Original Article

Assessing Undergraduate Medical Students' Awareness Regarding the Use of ChatGPT as an Educational Tool: A Cross-Sectional Survey

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Received: 1st February, 2024
Accepted: 27th March, 2024
Accepted: 29th April, 2024

DOI: https://doi.org/10.51846/jucmd.v3i2.2996

Abstract

Objective: To examine the level of knowledge, present utilization, and opinions of undergraduate students on the application of ChatGPT for educational objectives.

Methodology: This cross-sectional study was carried out at a private medical institution in Pakistan and included 219 participants from various academic years. The data was gathered by employing a pre-tested, structured survey form generated through Google Forms after obtaining informed consent. The gathered data underwent descriptive and inferential analyses using SPSS software version 26.0.

Results: Out of the 219 students who were invited, 198 students completed the survey, resulting in a response rate of 90.41%. The average age of the participants was 22.48 ± 0.56 years. Out of the total student population, 92.4% were acquainted with ChatGPT, but 25.9% had never utilized it for educational endeavours. Merely 1% of individuals reported using it frequently, whereas 44.2% used it on occasion. The students exhibited favourable perceptions: 61.6% expressed an improved comprehension, 85.9% placed importance on immediate availability, and 81.3% acknowledged the significance of individualized instruction. The concerns mentioned encompassed information accuracy (65.5%), privacy issues (48.7%), and potential overreliance (42.1%). Proposed enhancements encompassed instantaneous updates, heightened precision, and seamless connectivity with educational systems. An overwhelming majority of participants (78.7%) expressed a strong intention to continue using ChatGPT in the future.

Conclusion: The findings provide new light on how ChatGPT might be used in medical education. It reveals positive views, major problems, and suggestions for its use. Even though there were some problems, most people still wanted to use ChatGPT in the classroom. It draws attention to the probable influence on medical education's trajectory in the future.

Keywords: Artificial Intelligence, ChatGPT, Medical Students, Medical Education.

Introduction

Technological innovations have significantly affected the field of medical education. An increasing development in this context is the integration of artificial intelligence, namely Chat Generative Pre-Trained Transformers (ChatGPT), into medical education.[1]

This indicates a sudden alteration in how medical students get information, interact with learning resources and acquire essential clinical skills. Medical students can partake of AI enabled virtual assistants, chatbots and modules through ChatGPT which uses natural language processing to enable dialogue. It allows personalized learning experiences, immediate access to medical knowledge and develops problem-solving skills.[2] The introduction of ChatGPT into the teaching of medicine mirrors the current worldwide shift as universities implement AI for traditional pedagogies.[3] Medical students' responsibilities are growing with changes in healthcare delivery. Today's doctors need not only a deep understanding of the basics of medicine but also competence in technology, adaptability, and knowledge on how to effectively use artificial intelligence tools in clinics.[4] The learning of these abilities begins in medical schools.[5] Hence, it is mandatory to apprehend the current trends and the implications of ChatGPT in Abwa Medical College towards medical education.

This study aims to establish how much our youth understand about the educational use of ChatGPT. It will consider such issues as what drives AI-powered educational tools and evaluate possible advantages, obstacles and readiness of students for collaboration with such systems based on artificial intelligence.

Methodology

To assess the undergraduate medical students' awareness, a cross-sectional survey was administered at Pakistan's ABWA Medical College. A one-year ethical clearance was granted by ABWA Medical College's Institutional Ethical Committee (No. 834/2023). The study took around seven months to complete, beginning in June 2023 and ending in January 2024. The 219 participants in this poll represent a range of academic years at the institution. After receiving a thorough description of the study's features, the students gave their consent.

Following standard procedures for calculating survey sample sizes allowed us to arrive at an appropriate number of participants for this investigation. The sample size for this research was 500 ABWA Medical College medical students. With a 5% margin of error, we assumed that the outcome factor would occur 50% of the time in the population. For this investigation, a 95% confidence level was used. This sample size ensures that the study has adequate statistical power to detect significant differences or associations among variables of interest with a con-

fidence level of 95%. The data was gathered using a pre-tested, standardized questionnaire that was conducted through Google Forms. The purpose of the questionnaire was to gather data regarding the usage patterns of ChatGPT, the perspectives of students, the benefits and limitations, and their future intentions to use ChatGPT in an educational context. The data analysis was conducted using the SPSS version 26.0 program. The descriptive statistics provided an analysis of usage trends and student perceptions regarding the application of ChatGPT.

Results:

Out of 219 medical students, 198 completed an online survey questionnaire, resulting in an impressive overall response rate of 90.41% (refer to Table 1). The study participants were on average 22.48 + 0.56 years old. The survey included representation from every academic year of the Medical Bachelor's Degree program. The 4th and 5th-year medical students comprised the largest groups, contributing 24.4% and 24.2%, respectively. In contrast, the 1st-year medical students made up the smallest cohort, comprising only 11.6% of the respondents. Table 1 shows the demographic characteristics of the study participants. The gender distribution was relatively balanced, with 52.5% of respondents identifying as male and 47.9% as female. The majority of participants were between the ages of 21-23 years, comprising 55.5% of the sample. The distribution across different age groups included 16.6% aged 19-20 years, 26.2% aged 24-26 years, and only 1.01% aged above 26 years. These demographic details provide a comprehensive overview of the study participants, setting the stage for further exploration of their perceptions and experiences with Chat Generative Pre-Trained Transformers (ChatGPT) in the subsequent sections of the research findings.

Table 1: Demographic characteristics of study participants in the cross-sectional survey

Demographic Characteristics	Study Participants (n=198)	Percentage (%)
Gender		
Male	104	52.5
Female	95	47.9
Age		
19- 20 years	33	16.6
21-23 years	110	55.5
24- 26 years	52	26.2
>26years	2	1.01
MBBS Year		
1st Year	23	11.6
2nd Year	35	17.6
3rd Year	43	21.7
4th Year	48	24.4
5th Year	48	24.2

As part of the survey, we analysed the participants' familiarity with ChatGPT. Of all the participants, 182 accounting for 92.4% were familiar with ChatGPT, while 15 participants making up 7.6% had not heard of or did not know about it. Participants were also asked to rate their frequency of ChatGPT usage. Only 2 participants accounting for 1% reported using ChatGPT very frequently, 87 participants comprising 44.2% reported occasional usage, 57 participants accounting for 28.9% reported frequent usage, while 51 participants making up 25.9% reported rarely or never using ChatGPT. Participants were asked to rate their perception of the usage of ChatGPT. The participants can choose multiple options for the question. Out of the total participants,122 participants (61.6%) agreed that ChatGPT enhances understanding of medical concepts and improves problem-solving skills while 170 participants (85.9%) agreed that ChatGPT provides instant access to medical knowledge and 161 participants (81.3%) agreed that ChatGPT personalizes the learning experience (Figure 1).

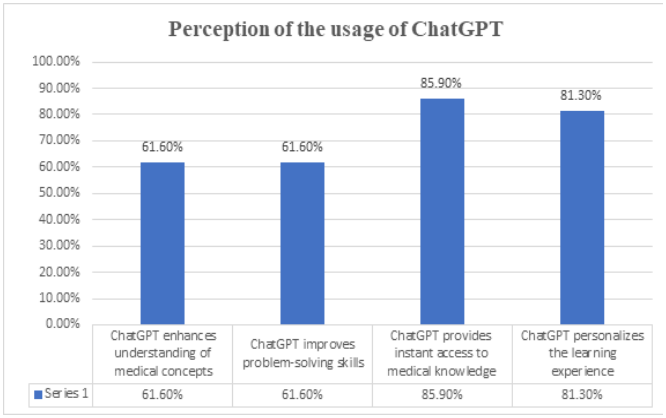

Figure 1: Bar chart of responses about the perception of usage of ChatGPT

During a survey, 198 ChatGPT users were asked to share their concerns or challenges they faced while using the platform. The participants can choose multiple options for the question. Out of these participants, 129 individuals (65.5%) expressed concerns about the accuracy of information provided by ChatGPT. Additionally, 96 participants (48.7%) were worried about privacy and data security issues while using the platform, while 83 participants (42.1%) felt that overreliance on ChatGPT was a challenge (Figure 2)

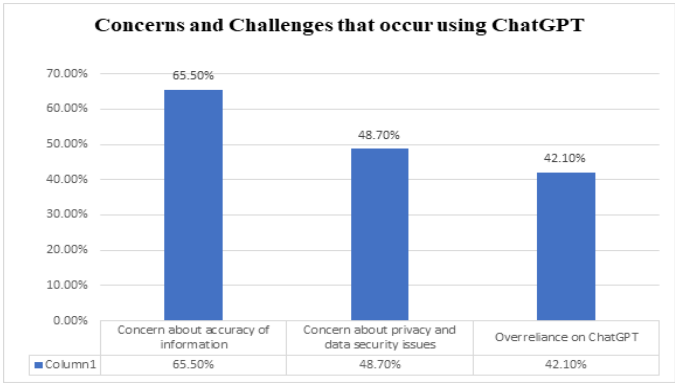

Figure 2: Bar chart of concerns and challenges that occur using ChatGPT

Despite the concerns and challenges that occur when using

ChatGPT Participants recommend improvements and features that would be more likely to use ChatGPT for medical education purposes. A total of 155 participants (78.7%) recommended Real-time updates on medical research in ChatGPT. Further,150 participants (76.1%) recommended improved accuracy of responses in ChatGPT while 129 participants (65.5%) recommended integration of ChatGPT with other educational tools. Participants were also asked if given the choice, would continue to use ChatGPT for medical education in their future academic years,155 participants (78.7%) agreed to use ChatGPT for medical education in their future academic years (Figure 3).

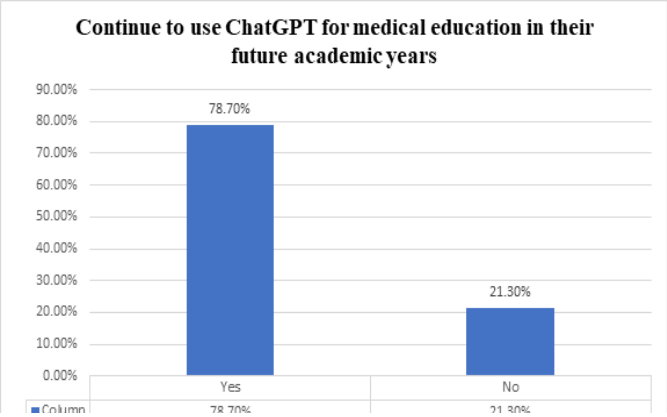

Figure 3: Bar chart illustrating students' intention to continue utilizing ChatGPT for medical education in their subsequent academic years

Discussion

The study examines the level of knowledge, usage habits, and opinions of undergraduate medical students considering Chat Generative Pre-Trained Transformers (ChatGPT) as a tool for education. This research provides a detailed picture of the changing trends in medical education. The study's findings offer useful insights within the existing literature, contributing to the broader discussion on the incorporation of AI technologies in medical curricula.

The participants from Abwa Medical College in the current study had an impressive awareness level of AI technologies, more specifically ChatGPT in the medical student community at a rate of 92.4%. This is in line with other studies that have shown that current medical education has increasingly acknowledged AI tools due to its emphasis on technical competence.[6] The acknowledgment of AI's probable impact on medicine and learning is constructive since this means that these students are being exposed to emergent technologies, which could redefine their future roles as healthcare providers.[7]

While some students use ChatGPT frequently (1%), others use it intermittently (44.2%) in out study. This finding is congruent to the previous research findings where acceptance rates for AI tools used in medical education were different.[8] Previous studies have recognized that the frequency of using ChatGPT could be influenced by a number of things such as institutional support, training and perceived benefits.[9]

In this paper, respondents expressed positive views on improved comprehension (61.6%), instant access (85.9%), and individualized instruction (81.3%). These observations are congruent with studies affirming that AI can enhance education and academic performance. Different research articles[8,10] have pointed out the positive effect of AI-based instructional technology on medical knowledge learning as well as problem-solving abilities. The adoption of ChatGPT in medical teaching, which has led to a high rating by the participants, reflects a worldwide trend in which institutions want to take advantage of AI's capabilities for modernizing traditional teaching methods.[11]

Despite the above, participants' concerns call for careful consideration while using ChatGPT for learning. For ChatGPT to succeed in being integrated into medical education, it must address critical issues such as information accuracy (65.5%), concerns over privacy (48.7%), and potential overdependence (42.1%). These findings are consistent with many earlier studies indicating the need for improvement of information accuracy, and data privacy assurance as well as reducing excessive dependence on AI.[11,12]

The participants' suggestions for faster updates (78.7%), more accurate results (76.1%), and integration with other educational resources (65.5%) offer practical guidance for developers and educators. Applying these recommendations could make ChatGPT more efficient and user-friendly, especially for medical education. These suggestions are in keeping with the continuous improvement and integration of AI technology to meet the evolving needs of medical students.[13]

It is encouraging to see that a large majority of participants (78.7%) are prepared to keep utilizing ChatGPT as they go through their academic careers (figure 3). There will soon be a change in educational frameworks to reflect the increasing demands on physicians to be technologically savvy and adaptable, and medical students' eagerness to incorporate AI technology into their learning process is a sign of that transition.[6,14]

Our study results support the use of AI technology in medical curricula, and our work contributes to the current discussion on the topic. Results are in line with previous research, but the study nevertheless shows that medical schools shouldn't use ChatGPT in a cookie-cutter way. The concerns and suggestions voiced by respondents must be addressed. The integration of AI technology into medical education is a complex topic, and future studies should investigate the contextual aspects that play a role in this. It is critical to approach the use of artificial intelligence tools like ChatGPT with caution and moderation as medical education develops.

Limitations

This research only included ABWA Medical College, therefore its findings may not be generalizable to other medical schools. Furthermore, since the results are based on self-reported data, which may be affected by response bias, the exactness of the conclusions may be compromised. The next research should use objective measures to evaluate the use of AI tools and include

multi-site studies to better understand the impact of these technologies on medical education.

Conclusion

The research throws light on the positive approval of ChatGPT among undergraduate students in the field of medical education. The study demonstrates a notable degree of awareness and favourable perception of the tool among students. Despite a few issues, pupils offered suggestions for enhancement, and a substantial majority indicated their goal to persist in utilizing ChatGPT throughout their academic endeavours. ChatGPT's potential impact on the future of medical education is emphasized.

Authors' contributions

HMAA and NKN conceived the idea. AA did data collection and analysis and did initial manuscript writing. NKN did the final manuscript review after editing. Both authors approved the final manuscript for submission.

Conflict of Interest: The authors have no conflict of interest.

Acknowledgement: We appreciate the assistance of all the MBBS students who participated in this study.

Funding: There is nothing to declare.

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