

Original Research Article

Exploring the awareness, perceptions, and beliefs towards artificial intelligence chatbots and ChatGPT among academicians and students in Saudi Arabia: a cross-sectional study

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Abstract

Purpose: To determine the awareness, perceptions and beliefs of healthcare academicians and students towards ChatGPT and other similar artificial intelligence (AI) chatbots.

Methods: This cross-sectional study was conducted over a period of four months in 2024 and involved healthcare students and academicians in Saudi Arabia. To examine respondents' awareness, attitudes and beliefs about ChatGPT, a standardized pre-validated questionnaire was administered.

Results: Three hundred and ninety-two healthcare students completed the survey. Among the surveyed respondents, 350 (89.3 %) were students and 26 (6.6 %) were assistant professors. More than half of the respondents claimed that they were familiar with computer skills while 174 (44.4 %) were familiar with the term "ChatGPT". Among respondents, 70.7 % believed ChatGPT would increase productivity and 69.4 % thought it could positively influence education. In addition, almost two-thirds of them were comfortable using ChatGPT in healthcare practice. Most (71.2 %) of the respondents revealed that ChatGPT is deemed untrustworthy while 83.4 % expressed concern about the model's potential to provide inaccurate or harmful recommendations.

Conclusion: This study shows varying levels of awareness of ChatGPT among respondents. Furthermore, about half of the respondents using ChatGPT show positive beliefs and agree that language models would increase productivity and positively influence education.

Keywords: ChatGPT, Language models, Productivity, Healthcare students, Academics, Assignments

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INTRODUCTION

ChatGPT, a cutting-edge technology, is gaining popularity in the education and healthcare sectors, with significant number of individuals interacting with artificial intelligence (AI) powered chatbots and virtual assistants [1-3]. It employs a massive language model to generate human-like answers to user inputs, making conversations more natural and engaging [4] and it is also

viewed as a valuable tool for academics and students to generate text-based interactions and quickly complete academic duties [1].

The power of ChatGPT and AI in healthcare is truly transformative [5,6]. Despite their use in various activities and academics, these technologies streamline communication between healthcare providers and patients, offering real-time assistance and guidance on research,

development and various healthcare-related tasks [6,7]. ChatGPT efficiently answers patients' queries, provides information on symptoms and treatment options and even schedules appointments with healthcare professionals [8]. Understanding how ChatGPT works and its features will help users navigate conversations more successfully and maximize the technology's potential [1,8]. Also, being aware of ChatGPT raises ethical concerns regarding AI, such as bias and privacy, pushing users to think critically about their interactions with AI-powered services [9].

Academics and students have different perspectives on ChatGPT. Some academics consider it a useful tool for students to swiftly acquire knowledge and seek clarification on complex issues [10,11]. Students, on the other hand, have mixed views on ChatGPT [12,13]. Some see it as a valuable resource that enhances their learning experience, while others remain skeptical about its effectiveness [12,13]. Overall, beliefs toward ChatGPT among academicians and students range from enthusiasm to skepticism, highlighting the need for further studies and exploration of its role in education [5,10-14]. Academicians perceive ChatGPT as a useful platform for engaging with students more personally and interactively, thereby fostering a deeper understanding of complex concepts [5,10,14].

In Saudi Arabia, awareness, perceptions and beliefs toward ChatGPT among academicians and students are mixed [6,7]. As a relatively new technology, there is a general lack of awareness among both groups about ChatGPT and its potential applications in academic settings [7,11]. Similarly, students' opinions of ChatGPT vary; some believe it will help them develop better study and research skills, while others are concerned about security and privacy concerns [15]. To promote a better understanding of ChatGPT's potential and limitations, academics and students in Saudi Arabia need to be better informed and engage in more conversations about it. Therefore, this study aimed to assess the awareness, perceptions and beliefs of academic and healthcare students toward ChatGPT and other similar AI chatbots.

METHODS

A cross-sectional investigation was carried out between academics and students over 4 months in 2024. A self-administered questionnaire was distributed online. This study included academic staff working in some Saudi Universities and healthcare students. Participants were excluded

from the study if they did not fit the inclusion criteria. Before data collection, the Institutional Review Board (IRB) from the College of Pharmacy at Taibah University in Madina, Saudi Arabia, approved the study (approval no. COPTU-REC-80-20231006). In addition, participants confirmed their voluntary involvement and comprehension of the study's goals and rights by responding to a specific question.

The questionnaire was derived from earlier studies [1,7,16] and divided into five sections. Section one considered demographics including age, gender, professional classification and college of employment (n = 8 items). Four items in part two evaluated respondents' computer proficiency, comfort level, familiarity with and thoughts on ChatGPT and other comparable AI chatbots while the third section comprised six items that used multiple-choice and binary questions to gather data on ChatGPT awareness. Part four used a five-point Likert scale to collect data on participants' perceptions toward ChatGPT (10 items) and ten items examining perceived obstacles to implementing ChatGPT in clinical practice on a binary scale (Yes/No) were included in the final portion.

Following the draft of the questionnaire, its content, flow and administration time were evaluated by a panel of experts including a professor from the College of Pharmacy. For consistency and dependability, a pilot study was carried out using academics and students who were chosen at random. The survey was disseminated electronically through Google Forms on social media sites like Facebook, Twitter and WhatsApp. Data was gathered using convenience sampling until the necessary sample size was reached.

Data analysis

Statistical Package for the Social Sciences (SPSS), version 27 (SPSS Inc., Chicago, Illinois), was used to analyze the data. Continuous variables were represented by mean $\pm$ standard deviation (SD), whereas descriptive statistics, such as frequencies and percentages, were computed for categorical variables.

RESULTS

Socio-demographic characteristics of the participants

The Cronbach's alpha, used to evaluate questionnaires' reliability, was 0.75, demonstrating both validity and reliability. All

respondents (392) finished the survey. Of the responses received, 184 (46.9 %) were males and 208 (53.1 %) were females. Among them, 166 (42.3 %) specialized in the College of Pharmacy and the majority of participants were aged 18 to 22 years, totaling 322 (82.1 %). Of the survey participants, 350 (89.3 %) were students and 26 (6.6 %) were Assistant Professors. In terms of experience, 34 (8.7 %) had 1 - 2 years of experience. Table 1 displays the socio-demographic characteristics of the participants studied.

Table 1: Socio-demographic characteristics of the participants

Variable	Frequency (n)	Percentage (%)
Gender		
Male	184	46.9
Female	208	53.1
Age (years)		
18-22	322	82.1
23-30	30	7.7
31-35	10	2.6
36-40	18	4.6
>41	12	3.1
Nationality		
Saudi	382	97.4
Non-Saudi	10	2.6
Expertise		
Pharmacy	166	42.3
Nursing	78	19.9
Dentistry	7	1.8
Applied medical science	66	16.8
Medicine	52	13.3
Science	23	5.9
Profession		
Researcher	6	1.5
students	350	89.3
Assistant Professor	26	6.6
Associate Professor	9	2.3
Professor	1	0.3
Years of experience		
Less than a year	3	0.8
1-2 years	34	8.7
2-4 years	27	6.9
5-10 years	11	2.8
11-15 years	7	1.8
>15 years	8	2.0
I am student	302	77.0

Perceptions and awareness of participants towards ChatGPT

More than half of the participants claimed that they were familiar to some degree with computer skills and expertise, while 174 (44.4 %) were familiar to some degree with the term "ChatGPT". Almost two-thirds of them were

comfortable to some extent using ChatGPT in healthcare, while 277 (70.7 %) claimed that this survey raised their interest in reading about ChatGPT and other AI models, as shown in Table 2.

Table 2: Computer Skills, familiarity, comfort and perceptions towards ChatGPT of the Participants

Variable	Frequency (n)	Percentage (%)
Your computer skills		
Not so familiar	89	22.7
Familiar to some degree	235	59.9
Very familiar	68	17.3
Familiarity with ChatGPT?		
Not familiar	123	31.4
Familiar to some extent	174	44.4
Very familiar	95	24.2
Comfort level in using ChatGPT?		
Not comfortable	79	20.2
Comfortable to some extent	237	60.5
Very Comfortable	76	19.4
Has this survey increased your interest in reading about ChatGPT and other AI models?		
Yes	277	70.7
No	115	29.3

Regarding the source of awareness of ChatGPT, 190 (48.5 %) of the participants knew it through social media and 223 (56.9 %) of the participants had used ChatGPT or similar language models. While 212 participants (54.1 %) had accessed or signed up for ChatGPT, more than half of them had posed a query to the AI program (Table 3).

Regarding participants' beliefs on ChatGPT, as presented in the article, 158 (40.3 %) viewed the technology neutrally. A total of 277, or 70.7 % of the participants, believed that language models like ChatGPT would enhance productivity. The concept that language models positively influence education was strongly supported by 272 participants (69.4 %), as illustrated in Table 4 and Table 5.

Perceived barriers to the application of ChatGPT in medical settings

Considering alleged barriers to the application of ChatGPT in medical settings, the AI Model (ChatGPT) was deemed untrustworthy by 71.2 % of respondents, while 83.4 % expressed concern about the model's potential to provide inaccurate or harmful recommendations. Approximately two-thirds of participants (61 %) felt AI Chatbots were underdeveloped, and nearly half of the

participants (49 %) lacked a ChatGPT option in their configuration. Of the participants, 57.1 % were not familiar with AI Chatbots. Furthermore, participants were concerned about patient confidentiality in 74.5 % of cases, and AI replacing human workers in healthcare in 65.6 % of cases. Moreover, 82.5 % of respondents said they would not employ AI Chatbots when making medical judgments (Table 6).

DISCUSSION

The current study sought to assess healthcare students' and academicians' awareness and beliefs regarding the use of ChatGPT and other similar AI chatbots. This study could significantly contribute to the literature on academic and healthcare settings among undergraduates and faculty members. Although there is limited literature on the perspectives of healthcare students and academicians, most of the existing literature focuses on undergraduate students [3,16]. This study aims to raise significant awareness among healthcare industries and professionals about how these beliefs and attitudes contribute to the advancement of artificial intelligence by overcoming barriers to better utilize ChatGPT in academic settings by students and faculty, as well as clinical settings. The results of this study may also serve as a guide for much-needed future investigations.

Overall, the findings indicated that 19.4 % of respondents felt comfortable using ChatGPT, although less than half were familiar with it. Furthermore, the vast majority of respondents expressed an interest in learning more about ChatGPT and other AI models after reading this survey. These results are in disagreement with previous findings [15]. For example, Sallam *et al* surveyed 458 undergraduate students and showed that only 23.9 % of the undergraduate students knew of ChatGPT before participation and 11.3 % of them self-reported ChatGPT use before the study [15]. Another study among Saudi academicians found a high level of awareness, but only 15.9 % felt comfortable using ChatGPT in their regular work [17]. Similarly, a recent study by Acosta-Enriquez *et al* found that students had solid knowledge and positive perceptions of ChatGPT, but past studies suggested that this does not guarantee its effective uptake and use [18]. These findings suggest that users' trust and reliance on ChatGPT are increased by addressing privacy issues and implementing security measures.

With regards to utilization, 56.9 % of the residents had already used ChatGPT, while 54.1 % of them had signed up for it. Additionally, 48.5 % of them revealed that their main source of information about ChatGPT was social media.

Table 3: Awareness of ChatGPT among university students

Variable	Frequency (n)	Percentage (%)
Have you used ChatGPT?		
Yes	223	56.9
No, not yet	148	37.8
I don't intend to use them	21	5.4
How are you aware of ChatGPT?		
Searching online	65	16.6
Friends	103	26.3
Social media	190	48.5
Other	34	8.7
Have you used ChatGPT or registered for an account?		
Yes	212	54.1
No	180	45.9
Have you questioned ChatGPT?		
Yes	205	52.3
No	187	47.7
What possible consequences could ChatGPT have for your professional life?		
Positive	226	57.7
Negative	26	6.6
I don't know	140	35.7
Are you planning to make substantial changes in your career plans because of ChatGPT and other AI Chatbots?		
Yes	69	17.6
No	114	29.1
Maybe	209	53.3

Table 4: Participants' beliefs about the use of ChatGPT

Variable	Frequency (n)	Percentage (%)
<i>Do you generally view this ChatGPT technology positively or negatively?</i>		
Very positive	73	18.6
Positive	143	36.5
No opinion	158	40.3
Negative	16	4.1
Very negative	2	0.5
<i>I believe ChatGPT can boost productivity</i>		
Completely agree	96	24.5
Somewhat agree	181	46.2
No opinion	94	24
Somewhat disagree	17	4.3
Strongly disagree	4	1.0
<i>Language models, in my opinion, can improve education</i>		
Completely agree	120	30.6
Somewhat agree	152	38.8
No opinion	95	24.2
Somewhat disagree	18	4.6
Strongly disagree	7	1.8
<i>Language models are someone I would trust to manage customer service and serve as a conduit for government organizations</i>		
Completely agree	51	13
Somewhat agree	108	27.6
No opinion	142	36.2
Somewhat disagree	57	14.5
Strongly disagree	34	8.7
<i>I worry that language models could produce discriminatory or prejudiced content</i>		
Completely agree	57	14.5
Somewhat agree	122	31.1
No opinion	161	41.1
Somewhat disagree	39	9.9
Strongly disagree	13	3.3
<i>I worry that language models could produce inaccurate or nonsensical content</i>		
Completely agree	68	17.3
Somewhat agree	140	35.7
No opinion	134	34.2
Somewhat disagree	39	9.9
Strongly disagree	11	2.8
<i>I'm concerned that individuals may become overly reliant on these technologies</i>		
Completely agree	162	41.3
Somewhat agree	114	29.1
No opinion	86	21.9
Somewhat disagree	18	4.6
Strongly disagree	12	3.1

Moreover, more than half of them agreed that ChatGPT is likely to positively influence their professional career. The positive views and utilization of ChatGPT, due to its simplicity and usefulness, have a substantial impact on students' perceptions [16]. Future studies could explore in depth the elements that lead to the development of these views.

The current findings reveal various beliefs about ChatGPT among respondents. For example, the majority believed that ChatGPT would increase productivity and positively influence education. One-fourth of respondents trusted that these chatbots could handle customer service and

interface with government agencies. These findings were consistent with earlier studies among academicians, where most respondents had a positive attitude towards ChatGPT and believed it could increase productivity. Additionally, the majority of academicians in previous studies strongly believed that ChatGPT could have a positive effect on learning [17]. In the present study, slightly fewer than half of the participants concurred that ChatGPT might provide biased information. In a previous study, 66.7 % of participants strongly believed that ChatGPT could produce biased information, which is fairly similar to this finding [7].

Table 5: Participants' beliefs about the use of ChatGPT (*continued*)

Variable	Frequency (n)	Percentage (%)
<i>I'm concerned that these technologies could develop sentence or intelligence and endanger people</i>		
Completely agree	78	19.9
Somewhat agree	106	27
No opinion	113	28.8
Somewhat disagree	51	13
Strongly disagree	44	11.2
<i>I am worried about potential job losses due to these technologies</i>		
Completely agree	102	26
Somewhat agree	132	33.7
No opinion	91	23.2
Somewhat disagree	49	12.5
Strongly disagree	18	4.6
<i>I think this technology's benefits exceed its drawbacks</i>		
Completely agree	71	18.1
Somewhat agree	152	38.8
No opinion	138	35.2
Somewhat disagree	18	4.6
Strongly disagree	13	3.3

Table 6: Challenges in using ChatGPT in healthcare practice

Variable	Frequency (n) Yes	Percent (%) No
Lack of credibility of data in ChatGPT.	279(71.2)	113(28.8)
Worry about making the wrong medical decisions	327(83.4)	65(16.6)
Unavailable at my university	192(49)	200(51)
ChatGPT is not yet well developed	239(61)	153(39)
Medical and legal considerations of employing artificial intelligence for patient care	258(65.8)	134(34.2)
I don't know which AI model can be used in healthcare	314(80.1)	78(19.9)
Unfamiliarity	224(57.1)	168(42.9)
Worry about confidentiality	292(74.5)	100(25.5)
Resistance to adopting AI Chatbots in medical decisions	281(71.7)	111(28.3)
Worry about AI taking over human roles	257(65.6)	135(34.4)

Moreover, respondents were very concerned that language models could produce inaccurate or illogical information. The findings dispel common misconceptions and gaps in knowledge about ChatGPT and offer practical guidance on how to adequately, consistently and effectively inform respondents about the benefits, drawbacks and hazards of ChatGPT in academic and healthcare settings.

Despite the wide variety of uses of ChatGPT for students and academicians, it's worth noting that ChatGPT is most typically used in scientific writing and healthcare. Its benefits in healthcare practice include cost savings, documentation, individualized medicine and enhanced health literacy [14].

Limitations of this study

First, the sample size is small; nonetheless, effort was made to include all students and professors

working in healthcare colleges at the study site. Secondly, the study used self-administered questionnaires, which introduce social desirability biases. Furthermore, only the western region was included in the study, which restricted how broadly the results could be applied. The majority of earlier studies were limited to professionals therefore, this study is the first of its sort in Saudi Arabia.

CONCLUSION

This study shows varying levels of awareness of ChatGPT among respondents. Majority of the respondents use ChatGPT and show positive beliefs, agreeing that language models increase productivity and positively influence education. In addition, most of them indicate that there is a need for more education and training in the field of ChatGPT and other similar AI chatbots.

DECLARATIONS

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None.

Ethical approval

Research Ethics Committee in the College of Pharmacy, Taibah University, Saudi Arabia, approved this study (COPTU-REC-80-20231006).

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Conflict of interest

No conflict of interest is associated with this work.

Contribution of authors

We declare that this work was done by the author(s) named in this article, and all liabilities pertaining to claims relating to the content of this article will be borne by the authors.

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