

Attitudes of Breast Cancer Chemotherapy Patients and Nurses Toward Acceptance of AI Psychological Nursing: A Qualitative Study

Tianyu Chu^{1,*}, Xian Chen^{1,*}, Qian Zhang¹, Hui Zhou¹, Ling Chen², Kai Jiang³

¹Obstetrics, Gynecology and Reproduction Research Center, Affiliated Hospital of Jiangnan University, Wuxi, Jiangsu, 214000, People's Republic of China; ²Department of Breast Surgery, Affiliated Hospital of Jiangnan University, Wuxi, Jiangsu, 214062, People's Republic of China; ³Department of General Surgery, Affiliated Hospital of Jiangnan University, Wuxi, Jiangsu, 214062, People's Republic of China

*These authors contributed equally to this work

Correspondence: Ling Chen, Department of Breast Surgery, Affiliated Hospital of Jiangnan University, Wuxi, Jiangsu, 214062, People's Republic of China, Email Rainbow_lyn@163.com; Kai Jiang, Department of General Surgery, Affiliated Hospital of Jiangnan University, Jiangsu, Wuxi, 214062, People's Republic of China, Email raphyal@yeah.net

Purpose: Psychosocial nursing for breast cancer patients is increasingly challenged by the high demand for support. The rapid development of AI technology offers a potential solution to address this challenge. Therefore, exploring the acceptance of AI psychological nursing by breast cancer chemotherapy patients and nurses is of great significance. The study aims to investigate the acceptability of AI in psychosocial nursing and the expectations and needs for its application from the perspective of breast cancer chemotherapy patients and nurses.

Patients and Methods: Semi-structured interviews were conducted with 17 breast cancer chemotherapy patients and 8 nurses. The data were coded and analyzed using the Technology Acceptance Model in conjunction with context-specific psychological variables for cancer patients.

Results: The final analysis identified four main themes and ten sub-themes, including AI nursing technology functionality features: ease of use of the AI system, human-like design, and stability of the AI. Emotional perception credibility and support effectiveness: accuracy of emotion recognition, appropriateness of responses, and sustainability of emotional support. Psychological safety protection: perception of privacy boundaries and psychological privacy protection. Drivers of acceptance of AI Psychological Nursing: Feelings of loneliness and pathways to integration.

Conclusion: This study underscores the potential of AI to enhance psychosocial nursing for breast cancer patients by addressing emotional support needs and alleviating nursing shortages. The findings provide valuable insights into the expectations, concerns, and perceived benefits of AI, offering a foundation for the design of future AI-driven nursing programs aimed at improving both the psychological and physical health of cancer patients.

Keywords: AI, breast cancer, psychological nursing, qualitative research, attitude

Introduction

According to the World Health Organization, in 2022, 2.3 million women were diagnosed with breast cancer globally. Breast cancer is the most common cancer among women in 157 countries, and women in every country, at any age after puberty, may develop breast cancer.¹ In China, breast cancer is the second most common cancer among women, with 357,200 new cases diagnosed in 2022.² Although the survival of breast cancer patients has been significantly prolonged with advances in treatment and detection technologies.³ However, the side effects of chemotherapy, such as hair loss, nausea, and anxiety, still cause great distress to patients' physical and mental health.⁴ Studies have shown that more than 84% of breast cancer chemotherapy patients in China experience concurrent problems such as fatigue, sleep disturbances, and depression.^{5,6} These adverse effects significantly impact the patient's quality of life, highlighting the urgent need for

targeted psychological interventions to alleviate these symptoms. Psychological nursing is effective in reducing psychological distress in cancer patients,⁷ but unfortunately, most patients fail to receive adequate psychological nursing support.

Nurses are the mainstay of delivering psychological nursing, yet the shortage of nurses has become a common problem facing healthcare systems worldwide. The World Health Organization (WHO) estimates that by 2030, there will be a global shortage of 4.5 million nurses.⁸ The shortage of nurses affects the quality of psychological nursing for patients. Artificial Intelligence (AI) refers to computer systems capable of simulating human intelligent behaviors, often through algorithm and data-driven processes that enable partial or full automation of specific tasks.⁹ With the rapid development of artificial intelligence technology, AI is already being used in areas such as predicting survival and supportive care needs for cancer patients,^{1,10} and the potential of AI in psychological assessment and psychological nursing is emerging.¹¹ Meanwhile, with the rapid advancement of conversational large language models (LLMs), their utilization as psychological assessment tools has demonstrated significant efficacy. Research indicates that GPT-4 exhibits high consistency with human raters when evaluating conversational responses.¹² Advancements in affective computing further validate the role of LLMs in fostering empathetic interactions. In certain assessment scenarios, LLMs-based chatbots accurately identify user emotions when responding to online patient queries, providing supportive responses tailored to diverse contexts.^{13,14} These findings underscore the vast potential of large language models to enhance user engagement through their capacity for empathy. Through AI technology, nurses can provide more efficient psychological care. Automated assessment tools and personalized intervention plans can offer timely and accurate psychological support to patients, even in the face of nursing staff shortages, making AI a crucial solution to address the issue of nurse scarcity.

However, due to the inherent differences between AI and humans, it remains to be investigated whether breast cancer patients are willing to accept AI-based psychological nursing and what type of AI psychological nursing they would be open to receiving. Meanwhile, the acceptance of technology is influenced by both individual and societal factors, with varying degrees of receptiveness often observed among different patients. Individual factors such as age, educational attainment, and familiarity with the technology directly impact patients' attitudes and willingness to adopt it. Societal factors including cultural background, social support networks, and the prevalence of healthcare infrastructure also play a significant role.¹⁵ Nurses' needs and expectations for the use of AI in psychological nursing have also not been fully explored. Previous research has mostly focused on the acceptance of AI usage by public figures and patients,¹⁶ primarily examining whether patients are willing to accept AI as an auxiliary tool for diagnosis and treatment.^{17,18} There are no studies on the attitude of cancer patients and nurses towards the acceptance of AI psychological nursing care and there is no relevant and appropriate questionnaire. To enable the development of AI to better provide patient-centered psychological nursing in the future, this study therefore takes breast cancer chemotherapy patients and unit nurses as research subjects to conduct a qualitative study on the acceptance attitude of AI psychological nursing. It provides a reference for the subsequent development of AI platforms and the construction of nursing programs.

Materials and Methods

Participants

This study used maximum variation sampling to select breast cancer patients undergoing chemotherapy and department nurses from the Department of Breast Surgery and Oncology at Affiliated Hospital of Jiangnan University between January and March 2025. Wuxi, as an important center city in China's Yangtze River Delta region, has a large mobile population. In order to better explore the perspectives of patients from different regions and to increase the generalizability of the study, this study sought to minimize the impact of regional differences on the findings by screening patients' regions using the hospital's electronic information system. The researchers also made efforts to consider factors such as different occupations, ages, and educational backgrounds when selecting participants. Inclusion criteria: (1) Age (18–65); (2) Patients agreed to participate in the study; (3) Participants were required to have basic language communication skills; (4) Self-reported knowledge and exposure to AI. Exclusion criteria: (1) Self-reported no exposure to AI products; (2) Suffering from mental or serious psychological illness. The sample size was determined according to the principle of "data saturation".

Research Methods

Research Theory

The Technology Acceptance Model (TAM)¹⁹ is a theoretical framework proposed by Fred Davis in 1989 to explain and predict user acceptance behavior towards new technologies. The core concept of TAM consists of two key variables: Perceived Ease of Use (PEOU) and Perceived Usefulness (PU). These factors work together to influence users' attitudes toward technology use and ultimately their decision to adopt the technology. Due to the specificity of the group of cancer patients, this study is based on the technology acceptance model, supplemented with emotion-security dual channel and disease-specific moderating variables based on several classical theories (This study's theory extension is primarily a theory integration approach rather than a variable invention, which meets the criteria for theory construction proposed by Whetten.²⁰ More details in the [supplementary file 1](#)), the supplemented model provides a more adapted perspective for analyzing technology acceptance in the context of this study, and the detailed framework is shown in [Figure 1](#).

Interview Outline

The interview content was initially determined after reviewing relevant literature and expert consultation for the study, and a formal patient interview outline was determined after pre-interviewing six patients: (1) What kind of AI do you expect to provide psychological nursing, and how should it interact with you and offer psychological support? (2) What is your level of understanding of AI psychological care technology? (3) Do you think AI would be used for psychological nursing in certain situations? (4) What do you think are the benefits of using AI for psychological care? (5) Compared to psychological nursing provided by nurses, what do you think are the advantages or disadvantages of using AI for psychological nursing? (6) In what situations would you feel comfortable expressing your true emotions to AI? (7) How would you feel if you were to use AI for psychological nursing? (8) What kind of psychological nursing do you expect? What kind of support would you like it to provide? Before the formal interview with the patient, the researchers will include a guiding question, asking the patient to talk about the psychological challenges or difficulties they encountered during the treatment process. This helps guide them to think about the support AI might provide.

A formal nurse interview outline was finalized after pre-interviewing four nurses: (1) What kind of AI for psychological care do you expect, and how should it help you provide psychological support to cancer patients? (2) What is your level of understanding of AI psychological care technology? (3) Do you think AI would be used for psychological nursing in certain situations? (4) What do you think are the benefits of using AI for psychological care? (5) Compared to psychological nursing provided by nurses, what do you think are the advantages or disadvantages of using AI for psychological nursing? (6) How would you feel if you were to use AI to provide psychological care? Before the formal interview with the nurses, the researchers will also include a guiding question, asking the nurses to talk about the challenges or difficulties they encounter when providing psychological care to cancer patients. Details of the post pre-interview upgrades can be found in [Supplementary file 2](#).

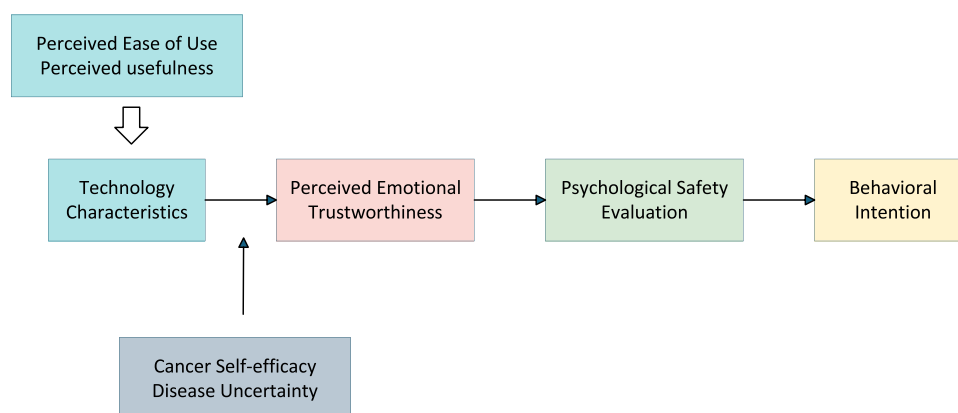


Figure 1 Extended model based on the technology acceptance model.

Notes: Different colors represent distinct steps within the extended technology acceptance model, with arrows indicating the directionality of the model's progression.

Data Collection

This study used a semi-structured interview method in which the researcher provided a quiet and comfortable conference room to conduct two-on-one in-depth interviews with the interviewer, and the researcher encouraged the research participants to fully express their views without interruptions. The two researchers participating in the interview are both women: one is an obstetrician-gynecologist with a doctoral degree, and the other is a nurse with a master's degree. Both researchers had more contact with patients, which helped breast cancer chemotherapy patients feel more comfortable expressing their inner thoughts. The researchers were trained in systematic qualitative research courses and communication skills. Meanwhile, to avoid potential biases arising from their professional backgrounds, the two researchers underwent standardized qualitative interview skills training prior to the interviews. The training particularly emphasized maintaining a neutral stance, avoiding the use of professional jargon to guide the patients, and refraining from asking hypothetical questions. The interviews consisted of 4 main stages:

(1) The researchers introduce themselves to the participants, explain the purpose and significance of the study, ensure that they understand the content of the interview, and gain their trust. They inform the participants that the interview will be recorded. After obtaining the participants' informed consent, demographic data is collected. (2) Before the formal interviews began, the research team presented a PowerPoint presentation introducing the concept of artificial intelligence, explaining its application prospects in various fields, and finally presenting the psychological assessment project developed on the DeepSeek (ai.com) platform (Including both text and voice interaction). The content of the presentation was kept neutral, avoiding any leading statements, and ensuring that the advantages or potential expected outcomes of the product were not overemphasized. This session aimed to provide necessary background information, and the researchers made efforts to avoid any guiding descriptions or value judgments, ensuring that participants could freely express their views based on their own experiences and understanding. (3) Conduct the interview formally and recorded, with the interview lasting approximately 45–60 minutes. (4) Feedback was collected from the study participants on this interview.

At the end of the interview, the researcher will convert the audio recording verbatim into text and import it into Word within 24 hours, during which the two researchers involved in the interview will repeatedly recall and check, and find the interviewer to verify any questionable issues in time to ensure that the converted text is consistent with that expressed by the study participants.

Data Analysis

Data analysis is conducted using NVivo (version 10.0) software. The main framework is based on four components of the TAM extended model: technological characteristics, perceived emotional credibility, psychological safety assessment, and moderating variables. The Colaizzi seven-step analysis method is used to analyze and code the interview text sentence by sentence, with the specific steps as follows: (1) The researcher repeatedly reads the collected data to become thoroughly familiar with the content provided by the participants. (2) Two researchers independently conducted a sentence-by-sentence analysis of the interview data, identifying key statements relevant to the research questions. (3) Two researchers independently summarised recurring themes and constructed the meaning of the codes. (4) Summarize the coded themes, identify meaningful common viewpoints, and initially form themes. (5) The researcher provides a detailed explanation of each theme formed in step 4 and includes typical original statements from the participants. (6) Group similar themes and statements together to construct a short and meaningful phrase, which is then named as the theme. (7) Return the generated theme structure to the participants for verification, asking whether it accurately describes their true emotions, in order to ensure the accuracy of the results. All authors participate in this process.

To ensure the objectivity of analytical findings throughout the data analysis process, this study employed a dual-coding methodology. All data were independently coded by two separate researchers. Following the initial coding phase, potential discrepancies were resolved through consensus discussions, thereby guaranteeing coding consistency.

Ethical Considerations

This study design has been approved by the Ethics Committee of Affiliated Hospital of Jiangnan University (JSMS04250007). Participants were informed of the purpose of the study during its implementation, and all participants were informed and agreed to participate in the study voluntarily. All patients and nurses could refuse to answer any

questions and terminate the interview at any time before data analysis, and all participant-related data were identified, encrypted, and kept by the researchers. Only members of the research team had access to these data. Informed consent was obtained from all participants. This consent included agreement for the publication of their anonymized responses and direct quotes. All procedures in this study complied with the ethical standards of the Declaration of Helsinki and obtained the requisite ethical committee approval and informed consent from participants.

Results

In order to ensure saturation of the research data, research team carried out coding and theme refinement in parallel since the end of the fifth interview, and continued to track the changing relationship between the number of interviews and the number of themes, the relevant details of which are shown in [Figure 2](#).

General Information on Breast Cancer Chemotherapy Patients and Nurses

In this study, the patients' ages range from 28 to 61 years, covering various age groups. The lowest level of education is no formal education, while the highest level is a master's degree, with patients from all educational stages represented. Additionally, the patients have diverse occupational backgrounds, including company employees, teachers, retirees, and other professional groups. More details in [Table 1](#). A total of 8 nurses eventually had valid formal interviews, including 7 females and 1 male. There are variations in both their ages and years of work experience. More details in [Table 2](#). Recruitment details for this study are shown in [Figure 3](#).

Results of the Qualitative Study

AI Nursing Technology Functionality Features

Ease of Use of the AI System

Multiple patients and nurses have expressed that the AI for psychological nursing they expect should be easy to use. They believe it should not involve complicated steps during use and should be accessible whenever needed. Overly complicated operations would affect their acceptance. P6: "I want to use the AI conveniently, just like Siri on my phone. I can simply call it and start talking". P2: "I think this AI should be ready to use with just a click, without needing to log in or authorize every time". P5: "I'm older, and I'm not very familiar with some phone features. I hope this AI can be easy to use so that even we older people can use it well". P12: "I think if the AI is too complicated, it might make me feel even more confused. I hope it can be a simple and easy-to-understand tool, so I can use it whenever I need it". P14: "I

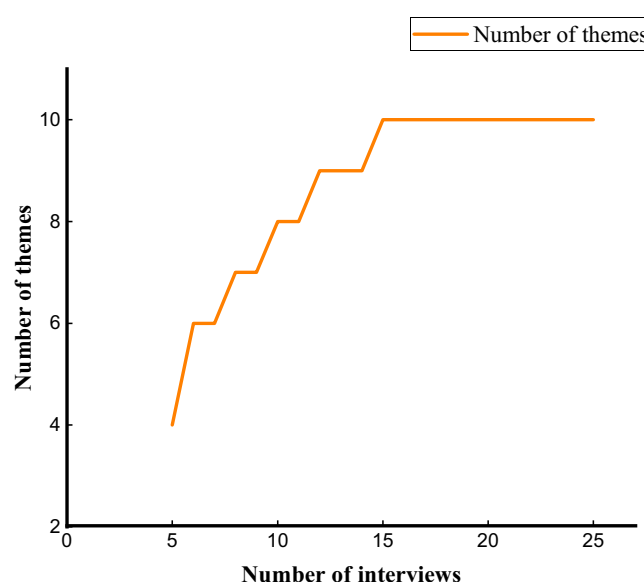


Figure 2 The relationship between the number of interviews and changes in the number of themes.

Table 1 General Information on Breast Cancer Chemotherapy Patients

Number	Age	Education	Occupation	Residence	Duration of Illness (year)	Staging of Disease	AI Contact Experience
P1	31	High school	Freelancer	Wuxi	2	I	DeepSeek
P2	55	Bachelor's degree	Teacher	Wuxi	5	III	Kimi
P3	46	Junior high school	Worker	Wuxi	3	II	Mobile Phone AI Assistant
P4	38	Junior college	Company staff	Yixing	2	II	Kimi, DeepSeek
P5	61	Junior college	Retiree	Wuxi	6	IV	Mobile Phone AI Assistant
P6	47	Junior high school	Peasant	Jiangyin	2	II	Mobile Phone AI Assistant
P7	44	Master's degree	Civil servant	Wuxi	3	III	DeepSeek
P8	55	Bachelor's degree	Retiree	Hefei	4	III	Mobile Phone AI Assistant
P9	28	Master's degree	Student	Wuxi	1	I	Mobile Phone AI Assistant, DeepSeek
P10	34	High school	Company staff	Wuxi	1	II	DeepSeek
P11	37	Primary school	Freelancer	Kaifeng	2	II	DeepSeek
P12	57	Primary school	Housekeeping	Suzhou	6	IV	Smart speaker
P13	52	Junior high school	Peasant	Nantong	3	III	Mobile Phone AI Assistant
P14	43	Not receiving	Peasant	Taizhou	5	III	Mobile Phone AI Assistant
P15	45	Junior high school	Worker	Wuxi	4	III	Mobile Phone AI Assistant
P16	53	Primary school	Freelancer	Wuxi	7	IV	Smart speaker
P17	62	Not receiving	Peasant	Jiangyin	5	IV	Mobile Phone AI Assistant

Table 2 General Information on Nurses

Number	Gender	Age	Title	Duration of Work (year)	Education	AI Contact Experience
N1	Woman	45	Associate chief nurse	22	Bachelor's degree	DeepSeek, Kimi
N2	Woman	40	Supervisor nurse	18	Bachelor's degree	DeepSeek, Doubao
N3	Woman	35	Nurse	7	Master's degree	DeepSeek
N4	Woman	28	Nurse	3	Junior college	DeepSeek
N5	Man	24	Nurse	1	Bachelor's degree	DeepSeek
N6	Woman	41	Supervisor nurse	19	Bachelor's degree	DeepSeek
N7	Woman	34	Nurse	8	Bachelor's degree	DeepSeek
N8	Woman	29	Nurse	5	Junior college	DeepSeek

don't have much of an education either, so if it's too hard to operate I might not know

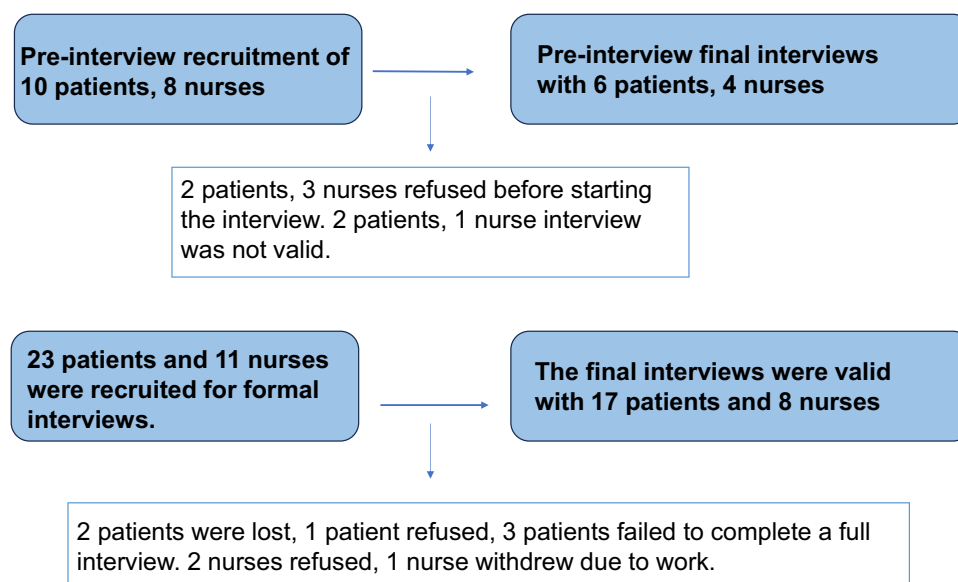


Figure 3 Detailed figure of breast cancer chemotherapy patients and nurses recruited.

Notes: Bold text indicates changes in patient and nurse numbers before and after the interview, while arrows denote the recruitment process.

Human-Like Design

Some patients have expressed that a more human-like interaction interface and a conversational, personalized approach would increase their desire to communicate and use the AI. P3: “If this AI could talk to me in my child’s voice, it would feel like having my child beside me while I’m in the hospital, and I’d be willing to talk to it”. P7: “I hope when I interact with it, it doesn’t feel like a cold machine. I want to talk to it like I’m talking to a real person”. P10: “If this AI looks like a person and speaks in a natural, friendly way, I would be more willing to talk to it and feel more relaxed”. P11: “If it could understand what I’m thinking and respond with a caring tone, I’d feel like it’s a friend, and using it would be much more comfortable”.

In terms of human-like design, older patients place special importance on the emotional warmth of AI, preferring it to use a tone that is more comforting and friendly. This helps alleviate their feelings of loneliness during hospitalization. Younger patients, on the other hand, expect AI to have intelligent conversations and personalized interactions, particularly in response to their changing emotional needs. Higher-educated patients also require AI to accurately recognize and respond to their emotional shifts. For nurses, their concerns go beyond emotional resonance; they also want AI to provide practical assistance and support in their caregiving tasks.

Stability of the AI

Multiple patients and nurses have expressed that they hope the AI used for psychological care is stable. Frequent crashes or freezes would affect their desire to communicate with and use it. P5: “I hope this AI can work consistently and won’t suddenly crash or freeze. It should feel smooth to use, or else it will interrupt my emotions”. P8: “I hope the AI doesn’t always freeze or suddenly disappear, because that would make me feel like it’s unreliable”. P2: “For me, the AI shouldn’t keep repeating the same sentence over and over, as that would annoy me. It should be able to adjust based on my responses and keep the conversation natural and smooth”. N4: “Stability is crucial; there can’t be issues at critical moments. It should maintain a constant connection and avoid interruptions so that I can better assist patients”. N6: “As nurses, I think stability is important, it’s about our experience as nurses and patients”.

Emotional Perception Credibility and Support Effectiveness

Accuracy of Emotion Recognition

Multiple patients have expressed that they hope the AI can accurately recognize their current emotions and respond accordingly. Some nurses also mentioned that they hope the AI can help them accurately identify patients’ emotions, so

they can provide more timely and accurate psychological care. P1: “I hope the AI can accurately sense my emotions. For example, if I’m feeling down, it should immediately notice and offer me some comfort or advice”. P7: “If I’m in a low mood, yet the AI always responds to me with a very happy tone, then I won’t want to use it anymore”. P15: “I wonder if the AI can really feel my sadness”. P11: “It would be great if the AI could notice when I’m feeling down and offer some thoughtful or comforting words. I don’t want to have to keep repeating how I feel”. P10: “If I’m feeling bad and the AI keeps talking to me in a light, happy tone, it would actually make me uncomfortable and feel like it doesn’t truly understand my emotions”. N1: “In psychological care, it’s crucial for the AI to recognize patients’ emotional changes in a timely manner. If it can respond based on a patient’s tone or expression, it would help us provide more personalized support”. N2: “If the AI can accurately assess a patient’s emotions and adjust its responses accordingly, it would significantly improve the quality of care”. N7: “If AI can accurately help us recognize a patient’s mood and then give us notifications when there’s a problem, I think that would make our psychological nursing a lot more efficient”.

Appropriateness of Responses

Multiple patients have expressed that they hope the AI can respond appropriately during conversations, providing comfortable and suitable replies based on the patient’s expressions. P5: “I hope the AI can respond appropriately based on my emotions at the time. For example, if I’m feeling down, it should comfort me with a warm tone, rather than giving me a bunch of dry advice”. P9: “If I’m happy, it should share in my joy; if I’m sad, it should offer comfort right away. The appropriateness of its responses is important—it should know when to be light-hearted and when to be serious”. P4: “Sometimes what I need is a response that understands my emotions, not just a mechanical answer to my questions. I hope the AI can be like a friend, knowing when to stay silent and when to say something appropriate”. P5: “The AI’s responses should be really suitable. If I’m anxious, it shouldn’t just tell me to relax, but respond in a way that makes me feel reassured, like a friend genuinely caring about me”. N8: “Being able to respond appropriately to the patient will be important, as cancer patients can sometimes be a little more sensitive”.

In terms of the appropriateness of emotional recognition and response, patients hope that AI can accurately detect and respond to their emotional fluctuations, especially during low moods, when AI should offer comforting reassurance. Nurses, on the other hand, expect AI to quickly identify patients’ emotional states, particularly for those with significant emotional fluctuations, and provide timely and appropriate emotional support.

Sustainability of Emotional Support

Multiple patients have expressed that they hope the AI can remember their conversation habits. Over time, they want the AI to better understand them and provide more appropriate responses based on previous conversations, avoiding the feeling that each interaction starts from scratch. P1: “I hope the AI can remember our previous conversations, so that every time I talk to it, we don’t have to start from scratch. It should be able to give more appropriate responses based on what I’ve said before”. P3: “If the AI can gradually understand my way of speaking and habits, and as time goes on, give more tailored responses, I wouldn’t feel like each conversation is a completely new and unfamiliar one”. P7: “I hope it can remember the emotions or thoughts I’ve shared before, so that every time we talk, it can give responses that are more aligned with my needs, without me having to explain everything again”.

Psychological Safety Protection

Perception of Privacy Boundaries

Some patients have expressed that if the AI can sense and respect privacy boundaries, fully considering the patient’s privacy during conversations and giving them some space, it would make them feel much more comfortable. P8: “If the AI can understand my privacy boundaries and avoid probing into things I don’t want to share, I would feel more at ease and be more willing to communicate with it”. P11: “I hope the AI can be sensitive during conversations, knowing which topics are appropriate to discuss and which ones shouldn’t be touched, so I don’t feel like it’s invading my privacy”. P5: “If the AI can respect my privacy and give me some space, rather than constantly delving into areas I’m unwilling to talk about, I would feel like it’s a trustworthy companion”. P3: “If the AI can give me enough freedom when I need to share and understand which topics are personal to me, even just a small consideration would make me feel more comfortable”.

Psychological Privacy Protection

Multiple patients have expressed concerns that their psychological privacy might be leaked or known by others. They mentioned that only if their psychological privacy is well protected will they feel comfortable expressing deeper emotions to the AI. P10: “I’m worried that my psychological privacy might be leaked or known by others. Only when I’m sure that this information won’t be disclosed will I be willing to talk to the AI about my inner feelings”. P11: “Psychological matters are very private and can’t be casually shared. If I can’t trust the AI to keep things confidential, I definitely won’t open up to it”. P9: “I care a lot about privacy. If I can’t be sure that the AI won’t disclose anything I say, I wouldn’t dare let it know my true thoughts”.

Drivers of Acceptance of AI Psychological Nursing

Feelings of Loneliness

Some patients have expressed that AI might be a good companion tool due to the long disease cycle, especially when they feel lonely in the hospital. P5: “Because my illness has dragged on for a long time, and I spend an unusually long time in the hospital, every time I feel lonely, I talk to my cell phone’s AI assistant to be able to chat with me and relieve my loneliness”. P8: “Sometimes, when the hospital stay is too long, I really feel lonely. If there were an AI to chat with me anytime, it wouldn’t make me feel so isolated, which would be nice”. P12: “The illness cycle is long, especially when I don’t have family with me. The AI might bring me some comfort and companionship”. P2: “If there were a good AI, I could chat with it when I’m alone in the hospital to ease my frustrations”. P16: “I’m sometimes hospitalized alone, sometimes I don’t even have anyone to talk to, so if speaking to an AI is similar to a person, I think it’s fine”.

Older patients, due to long-term hospitalization, are more likely to feel lonely, making AI an important emotional companion for them. While younger and higher-educated patients may also experience loneliness, their focus is more on the quality of emotional support and companionship provided by AI.

Pathways to Integration

An appropriate integration path can enhance the acceptance of AI by both patients and nurses. When patients and nurses learn about AI through some coincidental or relevant experiences, it increases their interest in using it. P12: “My child bought me a Xiao Ai speaker, and I can talk to it. I think it’s quite interesting. If there were an AI like this, I would be happy to try it”. P5: “My child tells me that AI is developing quickly and the functions are becoming very powerful”. P17: “This AI is evolving fast now, and I see a lot of people around me saying it’s awesome, although I don’t know if someone my age would use it, but a lot of people are using it I’d like to try it”. P13: “We’ve heard people say sometimes that AI is awesome now, and I’m quite interested”. N5: “I heard from others that DeepSeek is very useful and helps improve work efficiency. If there were an AI that could help us provide more efficient psychological care, I would be happy to try it”.

Discussion

With the rapid development of technology, the application of AI in the medical field is becoming increasingly widespread, particularly in the psychological care of cancer patients, where it shows tremendous potential. However, AI-based psychological care differs from traditional nurse-led care in some key aspects. Therefore, this study aims to explore the acceptance attitudes of nurses and breast cancer chemotherapy patients toward AI psychological care, as well as their expectations for such care. The findings will provide valuable insights for the development of future AI-based psychological care platforms and the formulation of nursing plans.

Attitude of Acceptance

This study found that patients and nurses were primarily concerned with ease of use, the effectiveness of emotional support, the accuracy of emotion recognition, and privacy protection when considering AI psychological nursing. These factors have a direct impact on their acceptance. A majority of patients (13/17) and nurses (7/8) held a positive attitude toward the use of artificial intelligence in psychological care, especially in contexts where illness contributes to a sense of loneliness. The potential of AI as a companion tool is widely recognized. This aligns with previous research on patients’

attitudes toward AI in assisting disease diagnosis.²¹ At the same time, an appropriate integration path is considered a key factor in improving patient acceptance. By designing a thoughtful approach to AI intervention, patients can better adapt to and trust this emerging care model. Therefore, the development of future AI psychological care systems should fully consider these factors to ensure their effectiveness and patient satisfaction in practical applications.

Promoting the Integration of AI in Psychological Nursing for Breast Cancer Chemotherapy Patients: Strategies for Future Use

Nursing shortages are a global challenge, particularly in the treatment of breast cancer patients, where psychological care is often overlooked or lacks adequate support. This study suggests that AI has the potential to alleviate this issue by providing emotional support and managing emotions. Breast cancer chemotherapy patients typically face prolonged hospitalizations and treatment processes, during which they often experience feelings of loneliness and anxiety. AI technology, especially emotional recognition and voice interaction features, can monitor patients' emotional fluctuations in real-time and provide immediate psychological support based on their emotional needs. This offers strong assistance to caregivers, especially during times of peak emotional demand, reducing the burden on nursing staff and enhancing the accessibility of psychological care. However, the widespread use and application of AI are still constrained by several challenges, such as the stability of AI systems, user ease of operation, and the accuracy of emotional recognition. To enable AI to play a greater role in alleviating nursing shortages, future research and practice should focus on addressing these technological barriers to ensure that AI can seamlessly operate in real-world caregiving environments and integrate smoothly into nursing workflows.

Another significant advantage of AI is its ability to enhance both the efficiency of care and the consistency of care quality. In the process of breast cancer chemotherapy, patients' emotional fluctuations can be substantial, especially during chemotherapy, when many patients experience emotional distress such as sadness, anxiety, or depression. Traditional psychological care often relies on the individual experience and emotional resonance of nurses, whereas AI can use precise emotional recognition technology to track patients' emotional changes in real time and provide personalized responses. This not only improves the quality of emotional support for patients but also reduces the risk of nursing errors or emotional detachment caused by inappropriate emotional responses. Furthermore, AI can provide real-time feedback to nursing staff, helping them quickly identify patients' psychological states. Especially when handling multiple patients, AI can assist nurses in effectively managing emotional needs, ensuring that each patient receives timely and personalized care. This automated emotional management will greatly improve nursing efficiency and reduce patient dissatisfaction caused by emotional neglect.

Breast cancer patients often face intense emotional distress during chemotherapy, including anxiety, depression, and feelings of loneliness. The results of this study indicate that patients particularly wish for AI to understand their emotional needs and provide targeted responses, such as offering comfort when they are feeling down or sharing in their joy when they are in a good mood. This kind of emotional interaction from AI could effectively alleviate feelings of loneliness and anxiety during the chemotherapy process, helping patients better cope with the psychological challenges of treatment. AI's emotional recognition system is capable of "learning" and remembering the patient's emotional fluctuations as interactions progress, providing more personalized and long-term psychological support. This long-term companionship from AI not only helps reduce the psychological burden on patients but also offers them more emotional comfort.

Despite the immense potential of AI in psychological nursing, several challenges remain in its practical application. First, the ease of use of AI is a common concern for both patients and caregivers, especially for elderly patients or those who are not familiar with technology. AI systems need to simplify the operational processes, avoiding complex login or authorization steps. Additionally, the accuracy of AI's emotional recognition is crucial. If AI fails to accurately identify patients' emotional fluctuations, it could lead to inappropriate responses, negatively impacting the patient's experience and the effectiveness of emotional support. To ensure the effective application of AI in breast cancer chemotherapy care, continuous optimization of the technology is necessary to make it more stable, user-friendly, and capable of accurately recognizing patients' emotional states. Furthermore, caregivers must undergo appropriate training to fully utilize the AI system, enhancing its value in real-world nursing care.

Study Limitations and Implications for Subsequent Nursing Research

Although this study made every effort to reduce the impact of regional differences on the generalizability of the results, due to the small sample of patients in the included regions and the possible impact of economic and technological levels on the generalizability of the results, future studies should expand the sample size and conduct multicenter interviews to improve the broad applicability of the findings. Despite researchers efforts to present background information objectively during the PowerPoint background introduction segment, participants' responses may still be subject to a degree of potential influence. This study also did not take into account the acceptability of AI in psychological nursing by patients who had never been exposed to AI, however, the attitudes and perceptions of this segment of the population are also extremely important and could be investigated in the future specifically for this group of patients. In addition, future studies could initially develop a relevant AI platform based on the results of this interview and conduct deeper interviews after in-depth use by patients and nurses to further optimize the platform's design and functionality to ensure that it better meets the needs. In this study, digital exposure levels exhibited significant variation among participants, with such differences potentially exerting a substantial influence on the efficacy of psychological support. Younger nurses and older patients demonstrated considerable disparities in their familiarity with digital technologies and usage habits, suggesting they may also differ in their acceptance of AI systems and modes of interaction. Future research should refine the measurement of digital exposure and investigate variations in participants' responses to and outcomes from AI-based psychological support systems across different digital exposure contexts.

Conclusions

This study explored the expectations and acceptance of AI psychological nursing among breast cancer chemotherapy patients and caregivers, focusing on aspects such as the ease of use of AI systems, human-centered design, emotional recognition accuracy, and privacy protection. The findings indicate that both patients and caregivers generally prefer simple and intuitive interfaces, especially elderly patients and those unfamiliar with smart devices. Their acceptance of AI is closely tied to the convenience of use. Furthermore, patients expect AI to provide emotionally resonant interactions to alleviate loneliness and emotional distress, and to accurately identify emotional fluctuations and respond appropriately. Although AI has shown promising potential in emotional support and improving care efficiency, this study did not demonstrate that AI can directly alleviate nursing shortage. Whether AI can help address the nursing shortage still requires further verification through subsequent research on its application in real nursing workflows. Based on the needs of patients and caregivers, future AI psychological nursing platforms should focus on improving the accuracy of emotional recognition, enhancing system stability, and strengthening privacy protection to better meet the psychological care needs of breast cancer chemotherapy patients. Meanwhile, the further application of AI technology brings more possibilities for nursing work, but realizing its full potential still relies on broader practical implementation and empirical research.

Abbreviations

TAM, Technology Acceptance Model; PEOU, Perceived Ease of Use; PU, Perceived Usefulness.

Data Sharing Statement

The datasets used and analysed during the current study are available from the corresponding author Lin Chen on reasonable request.

Ethics Approval and Consent to Participate

The study was designed and conducted in accordance with the ethical principles of the Declaration of Helsinki and was approved by the Ethics Committee of the Affiliated Hospital of Jiangnan University (Approval number: JSMS04250007). All patients and nurses were informed of the content and purpose of the study prior to their participation, and all participants voluntarily agreed to participate in this study.

Consent for Publication

All authors have reviewed and approved the version of the manuscript and consent to its publication. All patients and nurses who participated in this study provided informed consent for the use of their data for publication purposes.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no competing interests in this work.

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