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Knowledge, attitudes, and practices towards artificial intelligence among Ashur University-Medical College students, Baghdad-Iraq

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Abstract:

Artificial intelligence (AI) is a technology that enables machines to learn, reason, and carry out tasks that normally require human intelligence. AI can be used in a variety of ways to improve teaching and health, such as providing personalized learning experiences and developing new diagnosis approaches and treatments for diseases. This study aimed to assess the knowledge, attitudes, and practices (KAP) towards artificial intelligence (AI) among medical students at Ashur University-Medical College (AUMC) in Baghdad, Iraq. A descriptive cross-sectional study was conducted from November 2024 to January 2025, involving 200 first- and second-year medical students. Data was collected using a structured questionnaire adapted from previous studies, covering Sociodemographic characteristics, AI knowledge, attitudes, and practices. The results revealed that 93.5% of students understood the basic concept of AI, but only 28.5% and 12.5% were familiar with machine learning and deep learning, respectively. A significant majority (87.5%) supported the integration of AI into their field of study, with 70.5% advocating for its inclusion in medical training. However, 68.5% opposed using AI for student assessments due to concerns about fairness and bias. While 85.5% of students used AI technologies for academic purposes, only 6% had taken AI-focused courses outside their curriculum. The study highlights the need for incorporating AI education into medical curricula and fostering extracurricular engagement to better prepare students for the evolving healthcare landscape.

Keywords: Artificial Intelligence, Medicine, Students, Iraq, Education, KAP Study

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1. Introduction

Over more than two centuries, the development of the processing and storing of data and what is now known as artificial intelligence (AI) has evolved in a long series of steps (1). The literature indicates that the term "AI" and AI-based systems emerged in the 1950s (2). Over the following decades, extensive academic research in AI across various social and organizational contexts has led to the development of numerous theories and concepts aimed at addressing public challenges and seizing business and advanced technology opportunities (3). There is no universally accepted definition of intelligence within Artificial Intelligence (AI), as it spans philosophical perspectives and pragmatic descriptions, the AI researcher John McCarthy (1997) who coined the phrase “Intelligence is the computational part of the ability to achieve goals in the world”(4), Marvin Minsky (1968) defines AI in more programmatic expression define it as “the science of making machines do things that would require intelligence if done by men” (5), while the most reliable practical definition raised by Kaplan and Haenlein who define AI as “a system’s ability to

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correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation(6). AI integrates knowledge from multiple disciplines, such as computer science, mathematics, statistics, psychology, neuroscience, philosophy, and linguistics. Experts from these areas work together to create algorithms, build models, and train machines to carry out specific functions(7). AI can completely transform a variety of fields, including finance, transportation, healthcare, and education. Its uses range from algorithmic trading and personalized learning to medical diagnosis and autonomous vehicles (8). AI integration in healthcare has great potential to enhance clinical laboratory testing, treatment selection, and diagnosis of diseases (9,10). Modern AI is additionally impacting the healthcare industry by helping physicians diagnose, identify the causes of illnesses, recommend different treatment options, perform surgeries, and determine whether a condition is life-threatening (11,12). It is certain that future medical undergraduate and postgraduate students will work in a different professional environment, given the growing use of AI technology in the field (13). The teaching of AI and AI ethics must be shortly incorporated into the medical curriculum in order to adequately prepare future physicians (14).

Numerous studies have been conducted to assess the knowledge, attitudes, and practices(KAP) toward AI among medical students in various countries, including Syria, Lebanon, Jordan, Sudan, Oman, Pakistan, and France(15–21)

Research and information on this topic in Iraq are scarce; therefore, we planned and implemented this study to assess KAP among AUMC medical students. We intend to evaluate their understanding and acceptance of integrating artificial intelligence into their studies and future professional practice. We hope this study will provide preliminary data on how students engage with this tool and the potential for its integration into the curriculum in the future.

Study aims

1- to bridge the gap in understanding AI KAP among medical students, informing educators, policymakers, and healthcare professionals on effective AI integration

2- Enhancing medical education and ultimately improving patient care in our medical education discipline.

Expected Outcomes

1. Comprehensive understanding of AI KAP among AUMC students.
2. Identification of barriers and facilitators for AI adoption.
3. Data-driven recommendations for AI education and integration.

Objectives

1. Assess medical students' AI knowledge and awareness.
2. Identify challenges and factors influencing the practice of AI
3. To explore the current practices of AI utilization among medical students.
3. Analyze students' attitudes toward AI integration in medical education.

2. Methodology

Study Design, Study Setting, Study Population, and sampling:

This cross-sectional descriptive study was carried out at AUMC/Baghdad from November 2024 to January 2025. AUMC is a newly established institution, currently in its first two years of the six-year accredited College of Medicine program. A questionnaire was distributed to students, with a convenient sample of 200 selected from a total population of 1,200 students, comprising 100 first-year and 100 second-year medical students. A pilot study was conducted to ensure the clarity of all questionnaire items; however, the data gathered from this pilot study were excluded from the final analysis.

Data Collection Tool:

A structured, modified questionnaire was adopted from previously certified studies(13–16,20). The content validity of the questionnaire was reviewed and finalized by an expert panel consisting of three professors from the fields of nursing, medicine, and computer science.

The questionnaire includes sections on:

-Sociodemographic Data**:** Age, gender, year of study, academic performance, prior experience with technology.

- Knowledge: Understanding of AI concepts (e.g., machine learning, deep learning).

- Attitude: Acceptance of AI in healthcare. Perceived benefits and risks of AI in medicine. Trust in AI-powered systems.

- Current Practice of AI tools (e.g., medical search engines, diagnostic tools), Experience with AI-assisted learning, self-reported confidence in using AI in future medical practice.

Ethical approval:

Obtain ethical approval from the Institutional Review Board (IRB) of the AUMC. Obtain informed consent from all participating students. Ensure confidentiality and privacy of participant data.

Data Analysis:

Descriptive Statistics: Compute Frequencies, percentages, means, and standard deviations for Sociodemographic characteristics and AI KAP scores. Inferential Statistics: Chi-square test to compare AI KAP scores across different groups (e.g., year of study, gender). Data Analysis Software: SPSS, Excel; p-value < 0.05 was considered statistically significant.

3. Results: -

3.1. Sociodemographic Characteristics of Participants

A total of 200 medical students shared in the study. Participants were classified into three age groups as in Table 1: under 18 years, 18-20 years, and 21-23 years. Notably, the majority of participants (88.5%) fell within the 18-20 years age group. The study population consisted of (103)51.5% males and (97) 48.5% females, reflecting a nearly equal gender distribution and ensuring a balanced representation of both sexes.

The study includes a balanced gender representation across the two educational levels examined. In the first year, there is a marginal predominance of males, with 52 males compared to 48 females. Conversely, in the second year, the condition shifts slightly, with 51 males and 49 females. Overall, the distribution of males and females across both educational levels is relatively comparable

Table 2 provides a comprehensive overview of the information sources utilized by students, categorized according to their year of study in relation to artificial intelligence (AI). The dominance of social media and the Internet shows that the majority of students (81.5%) in both the first and second years rely heavily on these platforms for information, while the use of the curriculum is significantly lower, with only 18% of students utilizing it as a primary source of information**.**Minimal Reliance on Other Sources (0.5%)

Table 1 Demographic characteristics

age	male	female	Total	%	p-value
< 18	6	4	10	5	0.6
18-20	89	88	177	88.5	
21-23	8	5	13	6.5	
Total	103	97	200		
%	51.5 %	48.5%			

Table 2 Source of information regarding artificial intelligence (AI)

	education levels of students				
Source of information regarding artificial intelligence (AI):	**1rst year**	**2nd year**	**Grand Total**	**%**	p-value
Curriculum	**17**	**19**	**36**	**18**	**0.7**
Internet/social media	**82**	**81**	**163**	**81.5**	
other	**1**	**0**	**1**	**0.5**	
Grand Total	**100**	**100**	**200**		

The findings regarding the knowledge of artificial intelligence (AI) among the surveyed students are summarized in Figure 1, which illustrates the self-reported levels of AI knowledge among respondents. A significant portion of respondents (53.5%) reported a medium level of knowledge about AI. In contrast, 38% indicated a low level of knowledge, while only 8.5% claimed to possess a high level of knowledge.

3.2. Basic AI Knowledge

Table 3 presents the results of a survey examining the basic AI knowledge of students. The survey included five questions addressing key concepts in AI, including the definition of AI, its subtypes (deep learning and machine learning), and the role of labeled data in AI learning.

The survey findings reveal a substantial majority of respondents (93.5%) demonstrated a clear understanding of artificial intelligence; however, only 28.5% reported familiarity with machine learning, indicating a notable gap in knowledge regarding this AI subtype. Furthermore, merely 12.5% of participants possessed knowledge about deep learning, highlighting a significant deficiency in understanding this vital area of AI. In contrast, a considerable proportion of students (91.5%) acknowledged awareness of AI chatbots, suggesting a better grasp of specific AI applications. Additionally, a significant majority (87.5%) recognized the importance of labeled data in the training of AI systems, reflecting an understanding of the fundamental data-driven aspects of AI.

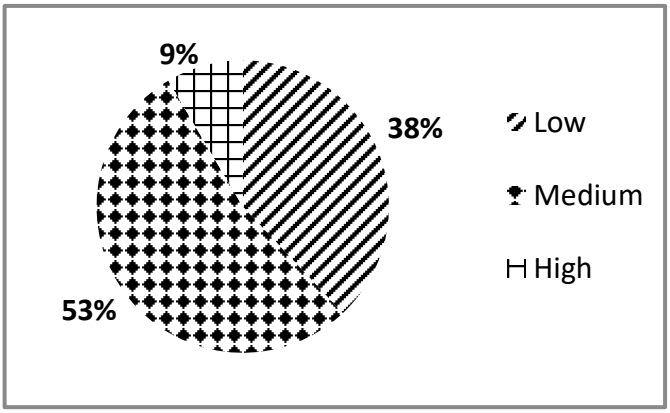

Figure 1 Rate your level of knowledge about AI:

Table 3 Questions on students' knowledge of AI.

Questions	yes N (%)	no N (%)	p-value
Do you know what artificial intelligence (AI) is?	187(93.5%)	13(6.5%)	<0.0000001
Do you know about machine learning (a subtype of AI)?	57(28.5%)	143(71.5%)	
Do you know about deep learning (a subtype of AI)?	25(12.5%)	175(87.5%)	
Have you ever heard of an AI Chatbot?	183(91.5%)	17(8.5%)	
For AI to "learn", it requires a large amount of labeled data (Information already processed by a human and clearly labeled)	175(87.5%)	25(12.5%)	

3.3. Attitude toward AI

The survey results reveal, as shown in Table 4, that a significant majority of respondents (87.5%) support the integration of artificial intelligence (AI) within their fields of study, although opinions on various aspects of AI are notably divided. Specifically, 64.5% of participants believe that AI can positively influence students' academic performance, while 35.5% disagree with this view. In the context of medical training, a substantial majority (70.5%) advocate for the inclusion of AI in training systems, reflecting confidence in its potential benefits. Conversely, a clear majority (68.5%) oppose the use of AI as a student assessment tool, raising concerns about its appropriateness in this role. Additionally, a significant portion of respondents (84%) acknowledge that AI poses security risks, underscoring the need for caution in its implementation. Furthermore, 84% assert that familiarity with AI will be essential for their professional endeavors after graduation, highlighting the importance of AI competency in the evolving job market. These findings illustrate the complex attitudes of university students toward AI, emphasizing both its potential advantages and the associated concerns.

3.4. AI Practices

The data presented in Table 5 highlights the engagement of medical college students with artificial intelligence (AI), revealing several key observations. A striking majority (98%) of students are not members of any AI or machine learning student organizations or clubs, indicating a lack of extracurricular involvement in this field. Additionally, only 6% have taken AI-focused courses outside their standard curriculum, suggesting limited exposure to formal AI education. In contrast, a significant proportion (85.5%) have utilized AI technologies or applications during their university studies, primarily for research and coursework. Furthermore, a substantial majority (92.5%) believe that AI has enhanced their understanding of academic concepts, underscoring its perceived value in their educational experience. These findings illustrate the current landscape of AI engagement among medical college students, highlighting both the limited formal involvement and the high utilization of AI technologies in their academic pursuits.

3.5. Chi-Square Analysis

The study investigated the association between demographic characteristics and AI knowledge among medical college students. No significant differences were found in AI knowledge across age groups, sex, or education levels. However, students who obtained information from the internet and other sources exhibited significantly higher AI knowledge compared to those who learned about AI through their curriculum. Additionally, students who rated their knowledge as high demonstrated significantly higher levels of knowledge. The majority of students (54%) rated their AI knowledge as moderate.

Table 4 Questions on students' attitudes toward AI.

Questions	Agree N (%)	Disagree N (%)	p-value
Do you support the application of artificial intelligence in your field of study?	175(87.5)	25(12.5)	<0.0000001
Does artificial intelligence have a positive impact on students' academic performance?	129(64.5)	71(35.5)	
Should artificial intelligence be part of the training system in the medical field	141(70.5)	59(29.5)	
Do you agree to use artificial intelligence? as a student assessment tool	63(31.5)	137(68.5)	
Does artificial intelligence pose a security risk? (e.g., data privacy)	168(84)	32(16)	
Do you think you will need experience with Artificial intelligence in your work after graduation	168(84)	32(16)	

Table 5 Questions on students' AI practices.

Questions	yes N (%)	no N (%)	P-value
1- Are you a member of any AI or Machine Learning clubs or student groups at your university?	4(2)	196(98)	<0.0000001
2- Have you taken any courses or workshops/trainings Focused on AI, outside your regular curriculum? Yes No	12(6)	188(94)	
3- Have you used AI technologies or applications during your university years? (e.g., for research or coursework) Yes No	171(85.5)	29(14.5)	
4- Has AI facilitated your academic concepts?	185(92.5)	15(7.5)	

Table 6 Association between sociodemographic characteristics and AI knowledge level.

Characteristics		N (%)	High Knowledge about AI N (%)	Low-Moderate Knowledge about AI N (%)	P-value
age groups	< 18	10(5)	6(62)	4(38)	0.9
	18-20	177(88.5)	111(63)	66(37)	
	21-23	13(6.5)	8(65)	5(35)	
sex	male	103(51.5)	67(65)	36(35)	0.4
	female	97(48.5)	58(60)	39(40)	
education levels	1rst year	100(50)	64(64)	36(36)	0.6
	2nd year	100(50)	61(61)	39(39)	
source of information regarding AI	curriculum	36(18)	23(64)	13(36)	0.8
	internet and others	146(82)	90(62)	56(38)	
Rate your level of knowledge about AI	low	76(38)	43(57)	33(43)	0.2
	moderate	107(54)	70(65)	37(35)	
	high	17(8)	13(77)	4(23)	

The data in Table 7 display the relationship between various demographic characteristics of individuals and their attitudes towards artificial intelligence (AI). For age groups, a higher proportion of individuals between the ages of 18-20 expressed a positive attitude towards AI, while those below 18 and between 21-23 showed more mixed feelings. Similarly, gender had a negligible impact on attitude, with a slightly higher proportion of males expressing positive attitudes compared to females. Educational level also had a minimal effect on attitudes, as both 1st and 2nd-year students showed similar positive and negative attitudes. The source of information regarding AI had a greater influence, with those who learned from the curriculum showing a stronger positive attitude, and those who relied on the internet and others showing more mixed feelings. Finally, participants with a moderate level of knowledge about AI had a higher proportion of positive attitudes, compared to those with low or high knowledge

Table 8 presents data on the dominance of actively and inactively practicing artificial intelligence (AI) among medical college students, categorized by various demographic and educational factors. Age groups show differences in AI practice between students aged 18-20 and those who are younger or older; the majority of 18-20-year-olds (88.5%) are actively practicing AI, while a considerably smaller proportion of other age groups engage in active AI practice. Gender displays no statistically significant difference in AI practice between male and female students, which is also true regarding education levels. Students who primarily obtain information about AI from the internet or other sources are slightly more likely to be actively practicing AI compared to those who rely on the curriculum. Surprisingly, students who assess their knowledge of AI as moderate are less likely to actively engage in AI practice compared to those who perceive their knowledge as either high or low.

Table 7 Association between sociodemographic characteristics and attitude level toward implementing AI.

Characteristics		n (%)	Positive Attitude n (%)	Negative Attitude n (%)	P-value
age groups	< 18	10(5)	7(72)	3(28)	0.9
	18-20	177(88.5)	125(70)	52(30)	
	21-23	13(6.5)	9(68)	4(32)	
sex	male	103(51.5)	76(74)	27(26)	0.3
	female	97(48.5)	65(67)	32(33)	
education levels	1rst year	100(50)	71(71)	29(29)	0.9
	2nd year	100(50)	70(70)	30(30)	
source of information regarding AI	curriculum	36(18)	24(66)	12(34)	0.57
	internet and others	146(82)	117(71)	47(29)	
Rate your level of knowledge about AI	low	76(38)	50(65)	26(35)	0.18
	moderate	107(54)	76(71)	31(29)	
	high	17(8)	15(88)	2(12)	

Table 8 Association between practicing AI and sociodemographic characteristics.

Characteristics		N (%)	Actively practicing AI N (%)	Inactively practicing AI N (%)	P-value
Age groups	< 18	10(5)	4(42)	6(58)	0.77
	18-20	177(88.5)	90(51)	87(49)	
	21-23	13(6.5)	7(51)	6(49)	
Sex	male	103(51.5)	51(50)	52(50)	0.8
	female	97(48.5)	49(51)	48(49)	
Education levels	1rst year	100(50)	50(50)	50(50)	1
	2nd year	100(50)	50(50)	50(50)	
Source of information regarding AI	curriculum	36(18)	18(50)	18(50)	0.9
	internet and others	146(82)	83(51)	81(49)	
Rate your level of knowledge about AI	low	76(38)	41(53)	35(47)	0.26
	moderate	107(54)	49(46)	58(54)	
	high	17(8)	11(66)	6(34)	

4. Discussion

The earlier chapters have outlined the results of our study on AI Knowledge, Attitudes, and Practices (AI KAP) among medical students. In this discussion, we will critically evaluate the levels of AI knowledge observed, explore the factors influencing student attitudes and practices towards AI, and examine how AI is applied in their current education and potential future careers. The majority of participants (88.5%) fall within the 18-20 age group, suggesting a focus on students in their early years of medical education. This will allow us to follow their evolution in AI KAP in the coming years of their study. The age groups are relatively balanced in terms of gender, with only slight differences in the number of males and females in each group. This is important for ensuring the findings are not biased towards one gender. This aligns with the characteristics of the participants, consistent with numerous studies conducted in this area, the majority of which focused on those age groups and maintained similar proportions between genders(15,17,19,23). The study emphasizes the significant influence of the internet and social media (81.5%) on student learning. In terms of social media as a source of information, this high percentage was also noted in several studies, including one conducted in the US (72%) and another in Lebanon (81.1%)(24,25). Although the internet offers access to a wealth of resources, it also raises concerns regarding the prevalence of misinformation and underscores the necessity for critical evaluation of online content, this is largely consistent with what was found by Jordanian research that a significant proportion of medical students (69%) reported using online resources for their education, highlighting a similar reliance on digital platforms for learning(15). Research conducted in Lebanon revealed that while students recognized the potential of AI in medicine, there were significant apprehensions about the reliability of information sourced from the internet (25)

Concerning the comprehension of artificial intelligence, 62% of the surveyed students assessed their understanding as being at a high to medium level. This suggests an acceptable understanding and a positive attitude towards the role of AI in medicine, although it is lower than the 70% and 85% exhibited by their Syrian and Jordanian medical student colleagues (17,26). The study reveals several important insights. A notable 93.5% of respondents demonstrated a clear understanding of artificial intelligence, indicating a strong foundational awareness of the topic within medical education. However, there is a significant knowledge gap regarding machine learning and deep learning, with only 28.5% and 12.5% familiarity, respectively, This finding aligns with similar studies conducted among healthcare students in Lebanon, Pakistan, and Vietnam (16,23,25) this gap could slows down students from effectively take advantage of advanced AI applications in healthcare, including predictive analytics and evidence based medicine. A high percentage of students (91.5%) are aware of AI chatbots, suggesting high engagement with practical AI applications. Additionally, 87.5% of participants recognized the importance of labeled data in AI systems, reflecting a solid understanding of the data-driven nature of AI, which is crucial for the effectiveness of AI models. The study tells a complex student's perspective on the incorporation of artificial intelligence into their education and future careers. A significant majority (87.5%) express strong support for AI integration, indicating enthusiasm for its potential benefits in enhancing educational experiences and future practices. This desire aligns with the findings of research conducted in Germany regarding medical students' attitudes toward AI (27). However, our participants' opinions are divided regarding AI's impact on academic performance, with 64.5% in favor and 35.5% against, reflecting uncertainty among some students about reliance on technology. Moreover, 70.5% of students support incorporating AI into medical training, indicating a willingness to embrace new teaching methods. This aligns with the conclusions of a study conducted among medical students in Western Australia found that a significant majority (87%) supported the incorporation of AI into medical curricula(28). On the other hand, 68.5% are against using AI for student assessments, expressing worries about fairness, transparency, and possible biases in AI systems. The importance of fairness and prejudice in AI is generally acknowledged by politicians, researchers, and the academic community(29-31). Additionally, 84% acknowledge the security risks linked to AI, emphasizing the importance of having proper training and guidelines for its safe use. Risk and security considerations are crucial, as AI systems may present new vulnerabilities and threats(32). We find that 84% of the study participants assert that skill with AI will be crucial for their professional endeavors post-graduation, underscoring the growing relevance of AI competencies in the healthcare job market, A study among Jordanian health professions students revealed moderate knowledge of artificial intelligence (AI), with many recognizing its importance in enhancing patient care and medical education, indicating a growing awareness of AI's relevance in their future careers. Similarly, research involving young pediatricians in France found that 80% expected AI to improve healthcare access and diagnostic assistance, reflecting a favorable attitude towards AI's role in their professional development. Additionally, a study on university students in Lebanon showed that 97.2% were familiar with AI, with 43% demonstrating a high level of knowledge, emphasizing the need for integrating AI education into curricula and reinforcing the notion that AI skills are essential for future professional endeavors(15,19,21).

The findings from the study reveal a complex landscape of engagement with artificial intelligence, characterized by a high utilization of AI technologies

(85.5% of students) in academic work, yet significant gaps in formal education and extracurricular involvement. Notably, 98% of students are not members of any AI or machine learning clubs, indicating a missed opportunity for collaborative learning and exploration of AI outside the classroom, Recent studies highlight the integration of AI technology in academic settings, emphasizing on its impact on student performance which reveal an independent High Utilization of AI in Education and explore the challenges and gaps in processing AI in Formal Education(33,34). Furthermore, only 6% have taken AI-focused courses, suggesting that medical training lacks sufficient this go in parallel with the Jordanian study which highlighted barriers such as lack of knowledge and curriculum gaps, suggesting that many students had not engaged with AI-focused courses on the other hand in Vietnam in a study on healthcare students found that while there was a general interest in AI, the actual knowledge and application of AI in their education were limited. This indicates that medical students, in general, have not had the opportunity to take AI-focused courses (15,23). Despite these gaps, 92.5% of students acknowledge that AI has enhanced their understanding of academic concepts, reflecting a positive perception of its role in education this supported by what professor Olaf Zawacki-Richter find in his study which is that AI applications, such as automated feedback systems and personalized learning platforms, significantly enhance students' comprehension and engagement with academic content(35)The results of the chi-square analysis will not be discussed, as they did not yield significant findings. However, the crosstab analysis examining the influence of demographic variables on AI comprehension and utilization has been included in this study. These results serve as a reference for future research on the same topic, allowing for comparisons of changes in the use of artificial intelligence driven by the impact of social, ethical, and demographic dynamics. The implications of these findings underscore the need for medical schools to develop curricula that incorporate AI education, encourage extracurricular engagement through AI-related clubs, prioritize ongoing professional development for students and faculty, promote research opportunities involving AI, and raise awareness about the significance of AI in medicine. Addressing these areas can better prepare students for a future where AI is integral to healthcare delivery

5. Conclusions:

The study offers helpful insights into the current state of AI knowledge, attitudes, and practices among medical students at AUMC. While students demonstrate a foundational understanding of AI and recognize its potential benefits in healthcare, significant gaps remain in their knowledge of advanced AI concepts such as machine learning and deep learning. Students generally support the integration of AI into medical education but express concerns about its use in assessments and the associated security risks. The high utilization of AI technologies for academic purposes contrasts with the limited formal education and extracurricular involvement in AI-related activities. These findings underscore the importance of addressing these gaps through curriculum development, extracurricular opportunities, and ongoing professional development to equip students with the necessary AI competencies for their future careers.

6. Recommendations:

1. Curriculum Development: Integrate AI education into the medical curriculum, covering both foundational and advanced AI concepts, including machine learning, deep learning, and ethical considerations.

2. Extracurricular Engagement: Encourage the formation of AI and machine learning clubs or student organizations to foster collaborative learning and practical application of AI technologies.

3. Professional Development: Provide ongoing training and workshops for both students and faculty to improve their comprehension and application of AI in healthcare.
4. Research Opportunities: Promote research initiatives that explore how AI is impacting medical education and patient care, encouraging students to participate in AI-related research projects.
5. Addressing Concerns: Develop guidelines and best practices for the ethical use of AI in medical education, particularly in student assessments, to address concerns about fairness, transparency, and bias.

ETHICAL DECLARATIONS

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Ethics Approval and Consent to Participate

The study adhered to ethical research guidelines. We obtained informed consent from all participants, and the confidentiality of responses will be preserved.

Consent for Publication

None.

Availability of Data and Materials

The franchisee author collected and stored the complete questionnaire forms.

Competing Interests

The authors declare that there are no conflicts of interest.

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Authors' Contributions

The authors contributed to the literature review and the writing of the manuscript. They have read and approved the final version of the manuscript.

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