Section: Community Medicine

Original Research Article

# ASSESSING READINESS AND BARRIERS FOR ARTIFICIAL INTELLIGENCE INTEGRATION IN MEDICAL TRAINING: INSIGHTS FROM A CROSS-SECTIONAL SURVEY OF STUDENTS AND FACULTY AT A TERTIARY CARE TEACHING HOSPITAL

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## ABSTRACT

**Background:** AI is rapidly changing in clinical practice and medical education worldwide. Healthcare applications include diagnosis, documentation, and decision assistance; education applications include individualized learning, adaptive simulations, and efficient exams. AI literacy, ethics, and professionalism are still missing from medical education in many countries, including India, despite their potential benefits. This study uses a pre-tested questionnaire at a Western Maharashtra tertiary teaching hospital to assess medical faculty and students' self-reported knowledge and barriers to AI adoption.

**Materials and Methods:** A cross-sectional survey involving 261 participants was carried out, including 174 medical students (66.7%) and 87 faculty members (33.3%), using a pre-tested questionnaire. The data collection process encompassed various demographic characteristics, levels of awareness and usage of AI, as well as the barriers faced in its application. Additionally, it gathered participants' opinions and attitudes concerning the integration of AI into the medical curriculum, particularly emphasizing their assessments of its inclusion. A thorough statistical examination was conducted to evaluate the awareness, utilization, and obstacles related to AI among both students and faculty members.

**Results:** A significant 80% of 261 participants (79.7% men and 20.3% females) used AI tools for academic purposes. Note that 38.3% of these participants considered themselves AI novices. Students use AI technologies 85.6% more than instructors, according to research. ChatGPT is the most popular tool, used by 70.7% of students. AI was most commonly used by students to improve study performance (66.9%) and enable interactive learning (49.1%). In contrast, 35.6% of professors used AI for curriculum development and literature reviews. Lack of expertise (37.5%), ambiguous AI efficacy proof (33.7%), and limited testing time (27.2%) are the main challenges. A large 87.7% of respondents supported incorporating AI into the medical curriculum, suggesting its educational potential.

**Conclusion:** The study emphasizes the need to integrate AI into medical education to prepare doctors for future difficulties. The findings emphasize the need for well-structured AI courses, focused faculty development, interdisciplinary collaboration, and ethical behaviours. These approaches will enable responsible and successful AI technology use, improving education and patient care.

**Keywords:** Artificial Intelligence, Faculty, Curriculum, Awareness, Barriers.

## INTRODUCTION

The phrase "Artificial Intelligence" (A.I.) was introduced by John McCarthy in 1955 and refers to computer functions that replicate human intelligence, but via different operating mechanisms.[1] In recent decades, the public has been acquainted with AI through applications such as virtual assistants and generative language models. Artificial intelligence techniques are progressively utilized in healthcare: advanced algorithms can assess clinical, behavioural, and environmental data, while convolutional neural networks can evaluate retinal images, categorize skin lesions, identify lymph node metastases, and discover radiographic anomalies.

The rapid advent of artificial intelligence (AI) in healthcare promises transformative impacts on diagnostics, treatment planning, and educational paradigms. As technology evolves, the readiness of medical training institutions to integrate AI into teaching and learning becomes increasingly critical. AI's application in clinical practice demands that future physicians are not only aware of its capabilities, but also understand its limitations, ethical implications, and practical barriers. Thus, assessing the self-reported knowledge and perceived barriers among both students and faculty becomes a crucial step in charting a responsive curriculum. Future physicians and healthcare system leaders must possess a comprehensive knowledge of the benefits and limitations of A.I. A notable challenge is the lack of knowledge among students, educators, and medical schools regarding A.I., Machine Learning (ML), and Deep Learning (DL), hindering the development of appropriate teaching methodologies and knowledge of effectively integrating A.I. tools into patient care processes.[2]

Recent literature highlights that although medical students and educators are intrigued by AI's potential, formal instruction remains sparse. Weidener and Fischer found that experts emphasised the importance of foundational AI knowledge, interpretation skills, and application competencies for medical students.[3] Similarly, Moldt et al. explored stakeholder insights and found wide variation in awareness and expectations about AI integration in the medical curriculum.[4] Ahsan et al. observed that while AI tools such as adaptive learning platforms are being piloted, their full integration into curricula is still at a conceptual stage, hindered by limited outcome data and resource constraints.[5]

Furthermore, Lee et al. defined a framework of six domains of essential medical AI competencies including digital health, foundational AI knowledge, ethics/legal aspects, application in clinical practice, data processing and analysis, and research/development.[6] These competencies align with the growing consensus that AI education must go beyond theoretical knowledge to include critical reflection, bias recognition, legal/regulatory understanding, and hands-on experience. Chan and Zary, in a systematic exploration of student and faculty perceptions, noted that while willingness to integrate AI is high, institutional readiness and faculty training often lag behind.[7]

Barriers to AI integration span multiple levels: learners limited prior exposure, faculty's lack of confidence in AI content, infrastructure constraints and curricular inertia. Gordon's scoping review identified that many AI-in-medical-education initiatives remain elective rather than embedded, and that robust evaluation of outcomes is still lacking.[8] Likewise, Singla et al., through a Delphi study in Canada, identified key curricular components and also flagged implementation challenges such as curriculum density, faculty time, and competing priorities.[9] Salih's qualitative work among faculty and students in Saudi Arabia revealed that while a large majority (91%) believed AI would positively impact medical education, concerns remained regarding ethics, resources and cultural sensitivity.[10]

In the Indian context and similar teaching hospitals globally, understanding local readiness and barriers is particularly important. Differences in technology access, faculty development, institutional culture and student preparedness may shape how AI is introduced, accepted and utilised. Sami et al. found in a large survey of 700+ medical students that although 80 % considered AI effective as a learning tool, only about 12 % had regular exposure to dedicated AI training.[11] Moreover, Kostkova P in their international study of digital-health competencies underscored that readiness frameworks must consider the interplay of professionalism in digital health, patient/population digital health, health information systems and health data science.[12]

Given this backdrop, the current study titled "Assessing Readiness and Barriers for Artificial Intelligence Integration in Medical Training: Insights from a Cross-Sectional Survey of Students and Faculty at a Tertiary Care Teaching Hospital" aims to elucidate self-reported knowledge levels, perceived barriers and willingness to integrate AI among medical students and faculty. With its primary objective to assess knowledge and barriers, and secondary objective to explore willingness to integrate AI into the curriculum, this investigation seeks to fill a pertinent gap and provide actionable insights for curriculum developers, faculty trainers and institutional leaders.

## MATERIALS AND METHODS

The present study was a cross-sectional, questionnaire-based observational study conducted among medical students and faculty members of a tertiary care teaching hospital. The study aimed to assess the readiness, perceived knowledge, and barriers related to Artificial Intelligence (AI) integration in medical training, along with the willingness of both groups to incorporate AI into the

existing medical curriculum. The study was carried out after obtaining institutional ethical clearance and formal consent from all participants.

The total sample size for the study was 261 participants, which included 174 medical students and 87 medical faculty members. The sample size was determined to ensure adequate representation of both groups to allow meaningful comparison and analysis. Participants were selected using a stratified convenience sampling technique to include representatives from both pre-clinical and clinical departments. Faculty members with at least one year of teaching experience and medical students enrolled in the MBBS program at the time of the study were eligible for inclusion. Those unwilling to participate or who submitted incomplete questionnaires were excluded from the analysis.

Data were collected using a pre-tested, structured, self-administered questionnaire designed to evaluate four main domains: demographic information, self-reported knowledge and familiarity with AI concepts, perceived barriers to AI adoption in medical education, and willingness to integrate AI into the curriculum. Instrument: pre-tested, semi-structured questionnaire adapted from Blanco MA, et al. The instrument tool will be reviewed by experts, pilot tested on students as well as faculty and will be modified for content validation [13].

The survey tool was distributed electronically through institutional email and secure online forms to ensure accessibility and confidentiality. Participants were informed about the objectives of the study, and anonymity was maintained throughout the process. Data collection was conducted over a period of four weeks. Each participant was required to provide responses independently without discussion to minimize response bias.

Collected data were entered into Microsoft Excel and subsequently analyzed using IBM SPSS Statistics version 26. Descriptive statistics such as frequencies, means, and standard deviations were used to summarize demographic characteristics and overall trends. Inferential statistics, including chi-square tests and independent t-tests, were applied to compare categorical and continuous variables between faculty and student groups. A p-value of less than 0.05 was considered statistically significant. The results were presented in tables and graphs for clarity and ease of interpretation.

## RESULTS

The present study included a total of 261 participants, comprising 174 medical students and 87 faculty members, from a tertiary care teaching institution. The findings highlights the demographic characteristics, levels of AI awareness and use, comparative analysis between students and faculty, as well as perceived barriers to AI integration in medical education.

The Table 1 presents the descriptive statistics of the participants. The majority of respondents (43.7%) were under the age of 20 years, primarily representing the undergraduate medical student group, followed by participants in the age range of 31–40 years (21.1%). Male participants constituted 79.7% of the study population, whereas females represented 20.3%. Among the total participants, two-thirds were medical students (66.7%), while one-third were faculty members (33.3%).

Among students (n=174), 60.9% belonged to the first year of medical education, followed by 17.2% in the fourth year and 16.7% in the third year, indicating active participation across early and advanced stages of study. Among faculty members (n=87), the largest proportion were professors (33.3%), followed by assistant professors (26.4%) and associate professors (21.8%), ensuring good representation across teaching hierarchies. A majority of faculty reported teaching medical students (77.0%) and medical residents (44.8%), reflecting the institution's academic diversity.

Figure 1 illustrates the age distribution of participants, showing a distinct skew toward the younger age groups, consistent with the predominance of medical students in the sample. Figure 2 depicts the year of study among medical students, highlighting the greater participation from first-year and fourth-year students. Figure 3 demonstrates the faculty designation distribution, confirming that senior-level educators were well represented, ensuring the inclusion of diverse academic perspectives.

Table 2 describes the AI awareness and usage among participants. A large proportion (38.3%) identified themselves as novices in understanding AI capabilities, followed by advanced beginners (33.7%) and competent users (19.2%). Only a small fraction of participants rated themselves as proficient (7.7%) or experts (1.1%), indicating that AI literacy remains at a developing stage across both groups. When asked about their frequency of AI tool usage for academic or medical-related work, the majority (54.4%) reported using such tools only occasionally, while 21.8% used them almost always. Only 3.8% reported always using AI-based tools, reflecting limited integration into daily academic activities.

Table 3 compares the AI awareness, usage, and attitudes between faculty and students. Although faculty members demonstrated slightly higher self-perceived proficiency, no statistically significant difference was observed in overall awareness levels ($p=0.128$). However, differences were significant regarding AI tool utilization patterns ($p=0.017$), indicating that students tend to use AI tools more frequently for academic purposes. Among specific tools, ChatGPT emerged as the most widely used platform (75.5%), followed by AI-assisted clinical tools (11.5%). Notably, usage of UpToDate ($p=0.0001$) and Dynamed ($p=0.0001$) was significantly higher among faculty members, whereas

students reported more frequent use of general-purpose AI applications.

When asked whether AI should be incorporated into the medical curriculum, an overwhelming majority of both faculty (89.7%) and students (86.8%) agreed, underscoring a shared recognition of AI's educational potential. Only 12.3% opposed integration, citing uncertainties regarding applicability and training infrastructure.

Table 4 outlines the perceived barriers to AI integration in medical education. The most frequently cited barrier was lack of knowledge on how to use AI tools (37.5%), followed by unclear evidence of AI's impact on performance (33.7%) and limited time to experiment (27.2%). Cost-related limitations were reported by 22.2% of respondents, whereas only 6.9% identified other miscellaneous concerns such as ethical dilemmas or resistance to change. Despite these challenges, a high majority (87.7%) supported integrating AI into the medical curriculum, confirming strong overall enthusiasm for AI-based transformation in medical education.

Table 5 summarizes and compares the understanding, usage, and perceptions of artificial intelligence (AI) between medical faculty and students. Most participants demonstrated limited familiarity with AI capabilities, with 38.3% identifying as "novice" and 33.7% as "advanced beginners," while only 1.1% reported expertise. Although a slightly higher percentage of students reported being competent or proficient compared to faculty, the overall difference in understanding was not statistically significant ($p=0.128$).

Regarding AI tool usage, ChatGPT emerged as the most widely used application across both groups, reported by 75.5% of participants, with significantly higher use among faculty (85.1%) than students (70.7%) ($p=0.011$). Other notable tools included UpToDate (6.9%), Dynamed (3.1%), and Open Evidence (2.7%), all of which showed statistically significant usage differences between faculty and students ($p=0.0001$ and $p=0.030$ respectively). Tools such as Dragon Medical One, Path AI, Azure AI Vision, and VisualDx were used minimally, highlighting limited diversity in AI tool adoption for educational or clinical purposes.

A strong consensus was observed regarding the integration of AI into the medical curriculum, with 87.7% of respondents supporting its inclusion and no significant difference between faculty and student perspectives ($p=0.505$). This finding reflects growing enthusiasm and recognition of AI's educational potential despite existing knowledge gaps. Overall, the table illustrates a transitional phase in AI adoption in medical education—where awareness and interest are high, yet practical competency and tool diversity remain limited.

Figure 1 illustrates the age distribution of the 261 participants included in the study. The largest proportion of respondents were under 20 years of age (43.7%), reflecting the predominance of undergraduate medical students. Participants aged 31–40 years constituted 21.1% of the total, followed by those aged 21–30 years (13.8%). Smaller groups included individuals aged 41–50 years (11.9%) and 51–60 years (9.6%). The age distribution indicates a healthy mix of early learners and experienced professionals, ensuring that both student and faculty perspectives were adequately represented in the study.

Figure 2 shows the distribution of medical students according to their year of study. The majority of respondents (60.9%) were first-year students, followed by 17.2% in the fourth year and 16.7% in the third year. Only 3.4% were second-year students, and 1.7% were postgraduate trainees. The predominance of early-year students highlights growing curiosity toward artificial intelligence at the foundational phase of medical education, while participation from senior-year and postgraduate students adds practical insight into clinical learning applications.

Figure 3 represents the academic designation of faculty participants (n = 87). The largest segment comprised professors (33.3%), followed by assistant professors (26.4%) and associate professors (21.8%). Senior residents or clinical tutors accounted for 9.2% of the sample, while heads of departments represented 9.2%. This distribution reflects robust participation from experienced educators, ensuring that the findings capture institutional, pedagogical, and administrative viewpoints on integrating AI into the medical curriculum.

Figure 4 depicts the various purposes for which medical students utilize artificial intelligence (AI) tools in their academic activities. The most frequently cited reason for AI use was to enhance overall study performance (66.9%), followed by interactive learning (49.1%), customizing study plans (38.3%), and practicing questions or examinations (37.7%). Other notable applications included enhanced note-taking (31.4%), presentation preparation (28.6%), and research assistance (25.7%). A smaller proportion of students reported using AI for diagnostic support (20.6%), wellness and health monitoring apps (15.4% and 14.3% respectively), or manuscript/report writing (13.1%). Only 8% of respondents indicated that they were not currently using any AI tools.

This distribution suggests that the primary motivation for AI adoption among students lies in academic enhancement and learning efficiency rather than clinical or diagnostic purposes. It also reflects a growing trend toward leveraging AI for personalized education and self-directed learning, underscoring the evolving role of technology in modern medical education.

Figure 5 describes Comparison of AI Awareness, Tool Usage, and Integration Preference Among Faculty and Students. Among faculty, AI was mainly used for curriculum development and research reviews (35.6%), aligning with students' use of AI for interactive learning—indicating a shared focus on integrated, learning-oriented AI use.

**Table 1: Descriptive Statistics**

| Variables (n=261) | Frequency (&) |
|---|---|
| **Age group** | |
| **<20** | **114 (43.67)** |
| **21–30** | **36 (13.79)** |
| **31–40** | **55 (21.07)** |
| **41–50** | **31 (11.87)** |
| **51–60** | **25 (9.57)** |
| **Gender** | |
| Female | 53 (20.30) |
| Male | 208 (79.69) |
| **Group** | |
| Faculty | 87 (33.33) |
| Student | 174 (66.66) |
| **Year of study (n=174)** | |
| 1st | 106 (40.61) |
| 2nd | 6 (2.2) |
| 3rd | 29 (11.11) |
| 4th | 30 (11.49) |
| Interns | 3 (1.14) |
| **Faculty designation (n=87)** | |
| SR/Clinical tutor | 8 (3.06) |
| Assistant professor | 23 (8.81) |
| Associate professor | 19 (7.27) |
| Professor | 29 (11.11) |
| HOD | 8 (3.06) |
| **Levels of learners the faculty teaches** | |
| Medical students | 67 (25.67) |
| Pharmacy students | 11 (4.21) |
| Nursing students | 35 (13.40) |
| Graduate students | 29 (11.11) |
| Medical residents/fellows | 39 (14.94) |
| Faculty members | 11 (4.21) |
| Other | 6 (2.29) |

**Table 2: AI Awareness and Usage Among Students and Faculty**

| Variables (n=261) | Frequency (%) |
|---|---|
| **Rating the understanding of AI capabilities** | |
| Novice | 100 (38.31) |
| Advanced beginner | 88 (33.71) |
| Competent | 50 (19.15) |
| Proficient | 20 (7.66) |
| Expert | 3 (1.14) |
| **Use AI Tools for medical school related work** | |
| **Always** | **10 (3.83)** |
| **Almost always** | **57 (21.83)** |
| **Occasionally** | **142 (54.4)** |
| **Never** | **15 (5.74)** |
| **Almost never** | **37 (14.17)** |

**Table 3: Comparison of AI Awareness and Usage Among Students and Faculty**

| Variables | Faculty (n=87) | Student (n=174) | Total |
|---|---|---|---|
| **Rating the understanding of AI capabilities** | | | |
| Novice | 41 (47.1) | 59 (33.9) | 100 (38.3) |
| Advanced beginner | 30 (34.5) | 58 (33.3) | 88 (33.7) |
| Competent | 11 (12.6) | 39 (22.4) | 50 (19.2) |
| Proficient | 4 (4.6) | 16 (9.2) | 20 (7.7) |
| Expert | 1 (1.1) | 2 (1.1) | 3 (1.1) |
| **Use AI Tools for medical school related work** | | | |
| Always | 2 (2.3) | 8 (4.6) | 10 (3.8) |
| Almost always | 18 (20.7) | 39 (22.4) | 57 (21.8) |
| Occasionally | 40 (46.0) | 102 (58.6) | 142 (54.4) |
| Never | 6 (6.9) | 9 (5.2) | 15 (5.7) |
| Almost never | 21 (24.1) | 16 (9.2) | 37 (14.1) |
| **AI tools used** | | | |
| AI and Clinical Tools | 15 (17.2) | 15 (8.6) | 30 (11.5) |
| ChatGPT | 74 (85.1) | 123 (70.7) | 197 (75.5) |
| Dragon Medical One | 1 (1.1) | 1 (0.6) | 2 (0.8) |
| Azure AI vision | 3 (3.4) | 5 (2.9) | 8 (3.1) |
| Open Evidence | 5 (5.7) | 2 (1.1) | 7 (2.7) |

| | | | |
|---|---|---|---|
| Path AI | 1 (1.1) | 2 (1.1) | 3 (1.1) |
| UpToDate | 15 (17.2) | 3 (1.7) | 18 (6.9) |
| Dynamed | 7 (8.0) | 1 (0.6) | 8 (3.1) |
| VisualDx | 1 (1.1) | 1 (0.6) | 2 (0.8) |
| Others | 18 (20.7) | 29 (16.7) | 47 (18.0) |
| **AI should be integrated into the medical curriculum** | | | |
| **Yes** | **78 (89.7)** | **151 (86.8)** | **229 (87.7)** |
| **No** | **9 (10.3)** | **23 (13.2)** | **32 (12.3)** |

**Table 4: AI Barriers**

| AI barriers and opinion related to AI in medical teaching | Frequency | Percentage |
|---|---|---|
| **AI barriers** | | |
| Cost | 58 | 22.2 |
| Limited time to experiment | 71 | 27.2 |
| Unclear evidence of AI tools' impact on performance | 88 | 33.7 |
| Lack of knowledge on how to use these tools | 98 | 37.5 |
| Others | 15 | 6.9 |
| **AI should be integrated into the medical curriculum** | | |
| Yes | 229 | 87.7 |
| No | 32 | 12.3 |

**Table 5: Comparison of AI Awareness, Tool Usage, and Integration Preference Among Faculty and Students**

| Parameter | Faculty (n=87) | Student (n=174) | Total | Chi-square value (p value) |
|---|---|---|---|---|
| **Rating the understanding of AI capabilities** | | | | |
| Novice | 41 (47.1) | 59 (33.9) | 100 (38.3) | 7.158 (0.128) |
| Advanced beginner | 30 (34.5) | 58 (33.3) | 88 (33.7) | |
| Competent | 11 (12.6) | 39 (22.4) | 50 (19.2) | |
| Proficient | 4 (4.6) | 16 (9.2) | 20 (7.7) | |
| Expert | 1 (1.1) | 2 (1.1) | 3 (1.1) | |
| **AI tools used** | | | | |
| ChatGPT | 74 (85.1) | 123 (70.7) | 197 (75.5) | 6.469 (0.011*) |
| Dragon Medical One | 1 (1.1) | 1 (0.6) | 2 (0.8) | 0.252 (0.616) |
| Azure AI Vision | 3 (3.4) | 5 (2.9) | 8 (3.1) | 0.064 (0.800) |
| Open Evidence | 5 (5.7) | 2 (1.1) | 7 (2.7) | 4.697 (0.030*) |
| Path AI | 1 (1.1) | 2 (1.1) | 3 (1.1) | 0.000 (1.000) |
| UpToDate | 15 (17.2) | 3 (1.7) | 18 (6.9) | 21.75 (0.0001*) |
| Dynamed | 7 (8.0) | 1 (0.6) | 8 (3.1) | 10.89 (0.0001*) |
| VisualDx | 1 (1.1) | 1 (0.6) | 2 (0.8) | 0.252 (0.616) |
| Others | 18 (20.7) | 29 (16.7) | 47 (18.0) | 0.636 (0.425) |
| **AI should be integrated into the medical curriculum** | | | | |
| Yes | 78 (89.7) | 151 (86.8) | 229 (87.7) | 0.445 (0.505) |
| No | 9 (10.3) | 23 (13.2) | 32 (12.3) | |

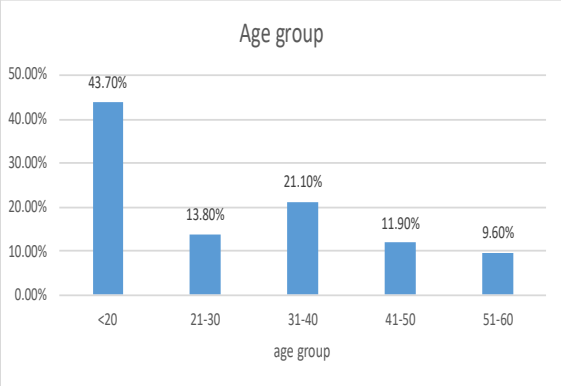


**Figure 1: Age distribution**

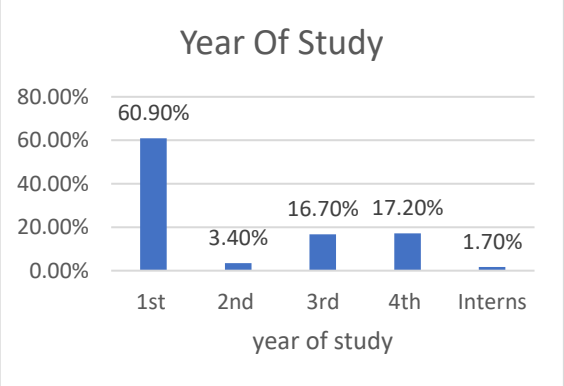


**Figure 2: Year of study of the participants**

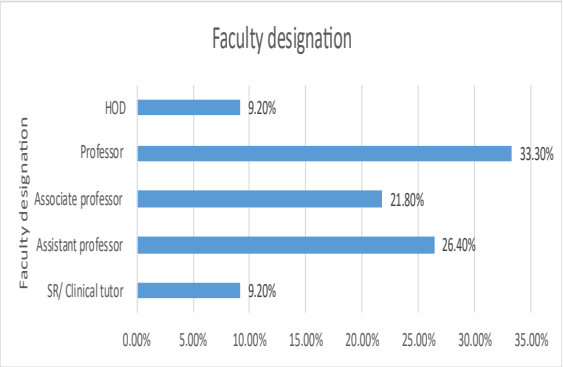


**Figure 3: Designation of the faculty**

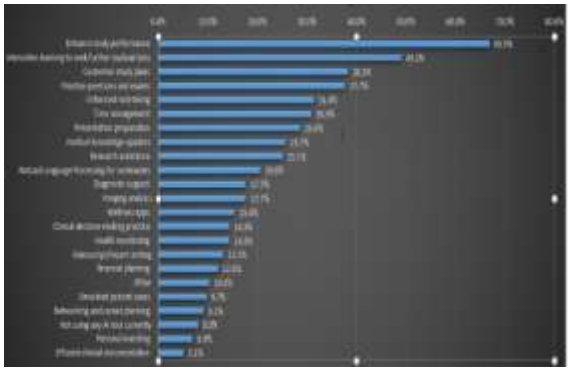

**Figure 4: Distribution based on purpose of using ai tools (students)**

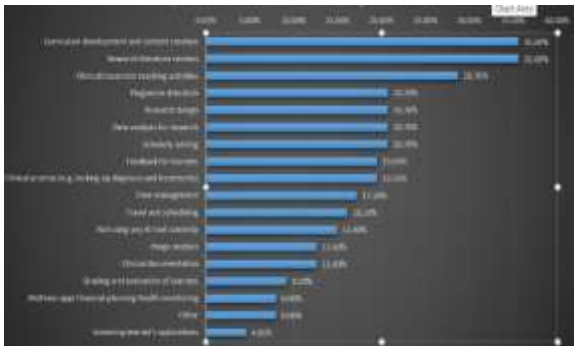

**Figure 5: Purposes of use AI tools among faculties**

## DISCUSSION

The findings from our cross-sectional survey highlight an evolving yet uneven landscape of Artificial Intelligence (AI) adoption in medical education. Both students and faculty expressed strong enthusiasm for integrating AI into the curriculum, yet a significant readiness gap persists between willingness and practical competence. As noted by Kalbarczyk A et al., institutional readiness continues to be limited by inconsistent knowledge levels and a lack of structured training opportunities.[14] In our study, nearly three-quarters of participants identified themselves as novices or advanced beginners in AI understanding, indicating that while awareness exists, proficiency in practical application remains low. This finding aligns with the observations of Alatawi F and Kerari A, who reported that readiness cannot be assumed based solely on positive attitudes toward AI.[15]

The pattern of AI tool usage further underscores this readiness gap. ChatGPT was the most commonly used AI application among both students and faculty, with significantly higher usage among faculty (85.1%) than students (70.7%). Tools such as Open Evidence, UpToDate, and Dynamed were used less frequently but showed statistically significant variation between groups, indicating selective rather than widespread AI engagement. This selective adoption pattern mirrors findings by Sayeed Salih et al, who identified that most educators and learners engage with AI primarily through easily accessible general-purpose tools, rather than domain-specific or evidence-based platforms.[16] This trend suggests that while exposure to AI exists, its integration into structured learning or clinical contexts remains limited.

Figure 4 adds further insight into the purpose behind AI use among students, revealing that the primary motivation (66.9%) was to enhance study performance, followed by interactive learning, customizing study plans, and practicing examination questions. More advanced applications such as diagnostic support, research assistance, or clinical decision-making practice were considerably less common. This distribution supports the notion that AI in medical education is currently perceived more as a tool for academic enhancement rather than as a transformative instrument for clinical reasoning or decision-making. The readiness imbalance is therefore not merely a question of access but also one of purpose—students and faculty tend to use AI within their immediate academic comfort zones rather than exploring its potential for professional competency development.

As proposed by Salem et al., the ADELE framework (Awareness, Development of Skills, Efficacy, Learnings, and Enforcement) provides a structured approach to bridging this gap by translating enthusiasm into competency and practical application.[17] The present data aligns with this approach, as 87.7% of participants endorsed the integration of AI into the medical curriculum but simultaneously cited a lack of operational knowledge (37.5%) as the most common barrier. This mismatch between enthusiasm and capability highlights the need for structured, hands-on training programs that build both confidence and competence. Furthermore, as emphasized by Sanri et al., true readiness extends beyond familiarity with AI tools—it requires embedding ethical, analytical, and application-oriented skills into medical education.[18]

Rani S. and colleagues,[19] found that medical students and faculty members had a fundamental understanding of Artificial Intelligence (AI), but they lacked a comprehensive understanding of how AI may be applied in the field of medical education. In addition, they have positive thoughts and attitudes on the application of AI in the field of medical education and healthcare. It is for this reason that this study

offers insights into the readiness of artificial intelligence (AI) to be incorporated into the curriculum of medical schools. In order for educational institutions to maintain their position as leaders in the training of competent healthcare professionals, this is very necessary. The study emphasizes the significance of providing medical students and faculty with information and skills related to Artificial Intelligence (AI), with the goal of ensuring that they are adequately prepared to make effective use of AI tools in their clinical practice. Personalized and data-driven healthcare is becoming increasingly prevalent, and this aligns with that paradigm. The research can also provide policymakers and educational institutions with information about the existing state of Artificial Intelligence (AI) in medical education as well as the future demands in this area.

A systematic approach to curriculum integration may rectify current deficiencies in knowledge and readiness. Fundamental workshops for students and teachers would establish a foundational comprehension of AI principles and techniques. These courses may subsequently develop into more advanced sessions as proficiency with AI improves. Faculty development is an essential initial step, as educators are vital in directing students' interaction with AI. Training programs designed to provide teachers with practical skills and knowledge of AI tools would facilitate effective instruction. Likewise, the gradual incorporation of AI into established courses, such as research methodologies or clinical reasoning, could enhance current curricula without overwhelming students or teachers.

## CONCLUSION

This study reveals that although both medical students and faculty demonstrate a strong willingness to integrate AI into medical education, substantial deficiencies persist in terms of understanding, competency, and operational readiness. The predominance of ChatGPT as the most used tool and the focus on study enhancement rather than clinical or research applications reflect an early, superficial stage of AI adoption. The most prominent barrier identified was the lack of knowledge on how to use AI tools effectively, surpassing concerns related to cost or time constraints. To translate enthusiasm into meaningful integration, medical institutions must implement faculty development programs, introduce competency-based AI modules aligned with frameworks such as ADELE, and encourage context-specific applications of AI in both academic and clinical domains. Only by bridging this readiness-enthusiasm divide can AI adoption move from aspirational interest to transformative educational impact.

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