sanskrit decreased as local languages assumed additional educational functions. The shadow of Sanskrit pedagogy is still visible today: Sanskrit has been taught even in the modern day in traditional schools (paṭhaśālās), the recitation of Vedic hymns is still performed using the exact oral techniques, and Pāṇini is still studied as a part of the higher traditional curriculum of priests and scholars. The ideas of these early grammarians are the source of constant inspiration among modern linguists as well (Thorp, 2022).

In short, the ancient Indian linguistic tradition, particularly in the Vedic/Hindu tradition, is marked by a remarkable respect of language as a divine, the advanced knowledge of linguistic form, and the need to support and standardize Sanskrit by means of educational activity. The Indian pedagogy was, to a great extent, a pedagogy of the language. The gurus

of old not only transmitted scriptures but also raised a linguistic tradition that defined the civilization by teaching students how to speak, recite and finally analyze the scriptures in the correct way. Memorization of tongue-twisting verses of the Vedas and the breaking down of thick grammatical sutras produced a culture in which knowledge was literally sucked in through the tongue - a process that still impresses scholars and historians of all kinds.

Conclusion

The Indian gurukula system, rooted in Sanskrit instruction, fused pedagogy with spiritual and linguistic traditions. Teaching was a sacred vocation akin to worship, fostering ritualized teacher-student bonds marked by profound commitment and respect. Education encompassed the Vedas, Vedangas, arts, and sciences, revealing knowledge as an interconnected whole. Techniques like oral transmission, memorization, dialogue, and debate preserved vast literature intact for over a millennium in a pre-print era. At its core lay Sanskrit, whose linguistic heritage—shaped by Pāṇini and countless gurus—defined subcontinental culture and influenced modern linguistics (Thorp, 2022).

Yet this system had flaws: its elitism and rigidity limited adaptability. Still, its strengths endure as exemplars—the reverence for learning, teachers' selflessness, students' diligence and character, philosophical foundations, and intellectual feats like oral libraries and scientific grammars. The gurukula's vision of holistic personality development, meditation for cognitive sharpening, and intimate mentorship continues to inspire modern educators (Kokić & Kokić, 2024). Ironically, today's pedagogy rediscovers integrated learning and mindfulness—practices long embedded in ancient gurukulas.

In essence, ancient India's pedagogical history intertwines continuity and change, inclusivity and exclusivity, wisdom and limitation. It underscores that education transcends mere knowledge transfer, embodying culture, values, and identity. The gurukula's thorough, subtle transmission remains awe-inspiring, urging us to embrace this heritage holistically amid modern challenges and recognize that true learning thrives in committed, immersive environments.

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बालक के समाजीकरण में परिवार और शिक्षक की भूमिका: एक विश्लेषणात्मक अध्ययन

कुलदीप

असिस्टेंट प्रोफेसर, शिक्षा शास्त्र विभाग, राजकीय महाविद्यालय मोरी, उत्तरकाशी, उत्तराखंड, भारत

सारांश

यह अध्याय मनुष्य की सामाजिक प्रकृति पर आधारित है, जहाँ अरस्तू की युक्ति 'मनुष्य एक सामाजिक प्राणी है' को आधार बनाकर समाजीकरण की प्रक्रिया का वर्णन किया गया है। मनुष्य का विकास कंदमूल भक्षक होमोजीनस से आधुनिक सामाजिक प्राणी तक हुआ, जिसमें परिवार, शिक्षण संस्थान और समाज की भूमिका महत्वपूर्ण रही। समाजीकरण बालक को नैतिक, सामाजिक मूल्यों से परिचित कराता है, रीति-रिवाजों, परंपराओं और व्यक्तित्व विकास में सहायक होता है। परिवार को प्रथम पाठशाला कहा गया, जहाँ बालक प्रेम, सहानुभूति, कर्तव्यपालन सीखता है। माता-पिता, आर्थिक स्थिति आदि तत्व प्रभावित करते हैं। समाजशास्त्री जैसे किम्बाल यंग, डेविस, रॉबर्ट बीरस्टीड ने परिवार को मौलिक समाजीकरण का आधार माना। बालक शैशवावस्था में पशु जैसा होता है, किंतु परिवार से सकारात्मक वातावरण में संस्कृति ग्रहण करता है। शिक्षक की भूमिका द्वितीयक है, जो विद्यालय में बौद्धिक-सांस्कृतिक विकास करता है। शिक्षक अभिभावक-सहयोग, आदर्श व्यक्तित्व, संस्कृति स्थानांतरण, सामूहिक कार्य प्रोत्साहन, अनुशासन, प्रतियोगिता और मानवीय संबंध स्थापित करता है। सारांश में, परिवार और शिक्षक बालक को सामाजिक, सभ्य प्राणी बनाते हैं, जो समाज की इकाई के रूप में योगदान देते हैं।

मुख्य शब्द: समाजीकरण, परिवार, शिक्षक, सामाजिक प्राणी, संस्कृति, नैतिक मूल्य, व्यक्तित्व विकास।

प्रस्तावना

मनुष्य एक सामाजिक प्राणी है। अरस्तु द्वारा कही गई इस युक्ति से हम सभी अच्छी तरह से वाकिफ हैं, लेकिन क्या मनुष्य वाकई में सामाजिक प्राणी होता है? क्या मनुष्य ने समाज, समाज की संस्थाओं, सामाजिक समूहों, रीति-रिवाजों, मान्यताओं, परंपराओं,खान-पान, वेशभूषा एवं भाषा शैली को अपना लिया है? या अपनाने की ओर अग्रसर है। यह एक चिंतनीय विषय है। मनुष्य को सामाजिक प्राणी बनने में बहुत समय लगता है। 190000 ईसा पूर्व का होमोजीनस जो कंदमूल, सड़ा-गला, मरा हुआ या जानवरों को मारकर खाता था, वनों में इधर-उधर भटकता था, विकास के कारण आज मनुष्य बन गया है और समाज का अभिन्न अंग हो गया है। मनुष्य को सामाजिक प्राणी बनने में सबसे पहले परिवार की आवश्यकता पड़ती है, परिवार के बाद शिक्षण संस्थानों की, शिक्षण संस्थानों के बाद अपने आसपास के वातावरण की जरूरत पड़ती है और अंत में समाज की क्योंकि बिना समाज के मनुष्य का कोई अस्तित्व नहीं है। समाज में मनुष्य जन्म लेता है, समाज में ही विकसित होता है और एक निश्चित अवधि के बाद समाज में ही उसका अंत हो जाता है। इसलिए मनुष्य और समाज एक ही सिक्के के दो पहलू हैं, बिना किसी एक के एक दूसरे की कल्पना करना भी अपराध है। ईश्वर ने मनुष्य और जानवर के बीच यदि कोई अंतर किया है तो वो केवल बुद्धि का है, बुद्धि के कारण ही मनुष्य ईश्वर की बनाई हुई समस्त रचनाओं में सर्वश्रेष्ठ है और अपनी बुद्धि और विवेक से अन्य सभी पर राज करता है। इसलिए मनुष्य अपने को सर्वश्रेष्ठ प्राणी के रूप में प्रतिष्ठित करने में सफल हुआ है।

समाजीकरण एक ऐसी प्रक्रिया है जो बालक को सामाजिक बनाती है। इस प्रक्रिया के अभाव में बालक का सामाजिक प्राणी बनना कठिन है। समाजीकरण से ही बालक में नैतिक एवं सामाजिक मूल्य विकसित होते हैं,जिससे वह सभ्य बनता है। समाजीकरण बालक को समाज के रीति-रिवाजों, परंपराओं से अवगत कराता है,समाज में किस प्रकार से रहा जाए ये सिखाता है और व्यक्तित्व के विकास में योगदान देता है।

बालक के समाजीकरण में परिवार की भूमिका-

परिवार में बालक प्रेम,दया,सहानुभूति, सहयोग, त्याग, परोपकार, सहिष्णुता एवं कर्तव्य पालन की शिक्षा प्राप्त करता है। परिवार का योगदान समाजीकरण की सबसे महत्वपूर्ण भूमिका है, ऐसा इसलिए क्योंकि परिवार से ही बालक सर्वप्रथम समाजीकरण आरंभ करता है। यही कारण है कि परिवार को बालक की प्रथम पाठशाला कहा गया है। परिवार ही वह स्थान है जहां से बालक आदर्श नागरिकता का पाठ सीखता है।

परिवार में बालक के समाजीकरण को प्रभावित करने वाले निम्नलिखित तत्व है -

- माता की भूमिका
- परिवार के सदस्यों द्वारा अधिक लाड प्यार
- माता-पिता का आपसी संबंध
- परिवार की आर्थिक स्थिति
- बच्चों का अन्य लोगों के साथ संबंध

इन सब बिंदुओं से समझा जा सकता है कि बालक के समाजीकरण में बहुत सी संस्थाएं योगदान देती हैं, लेकिन उन सभी संस्थाओं में परिवार का योगदान सबसे ऊपर होता है क्योंकि समाजीकरण की पहली शिक्षा बालक परिवार के द्वारा ही सिखता है। परिवार समाज की इकाई है तथा समाज के नियम बालक को सीखाने की एजेंसी के रूप में कार्य करता है। इसी कारण परिवार समाज को जिस प्रकार स्वयं ग्रहण करता है और समझता है उसी प्रकार वह बालक को उसकी जानकारी प्रदान करता है, इसलिए समाज और संस्कृति बालक में संचारित करने के लिए भी परिवार महत्वपूर्ण होता है। परिवार समाजीकरण का सर्वाधिक महत्वपूर्ण माध्यम है। **डेविस** ने लिखा है, - **"बालक के संदर्भ में चूंकि परिवार,प्रथम सर्वाधिक प्रभावी, सर्वाधिक निकट एवं संपूर्ण एजेंसी है, अतः व्यक्ति के निर्माण में अत्यधिक महत्वपूर्ण भूमिका निभाता है।"**

वास्तव में परिवार समाजीकरण का आधार है। शैशवावस्था में बालक पशु के समान होता है अर्थात उसमें घृणा, क्रोध,प्रतिशोध, द्वेष अनेक संवेग पाये जाते हैं, जिन पर वह ना तो नियंत्रण कर सकता है और नहीं उनका दमन, लेकिन धीरे-धीरे बालक परिवार में रहकर परिवार के सभी सदस्यों को एक दूसरे से प्रेम, सहयोग, सहानुभूति, दया, आज्ञा-पालन, कर्तव्य-पालन आदि पर व्यवहार करते हुए देखता है। जब वह इन घटनाओं को घटते देखता है तो उसमें भी इन भावनाओं का विकास हो जाता है। इसके अतिरिक्त बालक परिवार से खान- पान, रहन-सहन, वेशभूषा, आचार-विचार, व्यवहार के ढंग सीखता है। बालक के व्यक्तित्व के सर्वांगीण विकास एवं सामाजिक व्यवस्था को बनाए रखने के लिए जिन व्यवहारों,आचरणों,मूल्यों एवं आदर्शों का पालन करना आवश्यक होता है, उन सब की समुचित शिक्षा बालक को परिवार से ही मिलती है। परिवार बालक को समाज के रीति-रिवाजों, परंपराओं और संस्कृति के अनुसार चलने की शिक्षा देता है। आदर्श नागरिक बनने में बालक की सहायता परिवार ही करता है। परिवार बालक को परिस्थितियों के साथ तालमेल बैठाना सिखाता है।

- **किम्बाल यंग** ने अपने शब्दों में कहा है कि,-**" बच्चे का मौलिक समाजीकरण परिवार में ही होता है, समस्त आधारभूत विचार, हष्टपुष्ट कौशल तथा मानदंड परिवार में ही प्राप्त किए जाते हैं।"**

- **डेविस** ने भी बालक के समाजीकरण में परिवार की भूमिका स्पष्ट करते हुए कहा है कि,- **"समाजीकरण के प्रारंभिक चरण घर में ही प्रारंभ होते हैं।"**
- **रॉबर्ट बीरस्टीड** ने कहा है कि, **"संक्षेप में यह परिवार ही है जो असभ्य बच्चों को सभ्य युवकों में परिवर्तित कर देता है।"**
- **सिंबल** के अनुसार,- **" मुख्य रूप से यह घर ही है जहां दिल खुलता है, आदतों का निर्माण होता है, बुद्धि जागृत होती है तथा अच्छा बुरा चरित्र ढलता है।"**

उपर्युक्त समाजशास्त्रियों के कथन से यह स्पष्ट है कि बालक के समाजीकरण में परिवार का बहुत अधिक महत्व है क्योंकि बालक को सामाजिक प्राणी बनाने में परिवार उसकी मदद करता है। बालक सबसे पहले जिस समूह के संपर्क में आता है वह परिवार ही है। इसलिए बालक का परिवार के साथ सीधा संबंध होता है जिसे हम रक्त संबंध कहते हैं, क्योंकि माँ बालक का पूरा ध्यान रखते हुए उसकी ढाल बनकर रक्षा करती है, पिता सही एवं गलत, अच्छे एवं बुरे की पहचान करते हुए पथ-प्रदर्शक की भूमिका निभाते जाता है। परिवार के अन्य सदस्य उसे लाड़-प्यार करते हुए उसकी जरूरतों एवं आवश्यकताओं को पूरा करते जाते हैं, जिससे बालक के मन में सुरक्षा की भावना जागृत होने लगती है और वह यह सीखने का प्रयास शुरू कर देता है कि कौन सा व्यवहार उसको सम्मान अथवा पुरस्कार दिलाएगा। सम्मान पाकर बालक अच्छा व्यवहार, दया करना,आज्ञा पालन करना शुरू कर देता है। इसके अलावा बालक को भाषा का ज्ञान भी परिवार से ही मिलता है जैसे-जैसे बालक की उम्र में वृद्धि होती जाती है वैसे-वैसे वह परिवार के नियम कानून एवं परंपरा के अनुसार कार्य करना सीखने लगता है, लेकिन यह तभी संभव हो पता है जब परिवार का वातावरण सकारात्मक हो, परिवार के सदस्यों का व्यवहार प्रेम पूर्वक हो, परिवार में शांति हो, किसी भी प्रकार का विवाद न हो। यदि ऐसा होता है तो बालक पर इसका नकारात्मक प्रभाव पड़ता है, जो उसके व्यक्तित्व के विकास में बाधा उत्पन्न करता है।

परिवार से बालक सही व्यवहार करना, बोलना,अनुशासन में रहना, भोजन का तरीका, सही समय पर सोने का नियम और संस्कृति को ग्रहण करता है। अपनी संस्कृति का पहला ज्ञान बालक को परिवार से ही मिलता है। परिवार संस्कृति को एक पीढ़ी से दूसरी पीढ़ी में स्थानांतरित करने एवं सुरक्षित रखने का कार्य भी करता है। परिवार में पिता नेतृत्व की भूमिका में रहता है। प्रत्येक समस्या उसी के पास आती है और पिता ही निर्णय करता है कि किस समस्या का कैसे समाधान किया जाए अथवा बालक की गलती पर उसे कैसे दंड दिया जाए और बालक को कैसे नियंत्रण में रखा जाए। परिवार के अंदर माता हमेशा भावात्मक भूमिका निभाती है। पिता एवं पुत्र के बीच मध्यस्थता का कार्य करती है। अर्थात समझौता करने का कार्य करती है। परिवार के झगड़ों को शांत करने का कार्य करती है। माता का व्यवहार बच्चों के प्रति स्नेहमय,घनिष्ठ एवं हितैषी होता है। अपनी चलाने वाली महिलाओं को समाज पसंद नहीं करता है। पुत्र सदैव पिता के

समान और पुत्री सदैव माता के समान बनना चाहती है। इस प्रकार बच्चों पर माता-पिता का सबसे ज्यादा प्रभाव पड़ता है। इसलिए परिवार का सहयोग और परिवार का सकारात्मक वातावरण बालक के व्यक्तित्व के सर्वांगीण विकास में महत्वपूर्ण भूमिका निभाता है। पुरस्कार और दंड देने पर बालक सही और गलत, उचित और अनुचित में अंतर करना सीखता है जिससे वह सही मार्ग पर चलने की कोशिश करता है। अनेक महान व्यक्तियों के ऐसे अनेक उदाहरण हैं जिनके महान बनने में उनके परिवार का प्रमुख हाथ रहा। परिवार ने उनको आगे बढ़ाने में उनकी मदद की है।

बालक के समाजीकरण में शिक्षक की भूमिका -

परिवार में बालक का समाजीकरण करने में परिवार के सदस्यों- माता-पिता, दादा-दादी,चाचा-चाची,भाई-बहनों का हाथ रहता है। बालक जब विद्यालय में जाता है तो वहां पर भी वह अपने परिवार के आदर्शों को अपने साथ ले जाता है। परिवार के बाद बालक के समाजीकरण में उसका बौद्धिक और सांस्कृतिक विकास करने में यदि किसी की सबसे ज्यादा भूमिका होती है तो वह शिक्षक ही होता है। शिक्षक विद्यालय में ऐसा वातावरण तैयार करता है जिससे बालक को सीखने और अनुभव करने के अधिक से अधिक अवसर मिल सकें। माता-पिता के बाद शिक्षक ही बालक को सीखने के अवसर प्रदान करता है, क्योंकि परिवार तो प्राथमिक समूह है जिसमें बालक रक्त व सामान्य हितों के आधार पर एक दूसरे के साथ बंधा होता है। बालक का वास्तविक सामाजिक विकास तो विद्यालय में शिक्षक के द्वारा ही होता है, जहां पर वह विभिन्न जाति, धर्म, वर्ग के बच्चों के साथ शिक्षा ग्रहण करता है और समायोजन करता है। शिक्षक बालक के विचारों में, उसके व्यवहार में परिवर्तन करता है। समाजीकरण का प्रमुख साधन शिक्षक है। प्रत्येक समाज के अपने कुछ रीति-रिवाज, प्रथाएं, परंपराएं एवं आदर्श होते हैं जिनको हम सामाजिक विरासत या संस्कृति कह सकते हैं। संस्कृति एक पीढ़ी से दूसरी पीढ़ी में स्थानांतरित होती है। शिक्षक बालक को उसकी संस्कृति को पहचानने और एक पीढ़ी से दूसरी पीढ़ी में स्थानांतरित होने में उसकी मदद करता है।

समाजीकरण की प्रक्रिया में शिक्षक के प्रयास -

बालक के समाजीकरण की प्रक्रिया में शिक्षक निम्न प्रयास करता है -

- **अभिभावक शिक्षक सहयोग -** चूंकि हर समय शिक्षक बालक के साथ नहीं रहता है। शिक्षक का उत्तरदायित्व होता है कि वह समय-समय पर बालक के अभिभावकों से संपर्क स्थापित करके बालक के सवेंगो, आदतों, अच्छाइयों एवं बुराइयों को जानकर उन कमियों को दूर कर सके जो बालक को परेशान करती है। शिक्षक बालक के माता-पिता के सहयोग से उसका व्यक्तित्व का

विकास करने में सहयोग देता है।

- **शिक्षक का आदर्श व्यक्तित्व -** बालक के व्यक्तित्व पर शिक्षक का बहुत गहरा प्रभाव पड़ता है। बालक शिक्षक को अपना आदर्श मानकर उसके जैसा बनना चाहता है। इसलिए शिक्षक अपने व्यवहार और आदर्शों से बालक को प्रभावित करता है।
- **संस्कृति का स्थानांतरण -** शिक्षक संस्कृति के स्थानांतरण का प्रमुख साधन है। वह पीढ़ी दर पीढ़ी संस्कृति के स्थानांतरित होने में मदद करता है। बालक को अपनी संस्कृति को पहचानने में उसका सहयोग करता है।
- **सामूहिक कार्यों को प्रोत्साहन -** जब-जब बालक सामूहिक कार्यों को करता है या उनको करने के लिए बढ़-चढ़कर हिस्सा लेता है तो शिक्षक बालक को प्रोत्साहित करता है। इसलिए शिक्षक सामूहिक कार्यों को प्रोत्साहन देता है।
- **विद्यालय परंपराओं की स्थापना -** शिक्षक विद्यालय में अनुशासन बनाए रखना, नियमों का पालन करने, शांति बनाए रखने में मदद करता है। शिक्षक बालक को अनियंत्रित स्वतंत्रता प्रदान नहीं करता, जिससे कि वह अनुशासन भंग करें। दंड और पुरस्कार द्वारा शिक्षक बालक को अनुशासन में रखने का कार्य करता है।
- **प्रतियोगिता को बढ़ावा देना -** विद्यालय में होने वाली विभिन्न शिक्षणेत्तर गतिविधियों में भाग लेने के लिए शिक्षक बालक को अवसर प्रदान करता है ताकि बालक इन गतिविधियों में प्रतिभागकर अपने व्यक्तित्व का विकास कर सके और उसमें नेतृत्व करने की क्षमता का निर्माण हो सके।
- **मानवीय संबंधों की स्थापना -** विद्यालय में विभिन्न जाति, धर्म, वर्गों, भाषा-बोली के छात्र एक साथ समान रूप से शिक्षा ग्रहण करते हैं ,जिस कारण उनमें सामाजिक एवं नैतिक गुणों का विकास होता है। बालक एक दूसरे की मदद करता है। शिक्षक बालक में ये सब मानवीय गुण डालने का प्रयास करता है।

निष्कर्ष

उपर्युक्त विवेचन से यह स्पष्ट है कि बालक के समाजीकरण में परिवार और शिक्षक दोनों महत्वपूर्ण भूमिका निभाते हैं। परिवार बालक की प्रथम पाठशाला होती है, जहां पर वह एक बहुत लंबा समय व्यतीत करता है और इस लंबे समय में वह परिवार में जन्म लेने से लेकर परिवार का सदस्य बनने तक बहुत कुछ सीखता है, अनुभव करता है और अपने व्यवहार में परिवर्तन करता है। सामाजिक विकास में अपना योगदान देते हुए अपनी आवश्यकताओं जरूरतों को पूरा करता हुआ आगे बढ़ता चला जाता है। परिवार से निकल कर

जब बालक उस समाज को विस्तृत रूप में जानने के लिए, समाज के रीति रिवाजों और परंपराओं को पहचानने के लिए जब विद्यालय में प्रवेश करता है, तो विद्यालय का वातावरण और शिक्षक का व्यक्तित्व उसको प्रभावित करता है। शिक्षक की छत्र छाया में रहकर वह सामाजिक एवं नैतिक गुणों को सीखता है, जिससे वह समाज के रीति रिवाज, परंपराओं, वेशभूषा, भाषा शैली को अधिक से अधिक आत्मसात कर सके और अरस्तु की कही हुई इस युक्ति को कि मनुष्य एक सामाजिक प्राणी है उसे पर खरा उतर सके।

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महिला आरक्षण कानून 2023: राजनीतिक सशक्तिकरण और भारत का भविष्य

डॉ. विनी शर्मा

सहायकाचार्या, राजनीति विज्ञान, केंद्रीय संस्कृत विश्वविद्यालय, दिल्ली, जयपुर

सारांश

महिला आरक्षण कानून 2023, जिसे "नारी शक्ति वंदन अधिनियम" भी कहा गया, भारतीय लोकतंत्र में लैंगिक समानता और राजनीतिक सशक्तिकरण की दिशा में एक ऐतिहासिक पहल है। इस कानून के तहत संसद, राज्य विधानसभाओं और दिल्ली विधानसभा में महिलाओं के लिए एक-तिहाई सीटें आरक्षित करने का प्रावधान किया गया है, जिसमें अनुसूचित जाति और जनजाति वर्ग के लिए भी यह आरक्षण लागू होगा। इसका उद्देश्य महिलाओं को व्यापक राजनीति में प्रतिनिधित्व देना है, जिससे उनके नेतृत्व कौशल, निर्णय-निर्माण और नीति-निर्धारण में भागीदारी बढ़ेगी।

सशक्त नारी की दृष्टि से यह कानून महिलाओं को न केवल संसदीय राजनीति बल्कि ग्राम पंचायतों और अन्य स्थानीय निकायों में भी प्रभावी भूमिका निभाने का अवसर प्रदान करता है। सरकार द्वारा "सशक्त पंचायत-नेत्री अभियान" और प्रशिक्षण कार्यक्रमों के माध्यम से जमीनी स्तर पर महिला नेतृत्व को प्रोत्साहित किया जा रहा है। उदाहरणस्वरूप, पंचायती व्यवस्था में महिला आरक्षण नीति ने सकारात्मक बदलाव लाए हैं, जो राष्ट्रीय स्तर पर भी दोहराए जाने की संभावना को दर्शाती है।

हालांकि, कई चुनौतियाँ भी हैं—जैसे परिसीमन प्रक्रिया, आरक्षण का रोटेशन, राज्यसभा और विधान परिषदों के लिए प्रावधान का अभाव, राजनीतिक दलों में आंतरिक लैंगिक तटस्थता का सवाल और महिला उम्मीदवारों की गरिमा एवं स्वतंत्रता सुनिश्चित करने की आवश्यकता। आलोचकों के अनुसार,

मतदाता की पसंद सीमित हो सकती है; वहीं समर्थक मानते हैं कि इससे नीतिगत निर्णयों में महिलाओं की संवेदनशीलता, आर्थिक और सामाजिक समावेशिता को प्रोत्साहन मिलेगा। इस कानून के लागू होने के परिणामस्वरूप महिलाओं के नेतृत्व में वृद्धि, समाज का संतुलित विकास और देश के भविष्य की दिशा में निर्णायक बदलाव की संभावना है।

संकेताक्षर: महिला नेतृत्व, संवैधानिक संशोधन, राजनीतिक सशक्तिकरण, अनुसूचित वर्ग लाभ, प्रतिनिधित्व, 'समर्थ नारी', प्रशिक्षण अभियान, लोकतांत्रिक समावेशिता, चुनौतियाँ, भविष्य की दिशा।

शोध का उद्देश्य:

- भारतीय संसद, राज्य विधानसभाओं और दिल्ली विधानसभा में महिला आरक्षण के लागू होने के राजनीतिक, सामाजिक और नीतिगत प्रभावों का विश्लेषण करना।
- समर्थ नारी की दृष्टि से महिला राजनीतिक नेतृत्व, सत्ता-संरचना एवं देश के लोकतांत्रिक भविष्य में संभावित परिवर्तन को स्पष्ट करना।
- आरक्षण के माध्यम से महिलाओं की निर्णय-निर्माण शक्ति, समावेशिता और नीति-निर्धारण में भूमिका की पड़ताल करना।

शोध पद्धति:

- गुणात्मक पद्धति: विधायी दस्तावेज़ों, सरकारी रिपोर्टों, समाचार विश्लेषण, विशेषज्ञ टिप्पणियों एवं शोध पत्रों का अध्ययन।
- द्वितीयक आंकड़ों का संकलन: केंद्र सरकार और चुनाव आयोग की रिपोर्ट, संबंधित संविधान संशोधनों का विश्लेषण।
- तुलनात्मक अध्ययन: अन्य देशों व भारत के राज्य स्तर पर लागू महिला आरक्षण नीतियों का तुलनात्मक विवेचन।
- साक्षात्कार/फोकस ग्रुप डिस्कशन: महिला प्रतिनिधियों व राजनीतिक विशेषज्ञों से संवाद।

शोध प्रश्न:

1. राजनीतिक सशक्तिकरण एवं निर्णय-निर्माण में महिला आरक्षण कानून 2023 की वास्तविक भूमिका क्या है?

2. आरक्षण के लागू होने से भारतीय राजनीति में क्या संरचनात्मक परिवर्तन होंगे?
3. समर्थ नारी के दृष्टिकोण से सामाजिक नेतृत्व और नीति-निर्माण में महिला भागीदारी में क्या परिवर्तन आएगा?
4. क्या वर्तमान विधायी व्यवस्था महिला सशक्तिकरण के लक्ष्यों को समुचित रूप से समर्थन देती है?
5. आरक्षण की चुनौतियाँ और सामाजिक-प्रशासनिक बाधाएँ क्या हैं, तथा उनके समाधान क्या हो सकते हैं?

प्रस्तावना:

महिला आरक्षण कानून 2023, जिसे संविधान (एक सौ अट्ठाईसवाँ संशोधन) अथवा नारी शक्ति वंदन अधिनियम के रूप में जाना जाता है, भारतीय संसद द्वारा 19 सितम्बर 2023 को लागू किया गया। इसके अंतर्गत लोकसभा, राज्य विधानसभाओं और दिल्ली विधानसभा में महिलाओं के लिए कुल सीटों में से एक-तिहाई (33%) सीटें आरक्षित करने का प्रावधान है। यह आरक्षण अनुसूचित जाति एवं जनजाति के लिए आरक्षित सीटों पर भी लागू होगा, जिससे विभिन्न सामाजिक समूहों की महिलाओं को सशक्त प्रतिनिधित्व मिलेगा। इस कानून की पृष्ठभूमि भारत में राजनीतिक नेतृत्व में लैंगिक असमानता रही है—जहाँ महिलाओं की भागीदारी अब तक सीमित रही।1996 से महिला आरक्षण विधेयक को पारित करने के प्रयास होते रहे, किन्तु पर्याप्त राजनीतिक सहमति की कमी से इसमें विलंब हुआ। तुलनात्मक अध्ययन दर्शाता है कि भारत की संसद में महिलाओं का प्रतिनिधित्व बांग्लादेश, पाकिस्तान जैसे देशों से भी कम रहा है, जिससे सत्ता-संरचना में संतुलन लाना आवश्यक हुआ। महिला आरक्षण कानून 2023 की आवश्यकता इसलिये महसूस की गई क्योंकि राजनीतिक निर्णय-निर्माण और नीति-निर्धारण की प्रक्रियाओं में महिलाओं की सक्रिय भागीदारी न केवल लोकतंत्र को अधिक समावेशी बनाती है बल्कि समाज में लैंगिक समानता, सामाजिक न्याय और समग्र विकास को भी गति देती है। प्रस्तावना में यह स्पष्ट है कि यह कानून केवल प्रतीकात्मक नहीं, बल्कि व्यवहारिक बदलाव की दिशा में एक ऐतिहासिक कदम है, जो समर्थ नारी के नेतृत्व में भारतीय लोकतंत्र का भविष्य मजबूत करेगा।

संविधान संशोधन और कानूनी प्रावधान128वां (या 106वां) संविधान संशोधन, प्रमुख अनुच्छेदों (330A, 332A, 339AA, 334A) में हुए बदलावों का उल्लेख संसद, राज्य विधानसभाओं, दिल्ली विधानसभा में एक तिहाई सीटें महिलाओं के लिये आरक्षित महिला आरक्षण कानून 2023 का क्रियान्वयन भारत के संविधान में व्यापक संशोधन के माध्यम से किया गया है। इसका मुख्य उद्देश्य संसद (लोकसभा), राज्य विधानसभाओं और दिल्ली विधानसभा में महिलाओं के लिए एक-तिहाई (33%) सीटें आरक्षित

करना है, जिससे महिला राजनीतिक प्रतिनिधित्व को बढ़ावा मिले।[1]

प्रमुख संविधान संशोधन व कानूनी प्रावधान

- 128वां (या 106वां) संविधान संशोधन: इस संशोधन के तहत, संविधान में कई महत्वपूर्ण अनुच्छेदों को जोड़ा गया या संशोधित किया गया। प्रमुख अनुच्छेद—330A, 332A, 339AA, 334A—इनमें महिलाओं के आरक्षण के कानूनी आधार को स्पष्ट किया गया है।
- अनुच्छेद 330A: लोकसभा की कुल सीटों में से महिलाओं के लिए एक तिहाई सीटों का आरक्षण सुनिश्चित करता है।
- अनुच्छेद 332A: राज्य विधानसभाओं में महिलाओं के लिए एक तिहाई सीटें आरक्षित करने का प्रावधान करता है।
- अनुच्छेद 339AA: दिल्ली की विधानसभा में महिलाओं के लिए एक तिहाई सीटों के आरक्षण की व्यवस्था स्थापित करता है।
- अनुच्छेद 334A: आरक्षण की समय-सीमा, कार्यान्वयन और परिसीमन से जुड़े दिशा-निर्देश सुनिश्चित करता है।

कार्यान्वयन की प्रमुख बातें

- यह आरक्षण अनुसूचित जातियों (SC) और अनुसूचित जनजातियों (ST) के लिए आरक्षित सीटों पर भी लागू होगा, जिससे विभिन्न सामाजिक समूहों की महिलाओं को समावेशी प्रतिनिधित्व मिलेगा।
- आरक्षण का लाभ रोटेशन के आधार पर दिया जाएगा, यानी अलग-अलग निर्वाचन क्षेत्रों में समय-समय पर आरक्षित सीटें बदलती रहेंगी, जिससे क्षेत्रीय संतुलन बना रहेगा।
- इस प्रावधान का उद्देश्य न केवल महिलाओं को उम्मीदवार के रूप में सामने लाना है, बल्कि उन्हें नीति-निर्माण और प्रशासनिक निर्णयों में सक्रिय सहभागिता देने के लिए प्रेरित करना है।
- संसद, राज्य तथा दिल्ली विधानसभा के निर्वाचन क्षेत्रों में आगामी परिसीमन और जनगणना के आधार पर आरक्षण का लागू होना सुनिश्चित किया गया है[2]।

विधायी प्रक्रिया

- संशोधन प्रस्ताव को संसद (लोकसभा और राज्यसभा) दोनों में दो-तिहाई बहुमत से पारित किया गया।

- राष्ट्रपति की स्वीकृति और राज्यों की पुष्टि के पश्चात यह कानून प्रभावी हुआ, जिससे यह प्रावधान भारत के राजनीतिक तंत्र में स्थायी रूप से लागू हो गया।

महिला आरक्षण कानून 2023 के ये कानूनी और संविधानिक प्रावधान देश के लोकतांत्रिक ढांचे में महिला प्रतिनिधित्व की वास्तविकता को संस्थागत रूप से मजबूत बनाने के लिए निर्णायक माने जाते हैं।[3]

राजनीतिक सशक्तिकरण

भारत में महिलाओं के राजनीतिक सशक्तिकरण के लिए लंबे समय से प्रयास होते रहे हैं, जिनमें सबसे महत्वपूर्ण 1996 का महिला आरक्षण विधेयक था। वर्ष 1996 में पहली बार यह विधेयक संसद में पेश किया गया था, लेकिन बहुमत की कमी के कारण पारित नहीं हो पाया। इसके बाद 1998 से 2008 के बीच कई बार विधानसभा में इसे प्रस्तुत किया गया, लेकिन राजनीतिक असहमति के चलते इसे मंजूरी नहीं मिली। इसके बावजूद यह विधेयक महिलाओं के लिए राजनीतिक प्रतिनिधित्व की मांग को लेकर लगातार चर्चा में रहा।

सशक्त पंचायत-नेत्री अभियान इस दिशा में एक अहम पहल रहा है, जो 73वें और 74वें संविधान संशोधनों (1992) के तहत राज्यों में पंचायतों एवं शहरी स्थानीय निकायों में महिलाओं के लिए कम से कम एक-तिहाई सीटों का आरक्षण सुनिश्चित करता है।[4] इन संशोधनों से महिलाओं को न सिर्फ स्थानीय स्तर पर निर्वाचित नेतृत्व में भागीदारी मिली, बल्कि नेतृत्व कौशल और राजनीतिक अनुभव अर्जित करने का अवसर मिला। कई राज्यों ने इस पहल को आगे बढ़ाया और महिलाओं की संख्या पंचायतों में बढ़ाकर 50 प्रतिशत से अधिक कर दी।

नेतृत्व कौशल विकास के लिए केंद्र और राज्य सरकारों द्वारा प्रशिक्षण और जागरूकता कार्यक्रम आयोजित किए जा रहे हैं, ताकि महिलाएँ राजनीतिक निर्णय-निर्माण में प्रभावी भूमिका निभा सकें। कार्यक्रमों में नारी शक्ति वंदन, सशक्त पंचायत-नेत्री एवं महिला नेतृत्व विकास पर जोर दिया जाता है, जिससे महिलाओं का स्वावलंबन और जागरूकता बढ़े। इन प्रयासों का लक्ष्य महिलाओं को मतदाता से लेकर प्रतिनिधि तक का पूरा राजनीतिक चक्र समझाना और उन्हें सक्रिय रूप से इसमें भागीदारी के लिए सक्षम बनाना है।

इस पूरे संघर्ष और प्रयास के परिणामस्वरूप वर्ष 2023 में महिला आरक्षण कानून का पारित होना भारतीय राजनीति में महिलाओं के सशक्तिकरण की दिशा में एक ऐतिहासिक मील का पत्थर माना जा रहा है। यह विधेयक महिलाओं को संसद और राज्य विधानसभाओं में एक-तिहाई सीटें देने के साथ-साथ सामाजिक और राजनीतिक नेतृत्व के क्षेत्र में स्थायी बदलाव लाने का मार्ग प्रशस्त करता है।

समर्थ नारी का दृष्टिकोण

समर्थ नारी के दृष्टिकोण से महिला आरक्षण कानून 2023 महिलाओं को राजनीतिक क्षेत्र में स्वतंत्र विचार और सशक्त नेतृत्व के अवसर प्रदान करता है। इससे पंचायत और राज्य स्तर पर महिलाओं की भागीदारी बढ़ेगी, जो न केवल प्रतिनिधित्व को मजबूत करेगी, बल्कि नीतिगत निर्णयों में भी उनका प्रभाव बढ़ाएगी। आरक्षण के माध्यम से महिलाएं अब पारंपरिक सामाजिक एवं राजनीतिक प्रतिबंधों से मुक्त होकर सजग, जागरूक और सक्षम नेता के रूप में उभरेंगी।[5]

इस अधिकार से महिलाओं को सामाजिक नेतृत्व की दिशा में बढ़ावा मिलेगा, जहां वे स्थानीय से लेकर राष्ट्रीय स्तर तक प्रभावी राजनीतिक निर्णय ले सकेंगी। पंचायतों में महिलाओं के नेतृत्व ने पहले से ही सकारात्मक बदलाव दिखाए हैं, जिससे महिलाओं की स्वायत्तता और राजनीतिक समझ में वृद्धि हुई है। राज्य तथा लोकसभा स्तर पर यह आरक्षण महिलाओं को अधिक संगठित और प्रभावशाली नेतृत्व का अवसर देगा।

महिलाओं की राजनीतिक भागीदारी बढ़ाने के लिए नेतृत्व प्रशिक्षण और कौशल विकास पर जोर दिया जा रहा है। शासकीय और गैर-शासकीय स्तर पर आयोजित कार्यक्रमों द्वारा महिलाओं को चुनावी प्रक्रिया, नीति-निर्माण, सार्वजनिक बोलने, सांस्कृतिक बाधाओं से पार पाने तथा निर्णय लेने की क्षमता का विकास कराया जा रहा है। ये प्रयास महिलाओं को आगे आने और जागरूक मतदाता एवं प्रतिनिधि बनने में सहायता करेंगे।[6]

हालांकि, जमीनी स्तर पर सामाजिक अवरोध, पारंपरिक सोच, आर्थिक निर्भरता, और नेतृत्व में बाधाओं जैसी चुनौतियां अभी भी मौजूद हैं। इसके संभावित समाधानों में शिक्षा का विस्तार, परिवार और समाज में सोच का बदलाव, महिला नेतृत्व के लिए निरंतर प्रशिक्षण और समर्थन व्यवस्था का विकास प्रमुख हैं। साथ ही, राजनीतिक दलों से महिलाओं को उचित उम्मीदवार बनाने और उन्हें स्थिर राजनीतिक वातावरण प्रदान करने की भी अपेक्षा की जाती है।

समर्थ नारी की दृष्टि से, महिला आरक्षण कानून से न केवल महिलाओं का सशक्तिकरण होगा, बल्कि यह भारतीय लोकतंत्र को अधिक समावेशी, संवेदनशील और प्रगतिशील बनाने में योगदान देगा।[7]

भारतीय लोकतंत्र और भविष्य की दिशा

भारतीय लोकतंत्र में महिला आरक्षण कानून 2023 भविष्य की दिशा में समाज और राजनीति दोनों को समावेशी बनाने का महत्वपूर्ण कदम है। राजनीतिक प्रतिनिधित्व के माध्यम से महिलाओं को सत्ता में

उचित स्थान मिलना समाज के सभी वर्गों के लिए न्याय और समानता सुनिश्चित करता है। इससे विभिन्न समुदायों की आवाज़ नीतिगत निर्णयों में शामिल होती है, जो सामाजिक विकास को संतुलित और व्यापक बनाता है।[8]

प्रशासनिक निर्णयों में लैंगिक संतुलन से नीति-निर्माण में नवाचार आता है और निर्णय अधिक संवेदनशील एवं सामाजिक रूप से समावेशी होते हैं। महिलाओं के नेतृत्व में स्वास्थ्य, शिक्षा, सामाजिक सुरक्षा जैसे महत्वपूर्ण क्षेत्रों में विशेष ध्यान मिलता है। इससे न सिर्फ विकास की दिशा बदलती है, बल्कि प्रशासनिक प्रक्रिया में पारदर्शिता, जवाबदेही और जनसंपर्क में सुधार होता है।[9]

भविष्य में महिला नेतृत्व सामाजिक और नीति-परक बदलावों में निर्णायक भूमिका निभाएगा। यह पुरानी पितृसत्तात्मक संस्कृतियों और लैंगिक भेदभाव से उबरने का मार्ग प्रशस्त करेगा। महिला नेताओं की संख्या में वृद्धि, जाति, वर्ग और धर्म की सीमाओं को पार कर समावेशी राजनीति को बढ़ावा देगी, जिससे बहुसंख्यक समाज की राजनीति में भी बदलाव आएगा। नीतिगत स्तर पर महिलाओं की भागीदारी से बाल विवाह, महिला शिक्षा, स्वास्थ्य सुविधाओं में सुधार, और सामाजिक सुरक्षा के लिए और ज़्यादा प्रावधान होंगे।

संक्षेप में, महिला आरक्षण कानून 2023 भारतीय लोकतंत्र को अधिक जीवंत, समावेशी और प्रगतिशील बनाते हुए भविष्य में भारत के सामाजिक और राजनीतिक ताने-बाने को पुनः परिभाषित करेगा।

संभावित चुनौतियां

महिला आरक्षण कानून 2023 से जुड़ी प्रमुख चुनौतियाँ निम्नलिखित हैं[10]:

1. जनगणना आधारित परिसीमन की समस्या:

महिला आरक्षण का कार्यान्वयन आगामी जनगणना के बाद परिसीमन के आधार पर होगा। परिसीमन प्रक्रिया समय-सापेक्ष और संवेदनशील होती है, जिसमें मतदाता वितरण, क्षेत्रीय विविधता एवं सामाजिक समीकरणों का सही आकलन आवश्यक है। इससे देरी हो सकती है और यदि परिसीमन ठीक से न हुआ तो महिलाओं को आरक्षित सीटों का उचित लाभ नहीं मिलेगा। इसके अतिरिक्त, परिसीमन का राजनीतिक हस्तक्षेप भी समस्या का कारण हो सकता है।

2. आरक्षण की अवधि और वापसी का प्रश्न:

यह आरक्षण विधेयक प्रारंभिक तौर पर 15 वर्षों के लिए लागू होगा, जिसके बाद इसकी समीक्षा की

जाएगी और संसद इसे समाप्त या बढ़ा सकती है। इस सीमित अवधि की वजह से यह प्रश्न उठता है कि क्या 15 वर्षों में स्थायी महिला सशक्तिकरण और समावेशिता लाई जा सकेगी, या इसे निरंतरता की आवश्यकता है। वापसी की संभावना भी राजनीतिक दलों और सामाजिक समूहों के बीच विवाद का कारण बन सकती है।

3. वास्तविक कार्यान्वयन और दलों की भूमिका:

कई बार दलों द्वारा महिलाओं को नाममात्र का प्रतिनिधित्व देना, या 'पार्टनर उम्मीदवार' की तरह पुरुष के प्रभाव में महिला उम्मीदवारों को खड़ा करना देखा गया है। इससे महिला सशक्तिकरण का वास्तविक लाभ नहीं होता। राजनीतिक दलों की आंतरिक लैंगिक तटस्थता लाना और समर्थ महिला उम्मीदवारों को प्रबल समर्थन देना आवश्यक है।

4. राज्यसभा और विधान परिषदों में प्रावधान का अभाव:

वर्तमान बिल लोकसभा और राज्य विधानसभाओं में लागू होता है, लेकिन राज्यसभा और विधान परिषदों में महिला आरक्षण का प्रावधान नहीं है। इससे कुल मिलाकर संसद में महिलाओं की कुल भागीदारी सीमित रह सकती है, जो चुनौती।

5. चुनावी समीकरण और मतदाता की पसंद की सीमाएँ:

महिला आरक्षण से पुरुष उम्मीदवारों के लिए मुकाबला बढ़ जाएगा, जिससे कुछ विवाद उत्पन्न हुए हैं। साथ ही, आरक्षित सीटों पर मतदाता की पसंद सीमित हो सकती है, और महिला उम्मीदवारों का चयन सिर्फ आरक्षण के तहत होने से उनकी राजनीतिक योग्यता पर सवाल उठ सकता है।

समाधानों में परिसीमन प्रक्रिया में पारदर्शिता, राजनीतिक दलों में महिलाओं के लिए समुचित प्रशिक्षण, नेतृत्व कौशल विकास, और सामाजिक पूर्वाग्रहों को कम करने के लिए व्यापक जागरूकता अभियान शामिल हैं। साथ ही, महिला आरक्षण की अवधि पर भविष्य में निरंतर चर्चा और समीक्षा जरूरी है ताकि यह सुनिश्चित किया जा सके कि यह वास्तविक सशक्तिकरण की दिशा में प्रभावी रूप से काम कर रहा है।

निष्कर्ष

महिला आरक्षण अधिनियम 2023 भारतीय लोकतंत्र में महिलाओं के राजनीतिक प्रतिनिधित्व को बढ़ावा देने वाला एक ऐतिहासिक और संवैधानिक बदलाव है। यह अधिनियम संसद, राज्य विधानसभाओं और दिल्ली विधानसभा में महिलाओं के लिए एक तिहाई सीटें आरक्षित करता है, जिससे महिलाओं का

सामाजिक, आर्थिक और राजनीतिक सशक्तिकरण सुनिश्चित होता है। इस कानून से महिलाओं को नेतृत्व का अवसर मिलेगा, जिससे नीतिगत निर्णयों में लैंगिक संतुलन और संवेदनशीलता बढ़ेगी। इसके साथ ही, अनुसूचित जाति एवं जनजाति की महिलाओं के लिए भी विशेष प्रावधान किए गए हैं, जो समावेशी लोकतंत्र के निर्माण में सहायक होंगे। हालांकि, कार्यान्वयन में परिसीमन, दलों की भूमिका तथा सामाजिक पूर्वाग्रह जैसे चुनौतियां मौजूद हैं, किन्तु यह कानून महिलाओं के लिए सत्ता के द्वार खोलने में निर्णायक भूमिका निभाएगा।

सुझाव

1. शिक्षा और जागरूकता: महिलाओं को राजनीतिक और नेतृत्व कौशल सशक्त करने के लिए शिक्षा एवं प्रशिक्षण कार्यक्रमों को बढ़ावा देना आवश्यक है। इससे वे प्रभावी नेतृत्वकर्ता बन सकेंगी और राजनीतिक संवाद में भागीदारी बढ़ेगी।

2. आर्थिक स्वावलंबन: महिलाओं के आर्थिक सशक्तिकरण पर ध्यान देना आवश्यक है ताकि वे आर्थिक रूप से स्वतंत्र होकर राजनीतिक क्षेत्र में स्वतंत्र निर्णय ले सकें।

3. नेतृत्व प्रशिक्षण: नियमित और संरचित नेतृत्व विकास कार्यक्रम चलाकर महिलाओं की चयन प्रक्रिया, सार्वजनिक बोलने की क्षमता, और प्रशासनिक समझ को बढ़ावा देना चाहिए।

4. सामाजिक समर्थन: परिवार, समाज और राजनीतिक दलों के स्तर पर महिलाओं को निरंतर समर्थन प्रदान करना होगा, जिससे सामाजिक अवरोध कम हों और महिलाओं का राजनीतिक करियर स्थिर हो।

5. परिसीमन प्रक्रिया में पारदर्शिता: जनगणना आधारित परिसीमन में पारदर्शिता और निष्पक्षता सुनिश्चित कर कार्यान्वयन पर ध्यान देना होगा ताकि महिलाओं को समान अवसर मिल सके।

6. दल की भूमिका: राजनीतिक दलों को महिला उम्मीदवारों के चयन में तटस्थता अपनानी चाहिए और उन्हें वास्तविक नेतृत्व का अवसर देना चाहिए, न कि मात्र प्रतीकात्मक भूमिका।

7. समय-समय पर समीक्षा: आरक्षण की अवधि समाप्त होने के बाद प्रभाव की समीक्षा करते हुए आवश्यक सुधार और विस्तार किए जाने चाहिए ताकि यह सशक्तिकरण स्थायी हो सके।

इन प्रयासों के माध्यम से महिला आरक्षण कानून 2023 का उद्देश्य पूर्ण रूप से पूरा किया जा सकेगा तथा भारतीय लोकतंत्र और समाज में महिलाओं की भूमिका और प्रभाव को मजबूत किया जा सकेगा।

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