Section: Community Medicine

Original Research Article

ASSESSING AWARENESS, PERCEPTIONS, AND ACCEPTANCE OF CHATGPT AND OTHER ARTIFICIAL INTELLIGENCE (AI) TOOLS IN HEALTHCARE AMONG RESIDENT MEDICAL OFFICERS (RMOS): A CROSS-SECTIONAL STUDY FROM A TERTIARY CARE TEACHING HOSPITAL IN MUMBAI

Nikhil Honale[1], Abhiram Kasbe[2], Purushottam Giri[3]

[1]Senior Resident, Department of Community Medicine, Topiwala National Medical College (TNMC) & BYL Nair Ch. Hospital, Mumbai, Maharashtra, India.
[2]Professor, Department of Community Medicine, Topiwala National Medical College (TNMC) & BYL Nair Ch. Hospital, Mumbai, Maharashtra, India.
[3]Professor & Head, Department of Community Medicine, Indian Institute of Medical Science & Research (IIMSR) Medical College, Badnapur Dist. Jalna, Maharashtra, India.

Received *: 12/03/2026*
Received in revised form *: 05/05/2026*
Accepted *: 20/05/2026*

Corresponding Author:
Dr. Nikhil Honale
Senior Resident, Department of Community Medicine, Topiwala National Medical College (TNMC) & BYL Nair Ch. Hospital, Mumbai, Maharashtra, India.
Email: nikhiltnmc@gmail.com

DOI: 10.70034/ijmedph.2026.2.601

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (2); 3652-3657

ABSTRACT

Background: Generative AI tools such as ChatGPT are rapidly entering medical practice. Resident Medical Officers (RMOs), key providers of frontline care in tertiary teaching hospitals, are central to safe and ethical AI adoption. Indian evidence on their awareness, perceptions, and acceptance is limited.

Materials and Methods: A cross-sectional, self-administered online survey of 100 RMOs at a tertiary medical college in Mumbai was conducted between March and June 2025. Stratified random sampling across 19 departments was used; sample size was calculated using a finite-population correction (P=27.3%, E=8%, 95% confidence). A pretested, face-validated questionnaire captured familiarity, prior use, perceived benefits and concerns, training needs, and willingness to adopt AI. Associations were tested with chi-square (with continuity correction) or Fisher's exact test ($p<0.05$) using IBM SPSS Statistics v.28. STROBE reporting was followed.

Results: Mean age was 27.62 ± 2.25 years; 66% were female. Only 2% had formal AI training; 28% had used AI clinically (ChatGPT, 20%). Fifty-seven percent gave the top two ratings to AI's potential to revolutionise healthcare; 32% feared it could worsen disparities and 44% were unsure. Privacy, bias, transparency, and job displacement were dominant concerns. Hands-on training (72%), and training on algorithm validation (66%), ethics (61%), and legal aspects (59%) were most requested. Ninety-three percent were willing to adopt AI, with no significant differences by age, gender, year of residency, or speciality tier (all $p>0.05$).

Conclusion: RMOs showed high AI acceptance but limited formal exposure and substantial ethical concerns. Structured, competency-based AI literacy spanning technical, ethical, and clinical-application domains should be integrated into Indian postgraduate medical curricula.

Keywords: Artificial intelligence; ChatGPT; Generative AI; Medical education; Postgraduate; Resident physicians.

INTRODUCTION

Artificial intelligence (AI) refers to systems that perform tasks ordinarily requiring human intelligence, including learning, reasoning, perception, and decision-making.[1] Over the past decade, healthcare has been a focal arena of AI deployment, ranging from diagnostic imaging and clinical decision support to drug discovery, predictive analytics, and personalised medicine.[2,3] The advent of large language models such as ChatGPT (OpenAI, San Francisco, USA), Microsoft Copilot, and Google Gemini has further accelerated routine engagement with generative AI by clinicians for tasks such as literature search, differential diagnosis prompts, patient education content, and administrative documentation.[3,4]

Globally, professional bodies and policymakers including the World Health Organization, the European Commission's High-Level Expert Group on AI, and the United Kingdom's National Health Service have published frameworks emphasising responsible adoption, transparency, fairness, and clinician oversight in AI-enabled healthcare.[5,6] Despite this momentum, evidence indicates that clinicians' confidence and competence with AI tools have not kept pace with technological advancement, with formal AI literacy still largely absent from medical curricula.[7,8] In India, AI adoption in clinical practice has reportedly grown substantially in recent years, but is largely self-driven rather than curriculum-led.[9] Resident Medical Officers (RMOs), being the cohort that delivers a substantial proportion of inpatient and outpatient care in teaching hospitals, are pivotal to whether AI is integrated safely, ethically, and equitably into Indian healthcare. Their awareness, perceptions, and acceptance of AI tools therefore have direct implications for clinical practice, medical education policy, and community medicine, particularly in metropolitan settings such as Mumbai that are at the forefront of digital health adoption.

To our knowledge, few Indian studies have specifically examined RMO-level engagement with generative AI tools across pre-clinical, para-clinical, and clinical specialities within a single tertiary teaching institution. The present study sought to assess awareness, perceptions, and acceptance of ChatGPT and other AI tools in healthcare among RMOs at a tertiary medical college in Mumbai, and to examine variations by age, gender, year of residency, and speciality tier.

MATERIALS AND METHODS

Study design and setting: This was a cross-sectional, self-administered online survey conducted at a tertiary care teaching hospital in Mumbai, India, between March and June 2025. The institution houses 458 RMOs distributed across 19 pre-clinical, para-clinical, and clinical departments.

Participants and eligibility: All RMOs (Junior Resident year 1 to year 3) actively enrolled in residency during the study period and providing informed consent were eligible. RMOs on long-term leave, those who had withdrawn from residency, those who had previously completed any formal course or training in AI, those changing specialty during the study, and those concurrently enrolled in conflicting research were excluded. Other students, faculty, administrative, and non-medical staff were not eligible.

Sample size: Based on a previously reported proportion of 27.3% of doctors aware of AI's medical applications,[10] using a 95% confidence level, an 8% margin of error, and finite-population correction (N = 458), the calculated sample size was 95. This was rounded up to a final planned sample of 100 RMOs.

Sampling method: Stratified random sampling was employed, with each department serving as a stratum. Within each stratum, RMOs were listed by institutional ID number, and a computer-based random number generator was used to select participants. Five RMOs were planned per department; six were drawn from the six largest departments to achieve the target of 100. In the smallest department (3 eligible RMOs), all three were invited, with equal opportunity for selection.

Survey instrument: A structured questionnaire was developed by the investigators, informed by published instruments [7,11,12] and adapted to the Indian residency context. It comprised closed-ended and 5-point Likert-scale items across eight domains: (i) socio-demographic and training profile; (ii) familiarity with AI applications in healthcare; (iii) prior use of AI tools in clinical practice; (iv) perceived benefits; (v) perceived concerns; (vi) attitudes towards AI's transformative potential and equity implications; (vii) perceived role of clinicians in ethical AI use and training needs; and (viii) willingness to adopt AI-based technologies. The instrument was face-validated by three subject experts and pretested on 10 RMOs not included in the final sample, for clarity, comprehension, and length; minor wording revisions were made before deployment.

Data collection: The questionnaire was administered through Google Forms. The survey link, with an embedded participant information sheet and informed consent declaration, was distributed via institutional email and departmental messaging groups; reminders were sent at one and two weeks. Participation was voluntary and anonymous, and no personal identifiers were collected.

Ethical considerations: The study was approved by the Institutional Ethics Committee (IEC). Electronic informed consent was obtained from each participant before survey access. Data were stored on a password-protected institutional drive accessible only to the investigators.

Use of AI in manuscript preparation: AI-based writing assistants (ChatGPT, OpenAI; Microsoft Copilot) were used solely for language editing and

structural organisation during manuscript preparation, in line with ICMJE guidance.[13] No AI tool was involved in study design, data collection, statistical analysis, or interpretation. The authors take full responsibility for the content.

Data analysis: Categorical data were summarized as frequencies and percentages; quantitative data (age) as mean ± standard deviation and median with interquartile range. Associations between categorical variables were assessed using the chi-square test with Yates' continuity correction for 2×2 tables and Fisher's exact test where expected cell counts were less than 5. Where pooling of adjacent rows or columns was required to satisfy chi-square assumptions, this is footnoted in the relevant tables. Comparison of quantitative data between binomial categorical variables was performed using the unpaired t-test if normality (Shapiro–Wilk test) was satisfied, or the Mann–Whitney U test otherwise. Analyses were performed using IBM SPSS Statistics v.28 (IBM Corp., Armonk, NY, USA); $p<0.05$ was considered statistically significant. Reporting was carried out in accordance with the STROBE guidelines for cross-sectional studies.

RESULTS

Table 1: Socio-demographic profile of Resident Medical Officers (n = 100)

Variable	Category	Frequency (no.)	Percentage (%)
Age (in years)	23–25	13	13.0
	26–28	62	62.0
	29–31	19	19.0
	≥32	06	6.0
Gender	Female	66	66.0
	Male	34	34.0
Year of residency	Junior Resident- 1	24	24.0
	Junior Resident- 2	37	37.0
	Junior Resident- 3	39	39.0
Speciality tier	Clinical / Surgical	70	70.0
	Pre-clinical and para-clinical	30	30.0

[Mean age = 27.62 ± 2.25 years; median = 28 years (IQR 26–29)].

Of the 100 RMOs enrolled, 66 (66%) were female and 34 (34%) male; the mean age was 27.62 ± 2.25 years (range 23–34 years), with 62% in the 26–28 year band. Junior Residents in years 1, 2, and 3 accounted for 24%, 37%, and 39% respectively (chi-square goodness-of-fit p = 0.099). Seventy participants (70%) belonged to clinical or surgical specialities and 30 (30%) to pre-clinical and para-clinical departments [As shown in **Table 1**].

Table 2: Familiarity with AI applications in healthcare and prior use of AI-powered applications in clinical practice (n = 100)

Item	Frequency (no.)	Percentage (%)
Familiar with virtual assistants / chatbots	43	43.0
Familiar with AI-based image analysis	38	38.0
Familiar with AI-based predictive analytics and risk assessment	29	29.0
Familiar with AI in drug discovery and development	24	24.0
Familiar with AI for clinical decision support	22	22.0
Received any formal training in AI	02	2.0
Ever used an AI-powered application in clinical practice	28	28.0
Of whom used ChatGPT (specifically)	20	20.0

[Multiple responses permitted for familiarity items].

Familiarity with AI and prior use in clinical practice: Only 2 RMOs (2%) reported any formal training in AI; 98% had no prior structured exposure. The most commonly recognised AI applications in healthcare were virtual assistants and chatbots (43%) and AI-based image analysis (38%); fewer were familiar with predictive analytics, drug discovery, or clinical decision-support applications [As shown in **Table 2**]. Twenty-eight participants (28%) had ever used an AI-powered application in clinical practice. Among them, ChatGPT was most commonly cited (20% of the full cohort), with smaller numbers reporting use of SciSpace, Perplexity, Gemini, Microsoft Copilot, and Swasthya AI (PharmEasy). The most frequent use cases were diagnosis and treatment support, study/literature review, and image interpretation.

Table 3: Perceived benefits and concerns regarding the use of AI in healthcare (n = 100)

Domain / Item	Frequency (no.)	Percentage (%)
Most significant perceived benefit (single most-cited)		
Increased efficiency of workflows	27	27.0
Improved accuracy of diagnosis + efficiency + patient outcomes + reduced cost	18	18.0

Increased efficiency of workflows + reduced costs	10	10.0
Improved accuracy of diagnosis + increased efficiency	07	7.0
Improved accuracy of diagnosis (alone)	06	6.0
Reduced costs of treatment (alone)	05	5.0
Other combinations	25	25.0
No perceived benefit	02	2.0
Most significant perceived concerns (cumulative mention)		
Privacy and security concerns	58	58.0
Bias in algorithms	51	51.0
Job displacement	48	48.0
Lack of transparency and explainability	34	34.0
Inappropriate diagnosis	01	1.0
No concern	01	1.0

[Cumulative mention reflects combined responses across single and multi-option selections.]

Perceived benefits and concerns: Increased efficiency of workflows was the most frequently identified benefit (cited alone by 27% and within combinations by an additional 33%), followed by improved accuracy of diagnosis, enhanced patient outcomes, and reduced costs of treatment. Two participants (2%) felt AI offered no benefit. Privacy and security emerged as the leading single concern (15%), and cumulatively bias in algorithms (cited within at least one combination by 51%), privacy concerns (≥58%), lack of transparency and explainability (≥34%), and job displacement (≥48%) were prominently flagged [As shown in **Table 3**].

Table 4: Attitudes towards AI's transformative potential, equity impact, and clinicians' professional role (n = 100)

Item	Frequency (no.)	Percentage (%)
Agreement that AI can revolutionise healthcare delivery (5-point scale)		
1 (Lowest)	04	4.0
2	08	8.0
3 (Neutral)	31	31.0
4	33	33.0
5 (Highest)	24	24.0
Belief that AI can worsen healthcare disparities		
Yes	32	32.0
No	24	24.0
Unsure	44	44.0
Perceived clinicians' role (cumulative mention)		
Participating in development and evaluation of AI tools	63	63.0
Advocating for fair and equitable AI policy	41	41.0
Educating patients about AI	40	40.0
Opposed to clinician use of AI	01	1.0
Willing to attend a CME on AI in healthcare	91	91.0
Willing to adopt new medical technologies based on AI	93	93.0

Attitudes, professional role, and training needs: Fifty-seven RMOs (57%) gave the highest two ratings (4 and 5 on a 5-point scale) when asked whether AI could revolutionize healthcare delivery; 31% rated agreement neutrally (3) and 12% gave low ratings (1 or 2). Conversely, 32 RMOs (32%) believed AI could worsen healthcare disparities, 24 (24%) disagreed, and 44 (44%) were unsure. Sixty-three respondents envisaged a role for clinicians in the development and evaluation of AI tools (alone or in combination), 41% supported advocacy for fair and equitable AI policy, and 40% endorsed a role in patient education on AI; only one RMO opposed AI use altogether [As shown in **Table 4**]. Ninety-one RMOs expressed interest in attending a continuing medical education programme on AI in healthcare. Hands-on training with specific AI tools (72%), training on algorithm development and validation (66%), on ethical considerations (61%), and on legal implications (59%) were the most-requested components.

Table 5: Association between selected variables and willingness to adopt new medical technologies based on AI (n = 100)

Variable	Sub-group	Willing (no, %)	Not willing (no, %)	Test (p-value)
Age (in years)	23–25	12 (92.3)	01 (7.7)	Fisher's exact: 1.000
	26–28	56 (90.3)	06 (9.7)	
	29–31	19 (100.0)	00 (0.0)	
	≥32	06 (100.0)	00 (0.0)	
Gender	Female	62 (93.9)	04 (6.1)	Fisher's exact: 0.687
	Male	31 (91.2)	03 (8.8)	
Year of residency	Junior Resident- 1	23 (95.8)	01 (4.2)	Fisher's exact: 0.702
	Junior Resident- 2	33 (89.2)	04 (10.8)	
	Junior Resident- 3	37 (94.9)	02 (5.1)	

Speciality tier	Clinical / Surgical	65 (92.9)	05 (7.1)	Fisher's exact: 1.000
	Pre-clinical and Para-clinical	28 (93.3)	02 (6.7)	

[Fisher's exact test was applied where ≥25% of cells had expected counts <5; chi-square test with Yates' continuity correction was applied to 2×2 tables after pooling of adjacent rows where applicable. Percentages are row percentages.]

Associations with willingness to adopt AI-based technologies: Willingness to adopt AI-based technologies was uniformly high across all sub-groups: by age (90.3–100%), by gender (females 93.9%; males 91.2%), by year of residency (89.2–95.8%), and by speciality tier (clinical 92.9%; pre-/para-clinical 93.3%). None of these associations reached statistical significance [As shown in **Table 5**]

DISCUSSION

In this cross-sectional survey of 100 Resident Medical Officers at a tertiary medical college in Mumbai, three findings stand out: a near-universal willingness to adopt AI-based technologies (93%), a striking absence of formal AI training (98% had received none), and substantial ethical concerns, particularly around privacy, algorithmic bias, transparency, and equity. The high acceptance rate is consistent with reports from other settings. A multicentre European survey of medical students reported that the majority viewed AI as a useful adjunct, although most felt unprepared to use it.[7] Similarly, a Canadian countrywide study found that healthcare students supported AI integration but desired structured curricular exposure.[12] Our finding that 91% of RMOs would attend a continuing medical education programme on AI mirrors this global appetite for formal learning.

Despite this enthusiasm, only 28% of RMOs reported any prior clinical use of AI, and a mere 2% had received any formal training. ChatGPT was the most commonly used tool, reflecting a wider trend of clinician engagement with general-purpose conversational AI rather than validated clinical decision-support systems. This pattern is concerning: ChatGPT is neither designed nor regulated as a medical device, and uncritical use risks misinformation, fabricated citations, and breach of patient confidentiality if identifiable data are entered into public-facing models.[14] Without structured guidance, RMOs may be approaching these tools through trial and error, a pattern described elsewhere.[15] The dominant concerns expressed by participants privacy, algorithmic bias, lack of transparency, and equity align with those highlighted in international AI ethics frameworks.[5,16] That 32% of RMOs feared AI could widen healthcare disparities, and 44% were uncertain, signals important opportunities for educational intervention. Resident clinicians appear receptive to engaging with AI ethics, with 63% willing to participate in development and evaluation of AI tools and 41% supporting fair-AI advocacy. Channelling this readiness into formal competency-based modules, ethics committees, and institutional policy could meaningfully strengthen responsible adoption.

Notably, willingness to adopt AI did not differ significantly by age, gender, year of residency, or speciality tier. While previous literature has suggested that male clinicians and imaging specialists are more inclined towards new technology adoption,[17,18] our cohort showed near-uniform openness, suggesting that the current generation of Indian residents born into the digital era has converged in baseline acceptance of AI. This generational shift has practical implications: training need not be tailored by demographic group but should target depth, applied competence, and ethical reasoning across the board. These findings argue for early, structured, and assessable AI literacy within Indian postgraduate medical curricula. Required competencies should include not only technical familiarity but also evaluation of evidence, ethical reasoning, and recognition of bias, data stewardship, and effective human–AI collaboration. The National Medical Commission could consider adding a defined AI module within postgraduate competencies, in line with international curricular reforms.[8,19]

Limitations

Strengths of this study include stratified sampling across 19 specialties capturing pre-clinical, para-clinical, and clinical perspectives a pretested face-validated instrument, and a robust analytical framework. Limitations include the single-centre design, which restricts generalizability to other Indian institutions; reliance on self-reported responses, which may be subject to social-desirability bias; and the cross-sectional snapshot, which cannot capture how attitudes evolve as AI tools mature. Multi-centre prospective and qualitative studies are warranted to triangulate these findings.

CONCLUSION

Resident Medical Officers at this tertiary medical college in Mumbai demonstrated high willingness to adopt AI-based technologies but limited formal exposure and substantial ethical concerns. There is a clear and timely need to integrate structured, competency-based AI literacy encompassing technical understanding, ethical reasoning, and clinical application into Indian postgraduate medical curricula, supported by hands-on training, institutional policy frameworks, and faculty development. Doing so will equip the next generation of Indian clinicians to harness AI's benefits while safeguarding patient interests.

Acknowledgments: The authors thank the participating Resident Medical Officers for their time and insights, and the institutional administration for facilitating the conduct of this study.

Financial support and sponsorship: Nil.
Conflicts of interest: There are no conflicts of interest.

REFERENCES

1. Wang F, Preininger A. AI in Health: State of the art, challenges, and future directions. Yearb Med Inform 2019;28(1):16–26.
2. Kumar Y, Koul A, Singla R, Ijaz MF. Artificial intelligence in disease diagnosis: a systematic literature review, synthesizing framework and future research agenda. J Ambient Intell Humaniz Comput 2023;14(7):8459–86.
3. Faiyazuddin M, Rahman SJQ, Anand G, Siddiqui RK, Mehta R, Khatib MN, et al. The impact of artificial intelligence on healthcare: a comprehensive review of advancements in diagnostics, treatment, and operational efficiency. Health Sci Rep 2025;8(1):e70312.
4. Li M, Jiang Y, Zhang Y, Zhu H. Medical image analysis using deep learning algorithms. Front Public Health 2023;11:1273253.
5. World Health Organization. Ethics and governance of artificial intelligence for health: WHO guidance. Geneva: WHO; 2021.
6. European Commission. High-Level Expert Group on Artificial Intelligence: ethics guidelines for trustworthy AI. Brussels: European Commission; 2019.
7. Pinto dos Santos D, Giese D, Brodehl S, Chon SH, Staab W, Kleinert R, et al. Medical students' attitude towards artificial intelligence: a multicentre survey. Eur Radiol 2019;29(4):1640–46.
8. Wood EA, Ange BL, Miller DD. Are we ready to integrate artificial intelligence literacy into medical school curriculum? Students and faculty survey. J Med Educ Curric Dev 2021;8:23821205211024078.
9. Bhandari A, Purchuri SN, Sharma C, Ibrahim M, Prior M. Knowledge and attitudes towards artificial intelligence in imaging: a look at the quantitative survey literature. Clin Imaging 2021;80:413–19.
10. Ahmed Z, Bhinder KK, Tariq A, Tahir MJ, Mehmood Q, Tabassum MS, et al. Knowledge, attitude, and practice of artificial intelligence among doctors and medical students in Pakistan: a cross-sectional online survey. Ann Med Surg (Lond) 2022;76:103493.
11. Castagno S, Khalifa M. Perceptions of artificial intelligence among healthcare staff: a qualitative survey study. Front Artif Intell 2020;3:578983.
12. Teng M, Singla R, Yau O, Lamoureux D, Gupta A, Hu Z, et al. Health care students' perspectives on artificial intelligence: countrywide survey in Canada. JMIR Med Educ 2022;8(1):e33390.
13. International Committee of Medical Journal Editors (ICMJE). Recommendations for the conduct, reporting, editing, and publication of scholarly work in medical journals. Updated 2024. Available from: https://www.icmje.org/recommendations/.
14. Char DS, Shah NH, Magnus D. Implementing machine learning in health care — addressing ethical challenges. N Engl J Med 2018;378(11):981–83.
15. Wang W, Chen L, Xiong M, Wang Y. Accelerating AI adoption with responsible AI signals and employee engagement mechanisms in health care. Inf Syst Front 2023;25(6):2239–56.
16. Obermeyer Z, Powers B, Vogeli C, Mullainathan S. Dissecting racial bias in an algorithm used to manage the health of populations. Science 2019;366(6464):447–53.
17. Cirillo D, Catuara-Solarz S, Morey C, Guney E, Subirats L, Mellino S, et al. Sex and gender differences and biases in artificial intelligence for biomedicine and healthcare. NPJ Digit Med 2020;3:81.
18. Qazi A, Hasan N, Abayomi-Alli O, Hardaker G, Scherer R, Sarker Y, et al. Gender differences in information and communication technology use and skills: a systematic review and meta-analysis. Educ Inf Technol 2022;27(3):4225–58.
19. Ueda D, Kakinuma T, Fujita S, Kamagata K, Fushimi Y, Ito R, et al. Fairness of artificial intelligence in healthcare: review and recommendations. Jpn J Radiol 2024;42(1):3–15.