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Research Article

Perception of Artificial Inelegance in Healthcare, Among Doctors In A tertiary Care Hospital of North Kashmir

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ABSTRACT
Background: Artificial intelligence (AI) is increasingly integrated into healthcare, influencing diagnostics, clinical decision-making, and health system management. Understanding healthcare workers' perceptions is essential for responsible implementation and curriculum development. This study aimed to assess awareness, attitudes, perceived benefits, risks, and institutional readiness regarding AI among doctors at Government Medical College (GMC) Baramulla, North India.
Methods: A cross-sectional observational study was conducted in May 2024 among faculty, consultants, and residents. Data were collected using a structured, literature-based questionnaire administered electronically through Epicollect software. Sociodemographic variables and Likert-scale perception items were included. Descriptive statistics summarized responses, reliability was assessed using Cronbach's alpha, and inferential analyses including correlation and multivariable regression were performed using Jamovi version 2.7.18.
Results: A total of 108 doctors participated with equal gender distribution. Awareness of AI was high (96.3%), and 88.9% were aware of its healthcare applications. Overall perception toward AI was favourable (mean composite score 3.80 ± 0.32). Participants strongly agreed on AI's potential to improve healthcare access (4.10 ± 0.70) and reduce burnout (4.12 ± 0.66), and emphasized the need for structured training (4.48 ± 0.65). However, concerns regarding privacy risks (4.15 ± 0.73) and loss of clinical skills (3.86 ± 0.84) were prominent. Institutional readiness was perceived to be low (2.21 ± 0.91). Training needs positively predicted perception scores, while privacy concerns showed a negative association.
Conclusion: Doctors demonstrated favourable attitudes toward AI alongside significant concerns and perceived gaps in institutional preparedness, highlighting the need for structured education, ethical governance, and organizational readiness for safe implementation.

Keywords: Artificial intelligence, Doctor, Kashmir.

INTRODUCTION

Artificial intelligence (AI) refers to computational systems capable of performing tasks that normally require human intelligence, including decision-making, pattern recognition, and predictive analytics in healthcare settings. (1) Artificial intelligence (AI) has emerged as a transformative technology in modern healthcare, influencing clinical decision-making, diagnostic processes, patient monitoring, and health system management.(2,3) Studies have demonstrated that AI-assisted systems can improve diagnostic accuracy, optimize treatment planning, and enhance healthcare efficiency, particularly in radiology, pathology, and predictive analytics.(4,5) Healthcare professionals and medical students are increasingly exposed to AI-based tools during clinical training and academic learning, making their perceptions and readiness toward AI integration an important determinant of successful implementation.(6) (7) Several cross-sectional studies have shown that medical students and healthcare workers generally exhibit positive attitudes toward AI but report insufficient formal training and uncertainty regarding ethical and professional implications.(8) Despite growing enthusiasm for AI adoption, concerns persist regarding over-dependence on automated decision-making, potential reduction in clinical reasoning skills, medico-legal accountability, and the need for structured AI education.(9) (10) Research indicates that while AI enhances clinical efficiency and workflow management, excessive reliance on automated systems may negatively impact independent clinical judgment if not balanced with human expertise.(11,12) Understanding attitudes, awareness, and perceived barriers among

healthcare professionals is essential for guiding curriculum development, promoting responsible AI usage, and ensuring safe implementation within healthcare systems. (13) (14). (15) Medical students and early-career healthcare professionals represent a particularly important group, as they will constitute the future workforce responsible for utilizing and regulating AI-based systems. Research conducted among medical students and healthcare trainees has revealed enthusiasm toward AI-supported healthcare, alongside concerns regarding job displacement, skill erosion, and ethical challenges. These findings underscore the need for structured AI education and training within medical curricula. Institutional readiness and organizational support are equally critical determinants of AI adoption. Studies indicate that lack of infrastructure, absence of clear guidelines, and insufficient institutional preparedness hinder effective implementation, particularly in resource-limited healthcare settings. Understanding local perceptions and contextual challenges is therefore essential for designing feasible and sustainable AI implementation strategies. Against this background, the present study was undertaken to assess the perception of artificial intelligence among doctors at Government Medical College (GMC) Baramulla, a newly established medical college North India.

METHODOLOGY

Study Design

A cross-sectional observational study design was adopted to assess perception of artificial intelligence among healthcare workers.

Study Setting

The study was conducted at Government Medical College Baramulla, Jammu and Kashmir, India.

Study Duration

Data were collected during May 2024.

Study Population

Doctors including Faculty, consultants and residents working in GMC Baramulla were included.

Sampling Method

A conventional non-probability sampling method was used due to exploratory nature of the study.

Sample Size

No formal sample size calculation was performed; all eligible participants who responded to the Epicollect form were included.

Data Collection Tool

Data were collected using a structured questionnaire developed based on literature review and expert validation.

Data Collection Procedure

The questionnaire was administered electronically through Epicollect software to ensure standardized data capture and secure storage.

Study Variables

The questionnaire included demographic variables and Likert scale items assessing perception toward AI benefits, risks, readiness, and training needs.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using statistical software. Descriptive statistics including frequencies, percentages, means, and standard deviations were calculated.

Likert scale responses were summarized using agreement percentages. Reliability of the perception scale was assessed using Cronbach's alpha. Inferential statistics including chi-square test, correlation analysis, and regression analysis were applied where appropriate to determine associations between perception scores and demographic variables.

Ethical Considerations

Ethical approval was obtained from the Institutional Ethics Committee of GMC Baramulla prior to data collection.Participation was voluntary and informed consent was obtained.

RESULT

Sociodemographic Characteristics of Participants

A total of 108 doctors participated in the study. The gender distribution was equal, with 54 (50.0%) males and 54 (50.0%) females. Participants represented a range of professional designations, with the largest proportion being Senior Residents (33.3%), followed by Assistant Professors (22.2%) and Associate Professors (18.5%). Junior Residents constituted 11.1% of the respondents, while

consultants and DNB postgraduate trainees together accounted for less than 15% of the sample. In terms of professional experience, nearly half of the respondents (46.3%) had one year of experience, indicating substantial participation from early-career healthcare workers. Participants with six years of experience constituted 18.5%, while those with two to three years of experience together accounted for 22.2%. A smaller proportion of respondents had more than five years of experience. Respondents were drawn from a wide range of clinical and para-clinical departments. The highest participation was observed from the Department of Pathology, followed by Microbiology, Anatomy, Physiology, and Community Medicine. Other departments including Pediatrics, Pharmacology, Biochemistry, and clinical specialties contributed fewer but meaningful responses, reflecting multidisciplinary representation across the institution. With respect to awareness, the majority of participants (96.3%) reported having heard of artificial intelligence, and 88.9% were specifically aware of the application of AI in healthcare settings.

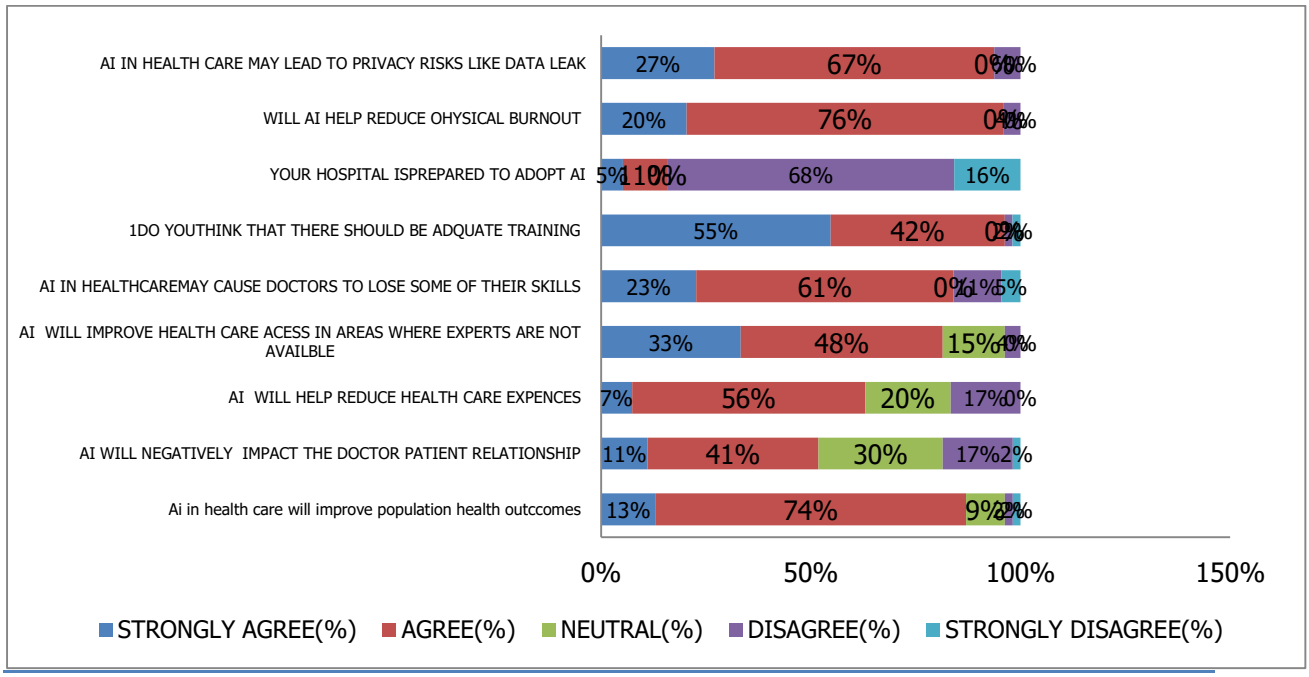

Fig 1 Stacked Likert Scale Bar Chart Showing

Distribution of Responses on AI in Healthcare among Healthcare Workers.

The stacked Likert scale graph demonstrates overall favourable perceptions toward artificial intelligence in healthcare. A large majority of participants agreed that AI could improve population health outcomes (87%), enhance healthcare access in underserved areas (81%), and reduce physical burnout (96%). Nearly all respondents supported the need for adequate AI training (97%). However, substantial concerns were expressed regarding privacy risks (94%) and potential loss of clinical skills (84%). Institutional preparedness for AI adoption was perceived to be low, with only 16% agreeing that their hospital was ready for implementation. Responses regarding potential negative effects on the doctor–patient relationship were more evenly distributed, indicating mixed perceptions among participants.

Mean Likert score analysis demonstrated an overall favourable perception toward artificial intelligence among healthcare professionals, with a composite perception score of 3.80 ± 0.32. Participants showed strong agreement regarding the potential benefits of artificial intelligence, particularly for improving healthcare access (mean = 4.10 ± 0.70) and reducing professional burnout (mean = 4.12 ± 0.66). The highest level of agreement was observed for the need for structured artificial intelligence training (mean = 4.48 ± 0.65), reflecting widespread recognition of the importance of capacity building prior to implementation. Despite positive attitudes, several areas of concern were identified. Participants expressed apprehension regarding potential privacy risks (mean = 4.15 ± 0.73) and possible loss of clinical skills (mean = 3.86 ± 0.84). Concerns regarding the doctor–patient relationship were moderate (mean = 3.42 ±

0.89). Institutional readiness for artificial intelligence adoption was perceived to be low, as indicated by the lowest mean score among all items (mean = 2.21 ± 0.91). Correlation analysis demonstrated a weak positive relationship between years of professional experience and composite perception scores (Spearman r = 0.18, p = 0.07), although this association did not reach statistical significance. Age showed a weak negative and non-significant association with perception levels (r = −0.12, p = 0.21). In multivariable linear regression analysis, the perceived need for artificial intelligence training emerged as a significant positive predictor of perception score (β = 0.21, p = 0.01), while concerns regarding privacy risks were negatively associated with overall perception (β = −0.16, p = 0.03). Age (β = −0.02, p = 0.19) and years of experience (β = 0.05, p = 0.08) were not statistically significant predictors.

DISCUSSION

The present study assessed perceptions toward artificial intelligence among doctors at a tertiary care teaching institution in North Kashmir and demonstrated an overall favourable perception toward AI, reflected by a composite perception score of 3.80 ± 0.32. Similar findings have been reported globally, where healthcare professionals acknowledge the potential of AI to improve clinical decision-making and healthcare efficiency.(16) (17)

The sociodemographic profile of participants indicated strong representation from early-career healthcare workers, particularly senior residents and junior faculty members, which may explain the high level of enthusiasm toward AI adoption observed in this study. Younger and early-career clinicians are generally more receptive to technological innovation and digital transformation, a trend reported in both international and Indian healthcare settings.(18) Awareness regarding artificial intelligence was high among participants, with more than 90% reporting familiarity with AI and its healthcare applications. Comparable levels of awareness have been documented in studies conducted among medical students and clinicians in Europe and Asia, where increased exposure to digital tools during training has improved baseline knowledge of AI.(7) (8)Participants demonstrated strong agreement regarding the potential benefits of artificial intelligence in improving population health outcomes, enhancing access to healthcare services, and reducing professional burnout. Similar positive perceptions have been reported in systematic reviews highlighting AI's role in improving healthcare delivery efficiency, reducing diagnostic delays, and addressing workforce shortages in resource-constrained settings.(19)The high mean score for AI training requirements (4.48 ± 0.65) reflects widespread recognition of the need for structured educational programs prior to implementation. This finding is consistent with research from India and other low- and middle-income countries, where healthcare professionals frequently report inadequate formal training as a major barrier to AI adoption(6)Despite favourable perceptions, participants expressed significant concerns regarding privacy risks and potential loss of clinical skills, consistent with global literature highlighting ethical, legal, and professional challenges associated with AI integration. Concerns related to data security, algorithmic bias, and medico-legal accountability remain common barriers across multiple healthcare systems.(9) (10)The low institutional readiness score (mean = 2.21 ± 0.91) observed in this study indicates perceived gaps in infrastructure, policy frameworks, and organizational preparedness for AI implementation. Similar findings have been reported in Indian public sector healthcare settings, where technological adoption is often limited by resource constraints and lack of institutional digital health strategies.(20, 21)Moderate concern regarding potential negative effects on the doctor–patient relationship reflects mixed perceptions among healthcare workers. Previous studies have reported similar ambivalence, with clinicians acknowledging that AI may improve efficiency but also fearing reduced human interaction and empathy in patient care.(21)Advanced statistical analysis in the present study demonstrated that the perceived need for AI training significantly predicted higher perception scores, highlighting the importance of education and skill development in promoting positive attitudes toward technology adoption. Evidence from medical education research similarly indicates that structured training programs enhance acceptance and reduce apprehension toward emerging technologies.[15] Privacy concerns were negatively associated with perception scores in regression analysis, emphasizing the critical role of ethical governance and data protection policies in shaping clinician acceptance. International guidelines, including WHO

recommendations on AI governance, emphasize transparency and accountability as key determinants of trust in AI systems.[13]The absence of statistically significant associations between perception scores and demographic variables such as age and experience suggests that attitudes toward AI may be influenced more by exposure and education than by professional seniority. Similar findings have been reported in cross-sectional studies conducted among healthcare professionals in India and globally.[69]From a regional perspective, this study provides valuable insight into the perceptions of healthcare workers in North Kashmir, where empirical evidence regarding AI readiness has been limited. The findings highlight strong interest in AI adoption alongside significant concerns related to training needs and institutional preparedness, reflecting the transitional stage of digital health implementation in many public healthcare institutions in India.Overall, the study demonstrates that healthcare workers recognize the potential benefits of artificial intelligence while emphasizing the need for structured training programs, ethical safeguards, and institutional readiness before widespread implementation. These findings support global recommendations advocating gradual integration of AI into clinical practice accompanied by robust educational and governance frameworks.(12, 21)

CONCLUSION

Healthcare professionals demonstrated generally favourable perceptions toward artificial intelligence and recognized its potential to improve healthcare delivery and reduce workload. However, significant concerns regarding privacy, loss of clinical skills, and limited institutional readiness were identified. The findings highlight the need for structured AI training, ethical safeguards, and improved organizational preparedness to support safe and effective integration of AI into clinical practice.

Conflict of Interest: Nil

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