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Knowledge, Perception, Practice and Barriers to Use Artificial Intelligence (AI) among Egyptian Medical Doctors

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Abstract

Back ground: Several studies highlight the impact of Artificial intelligence (AI) systems on healthcare delivery. AI driven tools have the potential to enhance diagnosis, prognosis, as well ashealth care planning. It is anticipated that AI will become an essential component of healthcare services in the near future, integrating into various facets of clinical care. Methods: A cross-sectional study utilizing an online questionnaire to assess the knowledge, perceptions, and practices related to AI among medical professionals was carried out. A total of 131 doctors from Cairo University Medical hospitals were selected through a convenient sampling method.

Results: Out of 131 doctors, 70 % were females. The median age of the participants was 37 years, with ages ranging from 24 to 79 years. The most represented specialty was internal medicine, accounting for 38.2% of the group. Among the utilized AI tools, Chat GPT was the most common, used by 68.3% of participants. The primary purpose for using such tools was plagiarism checks, which was chosen by 41.7% of the respondents. Additionally, over half of the participants expressed concerns regarding harmful/incorrect medical decisions, low credibility of information from, and the medico-legal implications associated with the use of AI models.

Conclusion:The results of this study highlight a pivotal moment for Egyptian medical doctors in the adoption of AI technologies. Although there is a solid understanding and favorable attitude toward AI, its practical implementation is still constrained by several obstacles.

Keywords: Artificial intelligence, Egyptian Doctors, Chat GPT

Introduction

Artificial intelligence (AI) refers to the use of computers and advanced technology, such as machine learning algorithms, to assemble and process data input from experts and analyze it. It analyzes this data to perform physical tasks and cognitive functions, to solve various problems, or make decisions comparable to that of a human being without explicit human interference ***(Al Hadithy et al., 2023).***

Several studies highlight the effects of AI systems on healthcare delivery. AI-based tools may improve prognosis, diagnostics, and care planning. It is believed that AI will be an integral part of healthcare services in the near future and will be incorporated into several aspects of clinical care.

Thus, many technology companies and governmental projects have invested in producing AI-based clinical tools and medical applications(***Esmaeilzadeh, 2020).*** An example is using AI in some tasks such as recognizing tumors or examining X-rays (***Ahmed , 2022).*** AI has been recently introduced in radiology; where it has been a revolutionary advancement as it minimizes potential errors and maximizes efficiency***(Abid et al., 2019).***

Generative Pre-trained Transformer (ChatGPT) has shown potential in various medical applications, such as identifying research topics, assisting in clinical and laboratory diagnosis, and providing updates and new developments to healthcare professionals. It also held promise in the development of virtual assistants to aid patients in managing their health ***(Dave et al., 2023).***
Furthermore, Chat GPT had been looked at to augment the response to pandemics or the integration with the global burden of disease to come up with a model to help in clinical and translational medicine***(Al-Tawfiq et al., 2023; Temsah et al., 2023).***

On the other hand, the use of Chat GPT and similar AI Chatbots in healthcare raises ethical and legal concerns, including potential copyright infringement, medicolegal complications, and the need for transparency in AI generated content ***(Dave et al., 2023;Gordijn and Have.,2023)***. Evaluating AI's accuracy in providing medical information and its ability to provide verified data for patients and healthcare workers is crucial ***(Park et al., 2019).*** With Chat GPT's recent emergence, there is few available data to assess healthcare workers' (HCWs) experience, which is crucial information, given the potential consequences to healthcare. Such research is highly needed to bridge the knowledge gap surrounding AI Chatbot integration in healthcare and provide insights to inform future interventions and policy development. This study aims to assess the knowledge, perception, and intended practices as well as obstacles to use AI among medical doctors in Cairo University hospitals.

Participants and Methods

Study design: This study is a cross-sectional study.
Study settings: participants were medical doctors working in Cairo University Hospitals. The study was conducted from January till March 2024
Inclusion criteria:
Doctors working inCairo University hospitals for more than 1 year
Acceptance to participate and complete the questionnaire.
Exclusion criteria:
Refusal to be included in this study.
Data collection tool:
A structured questionnaire (survey) was developed after intensive literature review and expert consultation. Online forms were distributed through social media platforms including email invitations, WhatsApp, and personal contacts of the research team. The survey was comprised of **four parts:**
The first part assessed the participants' demographic characteristics including age, sex, specialty, and highest academic degree achieved.
In the second part, participants answered questions about their knowledge and perceptions of AI. Those who had not used AI prior to the survey were specifically asked about their willingness to use it for healthcare purposes in the future.
The third part of the survey explored HCWs' uses and practice of AI and Chabot's for healthcare and research purpose.

The fourth part of the survey assessed the obstacles or barriers of using AI or Chabot's in medical field and research.

The questionnaire underwent testing in a pilot study involving 20 participants to evaluate its clarity, time demands, and to pinpoint any issues. The finalized version was then published online through social media platforms.

Sample size: According to the study by ***(Ahmed, 2022)*** 27.3% of doctors are aware of the application of clinical AI. Considering an alpha level of 5%, an estimated power of 80%, and a margin of error of 8%, the required sample size was calculated to be 119. To account for non-responses, this sample size was increased by 10%, resulting in a minimum requirement of 131 participants. The sample size calculation was performed using Epi-info software.

Statistical analysis: Data management and analysis were performed using Statistical Package for Social Sciences (SPSS) vs. 23. Numerical data was summarized using means and standard deviations or medians and ranges, as appropriate. Categorical data was summarized as numbers and percentages.Chi square or Fisher's tests were used (as appropriate) to compare between groups with respect to categorical data. All tests were two-sided. P-values < 0.05 were considered significant.

Ethical consideration: All performed procedures in the study followed the ethical standards of the institutional research committee and the 1964 Helsinki Declaration and its later amendments. Ethical approval was obtained from the National Cancer institute Ethical Committee (code EB2403-304-014).

Results

Table (1)

Personal characteristics of participants (n = 131)

Characteristics		Number	Percent
Age* (years) (Median age and range)		37 (24-79)	
Sex	Female	91	69.5
	Male	40	30.5
Specialty	Internal medicine	50	38.2
	Pediatrics	5	3.8
	Surgery	11	8.4
	Radiology	7	5.3
	Anesthesia	4	3.1
	Basic medicine (anatomy, physiology, Biochemistry, pharmacology)	13	9.9
	Clinical pathology	7	5.3
	Dentistry	1	0.8
	Public health/community medicine/family medicine	15	11.5
	Epidemiology/Biostatistics	6	4.6
	Doctor, NOS	12	9.2
Academic degree	Bachelor & MBBS	18	13.7
	Master	46	35.1
	MD	63	48.1
	Fellowship	4	3.1
Level of hospital / work	Academic	54	41.2
	Primary hospital	15	11.5
	Secondary hospital	9	6.9
	Tertiary hospital	53	40.5
Working experience (years)	≤5	26	19.8
	6-10	26	19.8
	11-15	37	28.2
	>15	42	32.1

* Variable is presented as median (range).

NOS: not otherwise specified

A total of 131 participants took part in this study.Three participants (2.2%) refused to complete the survey and were replaced to maintain the required sample size. The median age was 37 with ages ranging from 24 to 79 years. Approximately 70% of participants were females. The largest represented specialty was internal medicine, accounting for 38.2%. Individuals holding an MD (Doctor of Medicine)comprised 48.1% of the sample. Academic participants made up 41.2%, while those employed in tertiary hospitals accounted for 40.5%. About 32% of participants had more than 15 years of work experience. (Table 1).

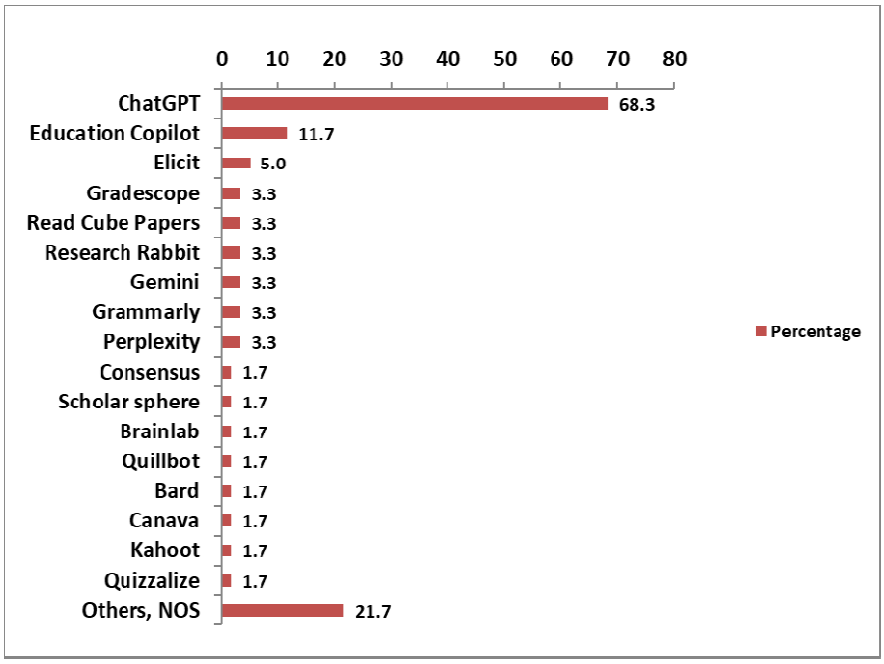
Approximately one-fifth (19%) of participants indicated that they had attended a course on AI. About two-fifths (37.4%) reported having used AI tools in their practice. Among those users, about one-third (33%) stated that their use was at least once every six months, while more than a quarter (29%) reported using them at least once a week. Half of the participants (51.0%) noted that they had encountered errors or incidents while working with AI tools. Additionally, about 46% of participants indicated that they utilized AI assistance in research and/or education(Table 2).

Table (2)

Previous knowledge and practice of the participants (n = 131)

Characteristics		Number	Percent
Have you attended a course on artificial intelligence?	No	106	80.9
	Yes	25	19.1
Have you ever used AI tools in practice?	No	82	62.6
	Yes	49	37.4
How often have you used AI tools in practice? (n = 49)	Every day	7	14.3
	At least once a week	14	28.6
	At least once a month	7	14.3
	At least once every six months	16	32.7
	Only once a year	5	10.2
Have there been any errors or accidents while working with AI tools? (n = 49)	No	24	49.0
	Yes	25	51.0
Have you ever used AI assistance in research/education?	No	71	54.2
	Yes	60	45.8

The most AI tools used by participants were ChatGPT (68.3%), followed by Education Copilot (11.7%, see Figure 1). In terms of their application in medical research, the primary reported purposes were plagiarism checks (41.7%), with translation and idea generation each cited by 25.0% of participants. Other mentioned uses included answering questions and summarizing articles. (Table 3).



NOS: not otherwise specified

Figure (1)

Percentage of participants using artificial intelligence tools
(Choosing more than one tool was allowed)

As for medical education, the most frequently chosen purposes were offering new teaching methods (26.7%) followed by creating exams (15.0%). Other mentioned purposes were cleaning up ideas and writing course specs (Table 3).

Table (3)

Purpose of artificial intelligence use among users (n = 60)

*Choosing more than one purpose was allowed.

Characteristics	Number	Percent
In medical research		
Drafting Manuscript	8	13.3
Translation	15	25.0
Idea Creation	15	25.0
Statistical Analysis	7	11.7
Appraising Medical Literature	13	21.7
Plagiarism check	25	41.7
Interpreting Finding	8	13.3
Proof Reading	9	15.0
Others	11	18.3
In medical Education		
Offer new teaching methods	16	26.7
Write Books	4	6.8
Create Exams	9	15.0
Correct Exams	3	5.0
Others	4	6.7

Six questions were designed to assess participants' perceptions of AI, with response options of "yes," "maybe," and "no." The first question inquired about their familiarity with computer skills/expertise, to which approximately 82% responded "yes." The second question asked if they were familiar with the term AI in health practice/research, and about half of participants answered with "yes." The third question evaluated their awareness of the broad applications of AI, with around 37% responding affirmatively. Participants were then asked if the survey increased their willingness to learn about or use AI models, and 70.2% answered "yes." In the fifth question, they were asked whether they would like hospitals to provide clinical AI related training, and about 82% responded positively. Finally, when asked if they believe that physicians who adopt clinical AI will replace those who do not, 29% answered "yes. (Figure 2).

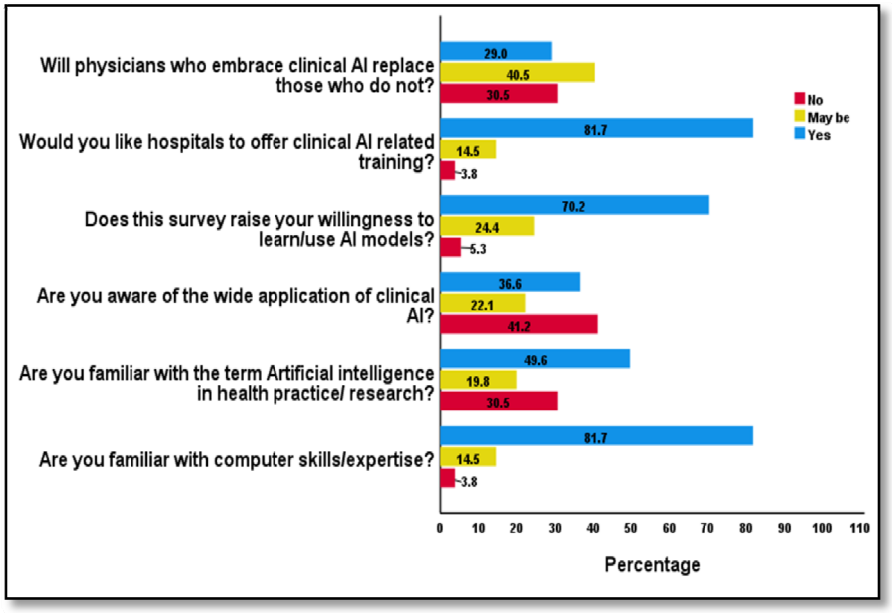


Figure (2)

Perception of artificial intelligence among participants

Table 4 assesses participants' acceptance of using AI across three medical domains: practice, education, and research. In the context of medical practice, 53.4% of participants either strongly agreed or agreed that AI can be utilized to recommend lifestyle changes. Approximately 44% expressed similar sentiments regarding AI's ability to report imaging exams, while two-fifths (40.5%) agreed or strongly agreed that AI can be used to measure blood pressure. In terms of medical education, about three-quarters (74.8%) of participants either strongly agreed or agreed that AI can provide new teaching methods. Nearly three-fifths (57.2%) concurred that AI can assist in correcting exams.For medical research, 68.7% of participants either strongly agreed or agreed that AI can be employed for plagiarism checks and corrections, while 66.5% felt similarly about its use for translation (see Table 4).

Table (4)

Acceptance to use artificial intelligence (n = 131)

Using AI tools	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
In Medical practice										
Evaluate blood pressure	6	(4.6)	47	(35.9)	37	(28.2)	30	(22.9)	11	(8.4)
Collect medical history	10	(7.6)	45	(34.4)	37	(28.2)	24	(18.3)	15	(11.5)
Report imaging exams	12	(9.2)	46	(35.1)	42	(32.1)	19	(14.5)	12	(9.2)
Perform digital diagnosis based on symptoms and medical exams	5	(3.8)	23	(17.6)	46	(35.1)	37	(28.2)	20	(15.3)
Recommend therapeutic strategies based on diagnosis validated by medical doctor	9	(6.9)	43	(32.8)	39	(29.8)	22	(16.8)	18	(13.7)
Renew previous prescriptions of medical doctors	13	(9.9)	39	(29.8)	41	(31.3)	26	(19.8)	12	(9.2)
Recommend lifestyle changes; (diet, physical activity) based on symptoms and the result of medical exams	18	(13.7)	52	(39.7)	34	(26.0)	11	(8.4)	16	(12.2)
Providing support to patients and families	15	(11.5)	39	(29.8)	36	(27.5)	21	(16.0)	20	(15.3)
In Medical Education										
Offer new methods of teaching	27	(20.6)	71	(54.2)	19	(14.5)	5	(3.8)	9	(6.9)
Write medical books	18	(13.7)	43	(32.8)	27	920.6)	30	(22.9)	13	(9.9)
Develop medical exams	17	(13.0)	50	(38.2)	34	(26.0)	16	(12.2)	14	(10.7)
Correct exams	18	(13.7)	57	(43.5)	33	(25.2)	13	(9.9)	10	(7.6)
In Medical research										
Provide an appraisal of medical literature	12	(9.2)	54	(41.2)	34	(26.0)	21	(16.0)	10	(7.6)
Idea creation	11	(8.4)	50	(38.2)	37	(28.2)	19	(14.5)	14	(10.7)
Drafting manuscripts	11	(8.4)	60	(45.8)	35	(26.7)	13	(9.9)	12	(9.2)
Proof reading of manuscript	17	(13.0)	61	(46.6)	30	(22.9)	12	(9.2)	11	(8.4)
Plagiarism check and correction	28	(21.4)	62	(47.3)	18	(13.7)	10	(7.6)	13	(9.9)
Statistical analysis	25	(19.1)	49	(37.4)	35	(26.7)	9	(6.9)	13	(9.9)
Interpretation of findings	15	(11.5)	42	(32.1)	30	(22.9)	29	(22.1)	15	(11.5)
Translation	23	(17.6)	64	(48.9)	26	(19.8)	3	(2.3)	15	(11.5)

Table 5 outlines the barriers to AI usage. Concerns regarding harmful or incorrect medical decisions/recommendations were expressed by 65.7% of participants, while 62.6% cited a lack of credibility in information from AI models, and 61.1% noted concerns about medico-legal implications, all either strongly agreeing or agreeing with these points (see Table 5).

Table (5)

Barriers against artificial intelligence use (n = 131)

Barriers	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Lack of credibility of information on AI Models may be a barrier against its wide use	14	(10.7)	68	(51.9)	29	(22.1)	9	(6.9)	11	(8.4)
I Worry about harmful or wrong medical decisions/ recommendations	28	(21.4)	58	(44.3)	28	(21.4)	11	(8.4)	6	(4.6)
AI tools are not yet well-developed	14	(10.7)	53	(40.5)	40	(30.5)	17	(13.0)	7	(5.3)
There are difficulties in integrating clinical AI into existing medical process	15	(11.5)	62	(47.3)	37	(28.2)	9	(6.9)	8	(6.1)
AI tools are not available in my setting	19	(14.5)	49	(37.4)	36	(27.5)	14	(10.7)	13	(9.9)
Medico-legal implications may limit AI use for patients' care	20	(15.3)	60	(45.8)	34	(26.0)	9	(6.9)	8	(6.1)
I do not know which AI model can be used in healthcare	13	(9.9)	57	(43.5)	43	(32.8)	10	(7.6)	8	(6.1)
I Worry about patients' confidentiality	21	(16.0)	47	(35.9)	41	(31.3)	13	(9.9)	9	(6.9)
I think there is resistance to adopt AI in medical decisions	13	(9.9)	52	(39.7)	47	(35.9)	10	(7.6)	9	(6.9)
I Worry about AI taking over human role in health care practice in the future	13	(9.9)	36	(27.5)	44	(33.6)	28	(21.4)	10	(7.6)

Table 6 displays several questions related to knowledge and perceptions of AI, categorized by various personal characteristics. The proportion of females familiar with the term AI in health practice/research was over twice that of males (p value = 0.045). Additionally, more than two-thirds of participants who had taken a course on AI held MD or PhD degrees (p value = 0.034) and were academics (p value = 0.030). Furthermore, academics accounted for more than half of those who had actually utilized AI assistance in research or education (p value = 0.018).

Table (6)

knowledge and perception in relation to different variables (n= 131)

		Have you attended a course on artificial intelligence?			Have you ever used AI tools in practice?		Have you ever used AI assistance in research/education?		Are you aware of the wide application of clinical AI?			Are you familiar with the term Artificial intelligence in health practice/ research?	
		No	Yes	No	Yes	No	Yes	Yes	May be	No	Yes	May be	No
Age	20-40	76 (71.7)	14 (56.0)	56 (68.3)	34 (69.4)	50 (70.4)	40 (66.7)	32 (66.7)	20 (69.0)	38 (70.4)	47 (72.3)	17 (65.4)	26 (65.0)
	41-60	25 (23.6)	10 (40.0)	22 (26.8)	13 (26.5)	19 (26.8)	16 (26.7)	12 (25.0)	8 (27.6)	15 (27.8)	15 (23.1)	8 (30.8)	12 (30.0)
	>= 61	5 (4.7)	1 (4.0)	4 (4.9)	2 (4.1)	2 (2.8)	4 (6.7)	4 (8.3)	1 (3.4)	1 (1.9)	3 (4.6)	1 (3.8)	2 (5.0)
	P value	0.242			1.000		0.629		0.702			0.926	
Gender	Male	32 (30.2)	8 (32.0)	22 (26.8)	18 (36.7)	23 (32.4)	17 (28.3)	16 (33.3)	7 (24.1)	17 (31.5)	21 (32.3)	3 (11.5)	16 (40.0)
	Female	74 (69.8)	17 (68.0)	60 (73.2)	31 (63.3)	48 (67.6)	43 (71.7)	32 (66.7)	22 (75.9)	37 (68.5)	44 (67.7)	23 (88.5)	24 (60.0)
	P value	0.860			0.234		0.615		0.684			0.045	
Medical degree	Bachelor	18 (17.0)	0 (0.0)	14 (17.1)	4 (8.2)	10 (14.1)	8 (13.3)	6 (12.5)	3 (10.3)	9 (16.7)	8 (12.3)	3 (11.5)	7 (17.5)
	Master	39 (36.8)	7 (28.0)	30 (36.6)	16 (32.7)	28 (39.4)	18 (30.0)	14 (29.2)	12 (41.4)	20 (37.0)	25 (38.5)	7 (26.9)	14 (35.0)
	MD	46 (43.4)	17 (68.0)	35 (42.7)	28 (57.1)	31 (43.7)	32 (53.3)	27 (56.3)	13 (44.8)	23 (42.6)	31 (47.7)	15 (57.7)	17 (42.5)
	Fellowship	3 (2.8)	1 (4.0)	3 (3.7)	1 (2.0)	2 (2.8)	2 (3.3)	1 (2.1)	1 (3.4)	2 (3.7)	1 (1.5)	1 (3.8)	2 (5.0)
	P value	0.034			0.335		0.675		0.828			0.761	
Level of hospital	Academic	37 (34.9)	17 (68.0)	31 (37.8)	23 (46.9)	23 (32.4)	31 (51.7)	26 (54.2)	9 (31.0)	19 (35.2)	26 (40.0)	13 (50.0)	15 (37.5)
	Primary hospital	14 (13.2)	1 (4.0)	13 (15.9)	2 (4.1)	12 (16.9)	3 (5.0)	2 (4.2)	7 (24.1)	6 (11.1)	5 (7.7)	3 (11.5)	7 (17.5)
	Secondary hospital	8 (7.5)	1 (4.0)	4 (4.9)	5 (10.2)	3 (4.2)	6 (10.0)	4 (8.3)	1 (3.4)	4 (7.4)	6 (9.2)	1 (3.8)	2 (5.0)
	Tertiary hospital	47 (44.3)	6 (24.0)	34 (41.5)	19 (38.8)	33 (46.5)	20 (33.3)	16 (33.3)	12 (41.4)	25 (46.3)	28 (43.1)	9 (34.6)	16 (40.0)
	P value	0.030			0.130		0.018		0.094			0.708	
working experience (years)	≤5	25 (23.6)	1 (4.0)	16 (19.5)	10 (20.4)	12 (16.9)	14 (23.3)	9 (18.8)	6 (20.7)	11 (20.4)	15 (23.1)	3 (11.5)%	8 (20.0)
	6-10	21 (19.8)	5 (20.0)	19 (23.2)	7 (14.3)	19 (26.8)	7 (11.7)	11 (22.9)	4 (13.8)	11 (20.4)	15 (23.1)	2 (7.7)	9 (22.5)
	11-15	29 (27.4)	8 (32.0)	21 (25.6)	16 (32.7)	19 (26.8)	18 (30.0)	11 (22.9)	10 (34.5)	16 (29.6)	16 (24.6)	12 (46.2)	9 (22.5)
	>15	31 (29.2)	11 (44.0)	26 (31.7)	16 (32.7)	21 (29.6)	21 (35.0)	17 (35.4)	9 (31.0)	16 (29.6)	19 (29.2)	9 (34.6)	14 (35.0)
	P value	0.108			0.619		0.185		0.918			0.26	

Data are presented as number (column percentage)

Discussion

The integration of Artificial Intelligence (AI) in health care presents both opportunities and challenges, particularly for medical professionals in Egypt. This discussion analyzes the knowledge, perception, practice, and barriers related to AI usage among medical professionals in Egypt, drawing on recent findings from the current study involving 131 participants.

The current study found that half of the participants were aware of the use of AI in healthcare practice and research. Furthermore, approximately two fifths recognized the extensive applications of clinical AI. A similar study in a Nigerian tertiary hospital revealed that most participating medical doctors reported their awareness about the wide use of AI in clinical practice ***(Ogbetere et al., 2024).***

Another study conducted in Pakistan found that while most doctors had basic knowledge of AI (***74***%), only a smaller percentage were aware of its specific medical applications (27.3%)***(Ahmed et al., 2022).***Research from Syria indicated that 70% of participants had prior knowledge about AI, but only 23.7% understood its applications in medicine ***(Swed et al., 2022).*** Additionally, a systematic review in China concluded that most physicians seem to be aware of the growing use of clinical AI; however, they often lack practical experience and relevant knowledge in this area***(Chen et al., 2022).***

The current study revealed that approximately one fifth of the participants had attended a course on AI, indicating a limited but growing interest in the subject.However, as notable two fifths reported having used AI tools in their practice. This discrepancy suggests that while formal education on AI may be lacking, there is an emerging trend of practical engagement with AI technologies.In contrast, a similar study conducted in Saudi Arabia found that 28% of participating radiologists had received training courses on AI ***(Alghamdiand Alashban,2023)***Meanwhile, approximately 25% of doctors in Nigeria reported incorporating AI into their medical practice ***(Ogbetere et al., 2024).***

Despite the expected benefits of AI-driven innovations in clinical medicine, several barriers hinder their acceptance. Among the participants in this study, the main reported barriers were lack of credibility of information on AI models, worrying about the harmful or wrong medical decisions or recommendations, as well as worrying about the medico legal implications. Other frequently reported barriers included challenges in integrating AI into current medical processes, concerns about patient confidentiality, and fears that AI might replace human roles in healthcare practice. These barriers reflect a broader apprehension towards integrating new technologies into established medical practices, particularly concerning patient safety and ethical standards. Similar barriers to AI use were reported by Bahraini doctors; where their main concerns were the future employment rates and the increased error rates posed by AI ***(Al-Medfa et al., 2023).***Fear of being replaced by AI was the main concern reported by German doctors ***(Weber et al., 2024).*** In contrast, Nigerian doctors considered inadequate funding and a lack of awareness as significant barriers faced in adopting artificial intelligence in a tertiary hospital in Nigeria ***(Ogbetere et al., 2024).***

The median age of participants was 37 years, with a notable representation of specialists in internal medicine (about two fifths), indicating that younger and possibly more “technology competent” professionals are more likely to engage with AI technologies. A study conducted in Saudi Arabia revealed that younger professionals, particularly males, might be more inclined to explore and utilize AI technologies effectively ***(Serbaya et al., 2024).***These findings underscore the notion that younger professionals in the medical field are generally more engaged with AI technologies due to their familiarity with technology and positive attitudes towards its integration into health care practices.
The perception of AI among the doctors surveyed in the current study shows a mix of optimism and caution. While about four fifths of participants reported being familiar with computer skills, only a half-acknowledged familiarity with the term "AI" in healthcare contexts. A substantial number (70.2%) expressed increased willingness to learn about AI after participating in the survey, and more than four fifths favored hospitals providing clinical AI-

In terms of practical use, the present study found that among those who used AI tools, about one third utilized them at least once every six months, while less than a third used them weekly. The most frequently used tool was ChatGPT (more than two thirds), primarily for tasks like plagiarism checks (two fifths) and translation (one quarter). Aligning with these findings, a study conducted in the

UK revealed that approximately one fifth of general practitioners reported using generative AI tools like Chat GPT in their clinical practice. Among these users, 29% utilized AI for generating documentation after patient appointments, while 28% employed it to assist with differential diagnosis ***(Charlotte et al., 2024).*** This indicates a growing trend in the practical use of AI tools among medical professionals.
Regarding the application of AI in medical education and research, about three quarters of doctors participating in the current study agreed that AI could offer new teaching methods. Despite these positive indicators, half of the participants reported experiencing errors or accidents while using AI tools, which raises concerns about reliability and safety. A broader acceptance of AI use in medical education was revealed by a survey performed on healthcare professionals; where 74.8% of participants believed that AI could introduce innovative teaching methods in medical education ***(American Medical Association., 2024).***

Conclusion

While the study revealed a foundational knowledge and positive perception of a sample of Egyptian doctors towards AI, practical application remains limited due to various barriers. Addressing these challenges through targeted training programs, increasing awareness about the reliability of AI tools, alleviating fears regarding job displacement associated with AI advancements and establishing clear ethical guidelines will be essential for fostering an environment where AI can effectively enhance healthcare delivery in Egypt.

Study limitations: This study used a convenience sample that may be prone to some biases and is less likely to fully represent the population.
Study recommendations: Training regarding AI tools, uses and how to overcome any related barriers should be available and regularly updated to improve doctors' awareness and engagement with recent technology.Future large scale studies are needed to include larger populations and increase the generalizability of results.

Declarations

Competing interests: The authors declare that they have no conflict of interest.
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Informed Consent : Informed consent was obtained from all participants included in the study.
Contributions
All authors equally participated in the conception and design of the work as well as analysis, work drafting, interpretation, and revision. All Authors have read and approved the final manuscript.
Consent for publication
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Availability of data and materials
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المعرفة، الإدراك، الممارسة والحواجز لاستخدام الذكاء الاصطناعي بين الأطباء المصريين

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الملخص العربي

مقدمة :

تركز العديد من الدراسات على تأثير استخدام نظام الذكاء الإططناعي على تقديم الرعاية الصحية. الأدوات التي تعتمد على الذكاء الاصطناعي لديها القدرة على تعزيز التشخيص والتوقعات، وكذلك تخطيط الرعاية الصحية. ومن المتوقع أن يصبح الذكاء الإصطناعي مكونا أساسيا في خدمات الرعاية الصحية في المستقبل القريب، حيث يندمج في جوانب مختلفة من الرعاية الإكلينيكية.

الطرق:

تم إجراء دراسة مقطعية باستخدام استبيان عبر الإنترنت لتقييم المعرفة والتصورات والممارسات المتعلقة الذكاء الاصطناعي بين المهنيين الطبيين. تم اختيار مجموعه ١٣١ طبيبا من مستشفيات جامعة القاهرة الطبية من خلال طريقة أخذ العينات المناسبة

النتائج:

من بين ١٣١ طبيبا ، شكلت الإناث ٧٠%. كان متوسط عمر المشاركين ٣٧ عاما ، وتراوحت الأعمار ما بين ٢٤ و ٧٩ عاما. كان التخصص الأكثر تمثيلا هو الطب الباطني(٣٨.٢%). كان الغرض الأساسي من استخدام هذه الأدوات هو فحوصات الإقتباس ، والتي تم اختيارها من قبل ٤١.٧٪ من المشاركين في البحث. بالإضافة إلى ذلك ، أعرب أكثر من نصف المشاركين عن مخاوفهم بشأن القرارات الطبية الضارة / غير الصحيحة ، وانخفاض مصداقية المعلومات الواردة ، والتداعيات الطبية والقانونية المرتبطة باستخدام نماذج الذكاء الاصطناعي.

الإستنتاج:

تسلط نتائج هذه الدراسة الضوء على لحظة محورية للأطباء المصريين في اعتماد تقنيات الذكاء الاصطناعي. على الرغم من وجود فهم قوي وموقف إيجابي تجاه الذكاء الاصطناعي ، إلا أن تطبيق استخدامه عمليا لا يزال مقيدا بالعديد من العقبات

الكلمات المفتاحية : **Chat GPT**
الذكاء الاصطناعي , الأطباء المصريون