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Review

Symptom experience in endocrine therapy for breast cancer patients: A qualitative systematic review and meta-synthesis

Yan Ma^{a,b}, Zhenqi Lu^{a,b,*}, Jiajia Qiu^{a,b}, Huiyu Luo^c, Lichen Tang^d, Yun Li^{a,b}, Ping Li^{a,b}^a Department of Nursing, Fudan University Shanghai Cancer Center, Shanghai, China^b Department of Oncology, Shanghai Medical College, Fudan University, Shanghai, China^c Department of Nursing, Fujian Cancer Hospital, Fujian, China^d Department of Breast Surgery, Fudan University Shanghai Cancer Center, Shanghai, China

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ABSTRACT

Objective: The purpose of this study was to systematically integrate the experience of symptoms of breast cancer patients receiving endocrine therapy, analyze the patients' understanding and coping status of symptoms, and provide information for the development of targeted symptom management measures.**Methods:** We searched databases including PubMed/MEDLINE, MEDLINE (Ovid), Web of Science, EMBASE (Ovid), CINAHL (EBSCO), and ProQuest from inception to September 25, 2023. Literature was screened and analyzed using Endnote software, evaluated using the Joanna Briggs Institute Critical Appraisal Tool for Qualitative Research, and the results were integrated using JBI's Pooled Integration Methodology.**Results:** Three composite findings were derived from 10 studies: symptom distress during endocrine therapy; coping in symptom experience; and support needs.**Conclusions:** Emphasis should be placed on the symptomatic experience of breast cancer patients undergoing endocrine therapy, and effective interventions should be developed to improve patients' medication compliance and quality of life. Finally, the long-term survival rate of patients is improved.**Systematic review registration:** CRD42023466073.

Introduction

Breast cancer is the most common malignancy in women. At present, the treatment of breast cancer is divided into local treatment (surgery) and systemic treatment (chemotherapy, targeted therapy, endocrine therapy [ET], etc.). Hormone receptor-positive patients make up about three-quarters of breast cancer patients.¹ ET is the first-line treatment for patients with hormone receptor-positive breast cancer. The American Society of Clinical Oncology breast cancer clinical practice guidelines² and Guidelines and Standards for the diagnosis and treatment of breast cancer formulated by China anti-Cancer Association (2021 edition)³ recommend that hormone receptor-positive breast cancer patients receive ET for 5–10 years after surgery.

ET can effectively reduce the recurrence rate of breast cancer, but also lead to a series of symptoms in patients, including hot flashes, cognitive decline, joint and muscle pain or stiffness, fatigue, sleep disorders, sexual dysfunction, and so on.⁴ The study by Seboun et al.⁵ showed that the 5-year cumulative incidence of hot flashes in

breast cancer patients treated with tamoxifen was 77.6%.⁵ The study by Pierre-etienne et al.⁶ demonstrated a 60%–65% incidence of hot flashes in postmenopausal breast cancer patients treated with ET.⁶ Ouyang Die in the line of 366 ET of breast cancer patients' investigation found that they have poor memory and other cognitive function decline.⁷ Research by Din⁸ and Crew⁹ suggests that aromatase inhibitors (AIs) related incidence of joint pain, joint stiffness is 9.9%–47%. In a follow-up study of early-stage breast cancer patients, Bowers found that 40% of 70% of ET patients were fatigued.¹⁰ In analyzing the related factors of insomnia after breast cancer surgery, Liu Cuiyang found that patients undergoing ET after breast cancer surgery were the most likely to have secondary insomnia (71.08%).¹¹ In a survey of 189 young breast cancer patients treated with ET, Gan Lu found that the incidence of sexual dysfunction was 81.0%.¹² Gandhi's study also found that breast cancer patients treated with AIs had the highest incidence of sexual dysfunction.¹³ Patients often have a variety of negative emotions secondary to physical pain, which seriously affect daily life, and even delay and refuse treatment.

* Corresponding author.

E-mail address: luzhenqi1972@163.com (Z. Lu).<https://doi.org/10.1016/j.apjon.2023.100364>

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The investigation of symptoms after ET for breast cancer is helpful to find different directions and focus on symptom management during ET for breast cancer. But it is difficult to quantitative comprehensive knowledge of the symptoms of patients with breast cancer during the ET experience. In 2003, Armstrong proposed symptom experience model based on symptom management theory and unpleasant symptom theory.¹⁴ The model points out that symptom experience refers to the process by which an individual perceives symptoms, evaluates them cognitively, elicits emotional responses, and manages symptoms.

Compared with quantitative research, qualitative research pays more attention to the experience of patients in treatment, nursing, and rehabilitation, and it is easier to describe the inner feelings of patients. Although the number of qualitative studies on symptoms related to ET in breast cancer patients has gradually increased in recent years, the sense of experience is a subjective feeling with large individual differences. Individual qualitative studies may be difficult to reflect the overall situation and provide limited guidance for clinical practice. Therefore, this study used the meta-synthesis method to conduct a pooled analysis of relevant qualitative research results. By revealing the real symptom experience of breast cancer patients during ET, patients' understanding of symptoms and coping status were analyzed, so as to achieve accurate nursing services and provide reference for formulating symptom management strategies.

Methods

Aims and design

The aim of this study is to systematically integrate the symptom experience of breast cancer patients receiving ET, analyze the patients' understanding and coping status of symptoms, so as to achieve accurate nursing services and provide reference for the development of symptom management strategies. The protocol was registered in PROSPERO (CRD42023466073). Literature was screened and analyzed using Endnote software, evaluated using the Joanna Briggs Institute (JBI) Critical Appraisal Tool for Qualitative Research,¹⁵ and the results were integrated using JBI's Pooled Integration Methodology.

Inclusion criteria

The inclusion criteria were as follows: (1) Patients with breast cancer who were receiving or had completed ET; (2) the phenomena of interest included breast cancer patients' experience of symptoms and needs related to ET; (3) literature that incorporates qualitative research designs such as descriptive studies, phenomenological studies, rooted theory studies, and so on.

Exclusion criteria

Conference papers, abstracts, duplicate publications, and articles with incomplete data were excluded. Excluding articles published in languages other than English.

Search strategy

We searched databases including PubMed/MEDLINE, MEDLINE (Ovid), Web of Science, EMBASE (Ovid), CINAHL (EBSCO), and ProQuest from inception to September 25, 2023. The specific search terms we used were as follows: ('breast cancer' OR 'breast neoplasms' OR 'breast tumor' OR 'breast carcinoma' OR 'breast malignancy') AND ('endocrine*' OR 'anastrozole' OR 'aromatase inhibitors' OR 'letrozole' OR 'fulvestrant' OR 'tamoxifen' OR 'toremifene' OR 'exemestane' OR 'goserelin') AND ('side effects' OR 'symptoms' OR 'pain' OR 'fatigue' OR 'sexual dysfunction' OR 'climacteric symptoms' OR 'bone and joint symptoms') AND ('qualitative' OR 'mixed study' OR 'mixed research' OR 'mixed method' OR 'phenomenology*' OR 'grounded theory' OR 'ethnography*' OR 'case stud*' OR 'action research' OR 'interview*' OR 'focus group' OR 'observation*').

Process of data selection and data extraction

Process of study selection

Endnote × 20 software was used to import all citations and remove duplicate citations. Articles were independently screened by two reviewers (YM and HL) based on their titles and abstracts. Two independent reviewers (YM and HL) then searched and screened articles that fully met the inclusion criteria. Disagreements are resolved by the third reviewer (JQ). The preferred reporting items for systematic reviews and meta-analyses (PRISMA) flowchart shows the results of the screening.

Quality appraisal

Two reviewers (YM and HL) independently evaluated the quality of the included studies using the JBI Critical Appraisal Checklist for Qualitative Research.¹⁵ Reviewers are trained in qualitative research methods and are assisted by a third reviewer (JQ) when there is disagreement. The list contains 10 evaluation criteria, each of which is answered "yes", "no", "unclear" and "not applicable". The included studies were ultimately categorized into three levels: level A (Perfectly fit the criteria, with a small chance of bias), level B (Partially meeting the criteria, the possibility of bias is moderate), and level C (Completely does not meet the standard, there is a greater possibility of bias). Final exclusion of Grade C studies and summary of evaluation results. Two reviewers (YM and HL) independently assessed all studies. Discuss with the third reviewer (JQ) to resolve differences and reach consensus.

Data extraction

Standardized tables were used to extract basic data for each study. This included authors, year, country, study design, number of people included and their characteristics, phenomena of interest and main findings. If the study included health care providers, only content related to the experience and needs of breast cancer patients with endocrine treatment-related symptoms was extracted. Data were extracted independently by two reviewers (YM and HL). Discrepancies were resolved through joint discussions with the third reviewer (JQ).

Data synthesis

The results of the included studies were integrated using JBI-Meta aggregation. Participant citations and author statements relevant to our purposes are first extracted by one reviewer (YM) and reviewed by another reviewer (HL). Each finding is then assigned a confidence level (unequivocal, credible, or unsupported) independently by two auditors (YM and HL) using the JBI confidence criteria assessment to ensure rigor. "Unequivocal" means that the results are supported by unquestionable evidence. "Credible" means that results can be inferred from examples, but the two lack a clear connection. "Unsupported" means that the result does not support the example. Findings rated as clear or credible were categorized according to content. Findings rated as unsupported were not analyzed for follow-up. Eventually, the categorization was further integrated into a comprehensive discovery. The appropriateness of the synthesized results was checked by all authors. Any differences are resolved through discussion. All analysis is performed in an Excel file.

Confidence in the findings

The ConQual approach was used to assess the confidence level of the synthesized results at four levels (high, medium, low, and very low). The reliability and credibility of the included studies were further assessed using high quality as a starting point to determine how they should be scored. Five questions (C2, C3, C4, C6, and C7) from the critical appraisal of the JBI Critical Appraisal of Qualitative Research identified confidence levels. If a study was rated yes on four or five criteria, the composite result remained unchanged. If two or three criteria are rated "yes", the rating will be lowered by one level. The rating is reduced by two levels in the remaining cases. The reliability of the composite outcome is determined by the sum of the reliabilities of

the included outcomes. The credibility of the synthesized findings is determined by the credibility of the original findings. If the synthesized result contains both nonduality (U) and credible (C) results, the confidence level is reduced by one level.

Results

Search results

Fig. 1 shows the results of the selection process. Finally, a total of 5783 articles were retrieved. A total of 1179 copies were deleted. 4604 abstracts were screened and 4579 were excluded based on the criteria. Inclusion and exclusion criteria were ultimately met by 10 full-text articles.¹⁶⁻²⁵

Quality appraisal

Table 1 shows the results of the quality assessment of the included studies. One study was graded A and the rest were graded B. No deletions were made after quality assessment. One study describes the researcher in terms of cultural background, values.¹⁷ Another study was unclear.¹⁶ None of the remaining studies elaborated on this point. A study describes the impact of research on researchers.¹⁷ Another study was unclear.²¹

Table 1
Results of the quality appraisal.

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
Sousa et al. ¹⁶	Y	Y	Y	Y	Y	U	N	Y	Y	Y
Karlsson et al. ¹⁷	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Toledo et al. ¹⁸	Y	Y	Y	Y	Y	N	N	Y	Y	Y
Ibrar et al. ¹⁹	Y	Y	Y	Y	Y	N	N	Y	Y	Y
Jacobs et al. ²⁰	Y	Y	Y	Y	Y	N	N	Y	U	Y
Londen et al. ²¹	Y	Y	Y	Y	Y	N	U	Y	Y	Y
Toivonen et al. ²²	Y	Y	Y	Y	Y	N	N	Y	Y	Y
Johnsson et al. ²³	Y	Y	Y	Y	Y	N	N	Y	Y	Y
Gomaa et al. ²⁴	Y	Y	Y	Y	Y	N	N	Y	Y	Y
Harrow et al. ²⁵	Y	Y	Y	Y	Y	N	N	Y	Y	Y

C1, congruity between the stated philosophical perspective and the research methodology; C2, congruity between the research methodology and the research question or objectives; C3, congruity between the research methodology and the methods used to collect data; C4, congruity between the research methodology and the representation and analysis of data; C5, congruity between the research methodology and the interpretation of the results; C6, identifying the researcher culturally or theoretically; C7, influence of the researcher on the research; C8, representation of participants and their voices; C9, ethical approval by an appropriate body; C10, relationship of the conclusions with the analysis or interpretation of the data; Y, yes; N, no; U, unclear

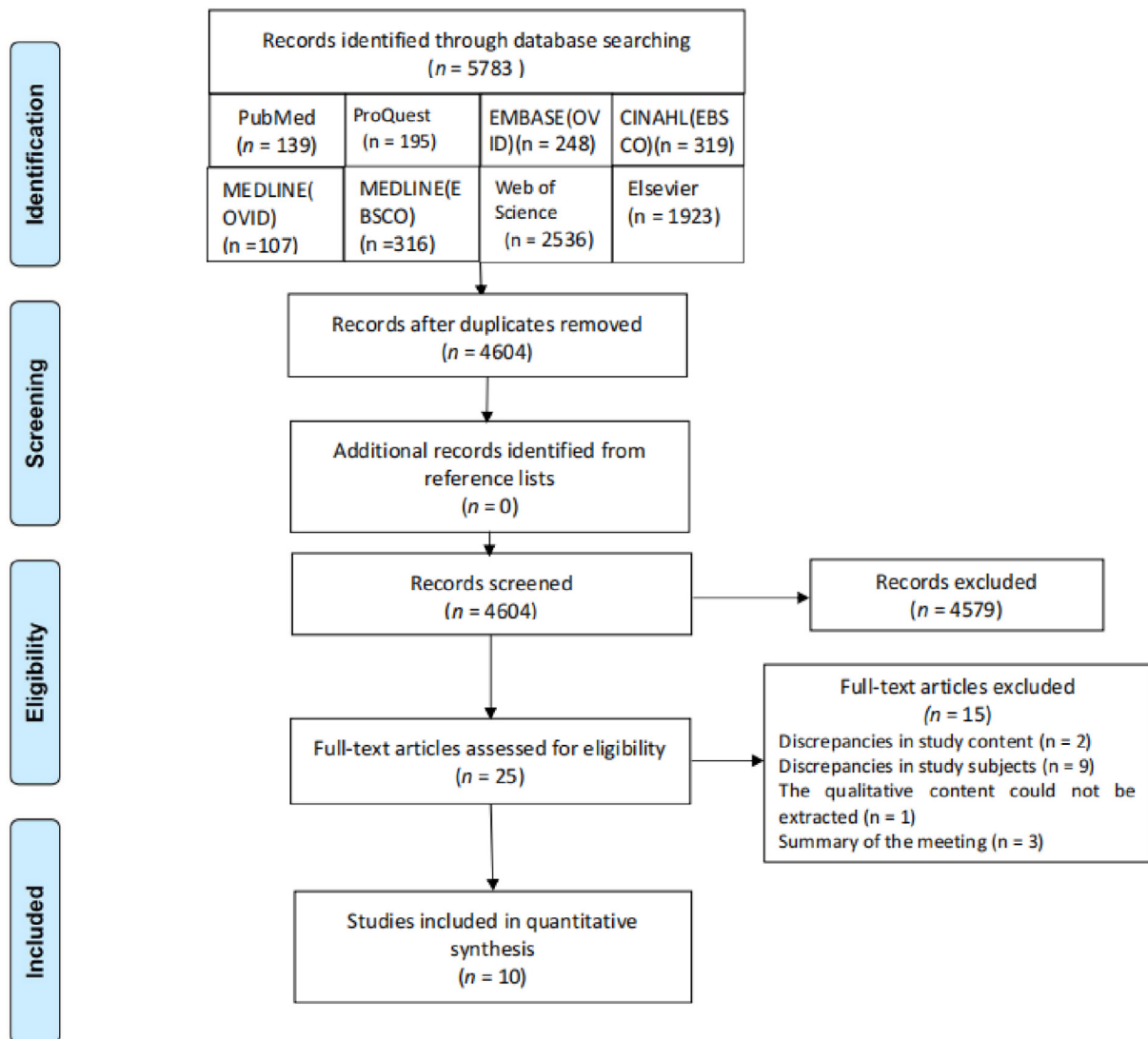


Fig. 1. PRISMA for diagram of the selection process. PRISMA, preferred reporting items for systematic reviews and meta-analyses.

None of the remaining studies have addressed this aspect. One study did not indicate whether it was approved by the ethics committee.²⁰

Study description

Table 2 shows the characteristics of the 10 included studies. Most included studies ($n = 7$) were published between 2019 and 2023.^{17–20,22–24} The other three articles were published in 2014 and 2018.^{16,21,25} Four studies were conducted in the United States,^{18,20,21,24} and the remainder were conducted in Australia,¹⁶ Sweden,^{17,23} Scotland,²⁵ Britain¹⁹ and Canada.²²

Review findings

Appendix A shows an overview of the findings and the comprehensive findings. Across the 10 studies, there were 67 findings and 33 categories. Three comprehensive findings were finalized. Of these findings, 64 were rated as clear and three were rated as credible.

Synthesized finding 1: Symptom distress in ET

Subtheme 1.1: Physiological symptom. Three studies addressed somatic symptoms in breast cancer patients receiving ET.^{16,19,24} ET for breast cancer patients is long and accompanied by adverse effects of varying severity. Of the many adverse reactions, the most frequently reported by patients were somatic symptoms. Among the most common side effects are sleep disorders. “After 10 days of hardly sleeping, I was banging my head on the wall on the landing ...¹⁹” Hot flashes is a major cause of sleep disruption. “I’ll just start sweating and it’s bad at nighttime, so I’m, constantly tossing and turning at night, so that bothers me because I have to get up in the morning to work.²⁴” Brain fog affects the patient’s memory and concentration to some extent. “... and you forget about a lot of things, even for the simple thing of my mum bought me pyjamas and I was actually in the shop with her in March. I had no memory of even looking at them.¹⁹” The treatment also leads to a decrease in the patient’s physical mobility. “... I couldn’t get up off the floor and needed help to walk because of the stiffness.¹⁹” Patients with severe joint pain may even need to stop taking their medication. “My side effects of joint pains are really severe. So, they asked me to stop the medication for about three weeks.²⁴” Urologic-related symptoms, on the other hand, affect the patient’s daily outings. “I can’t hold on to even get to a public toilet or a bathroom ... sometimes I can be in a shop and I can just start to randomly leak.¹⁶” This leads to negative emotions of anxiety, distress and worry in the patient. “I’ve become really quite anxious, if I am not near a known bathroom.¹⁶” In the meantime, patients worry about being able to function. “It was horrible at work actually, I had one horrible boss and she saw me leaving the office too many times and so she was being like a bully and then I said ‘well I have bladder problems, how can I come to work?’¹⁶”

Subtheme 1.2: Psychological symptom. Four studies explored psychological symptoms in breast cancer patients during ET.^{17,19,21,24} Younger patients experience greater anxiety and distress when experiencing perimenopausal symptoms compared with older patient. “... no sympathy because your [menopause] has been a slow nice decrease ... very different when all your friends are on their third baby ... Yeah, they kind of had two babies in the time that I’ve been kind of getting through this.¹⁹” In contrast, negative emotions caused by side effects are sometimes recognized as psychological problems when patients discuss their symptoms with medical personnel. “I cried, I lost it, and then right away, he wants me to go see the psychiatrist!²¹” The change in mood has also caused concern among the family. “My Husband was asking questions too, because of my mood swing.²⁴” It can even lead to the inability of the patient to participate in social activity. “I mean all throughout treatment you feel so crap that you don’t really want to see anybody and then now you know it just it also affects the enjoyment of going out and doing

something.¹⁹” In addition, some patients who lack social support experience a strong sense of abandonment. “The health care professionals said you just have breast cancer, it’s not serious.¹⁷” Patients even develop the idea of abandoning ET. “It’s just, imagine you on one of your worst days of the month and it’s like that every single day. That’s kind of how it feels at the moment. It makes it difficult to keep taking the medication.¹⁹”

Subtheme 1.3: “Sexual” issues. Three studies addressed the issue of “sexuality” in breast cancer patients receiving ET.^{16,17,23} “Sexual” problems have also become a great source of distress for patients. Sexual dysfunction reduces patients’ overall life satisfaction.”... no longing for sex anymore. It’s totally of no interest to me ... It’s not so fun when being in a relationship.¹⁷” Some doctors do not take patients’ sexual pain seriously. “I mentioned it [‘I have unbelievable pain with penetration’] to one of my oncology associated people with my treatment [...] and the answer was ‘if intercourse is a problem there’re other ways of pleasuring each other’. I think it was a very patronising comment and it wasn’t really helping me at all in dealing with the most problem that I have.¹⁶” Leads to patients not knowing who to consult about sex-related issues. “I would have wished to ask questions or get information about sex actually ... I don’t even know who to turn to.²³” At the same time, some patients think that “sex” is a private matter. “I think the subject [sexuality] is private and do not want my doctor to ask about it.²³” Patients want the topic of “sex” to be broached by medical professionals. “It must be a much more serious problem ... If they [health care providers] raise it, it’s easier to explain how you feel.²³”

Synthesized finding 2: Coping in the experience of symptoms

Subtheme 2.1: The patient was inadequately prepared for ET. Five studies explored the inadequate readiness of breast cancer patients to receive ET.^{17,20–23,25} ET as a “forced” choice. Patients aren’t prepared for it, they just see it as the only way out. “I see my tamoxifen as the lifeline to being cancer free.²⁵” Patients had a prior bias toward adverse effects. “Tamoxifen has a truly bad reputation.¹⁷” Patients surprised by cascading symptoms. “I wouldn’t have ever thought that it would interfere so much ...²¹” Patients also don’t understand the true cause. “I think it’s so hard to know what is causing what and ... but I do think the medications, like you say [referring to comment by another participant], exacerbated.²¹” They misinterpreted adverse reactions as signs of cancer recurrence or metastasis. “I’m going between oncology and my family doctor saying, ‘What’s wrong with me, I don’t feel good’—and then starting the fear of, ‘It must be in my bones, my bones hurt, the cancer must be back’.²²” leading to renewed fear in some patients.

Patients question the effectiveness and necessity of the treatment, worrying about daily side effects (e.g., fatigue) and long-term health consequences (e.g., decreased bone density). “... it made me wonder, ‘Is this working? Is it blocking enough estrogen?’²⁰” Patients begin to weigh the pros and cons of continued treatment and hesitate to continue it. “If I have to take it for five years and my quality of life is so bad, do I want to take it?²¹” Eventually, even refusing to carry out a doctor’s prescription. “After all, these are the type of Cipramil [antidepressant] and so on—what are they called? And in a weak dose they would help quite a lot against this, take the edge of off the sweating ... But I never cared ... so you don’t want to take anything more.²³” Decision to prioritize quality of life. “I decided I wanted to be able to golf and ski and do whatever without aching and feeling miserable. As I said, a shorter, better life than a longer one that wasn’t so good.²²”

Subtheme 2.2: Patient self-management strategies and techniques. Six studies explored self-management strategies and techniques for symptoms caused by ET in breast cancer patients.^{16,19,22–25} During treatment, patients strive to fight their symptoms through self-adjustment and seeking help from outside sources. Being mentally prepared to expect adverse reactions will mitigate the side effects to some extent. “I knew there was going to be side effects, because everybody kept saying that.

Table 2
Characteristics of the studies.

Study (year)	Country	Design (data collection method)	Patients	Phenomenon of interest	Main findings
Sousa et al. ¹⁶ (2018)	Australia	Semi-structured interviews	Nineteen patients who reported at least one genitourinary symptom	The aim was to explore knowledge, attitudes and experiences of genitourinary symptoms in women receiving endocrine therapy.	① Experience of understanding urogenital symptoms; ② Help-seeking behavior; ③ Treatment and evaluation received
Karlsson et al. ¹⁷ (2019)	Sweden	Focus Group Interviews	Twenty-five patients treated with tamoxifen after breast cancer surgery	The aim was to provide qualitative data about women's experiences with ET after breast cancer surgery.	① Discomfort; ② Improvement of management level; ③ Abandonment feeling
Toledo et al. ¹⁸ (2021)	United States	Semi-structured in-depth interviews	Nineteen patients were treated with at least one endocrine therapy in the previous year	The aim was to explore the influence of religion and/or spirituality in psychosocial adjustment to breast cancer and endocrine therapy symptom management.	① Psychosocial adjustment to breast cancer; ② Side effects of subsequent continued use and management of AET
Ibrar et al. ¹⁹ (2022)	Britain	One-to-one, online, semi-structured interviews	Twenty-five breast cancer patients who were using endocrine therapy	The aim was to explore the experience of breast cancer patients on endocrine therapy and to understand the impact of side effects on adherence.	① Bitter fruit that is difficult to swallow; ② Seeking relief; ③ Control; ④ The only way out is persistence
Jacobs et al. ²⁰ (2020)	United States	Semi-structured interviews	Twenty patients with low compliance; Ten highly adherent patients	Experiences, perceptions, and attitudes toward endocrine therapy and barriers and incentives for adherence were explored. Individual preferences for psychosocial interventions were also investigated.	① Motivation and patterns of adherence; ② Preferences for psychosocial interventions; ③ Differences in age, distress level, or duration of use
Londen et al. ²¹ (2014)	United States	Qualitative, focus group design	Four breast cancer patients aged ≥ 50 years were associated with endocrine symptoms	To conduct an investigation of women's experiences related to adjuvant AET and managing AET-related symptoms.	① Endocrine therapy is necessary; ② Unexpected symptoms occur; ③ Symptoms are difficult to understand; ④ Frustrations in symptom management
Toivonen et al. ²² (2021)	Canada	Qualitative and descriptive study	Twenty-three patients adhered to their medication, fifteen patients discontinued their medication, three pharmacists, two oncologists, and four oncology residents	To understand the factors associated with the use of endocrine therapy.	Adherence: ① Side effects; ② Reasons for use; ③ Experience with the health care system Nonadherence: ① Overwhelming side effects; ② Reluctance; ③ Experience with health care providers; ④ Contextual factors Health care providers: ① Patient and system-level barriers; ② Side-effect management; ③ Doctor-patient communication
Johnsson et al. ²³ (2023)	Sweden	Focus Group Interviews	Forty-five were from the Stockholm metropolitan area and thirteen were from the sparsely populated North Boten region	To explore the extent to which endocrine therapy patients think health care providers address the side effects of menopause.	① Patient-reported side effects; ② Patients' experiences of support from providers
Gomaa et al. ²⁴ (2023)	United States	Qualitative interview (Grounded theory)	Thirty-five breast cancer patients receiving endocrine therapy	Aim to report the lived experience of breast cancer survivors specifically as regards to side effects.	① Joint pain; ② Stiffness, and self-reported strategies for dealing with pain and stiffness; ③ Hot flashes and self-reported strategies for dealing with hot flash; ④ Sexual health as an under-discussed symptom and self-reported strategies for dealing with physical and sexual problems; ⑤ Mood changes and self-reported strategies for dealing with mood changes
Harrow et al. ²⁵ (2014)	Scotland	Semi-structured one-on-one interview	Thirty female patients taking TAM or AI for 1–5 years	To explore how breast cancer patients' experiences with endocrine therapy and their perceptions of the purpose of medication, side effects experienced, and interactions with health professionals, and beliefs influence adherence.	① Reasons for adjuvant endocrine therapy; ② Experience of adjuvant endocrine therapy; ③ Cognition and demand for support

And I think it was a frame of mind I put myself in that I was going to power through it.²² There are also some tips that patients take during treatment to prevent missed doses. For example, keeping pills where they can be seen or taking them at a specific time each day. "Got the routine, I take the dog out, come back, have all the, have a wee drop breakfast and have the rest of the pills."²⁵ At the same time, patients will learn about it through a number of platforms. "From the breast cancer association, the Internet and friends and yes, there is a lot of information, I think."²³ For example, looking up symptoms on the Internet. "I think a lot of people would like an online resource to use."¹⁶ However, it is often impossible to confirm the accuracy of the information. "I think a lot of people would like an online resource to use."¹⁶ Patients also look for and learn ways to mitigate side effects through forums and other means. "I have joined a lot of cancer forums. There's actually a Tamoxifen support group online and so I joined several."¹⁹ Such as changing daily routines to improve sleep quality through exercise. "As I started doing these exercises ... I could finally sleep almost through the whole night. And I wasn't in pain."²² Other measures to help relieve symptoms, such as acupuncture, are also tried. "I went and did an acupuncture course at the McMillan Centre ... to help with some of the hormonal side effects and then they gave me acupuncture needles so I could actually do myself at home to help with the hot flushes mainly, which did really help."¹⁹ Small number of patients find motivation to persevere in volunteering. "I indulged in that I become a support system to other people. I also support these two little girls who's going through cancer and they are the ones that really get me off my feet."²⁴

When self-adjustment has little effect, patients choose to seek help from medical personnel. "... make sure there was nothing else that might've been another cancer or something, cause I just want to make sure I don't have another cancer."¹⁶ Patients can explore individualized management strategies with the encouragement of their doctors. "Yes, but they do tell you people can have the same type of cancer as you and all the details be the same and yet the treatment will be different, the outcomes will be different and the experience will be different"²⁵ The patient can also adjust the treatment plan with the consent of the doctor. "Also, they're not that bothered about you taking a break. It seems to be your total time that counts."¹⁹

Synthesized finding 3: Support needs

Subtheme 3.1: Professional support. Three studies explored the professional support needed by breast cancer patients to cope with ET symptoms.^{16,20,25} Patients felt that professional support from medical staff was very important. "But you must be able to have a dialog with your doctor."²³ They trusted the medical staff. "I just accept what the doctor said, you know."²⁵ They valued the information they received from the doctor. "I just decided not to look anything more up ... I prefer, I've got good doctors and I prefer [information from] them, like."¹⁶ Feeling that the medical staff was the most important and valuable source of information. "Maybe the gynecologist, cause it's in his area."¹⁶

Identifying and meeting the patient's individual needs and providing multiple pathways to intervention is the most important part of professional support. Timely assessment of individual differences in the scope of information needed by patients. "... probably after a year or something, then it would be a good time to someone to talk to you about 'oh this could happen, or this could happen', or something."¹⁶ Proactively advise on side effects, particularly urinary symptoms. "I think it should be openly discussed by a treator, like the GP ... it should be told so we don't feel, 'hold on a second what's happening in here?' It's just to be made aware of, and then maybe say 'look, ok it will all happen [...] expect this but maybe if you do this, it could help you'."¹⁶ Provide printed materials for patients who prefer an educational manual. "Yes, it could just be a handout, for me it would be fine if he hand it out and say, look you need to be aware of this, you got to take care of stuff like that."¹⁶ Scheduling meetings using a video platform for patients who prefer to be at home. "I

think the video conferencing would be best not having to drive ... that you could do this in the privacy of your own home would be really good"²⁰

Subtheme 3.2: Kinship support. Two studies explored the kinship support needed by breast cancer patients to cope with ET symptoms.^{17,22} In addition to professional support, relatives also provide patients with resources and emotional assistance to cope with the various changes arising from the illness. They long to be understood by their loved one. "It's, it's hard to know what is what and it's hard to explain also why it is what it is. Really hard I think."¹⁷ Family support can help patients gain confidence and a sense of resilience. "I have to be strong because I'm not just making the decision for myself, I'm making it for my family."²² Conversely, when family members are indifferent to the side effects, they experience the emotional problems they cause, the patient develops stronger negative emotions and even resists intimacy. "No. I don't want to, don't touch me in a way. Because you don't understand it."¹⁷

Subtheme 3.3: Other supports. Two studies addressed additional support needed for breast cancer patients to cope with ET symptoms.^{18,20} Peer support and faith support are also powerful belief supports. Patients are eager to connect with fellow patients to share and learn from each other's experiences. "I think that it's nice to share your experiences with other women who are going through the same thing. And you can kind of draw support from each other"²⁰ Gain the confidence and strength to stay in treatment during the interaction. "and when you have similar experiences you feel that support because you're not alone."²⁰

For patients with religious beliefs, faith provides them with purpose and meaning in life and helps them to accept and understand the condition. "I'm a very faithful person, so I just pray my way through it. I just have to have faith."¹⁸ It also gives comfort to patients who feel alone in their treatment. "... So, for me, my faith is my rock. That's my center, what helps me."¹⁸ Even patients with no religious affiliation believe in the power of prayer. "I'm not deeply religious, but I believe in the power of praying ..."¹⁸ Patients will choose to adapt to the changes they are experiencing with a positive mindset and overcome their fear of cancer. "... I think that a positive mindset or being calm could help [the cancer] not come back."¹⁸

Discussion

This meta-synthesis study aimed to explore the symptom experience experienced by breast cancer patients during ET. Data synthesis led to the construction of three analytical themes: symptom distress during ET; coping in symptom experience; and support needs.

Emphasizing symptom distress

The results of this study show that breast cancer patients treated with ET experience many discomforts when experiencing related symptoms, which have a serious impact on their daily lives. The main mechanism of action of ET is to block the estrogen source or signal transduction pathway, reduce the estrogen content in the patient's body, disrupt the endocrine environment required for tumor cell growth, and force the tumor cells to stagnate in the G0/G1 phase, thus achieving anti-tumor effects.²⁶ The resulting hot flashes, sleep disturbances, decreased libido, musculoskeletal pain, and fatigue not only result in decreased life satisfaction but also lead to reduced physical mobility and interfere with daily socialization.²⁷ These symptoms can induce negative emotions and even shake the patient's resolve to adhere to treatment, which is consistent with Moon et al.'s study.²⁸ Medical staff should pay more attention to patients' complaints of discomfort, ask patients about the occurrence and development of symptoms during ET, and assess the severity of symptoms. Symptom experience model points out that symptoms have multi-dimension, dynamic change, simultaneity and

superposition.²⁹ Therefore, medical personnel should also carry out continuous and dynamic assessment of patients according to the stage of treatment and symptom development of patients. Menopausal symptoms were found to be the most common adverse effect of selective estrogen receptor modulators,³⁰ while arthralgia was the most common adverse effect of AIs.³¹ Medical staff should focus on evaluating the adverse reactions of the drug after the patient changes the treatment plan, and give corresponding intervention strategies according to the evaluation results. Li Xu et al.³² found that menopausal symptoms had a strong negative impact on the quality of life of patients in the early stage (< 12 months) and the late stage (> 36 months) of ET. Bhave et al.³³ showed that patients experienced a high degree of fatigue within 3 months after the initiation of AI treatment. Therefore, medical staff can provide patients with closer guidance on symptom management during periods of high incidence and severe symptoms. In ET of breast cancer, reproductive systems are common symptoms. However, sexual needs are often overlooked in clinical practice.³⁴ As a result, sexual dysfunction assessment and intervention should be integrated into long-term care planning for breast cancer. In the future, according to the theory of symptom management and the comprehensive intervention model, based on the results of this study, accurate symptom management programs during ET can be formulated and implemented for patients, so as to improve the quality of life of patients during treatment and reduce the adverse outcomes of ET-related symptoms.

Improving readiness

Meta-integration results indicate that most breast cancer patients have biases and misconceptions about ET, and thus question its efficacy. The reason for this is the low level of preparedness of the patients themselves and their insufficient knowledge about the necessity of the treatment, the possible adverse effects it may cause, and the measures that can be taken in response.

Therefore, increasing patients' awareness of the importance and necessity of treatment is the first prerequisite for improving their readiness. The National Comprehensive Cancer Network Breast Cancer Treatment Guidelines³⁵ and the Chinese Expert Consensus on ET for Breast Cancer³⁶ suggest that patients with estrogen receptor and/or progesterone receptor-positive breast cancer need to undergo at least 5 years of ET, which is effective in decreasing the recurrence rate and the morbidity and mortality rate by 30%–45%.³⁷ Medical personnel should inform patients before treatment that ET runs through the whole process from early neoadjuvant therapy to postoperative adjuvant and recurrence salvage, so that they can make it clear that adherence to ET is necessary for the prevention of cancer recurrence and metastasis. At the same time, medical staff should also fully respect and consider patients' subjective will on the premise of ensuring the treatment effect, fully mobilize patients' subjective initiative to participate in disease management, and thus increase patients' treatment compliance.

Informing patients of the potential adverse effects of ET and how to cope with them is another strategy to improve patient readiness. A range of ET-related symptoms, such as musculoskeletal joint symptoms, menopause-like symptoms, and sexual dysfunction, can occur during treatment.³⁸ Medical professionals need to provide different forms of symptom coping guidance for breast cancer patients with different cognitive levels in order to build up patients' psychological expectations and reduce their fear of ET. For example, when patients experience joint pain, timely guide patients to change their lifestyle habits, maintain regular exercise habits, focus on a balanced diet and ensure the intake of calcium and vitamins. Medical staff should dispel patients' prejudices and misconceptions about ET through comprehensive and standardized professional knowledge guidance, clarify patients' doubts, and thus improve patients' readiness for treatment. The way of health education should combine various forms. In addition to traditional knowledge manuals, lectures, and other forms, health education can also be carried out through pictures, text, or video through WeChat public accounts

and short videos. These forms break through the limitations of time and space and enhance the patient's access to knowledge.

Addressing support needs

This study found that constructing a family–professional–social support system better enhances patients' treatment adherence, improves quality of life, and thus enhances long-term survival. Good family support boosts patients' self-confidence. The studies by Yang Ruan,³⁹ Zhihong Nie et al.,⁴⁰ and Han Xiao et al.⁴¹ confirmed that communication and companionship of relatives play a key role in patients' psychological adjustment and disease recovery. Breast cancer patients who lack care and attention from family members and relatives, on the other hand, show a tendency of low medication adherence. Therefore, medical staff should instruct family members to create a relaxed family atmosphere while providing the necessary living conditions, so that patients can feel warmth and care, and give them full emotional support.

A study by Toivonen et al.²² emphasized the important role played by health care professionals in supporting patients in managing side effects. There is an urgent clinical need to develop and implement effective, theory-based measures for the management of the whole process, and to build a full range of systematic professional support for patients. This includes following up on the patient's medication throughout the process and encouraging the patient to voluntarily report any adverse drug reactions that occur during treatment and the effects they have. Closely monitor the patient's mood changes due to side effects while evaluating the relevant measures taken to cope with the symptoms and emotional reactions. In order to achieve effective and scientific whole process management, a multidisciplinary health management team based on nutrition, rehabilitation, oncology, psychology and other disciplines should be systematically constructed, integrating relevant information and resources to provide patients with precise means of intervention.

In the context of Internet+ and big data, comprehensive multidisciplinary and cross-disciplinary support is more likely to play a key role in the management of ET side effects in breast cancer patients. For patients who are inconvenient to pick up the medication by themselves, the problem can be solved through the Internet hospital's online prescription and offline mailing to the home. The government can include low-income patient families in the annual assistance program and give certain social subsidies.⁴² In the face of patients' knowledge needs, health professionals can use the Internet to provide patients with information about ET (e.g., mechanisms of treatment, rationale), side effects, and management of side effects (e.g., evidence-based strategies for each side effect).⁴³ This can be complemented by smart devices to intervene remotely in the patient's home via the internet. Breast cancer clubs, mutual support groups and symposiums for patients are set up on the basis of guiding patients in home management to provide a platform for mutual support and sharing of side-effect management skills.⁴⁴ Patients with persistent and more severe symptoms are further referred to supportive care services to help sustain their treatment.

Strengths and weaknesses of the review

This study strictly follows the JBI-Meta aggregation method and ConQual method guidance to synthesize qualitative evidence about the symptom experience of breast cancer patients during ET. However, this study has some limitations. In the end, only 10 literatures were included in this study, and the number of included articles was limited. All included studies were conducted in the context of high-income and English-speaking countries. Their cultural background, economic level, medical level and policies may be different from those of other countries. The findings may have limitations. Therefore, the content of this review can only be generalized to situations with similar cultural and medical skills. More research is needed in Asia or other low- and middle-income countries. At the same time, only one of the literatures included in this study was of grade A, and most of the literatures did not explain the status

quo of researchers from the perspective of cultural background and values, which may be biased to some extent. Since the meta-aggregation method is an analysis of the included studies, the reliability of the comprehensive results of this study is limited by the quality of the original study. In the future, more high-quality original research is needed, especially original research that combines theoretical framework with cultural context.

Clinical implications

This study summarizes the symptom experience of breast cancer patients in ET and identifies patient barriers in symptom management. Based on the comprehensive barriers to symptom management, the support elements needed in management were summarized. The results of this study will help medical institutions to develop a plan for symptom management in ET for breast cancer patients in the future and improve the quality of life of patients.

Conclusions

This study synthesized qualitative evidence on symptom experience during ET for breast cancer. The results showed that breast cancer patients had great symptom distress during ET, which had a serious impact on daily life. It is suggested that family members should improve the level of family support, medical staff should also pay attention to the patient's symptom experience, and help patients improve treatment readiness through comprehensive health guidance. At the same time, a whole-process management support system combining family, hospital, and society should be constructed to timely solve the obstacles and needs of patients in treatment, explore the coping mechanism of adverse reactions, and formulate practical intervention measures, so as to improve the treatment compliance of patients, improve the quality of life, and long-term survival rate of patients.

CRedit author statement

Yan Ma: Data Organization and Quality, Manuscript writing. **Zhengi Lu:** Study design, Study supervision. **Jiajia Qiu:** Critical revisions. **Huiyu Luo:** Data collection and appraisal. **Lichen Tang:** Data collection and appraisal. **Yun Li:** Data analysis. **Ping Li:** Data analysis. All authors were granted complete access to all the data in the study, with the corresponding author bearing the final responsibility for the decision to submit for publication. The corresponding author affirms that all listed authors fulfill the authorship criteria and that no others meeting the criteria have been omitted.

Declaration of competing interest

All authors have no conflicts of interest to declare. The corresponding author, Professor Zhenqi Lu is a member of the editorial board of the *Asia-Pacific Journal of Oncology Nursing*. The article underwent the journal's standard review procedures, with peer review conducted independently of Professor Lu and their research groups.

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Data availability statement

Data supporting the findings of this study are available from the corresponding author upon reasonable request.

Declaration of Generative AI and AI-assisted technologies in the writing process

No AI tools/services were used during the preparation of this work.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.apjon.2023.100364>.

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