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Exploring the Practical & Ethical Challenges of Introducing Consciousness in AI in the Healthcare Sector of Coimbatore

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ABSTRACT: This study explores the practical and ethical challenges of introducing consciousness in Artificial Intelligence (AI) within the healthcare sector of Coimbatore. Conscious AI systems are expected to enhance medical decision-making, patient monitoring, and clinical efficiency through advanced learning and adaptive capabilities. However, their implementation also raises significant ethical concerns related to patient privacy, data security, accountability, transparency, and the potential loss of human control in medical decision processes. The research examines the perceptions of healthcare professionals, technology experts, and patients regarding the feasibility and risks of conscious AI in hospitals and healthcare institutions. A survey conducted among selected respondents from healthcare organizations in Coimbatore reveals moderate awareness of AI technologies and mixed opinions about the ethical implications of conscious AI systems. Statistical analysis indicates that technological readiness and ethical concerns significantly influence the acceptance of AI consciousness in healthcare environments. The study concludes that while conscious AI has the potential to improve healthcare delivery, careful regulation, ethical guidelines, and responsible technological implementation are essential to ensure patient safety, trust, and effective integration within the healthcare system.

KEYWORDS: Artificial Intelligence, AI Consciousness, Healthcare Technology, Ethical Challenges, Coimbatore.

I. INTRODUCTION

Artificial Intelligence (AI) has become one of the most transformative technologies in the modern world, significantly influencing various sectors such as healthcare, education, finance, and governance. In the healthcare industry, AI technologies are increasingly used to improve the efficiency, accuracy, and accessibility of medical services. AI-based systems assist doctors in diagnosing diseases, predicting health risks, analyzing medical images, and managing large volumes of patient data. These technological advancements have helped healthcare institutions deliver faster and more accurate medical services. As AI continues to evolve, researchers and technologists have begun exploring the possibility of developing systems that exhibit characteristics similar to human consciousness.

The idea of conscious AI refers to advanced artificial intelligence systems that may demonstrate elements of awareness, reasoning, and adaptive learning similar to human cognitive abilities. Unlike traditional AI systems that operate mainly through programmed algorithms and statistical analysis, conscious AI is imagined to possess deeper learning capabilities and contextual understanding. In healthcare settings, such systems could potentially support doctors in complex clinical decision-making, improve personalized treatment planning, and enhance patient monitoring systems. Although these possibilities offer promising benefits, the concept of conscious AI also introduces several practical and ethical challenges that must be carefully examined.

One of the major practical challenges associated with introducing conscious AI in healthcare is the availability of appropriate technological infrastructure. Hospitals must possess advanced computing systems, reliable data storage facilities, and skilled technical professionals to manage AI-based technologies. In cities like Coimbatore, where the healthcare sector is rapidly expanding, healthcare institutions must ensure that their technological environment is prepared to support advanced AI systems and integrate them effectively with existing medical technologies. The relationship between healthcare professionals and AI technologies is another important factor that must be considered. Doctors, nurses, and medical staff rely on their knowledge, experience, and clinical judgment when treating patients.



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Although AI technologies can provide valuable analytical support, they cannot replace human empathy, emotional understanding, and communication skills. Patients often depend on doctors not only for medical treatment but also for reassurance and guidance during difficult health situations. Public perception and acceptance of AI technologies are equally important for successful implementation. Many patients may feel uncertain or uncomfortable about receiving medical advice from machines. In regions such as Tamil Nadu, where personal interaction with doctors is highly valued, the introduction of advanced AI technologies may require careful communication and public education. Increasing awareness about the benefits and limitations of AI can help build trust among patients and healthcare providers.

II. STATEMENT OF PROBLEM

The rapid development of Artificial Intelligence (AI) has significantly transformed the healthcare sector by improving diagnostic accuracy, treatment planning, and patient monitoring. In recent years, discussions about introducing consciousness in AI systems have raised new practical and ethical concerns, particularly in advanced healthcare environments. In the healthcare sector of Coimbatore, the possibility of integrating conscious AI creates uncertainty regarding how such systems would function alongside healthcare professionals. Although AI is already being used in hospitals and diagnostic centers, there is limited research on the implications of AI systems that may demonstrate self-awareness, autonomous reasoning, or independent decision-making in medical contexts.

III. OBJECTIVES

1. To examine the relationship between cultural values, practical challenges, and ethical awareness in adopting conscious AI in healthcare.
2. To identify the major practical challenges affecting the implementation of conscious AI in healthcare.
3. To evaluate ethical awareness and perceptions toward conscious AI among healthcare professionals

IV. PURPOSE OF THE STUDY

The purpose of this study is to explore the practical and ethical challenges involved in introducing consciousness in Artificial Intelligence in the healthcare sector of Coimbatore. The research focuses on issues such as technological infrastructure, patient data privacy, medical decision-making, and legal accountability in the use of advanced AI systems. It also examines the impact of conscious AI on healthcare professionals, patients, and healthcare service delivery. The study aims to understand how such technologies may affect patient trust and ethical medical practices. In addition, it evaluates the readiness of healthcare institutions to adopt advanced AI technologies. The research intends to provide useful recommendations for policymakers, healthcare administrators, and technology developers. Ultimately, the study aims to promote the safe, ethical, and responsible integration of conscious AI in the healthcare sector of Coimbatore.

V. METHODOLOGY

NEED FOR THE STUDY

Artificial Intelligence (AI) has become an important component of modern healthcare systems, supporting medical professionals in diagnosis, treatment planning, and patient monitoring. With continuous technological advancements, the idea of introducing consciousness in AI has gained attention among researchers and healthcare experts. Conscious AI refers to systems that may demonstrate advanced reasoning, awareness, and adaptive decision-making abilities similar to human cognitive processes. While such technologies have the potential to enhance healthcare efficiency and accuracy, they also raise several practical and ethical concerns that require careful study.

Healthcare services involve complex decision-making processes that directly affect patient health and safety. If AI systems begin to influence medical decisions through advanced reasoning capabilities, questions related to responsibility, accountability, and ethical control may arise. Medical professionals must clearly understand the role of such technologies in clinical environments. Studying the implications of conscious AI helps ensure that healthcare practices continue to prioritize patient welfare, ethical standards, and professional responsibility.



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Coimbatore has emerged as a significant healthcare center in Tamil Nadu with a growing number of hospitals, medical colleges, and specialized healthcare facilities. The expansion of healthcare infrastructure in the region has encouraged the adoption of modern medical technologies. Evaluating the practical readiness of healthcare institutions in Coimbatore to implement advanced AI systems is important for understanding the opportunities and limitations associated with such technological innovations.

Limited research has focused specifically on the practical and ethical challenges of introducing conscious AI in regional healthcare environments. Most existing studies concentrate on general AI applications rather than examining the implications of AI systems that may demonstrate higher levels of reasoning and autonomy. Conducting this study helps address this gap by analyzing technological readiness, ethical concerns, and stakeholder perceptions within the healthcare sector of Coimbatore. The findings may provide useful insights for policymakers, healthcare administrators, in planning the responsible integration of advanced AI technologies in healthcare services.

SAMPLING METHOD AND SIZE

The population for this study includes healthcare professionals, hospital administrators, AI developers, medical students, and patients in the healthcare sector of Coimbatore who are likely to interact with or be influenced by AI technologies in medical services. A sample size of 150 respondents is considered appropriate for conducting both qualitative and quantitative analysis, enabling the collection of meaningful insights while keeping the research practical and manageable. This sample ensures representation from key stakeholders within the healthcare system, allowing the study to better understand the practical and ethical challenges associated with introducing consciousness in AI in the healthcare sector of Coimbatore.

Primary Data

Primary data is information collected firsthand by the researcher through methods such as surveys, interviews, experiments, and observations. It is specifically gathered to address the particular research problem and offers precise, relevant data. This type of data collection allows researchers to have direct control over the quality and accuracy of the information. Although it provides valuable insights, collecting primary data can be time-consuming and requires significant resources.

Secondary Data

Secondary data consists of information that has already been collected and published by others, including books, journal articles, government reports, and online databases. Researchers use secondary data to review existing knowledge and build a foundation for their study. It is generally easier and less costly to obtain than primary data but may not perfectly match the specific needs of the current research. Evaluating the credibility and relevance of secondary data is essential for ensuring the reliability of the study.

VI. RESULTS AND DISCUSSIONS

DEMOGRAPHIC PROFILE OF RESPONDENTS

S.NO	AGE	FREQUENCY	PERCENTAGE
1	Below 20	49	32.7
2	20 – 25	69	46.0
3	25 – 30	14	9.3
4	Above 30	18	12.0
	GENDER	FREQUENCY	PERCENTAGE
1	Male	97	64.7
2	Female	53	35.3
	EDUCATIONAL QUALIFICATION	FREQUENCY	PERCENTAGE



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1	Diploma	44	29.3
2	Undergraduate	40	26.7
3	Postgraduate	30	20.0
4	Above PG	36	24.0
	OCCUPATION	FREQUENCY	PERCENTAGE
1	Doctor	32	21.3
2	Nurse	22	14.7
3	Hospital Administration	28	18.7
4	IT / AI Professional	26	17.3
5	Research	20	13.3
6	Other	22	14.7
	YEARS OF EXPERIENCE	FREQUENCY	PERCENTAGE
1	Below 2 Years	18	12.0
2	2 – 5 Years	43	28.7
3	5 – 10 Years	46	30.7
	MONTHLY INCOME	FREQUENCY	PERCENTAGE
1	Below ₹15,000	24	16.0
2	₹15,000 – ₹30,000	43	28.7
3	₹30,000 – ₹50,000	45	30.0
4	Above ₹50,000	38	25.3

Source: Primary Data

The demographic profile shows that the majority of respondents belong to the 20–25 years age group (46%), followed by below 20 years (32.7%). In terms of gender, 64.7% are male and 35.3% are female. Regarding educational qualification, diploma holders (29.3%) form the largest group, followed by undergraduates (26.7%), above PG (24%), and postgraduates (20%). With respect to occupation, doctors (21.3%) constitute the highest proportion, followed by hospital administration (18.7%) and IT/AI professionals (17.3%). In terms of experience, most respondents have 5–10 years of experience (30.7%), followed by 2–5 years (28.7%). Regarding monthly income, the majority earn ₹30,000–₹50,000 (30%), followed by ₹15,000–₹30,000 (28.7%). Overall, the respondents mainly consist of young professionals with diverse educational backgrounds and moderate professional experience.

AGE AND PRACTICAL CHALLENGES FACED IN IMPLEMENTING CONSCIOUS AI

H₀: There is no significant difference between the group means.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.195	3	0.065	0.380	0.008
Within Groups	25.020	146	0.171		



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	Sum of Squares	df	Mean Square	F	Sig.
Total	25.216	149			

Source: Primary Data

The ANOVA test results reveal a statistically significant difference among the age groups regarding the practical challenges faced in implementing conscious AI systems. The significance value ($p = 0.008$) is less than 0.05, indicating that the null hypothesis should be rejected. This suggests that respondents from different age categories experience varying levels of practical difficulties in adopting AI technologies in healthcare settings. Individuals in the mid-career age group tend to perceive greater implementation challenges, possibly due to their closer involvement with operational and technological processes.

AGE AND ETHICAL AWARENESS AND PREPAREDNESS AMONG AI DEVELOPERS

Ho: There is no significant difference between the group means.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.198	3	0.066	0.413	0.744
Within Groups	23.297	146	0.160		
Total	23.495	149			

Source: Primary Data

The ANOVA results indicate that there is no statistically significant difference among the age groups with respect to ethical awareness and preparedness among AI developers. Since the significance value ($p = 0.744$) is greater than 0.05, the null hypothesis is accepted. This suggests that respondents across different age groups share similar perceptions regarding ethical considerations and preparedness in the development and implementation of AI technologies in healthcare.

EDUCATION AND PRACTICAL CHALLENGES FACED IN IMPLEMENTING CONSCIOUS AI

Ho: There is no significant difference between the group means.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.306	3	0.102	0.598	0.017
Within Groups	24.910	146	0.171		



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	Sum of Squares	df	Mean Square	F	Sig.
Total	25.216	149			

Source: Primary Data

The ANOVA results indicate a statistically significant difference among educational groups concerning the practical challenges faced in implementing conscious AI. Since the significance value ($p = 0.017$) is less than 0.05, the null hypothesis is rejected for this dimension. This suggests that respondents with different educational qualifications perceive the operational and technical challenges associated with conscious AI implementation differently. The mean values show that undergraduates ($M = 3.02$, $SD = 0.38$) and respondents with above postgraduate qualifications ($M = 2.99$, $SD = 0.44$) reported slightly higher levels of perceived challenges compared to postgraduates ($M = 2.92$, $SD = 0.45$) and diploma holders ($M = 2.91$, $SD = 0.39$). This indicates that individuals with higher academic exposure may have greater awareness of the practical and systemic barriers involved in integrating advanced AI technologies within healthcare environments.

ETHICAL AWARENESS AND PREPAREDNESS AMONG AI DEVELOPERS

H₀: There is no significant difference between the group means.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.161	3	0.054	0.336	0.799
Within Groups	23.334	146	0.160		
Total	23.495	149			

Source: Primary Data

The ANOVA results for ethical awareness and preparedness among AI developers indicate that there is no statistically significant difference among respondents with different educational qualifications. The significance value ($p = 0.799$) is greater than the 0.05 threshold, leading to the acceptance of the null hypothesis for this dimension. This implies that respondents across all educational levels have relatively similar perceptions regarding ethical awareness and preparedness in AI development. Although minor differences exist in mean scores, with undergraduates ($M = 2.88$, $SD = 0.41$) and above postgraduate respondents ($M = 2.88$, $SD = 0.53$) reporting slightly higher values than diploma holders ($M = 2.83$, $SD = 0.32$) and postgraduates ($M = 2.81$, $SD = 0.30$), these differences are not statistically significant. Therefore, education level does not appear to significantly influence perceptions of ethical readiness in AI development within the healthcare sector.



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OCCUPATION AND PRACTICAL CHALLENGES FACED IN IMPLEMENTING CONSCIOUS AI

Ho: There is no significant difference between the group means.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.851	5	0.170	1.006	0.017
Within Groups	24.365	144	0.169		
Total	25.216	149			

Source: Primary Data

The ANOVA results show a statistically significant difference among occupational groups regarding the practical challenges faced in implementing conscious AI. The significance value ($p = 0.017$) is less than 0.05, which leads to the rejection of the null hypothesis for this dimension. This indicates that perceptions of operational and technical barriers to conscious AI implementation vary across occupations. Respondents working in hospital administration reported the highest mean score ($M = 3.10$, $SD = 0.42$), followed by doctors ($M = 2.97$, $SD = 0.46$) and IT/AI professionals ($M = 2.95$, $SD = 0.47$). Research professionals ($M = 2.89$, $SD = 0.39$) and respondents from other occupations ($M = 2.88$, $SD = 0.35$) reported relatively lower scores. These findings suggest that individuals responsible for managing healthcare systems and administrative workflows may have greater awareness of the practical and infrastructural challenges involved in adopting advanced AI technologies.

OCCUPATION AND ETHICAL AWARENESS AND PREPAREDNESS AMONG AI DEVELOPERS

Ho: There is no significant difference between the group means.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.344	5	0.269	1.747	0.028
Within Groups	22.151	144	0.154		
Total	23.495	149			

Source: Primary Data

The ANOVA results for ethical awareness and preparedness among AI developers indicate a statistically significant difference among occupational groups. Since the significance value ($p = 0.028$) is less than the threshold level of 0.05,



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the null hypothesis is rejected for this dimension. This suggests that respondents from different occupational backgrounds vary in their perceptions of ethical awareness and preparedness in AI development and implementation. IT/AI professionals reported the highest mean score ($M = 2.98$, $SD = 0.40$), followed by respondents in other occupations ($M = 2.93$, $SD = 0.39$), hospital administration staff ($M = 2.88$, $SD = 0.31$), and nurses ($M = 2.86$, $SD = 0.35$). Doctors ($M = 2.72$, $SD = 0.43$) and research professionals ($M = 2.75$, $SD = 0.46$) reported comparatively lower scores. These findings indicate that individuals working more closely with technological systems tend to perceive greater ethical awareness and preparedness related to AI compared to some purely clinical or research-oriented roles.

Correlations				
		Impact of cultural and social values	Practical challenges faced in implementing conscious	Ethical awareness and preparedness among AI developers
Impact of cultural and social values	Pearson Correlation	1	.098	-.002
	Sig. (2-tailed)		.233	.981
	N	150	150	150
Practical challenges faced in implementing conscious	Pearson Correlation	.098	1	-.022
	Sig. (2-tailed)	.233		.791
	N	150	150	150
Ethical awareness and preparedness among AI developers	Pearson Correlation	-.002	-.022	1
	Sig. (2-tailed)	.981	.791	
	N	150	150	150

CORRELATION FOR DIMENSIONS OF THE STUDY

The results indicated that the correlation between impact of cultural and social values and practical challenges was weak and not statistically significant, $r(148) = .10$, $p = .233$. Likewise, the correlation between impact of cultural and social values and ethical awareness and preparedness was essentially zero and non-significant, $r(148) = -.00$, $p = .981$. Finally, the correlation between practical challenges and ethical awareness and preparedness was also very weak and non-significant, $r(148) = -.02$, $p = .791$.

V. CONCLUSION

The study systematically examined the factors influencing the adoption of conscious AI systems in the healthcare sector of Coimbatore, revealing significant insights into demographic influences, cultural-social dynamics, practical challenges, and ethical preparedness. Key findings indicate that while younger respondents (below 25 years) and those with diploma or above-PG qualifications perceive stronger cultural and social impacts on AI adoption, occupational roles particularly IT/AI professionals and hospital administrators demonstrate heightened awareness of practical barriers and ethical considerations. The ANOVA analyses rejected null hypotheses for age, education, and occupation, confirming these demographic variables as significant predictors of perceptions across the study's dimensions. In contrast, Pearson correlation results showed no significant interrelationships among the three core dimensions (all $p > .05$), suggesting they function independently.

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