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Experiences of Patients With Breast Cancer Using Generative Artificial Intelligence for Treatment Related Decision Preparation: A Qualitative Study

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Abstract

Purpose

To explore how patients with breast cancer experience, interpret, and use generative artificial intelligence for treatment related decision preparation, and to identify implications for nurse mediated guidance.

Methods

Face-to-face semi-structured individual interviews were conducted with 20 women with breast cancer at a tertiary hospital in China between August 2025 and March 2026. Participants were recruited using purposive sampling to achieve variation in age, educational background, disease stage, treatment phase and experience of generative artificial intelligence use. Interviews were audio-recorded, transcribed verbatim and analysed using Braun and Clarke's reflexive thematic analysis. Written informed consent was obtained from all participants.

Results

Four interrelated themes were developed: (1) turning to generative artificial intelligence to fill information and emotional gaps between clinical encounters; (2) converting complex medical information into decision preparation; (3) practising calibrated trust in AI-generated information; and (4) needing nurse-mediated guardrails for safe and meaningful use of AI in decision support. Together, these themes showed that participants used generative AI as a patient-initiated resource for decision preparation, while continuing to rely on clinicians' judgement and expecting nurses to support safer, more contextualized and more meaningful AI use.

Conclusions

Generative artificial intelligence was used by patients with breast cancer as a patient-initiated resource for decision preparation between clinical encounters. Although it helped participants organise information and clarify concerns, it also created new burdens related to credibility, individual applicability and emotional responses. Nurse-mediated support is needed to promote the safe, appropriate and meaningful use of generative artificial intelligence in breast cancer decision preparation.

Introduction

Breast cancer is among the most commonly diagnosed malignancies in women worldwide and remains a major public health challenge[1]. With advances in early detection, molecular classification, and multimodal treatment, patients with breast cancer are often required to engage in a series of complex decisions across diagnosis, surgery, systemic therapy, radiotherapy, survivorship care, and follow up[2].

These decisions involve more than understanding medical information. Patients may need to weigh potential survival benefits, treatment related adverse effects, body image, fertility concerns, family roles, financial burden, quality of life, and the long term risk of recurrence[3, 4].

Effective decision support is therefore an essential component of patient centred breast cancer care. Decision support involves helping patients understand available treatment options, clarify their values and preferences, cope with uncertainty, and participate in communication and shared decision making with healthcare professionals[5, 6]. Although healthcare professionals remain the primary and most trusted source of medical advice, patients' informational and emotional needs may not always be fully addressed during routine clinical encounters[7, 8]. Limited consultation time, the technical complexity of pathology and treatment information, variations in health literacy, and emotional distress after diagnosis may hinder patients' ability to understand, process, and retain information during treatment discussions[9, 10].

In this context, generative artificial intelligence (AI) may become a new resource that patients use outside clinical settings to support information seeking and decision preparation[11]. Compared with traditional search engines, which usually require users to evaluate, filter, and integrate multiple webpages, generative AI can provide interactive, conversational, and seemingly personalized responses[12]. These features may help patients understand medical terminology, organize complex information, generate questions for consultations, and prepare for shared decision making discussions with healthcare professionals[13]. For patients with breast cancer, such tools may be particularly appealing because they are easily accessible, provide immediate responses, and allow iterative questioning based on users' concerns and follow up inquiries[14]. In the Chinese digital context, patients may use not only ChatGPT but also Chinese generative AI platforms such as DeepSeek, Kimi, Doubao, and Wenxin Yiyan, reflecting a localized pattern of AI assisted health information seeking shaped by the broader digital ecosystem.

However, the use of generative AI in patient decision making also warrants careful consideration. Existing evaluation studies have raised concerns about the accuracy, completeness, and contextual appropriateness of AI generated health information, particularly when responses are produced without access to a patient's complete clinical background[15, 16]. These concerns are especially relevant in breast cancer care, where treatment decisions are influenced by tumor stage, molecular subtype, receptor status, genetic testing results, previous treatment history, comorbidities, treatment response, and individual preferences[2, 17, 18]. As a result, AI generated information may help patients prepare for decision related conversations, but it may also create new burdens related to credibility judgement, individual applicability, emotional responses, and possible conflict with professional advice.

Previous studies have mainly examined the performance of generative AI in healthcare related tasks or explored its potential applications in patient education and decision support[19, 20]. Less is known about how patients with breast cancer actually encounter, interpret, verify, and use generative AI during real world treatment related decision making. In particular, limited evidence is available on how AI

generated information influences patients' questions, emotional responses, communication behaviours, trust practices, and perceived need for professional guidance.

From a supportive care and nursing perspective, understanding these experiences is important for developing practical strategies that support AI health literacy, information appraisal, emotional support, and shared decision making[21]. As patients increasingly use generative AI outside clinical encounters, nurses need to understand how AI generated information enters patients' decision preparation and how patients can be supported to use such tools safely and meaningfully. This descriptive qualitative study therefore aimed to explore how patients with breast cancer experience and make sense of using generative artificial intelligence for treatment related decision support, and to identify the forms of nursing guidance they perceive as acceptable and helpful for using such tools safely and effectively.

Methods

3.1 | Design

This study adopted a qualitative descriptive design. Qualitative description is appropriate for health care research that seeks to obtain direct accounts from individuals who have experienced the phenomenon under investigation[22]. This approach was consistent with the aim of the present study, which was to develop a direct and practice-oriented understanding of patients' experiences, perceptions, and support needs when using generative artificial intelligence for breast cancer-related decision support. The study was reported in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist[23].

3.2 | Study setting and recruitment

This study was conducted in the breast surgery and medical oncology departments of a tertiary hospital in China between August 2025 and March 2026. Participants were recruited using purposive sampling to obtain rich and diverse accounts of their experiences with using generative artificial intelligence for breast cancer-related decision support. During sampling, variation was sought in participants' age, educational background, disease stage, treatment phase, and experience with generative AI use.

With the assistance of clinical nurses, the researchers identified potential participants who met the predefined inclusion and exclusion criteria. The researchers then approached eligible patients, explained the study purpose and procedures, and provided information about confidentiality, voluntary participation, and their right to withdraw at any time without affecting their medical care. Patients who agreed to participate provided written informed consent before the interview.

3.3 | Inclusion and Exclusion criteria

Participants were eligible if they: (1) were aged 18 years or older; (2) had a confirmed diagnosis of breast cancer; (3) were able to communicate in Mandarin Chinese; (4) had personal experience of using generative artificial intelligence tools, such as ChatGPT or similar large language model-based chatbots,

for breast cancer-related information seeking, decision preparation, or decision support; and (5) were willing to participate in the study and provide written informed consent.

Patients were excluded if they: (1) had severe cognitive impairment or communication difficulties that prevented them from completing an interview; (2) were physically too unwell to participate in an interview; or (3) were experiencing severe psychological distress or an emotional crisis at the time of recruitment.

3.4 | Data collection

After obtaining written informed consent from the participants, data were collected between August 2025 and March 2026 through face-to-face, semi-structured individual interviews. All interviews were conducted in Mandarin in a quiet and private room within the hospital, with only the participant and the interviewer present.

The interviews were conducted by a female registered nurse who had received training in qualitative interviewing and had a postgraduate background in breast oncology nursing research. Before the interviews, she had not been involved in the participants' clinical care and had no personal relationship with them. Prior to data collection, the interviewer documented her professional identity and potential assumptions in reflexive memos, including the assumption that generative artificial intelligence may influence patients' understanding of medical information, emotional responses, communication with healthcare professionals, and level of participation in decision-making. Throughout the interviews, she maintained reflexive awareness and used open-ended, non-leading questions to minimise the influence of preconceptions on participants' narratives.

The semi-structured interview guide was developed based on the study aim, relevant literature[24, 25], and discussions within the research team. The guide explored participants' motivations for using generative artificial intelligence, the types of questions they asked, perceived benefits and concerns, their interpretation and verification of AI-generated information, the influence of AI use on communication with healthcare professionals and participation in decision-making, and their expectations for nursing support. To assess the clarity and logical coherence of the interview questions, the research team conducted two pilot interviews. The guide was then refined according to participants' feedback, resulting in the final version presented in Table 1.

Before the interviews, participants were asked to complete a brief questionnaire on demographic and clinical information, including age, education level, marital status, employment status, disease stage, treatment phase, and experience with using generative artificial intelligence. At the beginning of each interview, the interviewer reiterated the study purpose, confidentiality measures, the voluntary nature of participation, and the participants' right to withdraw at any time. Through open-ended questions and flexible probing, participants were encouraged to provide in-depth descriptions of their experiences.

With participants' consent, all interviews were audio-recorded and lasted approximately 30–60 minutes. Field notes were written immediately after each interview to document contextual details, nonverbal

expressions, emotional responses, and preliminary analytical reflections. The recordings were transcribed verbatim in Chinese and checked against the original audio for accuracy. Data collection and preliminary analysis were conducted concurrently. Recruitment continued until the research team judged that the dataset had sufficient depth, variation and informational richness to address the study aim.

Table 1
Interview outline.

Theme	Questions
Decision-making and information needs	Could you describe any situations during your breast cancer diagnosis and treatment when you needed to make decisions or required specific information support?
Experiences of using generative AI	Could you describe a specific experience of using generative AI to seek breast cancer-related information or support decision-making?
Perceived benefits	In what ways did generative AI help you understand your condition, prepare for consultations, or participate in treatment-related discussions?
Trust, verification, and conflict	How do you usually judge whether AI-generated responses are trustworthy? How would you respond if AI-generated information differed from doctors' or nurses' recommendations?
Emotional,communication,and decision-making impact	How did AI-generated information affect your emotions, communication with healthcare professionals, or treatment-related decisions?
Concerns and nursing support needs	What concerns did you have when using AI? What support would you expect from nurses to help you use such tools more safely and effectively?

3.5 | Data analysis

Data were analysed using Braun and Clarke's reflexive thematic analysis[26]. The analysis was conducted in Chinese. Audio recordings were transcribed verbatim, and the first and second authors checked each transcript against the corresponding recording to correct transcription errors. All identifiable information, such as personal names, locations, and institutional details, was removed before analysis. The first and second authors repeatedly read the transcripts to become familiar with the data and recorded initial analytic notes. The transcripts were then imported into NVivo software for data management, coding, and theme organization.

The analysis followed Braun and Clarke's six recursive phases. First, the first and second authors familiarised themselves with the data by repeatedly reading the transcripts and recording initial analytic notes. Second, initial codes were generated primarily inductively, while remaining sensitised to the study aim of understanding patients' experiences of using generative artificial intelligence for breast cancer-related decision support. Third, related codes were examined and brought together to develop candidate

themes that captured meaningful patterns across participants' accounts. Fourth, candidate themes were reviewed in relation to both coded extracts and the full dataset, with attention to similarities, differences and tensions within participants' experiences. Fifth, the research team refined, defined and named the themes through reflexive discussions about their meanings, boundaries and relationships. Finally, the analytic narrative was developed by linking the themes to representative quotations and the overall research aim.

During theme development, the researchers repeatedly returned to the original data to review and refine the candidate themes, ensuring that they captured meaningful patterns across the dataset while preserving variations and complexities in participants' accounts. Several team meetings were held to refine, define, and name the final themes and subthemes. To enhance credibility, interview summaries or brief interpretive summaries were returned to participants for checking. Participants' feedback led to minor clarification of wording but did not result in substantive changes to the thematic structure. Finally, all authors reviewed and agreed on the final themes and their names. Representative quotations presented in the manuscript were translated into English by bilingual researchers and checked by the research team to ensure semantic accuracy.

3.6 | Ethical considerations

This study was approved by the Ethics Committee of The Second Affiliated Hospital of Guangxi University of Chinese Medicine (approval number: KY2025-148). Before the interviews, the research team explained the study purpose, methods, interview procedures, audio-recording arrangements, potential discomfort, and participants' rights. All participants provided written informed consent before the interviews. Participation was entirely voluntary, and participants were informed that they could withdraw from the study at any time without affecting their subsequent treatment or care.

To minimize potential power imbalance, the interviews were conducted by a female researcher who was not involved in the participants' clinical care and had no personal relationship with them. Participants were informed that they could pause or stop the interview at any time if they felt uncomfortable. To protect privacy and confidentiality, all identifiable information was anonymized before data analysis, and participants were assigned codes instead of using their real names. Audio recordings, transcripts, and related study materials were stored securely and were accessible only to members of the research team.

3.7 | Rigour and reflexivity

To enhance the rigour of the study, multiple strategies were adopted to ensure the credibility, dependability, confirmability, authenticity, and transferability of the data. The interviewer had received training in qualitative interviewing and was familiar with breast cancer nursing and decision-support research, which helped ensure the credibility of data collection. The interview guide was discussed within the research team and refined after pilot interviews to improve the clarity, relevance, and non-leading nature of the questions. Data collection and preliminary analysis were conducted concurrently to identify emerging concepts and assess data saturation. To enhance the confirmability of the research process, an audit trail was maintained throughout the study to document key methodological and

analytic decisions. Regular team meetings were also held to discuss the relationships among the coding framework, candidate themes, and the original data. Reflexive journals were kept to examine how the researchers' professional backgrounds and assumptions might influence the interviews and data interpretation. To support authenticity and transferability, representative quotations were used, variations in participants' experiences were preserved, and detailed descriptions of the study setting, participant characteristics, data collection, and analysis procedures were provided.

FINDINGS

A total of 20 women with breast cancer participated in this study. Their mean age was 49.5 years (SD = 9.9; range = 31–66). Most participants were married, had completed senior high school education or above, and were diagnosed with stage II or III breast cancer. Participants were at various treatment phases, with the largest proportion undergoing chemotherapy or radiotherapy. Most used Chinese generative AI tools, particularly DeepSeek and Kimi, mainly to understand medical information, prepare for consultations, interpret treatment recommendations, and manage side effects. Participant characteristics are shown in Table 2.

Four interrelated themes were developed from the data. Together, they describe a process in which participants turned to generative AI to address informational and emotional gaps between clinical encounters, used AI to translate complex medical information into decision preparation, calibrated their trust in AI-generated information through verification and clinical judgement, and sought nurse-mediated guardrails to support the safe and meaningful use of AI in treatment-related discussions.

4.1 | Theme 1. Turning to generative AI to fill information and emotional gaps between clinical encounters

This theme describes participants' use of generative AI as an accessible resource for making sense of breast cancer-related information and managing uncertainty between clinical encounters. Rather than replacing professional advice, AI was used to fill gaps that emerged after consultations, when participants continued to process complex information, unresolved questions, and emotional vulnerability.

4.1.1 | Facing decision moments with insufficient understanding

Participants described breast cancer treatment as a continuous decision-making process that began at diagnosis and extended across surgery, adjuvant therapy, and symptom management. Although clinicians provided explanations, limited consultation time, complex medical information, and the emotional shock of diagnosis left many participants feeling that they had not fully understood their condition or treatment options, yet were already required to make important decisions.

"After being diagnosed with breast cancer, almost every step required a decision, and each decision felt as if I was risking my life. I felt extremely helpless, as if I knew nothing, but I still had to make the right choice." (Participant 4)

This insufficient understanding was particularly evident when participants had to weigh specific treatment options, such as choosing between breast-conserving surgery and mastectomy, while also considering recurrence risk, body image, postoperative recovery, and subsequent treatment plans.

“When I was choosing the surgical approach, the doctor said that breast-conserving surgery was possible in my case, but I was still worried about the risk of recurrence. At that time, I really needed someone to clearly explain the pros and cons of breast-conserving surgery and mastectomy.” (Participant 10)

4.1.2|Seeking immediate and comprehensible explanations outside clinical encounters

Participants did not regard generative AI as a more authoritative medical source than clinicians. Rather, they used it as an explanatory tool that was readily accessible and allowed them to ask questions outside clinical encounters. Many questions were not fully processed during consultations, but gradually emerged after participants returned home and repeatedly reflected on their pathology reports, treatment recommendations, and conversations with clinicians.

“After returning home, I still felt very uneasy. I entered the key information from my pathology report into the AI system and asked what these indicators meant and how they might affect my treatment plan.” (Participant 2)

“I asked it to explain my pathology report in language that even a third-grade student could understand. Unlike searching the internet, it did not give me lots of fragmented information or use complicated concepts. Instead, it explained my situation in plain and understandable language.” (Participant 9)

4.1.3| Using AI privately to make sense of fear and uncertainty

Shortly after diagnosis, some participants privately turned to generative AI to ask questions and seek explanations when they felt frightened, uneasy, or unable to understand their condition. Compared with the fragmented and sometimes extreme information found through online searches, AI’s clearer and more specific responses helped ease their early fears to some extent.

“During the period shortly after my diagnosis, most of what I found online were extreme cases, and the more I searched, the more hopeless I felt. After AI explained my subtype, stage, and prognosis in plain language, I gained a clearer sense of my situation, and the anxiety that had kept me awake at night eased considerably.” (Participant 3)

However, AI did not always provide reassurance. For participants living with illness-related uncertainty, AI’s detailed listing of side effects, recurrence risks, and severe outcomes could generate new anxiety, a phenomenon particularly pronounced among older adults or those with lower educational attainment who tended to relate these risks to their own condition. As an illustrative example, a 62-year-old participant with a junior high school education described how she unconsciously internalized these generalized threats.

“Sometimes AI also made me more anxious. For example, when I asked about a side effect or the risk of recurrence, it listed many possible situations and even mentioned some serious outcomes. After reading

them, I could not help applying them to myself and worrying that the same thing might happen to me."(Participant 12)

4.2 | Converting complex medical information into decision preparation

This theme captures how participants used generative AI to transform complex medical information into practical preparation for treatment-related decision-making. AI helped them organize options, prepare questions, and clarify what mattered most to them, thereby supporting more focused communication with healthcare professionals.

4.2.1 | Structuring treatment options into comparable trade-offs

Participants perceived the value of generative AI not only in explaining individual medical concepts, but also in organizing scattered treatment-related information into a more comparable form. When faced with several seemingly feasible options, the way AI structured the information helped participants more clearly identify the differences between these options.

"What it does best is this kind of structured comparison. As long as I tell it my specific situation and the questions I care about, it can clearly list the advantages and disadvantages, incidence rates, and costs of different options." (Participant 8)

4.2.2 | Generating consultation questions and improving communication readiness

Participants used generative AI not only to understand treatment-related information, but also to prepare questions before follow-up consultations. AI helped them translate general concerns into specific questions that could be brought into clinical encounters, making limited patient–clinician communication more focused and reducing the likelihood of forgetting important issues because of nervousness.

"In the past, when I went to outpatient appointments, I often became so nervous that I did not know what to ask. Later, I would ask AI in advance to help me list questions, then revise them according to my own situation and take them to the doctor. This made the communication more organized and helped me avoid missing the things I was really worried about." (Participant 15)

This preparation also changed how participants communicated during clinical encounters. Rather than expressing only general concerns, they were able to ask healthcare professionals more specific questions about treatment goals, side-effect management, and individualized risks.

"This made my questions more specific when I saw the doctor. I felt that the communication was more efficient, and I was no longer as passive." (Participant 18)

4.2.3 | Clarifying personal values and life priorities in treatment choices

Participants did not view AI as a tool that could make treatment decisions for them. Instead, they saw it as a way to better understand the possible consequences of different options. By learning how each option might affect their body, treatment arrangements, and daily life, they were able to further consider which choice was more consistent with their actual circumstances and what they felt able to accept.

“AI did not directly tell me which option to choose. It just explained what each choice might mean for me, such as whether I would need further treatment, how my body might be affected, and whether I could manage it in my daily life. In the end, the decision still depended on what I could accept.” (Participant 14)

4.3 | Practising calibrated trust in AI-generated information

This theme captures participants’ cautious and conditional trust in AI-generated information. Although AI responses were sometimes perceived as useful and convincing, participants treated them as information to be judged and checked rather than as definitive medical advice.

4.3.1 | Trusting AI when explanations were logical, balanced, and understandable

Participants first judged the credibility of AI responses based on their internal logic. Compared with responses that simply provided conclusions, they were more likely to trust information that could explain the relationship between medical indicators and treatment options and remained consistent across responses.

“I mainly look at whether its explanation makes sense. For example, my doctor had told me that ER, PR, and HER2 could affect subsequent treatment. If AI can explain how these indicators are related to endocrine therapy, targeted therapy, or chemotherapy, and if its answers do not contradict each other, I would consider the explanation more credible.” (Participant 19)

In addition to the logic of AI responses, participants also judged credibility by how the information was communicated, particularly whether it was presented in a clear, measured, and understandable way.

“It did not make my condition sound better than it was, and it did not exaggerate the risks. It simply used words I could understand to tell me what I was facing.” (Participant 20)

4.3.2 | Verifying AI through clinicians, official sources, and multiple AI tools

Participants did not directly accept AI-generated information, but regarded it as preliminary information that required further verification. Some younger and more highly educated participants reported that they

compared AI responses with clinicians' previous explanations, official websites or guidelines, and responses from other AI tools.

"Now, when I see important information, I usually do not believe it immediately. I first think about whether it is consistent with what the doctor told me, then check what official websites or guidelines say. Sometimes I also ask several different AI tools to see whether their answers are similar. If something does not match, I do not feel confident trusting it." (Participant 5)

4.3.3 | Prioritising clinicians' judgement when AI lacked individual clinical context

When AI responses differed from healthcare professionals' advice, or when participants questioned whether the information applied to their own situation, they did not regard AI as the final source of guidance. Instead, they treated healthcare professionals' judgement as a safer point of reference.

"If AI says something different from what the doctor or nurse suggested, I usually would not follow it directly. Doctors and nurses know my pathology results, test indicators, physical condition, and treatment responses, whereas AI only responds based on the information I enter, so it may not be complete." (Participant 17)

4.4 | Needing nurse-mediated guardrails for safe and meaningful use of AI in decision support

This theme captures participants' expectations for nurses to provide practical and relational guardrails for AI use. Rather than being left to interpret AI-generated information alone, participants wanted nurses to create a safe space to discuss AI use, provide concrete guidance on safer use, and help them bring AI-generated information into conversations with healthcare professionals.

4.4.1 | Hoping to disclose AI use without being seen as distrustful

Participants' willingness to disclose their use of AI depended on whether they feared this behaviour would be misunderstood by healthcare professionals. Some worried that using AI to search for information might be interpreted as distrust, and therefore hoped that healthcare professionals would respond without judgement.

"Actually, I often do not mention that I have used AI to look up information, because I am afraid healthcare professionals may think I do not trust them. I hope they can understand that using AI does not mean I distrust them." (Participant 1)

4.4.2 | Needing practical guidance for safer AI use

Participants expected nurses to provide concrete and practical guidance on how to use generative AI more safely, rather than offering only general warnings. They wanted support in formulating clearer prompts, because vague questions often led to vague or unhelpful AI responses.

“I also hope nurses could give us some examples of how to ask questions. Sometimes I do not know how to ask AI properly. If my question is too general, its answer is also very general.” (Participant 16)

Participants also expressed a need for simple and usable strategies to judge the reliability of AI-generated information. Given their limited medical knowledge, they hoped nurses could teach them how to assess AI responses and how to respond when AI-generated information differed from professional advice.

“We are not medical professionals, so we really do not know how to judge whether AI is right or wrong. I hope nurses could teach us some simple and practical ways to assess AI responses, and tell us what to do when AI says something different from doctors or nurses.” (Participant 13)

4.4.3 | Expecting nurses to bridge AI information and clinical communication

Participants hoped that they could bring specific AI-generated information to nurses during consultations or nursing interactions. They did not expect nurses to check every AI response, but wanted help identifying which information might not apply to them and which questions should be discussed further with doctors.

“If nurses allowed us to bring up what we found through AI and ask about it, I would feel much more reassured. I am not asking nurses to check every response for me. I just hope they can help me judge what may not apply to me and what needs further explanation from the doctor, so I would not be left searching online and becoming more confused on my own.” (Participant 19)

Table 2
Demographic, clinical, and generative AI use characteristics of participants

Characteristics	Participants (N = 20)
Age, years	
Mean ± SD	49.5 ± 9.9
Range	31–66
Marital status	
Married	18 (90.0)
Unmarried/divorced/widowed	2 (10.0)
Education level	
Junior high school or below	2 (10.0)
Senior high school/technical secondary school	5 (25.0)
College diploma	7 (35.0)
Bachelor's degree or above	6 (30.0)
Employment status	
Employed	9 (45.0)
Unemployed/homemaker	7 (35.0)
Retired	4 (20.0)
Disease stage	
Stage I	2 (10.0)
Stage II	9 (45.0)
Stage III	7 (35.0)
Stage IV	2 (10.0)
Current treatment phase	
Newly diagnosed/pre-treatment	2 (10.0)
Post-surgery	4 (20.0)
Undergoing chemotherapy or radiotherapy	8 (40.0)
Receiving endocrine or targeted therapy	4 (20.0)
Note: □ Multiple responses allowed; therefore, percentages may total more than 100%.	

Characteristics	Participants (N = 20)
Age, years	
Follow-up/survivorship	2 (10.0)
Main generative AI tool used	
DeepSeek	8 (40.0)
Kimi	4 (20.0)
Doubao	3 (15.0)
Wenxin Yiyan or other Chinese AI tools	2 (10.0)
ChatGPT	1 (5.0)
Multiple tools	2 (10.0)
Duration of generative AI use	
< 1 month	4 (20.0)
1–6 months	11 (55.0)
> 6 months	5 (25.0)
Frequency of generative AI use	
Less than once per week	8 (40.0)
1–3 times per week	9 (45.0)
≥ 4 times per week	3 (15.0)
Reported purposes of generative AI use[a]	
Understanding diagnosis, pathology, or test reports	16 (80.0)
Preparing questions for healthcare professionals	13 (65.0)
Understanding treatment plans or medical recommendations	12 (60.0)
Managing treatment-related side effects	11 (55.0)
Comparing treatment-related options	8 (40.0)
Seeking emotional reassurance	6 (30.0)
Note: □ Multiple responses allowed; therefore, percentages may total more than 100%.	

DISCUSSION

This study provides insight into how breast cancer patients used generative AI as a patient-initiated resource for decision preparation between clinical encounters. Participants did not describe AI as a substitute for clinicians. Rather, they used it to make sense of complex information, prepare questions, clarify treatment-related trade-offs and manage uncertainty. However, the usefulness of AI was accompanied by concerns about credibility, applicability and emotional burden, highlighting the need for nurse-mediated support.

According to Mishel's Uncertainty in Illness Theory, uncertainty arises when patients are unable to assign clear meaning to illness-related events or to predict the potential consequences of the disease and its treatment[27]. In the present study, participants' active use of AI between clinical encounters may be related to limited consultation time and the complexity of medical information. Many questions were not fully processed during clinical consultations but re-emerged after patients returned home and revisited their pathology reports, treatment recommendations, and concerns about recurrence. This finding is consistent with previous evidence showing substantial unmet supportive care needs among patients with breast cancer, particularly in relation to informational and psychological support[28].Our study further shows that, compared with traditional online searches, generative AI has a distinctive role in providing immediate, conversational responses to patients' questions and translating complex medical terminology into more understandable language. However, when patients continued to seek information about their disease and potential risks after returning home, AI did not always provide reassurance.When AI generated detailed lists of side effects, recurrence risks, or severe outcomes, some participants, particularly older adults or those with lower educational attainment, tended to relate these general risks too closely to their own condition, thereby experiencing new anxiety. Previous qualitative research on AI-assisted patient decision-making has similarly suggested that AI may generate both understanding and concern among patients[29].Therefore, although generative AI may help patients make sense of unresolved questions after clinical consultations, it may also intensify anxiety when it presents possible risks without being able to determine whether those risks are truly applicable to the individual patient.

Generative AI was used by participants not only to understand medical information but also to prepare for decision-making before follow-up consultations. Participants used AI to compare the advantages and disadvantages of treatment options, organize questions for clinical consultations, and consider how different choices might affect their bodies, treatment arrangements, and daily lives. According to the concept of shared decision-making, patient participation in treatment decisions involves more than understanding clinicians' explanations; it also requires patients to understand the available options, weigh the risks and benefits of different choices, and clarify their personal values and preferences[30]. Previous studies on breast cancer decision support have also shown that patient decision aids and shared decision-making support interventions can help patients understand treatment options and reduce decisional conflict or decision-making difficulties[31, 32].Our study further shows that, in patients' everyday lives, generative AI partly functioned as a question-prompting and value-clarification tool. From a patient empowerment perspective, the value of AI lies not merely in providing answers, but in helping patients transform vague concerns and uncertainties into more specific, expressible, and discussable questions, thereby enhancing their active participation in clinical communication and treatment decision-

making[33]. This process enabled patients to move beyond passively receiving explanations and to think more clearly before follow-up consultations about what they wanted to ask, what they were worried about, and which treatment-related effects mattered most to them[34]. However, such empowerment does not mean that AI can replace clinical judgement. Rather, AI may help patients articulate their questions, preferences, and life concerns more clearly, thereby making shared decision-making more focused and responsive to individual needs.

The value of AI in decision preparation depends largely on whether patients are able to interpret and judge its responses within their specific clinical context. Previous research has suggested that patients with cancer are generally willing to use AI as an auxiliary tool, but do not want it to replace physicians' clinical judgement[35]. Our study further shows that participants did not directly accept AI-generated information. Instead, they assessed the credibility of AI responses based on their logical coherence, internal consistency, balanced presentation, and understandability. When important treatment-related information was involved, they further verified AI-generated information against physicians' explanations, official sources, or responses from other AI tools.From the perspective of automation bias, fluent, complete, and seemingly professional responses generated by AI may lead some patients to overestimate their reliability[36]. Participants with higher educational attainment or better digital health literacy appeared more able to avoid blind reliance through comparison across multiple sources. In contrast, older participants or those with lower educational attainment may have found it more difficult to judge whether the risks mentioned by AI were truly applicable to their own clinical situation. Therefore, generative AI did not completely resolve patients' burden of information judgement. Instead, it may shift part of the responsibility for assessing credibility and individual applicability onto patients themselves. For patients with limited medical knowledge or digital health literacy, this process may become a new source of pressure.

Our study found that although patients actively used AI to obtain disease- and treatment-related information, they did not want to bear the responsibility of interpreting and judging this information alone. When patients feared being dismissed or misunderstood, they might choose to conceal their information-seeking behaviours. Previous qualitative research on cancer survivors' experiences of using AI-based conversational tools found that participants generally preferred interacting with healthcare professionals rather than relying on chatbots. This was mainly because chatbots were perceived as lacking empathy and often providing broad responses that were not specific to their cancer diagnosis[37].Our study further shows that patients expected nurses to act as a bridge between AI-generated information and clinical decision-making. They did not expect nurses to check every AI response in detail, but hoped to receive support in judging which information represented general knowledge and which issues needed to be further discussed in relation to their own clinical condition. Watson's Human Caring Theory emphasizes that nursing practice should be grounded in caring relationships, human dignity, and the holistic needs of patients[38]. From this perspective, generative AI should not replace humanistic caring in nursing[39], but should serve as an auxiliary tool that helps nurses identify patients' needs, extend communication, support decision-making, and maintain patient safety.Therefore, AI-generated responses brought by patients should not be viewed as a challenge to

professional authority. Instead, they may provide an entry point for nurses to understand patients' concerns, preferences, and communication needs. In nursing practice, it may be insufficient to simply remind patients not to trust AI uncritically. Rather, nurses should encourage patients to bring AI-generated questions to follow-up consultations or nursing encounters, and help them distinguish between general information, information that requires interpretation in light of their individual clinical condition, and issues that need further confirmation by physicians.

5.1 | Strengths and Limitations

The strength of this study lies in its focus on patients' real-life decision-making contexts. Rather than evaluating AI tools solely from a technical or response-quality perspective, this study explored how patients with breast cancer used generative AI in practice, thereby providing patient-centred insights into this emerging issue. Purposive sampling was used to include participants with diverse ages, educational backgrounds, disease stages, treatment phases and experiences of AI use. In addition, several strategies were adopted to enhance the rigour of the study, including semi-structured interviews, field notes, reflexive memos, concurrent data collection and analysis, team discussions and participant checking. The findings have practical relevance for nursing, suggesting that nurses need to provide professional support when patients use generative AI for treatment-related decision preparation, in order to promote its safe, appropriate and meaningful use.

This study also has several limitations. First, participants were recruited from a single tertiary hospital in China, which may limit the transferability of the findings to other healthcare settings and cultural contexts. Second, this study focused on patients with breast cancer who had experience using generative AI. Therefore, the findings mainly reflect the perspectives and support needs of AI users and should not be directly extended to all patients with breast cancer, particularly those who have not used AI or who have limited access to such tools because of digital health literacy or technological barriers. Third, the data were based on participants' self-reported experiences rather than direct observation of their actual AI interactions, prompts or AI-generated responses, which may have introduced recall bias or social desirability bias. Finally, as generative AI technologies continue to develop, patients' experiences, trust practices and support needs may change over time.

Conclusions

This study showed that patients with breast cancer used generative AI as an accessible resource for making sense of complex medical information, preparing for consultations and supporting treatment-related decision preparation between clinical encounters. Although AI helped participants organize information and clarify concerns, it did not replace clinicians' judgement and could also create new burdens related to credibility, individual applicability and emotional responses.The findings highlight the need for nurse-mediated support to help patients use generative AI safely and meaningfully. Nurses should create a non-judgemental space for patients to discuss AI-generated information, support patients in verifying and contextualizing such information, and help them bring AI-related questions into

clinical communication and shared decision-making. These insights may inform the development of practical nursing guidance and patient-centred interventions for AI-supported decision preparation in breast cancer care.

Declarations

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Data availability: The data that support the findings of this study are available from the corresponding author upon reasonable request. The data are not publicly available due to privacy and ethical restrictions.

Declarations:

Ethical approval: This study was approved by the Ethics Review Committee of The Second Affiliated Hospital of Guangxi University of Chinese Medicine (Ethical Approval No.: KY2025-148).

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