Artificial Intelligence Counseling to Alleviate Psychological Anxiety among Medical Interns: a Qualitative Study

Xiaoling Ou, Xinqun Bao, Xinyi Xu, Huijing Luo, Wanying Hu, Qiuheng Huang*

Faculty of Chinese Medicine Science, Guangxi University of Chinese Medicine, Nanning, China

*Corresponding author's email address: 774661672@qq.com

Abstract. Objective: This study employed a qualitative research methodology to investigate the emotional and experiential dimensions of AI counseling for the purpose of alleviating the anxiety of medical interns. Additionally, the intrinsic factors were explored in order to provide a foundation for the enhancement of the mental health of medical interns and the development of a scientific training curriculum for mental health education. **Methods:** A purposive sampling method was employed to select 21 undergraduate medical interns for the study. Semi-structured interviews were conducted, and the Colaizzi 7-step analysis was utilized to analyze the data. **Results:** Three themes emerged from the data: a lack of professional competence, anxiety about relationships and future career development; and facilitators and impediments to AI counseling to alleviate psychological anxiety. **Conclusion:** AI psychological counseling has some positive effects in alleviating psychological anxiety of medical interns, and there are also hindering factors. Medical interns should strengthen their professional skills training, improve interpersonal relationships, and reasonably plan their future career development. In addition, the technology of AI psychological counseling should be continuously improved to meet the individual needs of medical interns.

Keywords: psychological anxiety, medical interns, AI consulting, qualitative research, education

1 Introduction

In the context of the accelerated pace of life in modern society, the problem of psychological anxiety has become increasingly prominent, to the extent that it has become a key factor affecting people's physical and mental health and social stability. While traditional psychological counseling has some alleviating effect, this is limited by the high cost of counseling and the limited resources available. Consequently, there is a need to develop new approaches to meet the public's mental health needs. The rapid development and maturation of artificial intelligence (AI) has led to the emergence of AI-based psychological counseling as a novel service offering. This new approach is gaining

traction globally, with its advantages and potential becoming increasingly evident[1].The internship represents the initial exploration of the clinical work of medical students, as well as the transformation of their identity from medical students to doctors. Consequently, the process of internship is accompanied by a certain degree of pressure, which may result in the emergence of mental health problems[2]. In this context, the objective was to conduct a qualitative study of AI counseling to alleviate psychological anxiety in medical interns. It was hoped that this study would provide new ideas and directions for mental health work with medical interns.

2   Literature Review

AI counseling, which encompasses robots or conversational systems that employ AI technology, is a rapidly evolving field[3]. Machines are designed to learn using a variety of learning methods, including machine learning, deep learning, and reinforcement learning[4]. By analyzing large amounts of psychological data and cases, AI can quickly and accurately identify a user's psychological problems and provide appropriate solutions and recommendations. Overall, the application of machine learning in mental health has shown many benefits in the areas of diagnosis, treatment, research and clinical management[5].

At present, there is a proliferation of applications utilizing AI for counseling, with notable improvements observed in the treatment of adverse psychological states[6]. Nevertheless, a smaller proportion of these resources are specifically designed for healthcare workers. Anxiety is a significant concern for the majority of medical interns, who are about to commence their clinical duties at the front line of medical practice. In order to alleviate their anxiety and improve the mental health of medical interns, it is of particular importance to strengthen psychological counseling and psychological guidance[7]. Therefore, this study employs a qualitative research methodology to gain a comprehensive understanding of the emotional and experiential dimensions of AI counseling in mitigating the anxiety of medical interns. This understanding is intended to inform the development of more effective mental health support for medical interns and to inform the design of more evidence-based and rational mental health education and training curricula.

3   Methodology

3.1   Participants

Use of purposive sampling, a number of medical interns at a university of traditional Chinese medicine in Guangxi were selected as research subjects[8]. The sample size was determined based on the data reaching saturation, indicating that no new themes were presented. The inclusion criteria were as follows: medical interns engaged in clinical work, informed and voluntary participants. The exclusion criteria were as follows: those who were not willing to express their experiences verbally, those who refused to

participate in the survey, and those who could not complete the questionnaire independently. The study was conducted from January to April 2024, with 21 medical interns interviewed. The participants were numbered N1-N21 and ranged in age from 21 to 25 years old. There were 18 female and 3 male participants, with 21 undergraduates, 5 in Chinese medicine, 14 in nursing, 1 in rehabilitation therapy, and 1 in medical testing technology.

3.2   Data Collection

The purpose, significance, and methodology of the study were explained to the interviewees, and their consent to utilize the phenomenological research methodology was obtained through the conduct of semi-structured interviews. An outline for the interviews was developed after combining the purpose of the study, literature research, and expert consultation. The interviews were conducted in the same order and manner. The specific outline is as follows: (1)Do you experience anxiety during your internship? (2)What are the causes of your anxiety? (3)How do you cope with anxiety? (4)Have you used our AI counseling applet? If so, how do you feel about it? What improvements could be made? (5) What advantages do you see in AI psychological counseling? (6)Would you prefer AI psychological counseling or offline traditional psychological counseling?

Prior to the interview, the interviewee was required to sign an informed consent form, which guaranteed the protection of their privacy. This form also stipulated that the interviewee's name would be replaced with a code number, that the interview process would be audio-recorded for qualitative research purposes only and would never be disclosed, and that the time of the interview had been discussed by both parties and was based on the convenience of the interviewee. Respondents were instructed to express their thoughts truthfully and positively during the interview. The interviews in this study lasted 313min with a maximum of 51min, a minimum of 3min and a average of 15min.

3.3   Data Analysis

Each interview will be transcribed in Word format within 24 hours to ensure the completeness and accuracy of the information. Further data summarization and refinement analysis were conducted using Colaizzi's seven-step analytical approach[9].This process entailed the following steps: (1)meticulous examination of the content of all interviewees' recorded interviews and related transcripts. (2)analysis and categorization of key statements. (3)coding of recurring ideas. (4)synthesis of ideas coded in step 3. (5)detailed, unambiguous description of the findings. (6)categorization of similar ideas and condensation of thematic concepts. (7)solicitation of evidence from interviewees.

4   Results

The interviews have enabled us to gain insight into the current state of psychological anxiety among medical interns. Over half of the interviewees have experienced varying degrees of anxiety during their internships for diverse reasons. Following the analysis and refinement of the data, three overarching themes and nine sub-themes emerged from the study.

4.1   Thematic: the Current Status of Psychological Anxiety in Medical Interns

4.1.1 Sub-Theme: A Lack of Professional Competence Among Medical Interns Has Been Identified as A Significant Issue

The respondents indicated that their lack of professional competence and the discrepancy between theoretical knowledge and clinical practice contributed to operational challenges during their internships, which in turn gave rise to anxiety. Internship N10:"There's a difference between what I learn in school and what I use in practice. Practice is important. Some techniques we learn in the clinic aren't in our textbooks." Internship N18:"Part of the theoretical knowledge learned in the first and second year of college has been forgotten, and when you need to use it in the internship, you are more flustered if you are not very clear, and you need to ask the instructor, and some of the instructors may criticize you a little bit, and you will be in a bad mood."

4.1.2 Sub-Theme: Medical Interns Express Concerns Regarding Their Relationships

The respondents indicated that their psychological state is also affected by their ability to get along with people such as instructors, patients, and peers during their internship. Internship N13:"Some teachers were more interested in socializing than teaching. They said things that made me uncomfortable. There's still a disconnect with the lead teachers, but you have to live with it." Internship N20:"I'm in nursing school, so I see patients a lot. Some patients and their families were unhappy for me to do the hands-on operation, thinking that interns don't know what they're doing and questioning my ability. During the operation, there will also be families, and I speak more intensely. I still feel bad."

4.1.3 Sub-Theme: Medical Interns Express Concern About Their Future Careers

The respondents expressed concern regarding their ability to secure employment following graduation. Internship N5:"I learned about hospital recruitment in my specialty. There are few places, I'm not from a top school, and the competition is low. I feel pressure about future employment. "Internship N14:"My internship was bad. Some patients don't recognize you. I might change careers, but it's hard to know what I'll do next. It's not in my specialty, and I don't know what else I'll do."

4.2 Thematic: the Objective of this Study is to Examine the Efficacy of AI Counseling in Alleviating Psychological Anxiety in Medical Interns

4.2.1 Sub-Theme: Technological Progress

Each person is unique in the life of society. Therefore, every counselor needs to be treated seriously and not generalized. With the continuous development of artificial intelligence technology, the AI psychological counseling system is becoming more and more powerful, and can provide more personalized and efficient mental health services for medical interns. Internship N1:"The AI applet is more convenient than offline. "Internship N17:"Online communication lets me be more open, which helps with targeted treatment. It's hard to talk to people you don't know, but you can talk openly with strangers."

4.2.2 Sub-Theme: a Shift in the Philosophical Underpinnings of Medical Education is Underway

An increasing number of colleges and universities, as well as experts in the field, are recognizing the importance of addressing the mental health of medical interns. They are actively implementing AI-based psychological counseling to enhance the psychological well-being of interns. Internship N3:"My counselor asked about the internship before asking how I was doing. "Internship N12:"I've looked into this. Nowadays, people are more aware of how students and interns are doing mentally. You can see this in the news."

4.2.3 Sub-Theme: Internship Requirements

In light of the challenging clinical internship environment and high-pressure working conditions, medical interns are increasingly seeking mental health services. AI-based psychological counseling has emerged as a promising approach for them to cope with psychological distress. Internship N2:"It's a little anxiety when you join a department because you don't know what it's like, especially in the first few months. It's still necessary to give yourself a bit of psychological help, but offline counseling is expensive and takes a lot of time." Internship N21:"I've read some of the articles in the previous AI mini-programs. Some of the writing still touches me."

4.3 Thematic: the Present Study Examines the Potential for AI to Provide Psychological Counseling to Medical Interns, with a Focus on Alleviating Anxiety

4.3.1 Sub-Theme: Cost Issues

The development and maintenance of an AI counseling system necessitates significant financial resources, which may prove challenging for some educational institutions and healthcare organizations to secure. Internship N3:"As an intern, I felt isolated. There's not much support for interns." Internship N7:"Your approach is still unusual.

It's not perfect, but it's good and has potential. You don't see much counseling like this, but it takes a lot of effort to get it right."

4.3.2 Sub-Theme: Privacy Concerns

Although AI counseling has facilitated the maintenance of a certain degree of privacy for interns, some interns still express concerns about the security of their personal information. Internship N9:"People can talk to the AI counseling applet, but it will still collect data, and there is still a risk of privacy breaches. "Internship N19:"Some people are worried that their information will be shared when using AI counseling apps."

4.3.3 Sub-Theme: Traditional Concept

Some medical interns and educators believe that face-to-face counseling is more effective, and the recognition of AI counseling is low. Body language is a non-verbal symbol used by people in communication to express and transmit thoughts and feelings through facial expressions, body postures, gestures, and other physical changes, which carry certain emotional colors and can convey information and express attitudes. In contrast, offline counseling allows for the observation of a greater quantity of information, which is conducive to analysis and intervention. Conversely, AI counseling is more limited in this regard. Internship N8:"I think offline counseling is better because you can talk in real time and talking helps to alleviate emotions. "Internship N9:"Everyone is different. Extroverts like me like to be offline. My every move can be observed. The doctor knows what I do when I tell this one thing and can understand me better."

5   Discussion

5.1   Educational Implications of AI Consulting

The introduction of AI Psychological Counseling has broadened the avenues for mental health education for medical interns. Through AI Psychological Counseling, medical interns can gain a deeper understanding of mental health and a wider range of strategies for managing negative emotions, thereby enhancing their ability to navigate the complexities of the workplace and reduce stress and anxiety.

Emotion Management: AI Counseling can assist medical interns in developing their emotional regulation skills. By enabling them to record, release and regulate their emotions, it helps them to identify and address the causes of their emotional fluctuations, thereby improving their ability to cope with anxiety and stress and maintain emotional stability.

The AI Counseling Card can facilitate the development of a positive mindset in medical interns. It offers psychological exercises designed to cultivate a positive outlook and equip them with the tools to navigate challenges and difficulties with greater ease, thereby reducing anxiety.

The integration of AI technology and psychology education has the potential to facilitate mutual progress and development[10]. The incorporation of AI counseling on campus, on a voluntary basis, enables educators to gain a deeper understanding of their

students' circumstances and address their psychological concerns, thereby exerting a significant impact on the overall growth and well-being of students' mental health.

5.2   Reasonable Improvement of Relevant Technology and Use of AI Counseling

The issue of privacy and data security is of significant concern to users[11]. It is imperative that AI counseling platforms establish a rigorous data protection and privacy policy. Such platforms must clearly delineate the manner in which user data is collected, utilized, and stored, and must adhere to all pertinent laws and regulations to guarantee the security of user data. A certain degree of restriction must be imposed on the access and use privileges of user data to ensure that the data is utilized legally only when necessary.

5.2.1 Ensure Real-Time Interactivity in AI Counseling Online Communication

(1) Optimizing algorithms: the algorithm of the AI psychological counseling system must be enhanced in order to facilitate a more expedient response to users' inquiries and feedback. The provision of a range of real-time interactive tools enables the AI psychological counseling platform to fulfill the communication requirements of counselors, thereby ensuring the delivery of timely and efficacious psychological counseling services.

(2) Establishment of a feedback mechanism: it is recommended that a user feedback mechanism be established to collect and process user feedback in a timely manner and continuously optimize system performance. In addition, it is proposed that diversified real-time interactive function boards, such as online chat, voice calls and mood state quizzes, be developed to meet the needs of different counselors. This would effectively induce counselors to accurately express their emotions and problems, and make up for the shortcomings of online communication.

(3) Increase concurrent processing capacity: it is necessary to enhance the concurrent processing capacity of the system in order to accommodate the simultaneous consultation of multiple users. The AI psychological counseling platform should establish reasonable service hours and may implement an appointment scheduling system to guarantee that consultants can obtain timely responses and answers when the counselor is online.

5.2.2 Technically Improving Emotion Recognition in AI Counseling

AI, particularly AI-based Conversational Agents (CA), is garnering increasing attention in the field of mental health care[12]. The technology utilized for emotion recognition is of particular significance. It is imperative to acknowledge that AI lacks the capacity to empathize with emotions. When confronted with intricate psychological issues, AI is currently unable to fully comprehend human emotions and engage in accurate emotional communication and soothing. Counselors may need understanding and

empathy from human consultants. Consequently, AI psychological counseling platforms must also reform their technology and enhance AI emotion recognition technology.

5.3   Research Shortcomings and Prospects

The medical interns selected for this study were all undergraduate students and thus failed to cover graduate students and medical interns at other academic levels. Therefore, the results of the study may not be fully applicable to medical interns at other academic levels. Future studies may consider expanding the scope of the study population to improve the comprehensiveness of the study. Furthermore, this study preliminarily explored the strengths and weaknesses of AI counseling in alleviating the psychological anxiety of medical interns. Future research could further explore its application value in different scenarios, populations, and problem areas. Additionally, in terms of interdisciplinary research, future research can combine multidisciplinary knowledge such as medicine, psychology, and computer science to explore the innovative application of AI psychological counseling in alleviating psychological anxiety of medical interns and provide more comprehensive support for medical education.

6   Conclusion

In conclusion, the study demonstrated that AI-based psychological counseling has a positive effect on alleviating the psychological anxiety of medical interns. However, there are still limitations to be considered. It is recommended that colleges enhance the professional training of medical interns, facilitate their development of interpersonal skills, and implement a structured approach to their future career development. Concurrently, the technology and service system of AI psychological counseling must be continuously enhanced. It is recommended that efforts be made to enhance the protection of user privacy and data security. Furthermore, the combination of traditional psychological counseling and AI psychological counseling should be promoted in order to meet the personalized needs of medical interns and to improve their mental health. Such an approach will facilitate the development of a positive mindset and emotion management skills among medical interns, thereby providing a robust foundation for their future success in the medical profession.

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