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PERCEPTIONS OF TEACHERS IN MEDICAL COLLEGES REGARDING CHATGPT USE IN ACADEMICS: A QUALITATIVE STUDY

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Abstract

Background: *The integration of artificial intelligence tools like ChatGPT in higher education is rapidly expanding. In medical education, these tools have the potential to support teaching, learning, and research. However, the perceptions of medical college teachers regarding their use remain underexplored.*

Objectives: *To explore the perceptions of teachers in medical colleges regarding the use of ChatGPT in academic activities, focusing on its perceived benefits, challenges, and implications for medical education.*

Methodology*: Employing a qualitative research design, conducted in-depth interviews with teachers from four different public and private sector medical colleges in Peshawar, adopting the Purposive Sampling Technique. The data was transcribed and thematically analysed.*

Results*: The study uncovered several salient themes from the analysis. The participants revealed that it was easier to use as compared to other search engines and considered it a time- and effort-saving tool. Despite these benefits, some participants expressed concerns that it reduces the cognitive abilities of students and prompts them to engage in plagiarism and cheating. The participants also stated coping strategies for the risk posed by ChatGPT, which include global awareness about its rightful use and limiting its usage. The participants expressed contrasting views when asked about the fate of ChatGPT in future medicine.*

Conclusion*: This qualitative study provides valuable insights into the perceptions of teachers in medical institutions about the use of ChatGPT. While findings provide benefits and the risks they pose, they also provide coping strategies to mitigate these risks.*

INTRODUCTION

Artificial intelligence (AI) is a branch of computer science that is capable of stimulating or even recreating the capabilities of the human mind. Chat Generative Pre-Trained Transformer (ChatGPT) is a

natural language processing model of artificial intelligence created by OpenAI that is provided with a large number of computing techniques and data, programmed in a way to respond in a conversational style to the user input [1,2]. It was launched by AI in September 2022 and has more than 100 million users to date [3]. It takes data from an online pool, organises it, and uses it to generate human-like responses using different algorithms. ChatGPT has applications in various disciplines, such as education and healthcare [4-8].

The advent of artificial intelligence, ChatGPT, is bringing a revolution in every field, and medical education is no exception. Researchers have conducted various studies to explore the use of artificial intelligence in education, including chatbots, programming support language models and NLP tools [9-13]. The field of medical education has the potential to greatly benefit from AI [14-18]. With the pace at which the world is developing, old and stereotypical ways of learning are no longer useful in medical education. That's why students, as well as teachers, are shifting their focus to a more advanced and easily accessible approach to learning, which is ChatGPT. Several studies [19-23] have published applications of ChatGPT in education. ChatGPT will prove to be a game-changer that has the potential to end traditional assessment and assignment patterns like essay writing [24]. Because of its conversational search experience, it is usually preferred over Google and other search engines [25].

ChatGPT helps teachers prepare more quizzes, exercises, essay grading, quick and accurate assessments, explore new data, and create scenarios. On the other hand, students are using this model for quick access to data, language translation, personalised learning [26], writing tasks, developing research skills, and learning problem-solving skills [27]. The accuracy of ChatGPT can be estimated by a study conducted on ChatGPT attempting the USA's medical licensing exam, USMLE Step 1, where it scored with >50% accuracy, almost touching the passing threshold (60%) of the exam [28]. The world is looking forward to using ChatGPT at its best, but there are some limitations and drawbacks to this model [29-33]. It is associated with ethical problems, security issues, plagiarism, a reduction in critical thinking ability [34,35], and a biased nature [36]. It is therefore needed to find out how people perceive this model and what its applications and limitations are from students' and teachers' perspectives.

This study aims to explore the general understanding and perception of teachers in medical education about the use of ChatGPT and to analyse health professionals' concerns about the impact of ChatGPT on the future medical field.

METHODS AND MATERIALS:

Study design, duration, and setting:

This study followed a qualitative phenomenological design in which data were collected from participants via in-depth interviews (IDIs). This study was conducted in various medical teaching institutes in Peshawar. The medical teaching institutes in which the study was conducted are Khyber Medical College (KMC), Khyber Girls Medical College (KGMC), Pak International Medical College (PIMC), and Northwest School of Medicine (NWSM).

Sample size and sampling technique:

The purposeful sample technique was adopted to select the teachers for in-depth interviews, and the sample was determined by the saturation of the data collection tool, which gave us a sample size of 16.

Inclusion and exclusion criteria:

Faculty staff members from all the departments were included in the research, while excluding only those who had less than 2 years of experience and those who were not available at the time of data collection.

Data collection and analysis:

The data were collected in the form of in-depth interviews (IDIs), which were voice-recorded after informed consent. The data collected was then thematically analysed after identifying various themes and subthemes**. It** was then triangulated by analysing and interpreting the interviews separately by all the researchers and then comparing the themes identified, which gave us our final findings.

RESULTS:

A total of 16 in-depth interviews with medical education teachers were conducted. Thematic analysis generated five overarching themes: (1) Perception of

ChatGPT, (2) Benefits of ChatGPT, (3) Drawbacks of ChatGPT, (4) Strategies to mitigate risks, and (5) Fate of ChatGPT. Each theme and its subthemes are presented below with illustrative quotations.

Table 1: Themes and Sub-themes emerged from the interviews

The table given below shows the themes that were identified during the thematic analysis of the interviews.

Themes	Sub-Themes
Perception of participants	○ Knowledge ○ Intention to use ○ Comparison with other search engines
Benefits of ChatGPT	○ Ease of use ○ Time and effort saving
Drawbacks of ChatGPT	○ Cheating and plagiarism ○ Effect on cognitive abilities ○ Unreliable referencing
Strategies to mitigate risk factors	○ Global awareness ○ Limited use
Fate of ChatGPT	○ Threat to jobs ○ Use for diagnostic purposes

Theme 1: Perception of Participants

Most of the participants showed good comprehension of ChatGPT's nature, and they all concurred on its primary purpose and objectives. One of the faculty members stated that:

The concept of this software is that it will converse with you regarding any subject you choose. It chats with me just like a human, gathers all of the information, and displays it for me (participant 3, assistant professor).And:

It is a very good app. You can use it for MCQs to check answers that you don't understand. Apart from that, if you want to write a formal letter or a CV, you can take an idea from it (participant 14, lecturer).

When the group discussed the information resources of ChatGPT in comparison to other conventional search engines, half of them were in support of using Google, as one participant stated that:

I prefer Google because ChatGPT is still in the developmental phase (participant 1, lecturer).

While the other half of the population quoted:

It's a new technology, so everyone should learn how to use it. It uses AI algorithms. The more we use it, the better it gets (participant 7, assistant professor).

Theme 2: Benefits of Using ChatGPT

Regarding the usefulness of ChatGPT, the subthemes that emerged were: 1) Ease of use; 2) Effort- and time-saving tool; 3) Collecting and summarising information

Almost all of the participants described that ChatGPT has the benefit of easy and quick access for everyone around the globe.

It provides you with answers within minutes for whatever you search for. I think it makes students smart because, at the end of the day, you need to work smarter as well as harder (Participant 2, Assistant Professor; Participant 8, Lecturer).

One other participant with the same view said that:

ChatGPT is very time-efficient, too. It gives a different perspective on an idea; you don't have your teacher 24 hours a day available, so you can gain a lot of knowledge from it, and I don't think it's a problem at all (participant 9, assistant professor).

The teachers described ChatGPT as a remarkable tool that can also help in decision-making and make one independent. It helps in writing essays and formal letters. It gives you a good opinion and advice, and it also helps to decide on logos and captions (participant 1, assistant professor).

Some of the teachers denied its benefits. They were of the view that technology can never take over the gold standard conventional system.

I think students should rely on books; they can take an idea from ChatGPT, but shouldn't depend on it, as it has more disadvantages as compared to its benefits (participant 9, assistant professor).

Theme 3: Drawbacks of ChatGPT

Only a few faculty members voiced their disapproval of ChatGPT, expressing worries about its misuse, lack of confidence in technology, and its role as a hub for cheating and plagiarism. One of the members said that:

ChatGPT provides students with ready-made data so that they don't make any effort for their topic of study, which leads to a decrease in their IQ level. Moreover, with the excessive use of ChatGPT, we can't differentiate between hard-working students and those who rely completely on ChatGPT (participant 15, lecturer).

While many professors were open to the idea of including ChatGPT in their classes, some voiced concerns about its suitability as a teaching tool. They complained that it was impossible to anticipate how students would use the discussion bot and expressed worries that glitches in the software would cause confusion or misunderstanding.

I am unsure of how trustworthy or consistent the data from ChatGPT would be (participant 10, professor).

Theme 4: Strategies to mitigate risks

The majority of participants who were asked to recommend methods to minimise the risk of using ChatGPT suggested that additional oversight and monitoring could help ensure its proper use. Some also suggested applying stricter rules and guidelines for its proper and limited use.

*We should use it as a tool, but we shouldn't copy and paste data wholly and solely from it. We should take an idea and then use our intellect and imagination (participant 11, assistant professor).*And

We should arrange nationwide awareness programs for the proper use of ChatGPT (participant 3, assistant professor).

One other faculty member quoted;

Don't make it your master; be its master (participant 12, professor).

Theme 5: Fate of ChatGPT

Almost all the participants agreed that ChatGPT will flourish further in the future and rule the world, but as far as the medical field is concerned, it not only involves knowledge but also requires an empathetic approach towards patients, so it can't replace doctors. One participant's views were:

AI can replace overall jobs, but the medical field is technical, so it can't be replaced. As a doctor, you need sympathy and empathy, which AI can't provide (participant 13, assistant professor).

But some of the participants gave the opposite opinion: that ChatGPT may replace doctors, and soon there would be an era of robots.

*It gives you a very good differential diagnosis, so I think in future competitions, it will be ChatGPT (participant 3, assistant professor).*And:

With the advancement of AI, you will need fewer human beings, and people will get out of jobs (participant 15, lecturer).

DISCUSSION:

Artificial intelligence is changing the course of today's world, and one of its tools, ChatGPT, is revolutionising medical education as well. The participants in this study showed an understanding of the uses and applications of this tool. Some participants considered it an assistant for performing various data-related activities, while others labelled it a threat that would displace humans from various positions.

The majority of the participants believed that ChatGPT is helpful in research activities, providing summarised articles and insights on a certain topic. Recent research showed that people use ChatGPT to write readable and coherent articles and papers [37]. Another study stated that this tool greatly reduces the time required by the authors to search for papers, write, and analyse responses [38]. Gao et al. tested ChatGPT for abstract writing after providing 50 research papers from renowned journals. The results showed that only 8% of the abstracts were acceptable, while others did not follow the pattern of the journals. Also, 68% of abstracts were recognised by experts as ChatGPT-generated due to their vaguer and more formulaic nature [39].

Almost all of our participants raised concerns that it might reduce the cognitive impacts on the users. A study in Saudi Arabia also showed that teachers and doctors are more interested in using ChatGPT for research purposes than decision-making because the latter usage might reduce their thinking capacities [40]. There were concerns about its misuse for cheating and plagiarism. Participants expressed that too much use of this tool in research might reduce the impact of the research. The boundaries must be established to combat plagiarism [41].

ChatGPT's ability to respond to the questions accurately and in a conversational way has greatly impressed the participants. It has successfully cleared medical exams in various institutes. A study by Das et al. says that ChatGPT solved various microbiology questions based on clinical scenarios with 80% accuracy [42].

Participants expressed contrasting opinions about the fate of ChatGPT in the future. The responses were a blend of optimism and pessimism. A study performed at the Catholic University of Korea says that radiologists and pathologists are the people who would be more prone to being replaced by ChatGPT or other artificial intelligence tools [43]. Other participants believed that ChatGPT could not take the place of humans and that its future looked bleak to them. A study discovered that ChatGPT-generated responses are more objective, while humans always prefer subjective expressions and hence cannot provide satisfactory responses to their users [44].

Conclusion:

A significant number of teachers were using ChatGPT and were satisfied with the results produced by this tool. Most of the participants preferred this tool over other search engines because of its easy usage, time savings, and conversational way of responding, while a few of them raised concerns over its overdependence, reducing the cognitive abilities of users, and its potential to be misused for cheating and plagiarism purposes. While some of the teachers were optimistic about the future of ChatGPT, others did not see this tool in the long run. However, there is still a lot of room for further research to figure out the fate of this tool in medical education.

Recommendation:

Authorities should formulate special rules and guidelines for the use of ChatGPT to limit the potential negative effects. Institutions should organise conferences and awareness drives to educate people about such tools and their efficient usage. Researchers must be encouraged to research the impacts of ChatGPT on the cognitive abilities of its users.

Limitation:

This study has some limitations. First, the smaller sample size (16 interviews) and restriction to one city (Peshawar) affect its generalizability to other regions. Second, student's perceptions of ChatGPT were not recorded, which means key stakeholders of our academic process have been overlooked. Third, teachers might have underreported their reliance on ChatGPT due to social desirability.

Authors' Contributions:

Muhammad Shayan and Zahra Sheikh conceptualised the study and contributed to the development of the research design. Safia Anwar Kham, Aimen Nawaz Khan, and Muhammad Arsalan were responsible for data collection and transcription. Amjad Ullah and Ubaid Ullah Mian carried out data analysis and interpretation. Dr. Imran Marwat and Dr. Umer Farooq provided critical guidance, supervision, and validation of the methodology. Dr. Zaid Iqbal assisted in refining the manuscript and ensuring intellectual content. All authors contributed to drafting, revising, and approving the final version of the manuscript.

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