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Nonpharmacological Management of Cancer-Related Fatigue in Breast Cancer Patients Undergoing Chemotherapy: A Best Evidence Summary

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Abstract: *Objective*: To retrieve and summarize the best evidence on non-pharmacological management of cancer-related fatigue in breast cancer patients undergoing chemotherapy, and to provide an evidence-based foundation for individualized management. *Methods*: Clinical guidelines, expert consensus, systematic reviews, and other relevant literature were systematically searched in domestic and international databases from inception to April 2026. Two researchers independently screened the literature, assessed quality, and extracted and synthesized the evidence. *Results*: A total of 28 publications were included, consisting of 2 clinical decisions, 5 guidelines, 2 expert consensus statements, 16 systematic reviews, and 3 randomized controlled trials. The evidence was synthesized into seven themes: multidisciplinary team collaboration, assessment and screening, exercise intervention, psychological and behavioral intervention, traditional Chinese medicine and complementary and alternative therapies, nutritional support, and health education. *Conclusion*: Clinical implementation should integrate local contexts and patient characteristics, applying the best available evidence to deliver individualized nonpharmacological management, so as to alleviate fatigue and improve quality of life.

Keywords: Breast cancer; Chemotherapy; Cancer-related fatigue; Nonpharmacological management; Exercise intervention; Evidence summary; Evidence-based nursing

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1. Introduction

Breast cancer is the most frequently diagnosed cancer and a leading cause of cancer-related mortality among women worldwide [1,2]. Chemotherapy, a core component of comprehensive breast cancer treatment,

is associated with various adverse effects [3,4]. Cancer-related fatigue (CRF) is one of the most debilitating symptoms during chemotherapy, with an incidence of 60–90%, severely impairing patients' quality of life and treatment adherence [5,6]. CRF during chemotherapy is more prominent and persistent, with some patients experiencing chronic fatigue for years after treatment [7]. Given its impact, nonpharmacological management strategies have been recommended as first-line interventions by guidelines due to their safety and feasibility [8–10]. However, current evidence is fragmented, and its applicability in the chemotherapy setting requires systematic synthesis. This study aims to integrate the best available evidence on nonpharmacological management of CRF in breast cancer patients undergoing chemotherapy, providing an evidence-based reference for clinical nursing practice.

2. Methods

2.1. Problem establishment

An evidence-based nursing question was constructed using the PIPOST framework [11].

(1) P (Population)
Patients aged ≥ 18 years with pathologically confirmed breast cancer and CRF;

(2) I (Intervention)
Nonpharmacological management strategies as the core approach, encompassing exercise intervention, psychological intervention, complementary and alternative therapies, sleep management, and nutritional support;

(3) P (Professional)
Oncology clinical nurses, physicians, rehabilitation therapists, and community nursing staff;

(4) O (Outcome)
CRF severity, quality of life, treatment adherence, and intervention safety indicators;

(5) S(Setting)
Inpatient oncology wards, day chemotherapy centers, community, and home settings;

(6) T (Type)
Clinical decision support tools, best practice recommendations, guidelines, expert consensus statements, evidence summaries, systematic reviews, and meta-analyses.

As CRF spans the entire treatment trajectory and is most severe during chemotherapy, this study initially searched broadly for evidence, then focused on applicability and safety in the chemotherapy setting during synthesis.

2.2. Search strategy

Guided by the "6S" evidence pyramid model, a top-down search of relevant resources was conducted, primarily including: BMJ Best Practice, UpToDate, DynaMed, Guidelines International Network (GIN), National Guideline Clearinghouse (NGC),Registered Nurses' Association of Ontario(RNAO), National Institute for Health and Care Excellence (NICE), Scottish Intercollegiate Guidelines Network (SIGN), and Medlive (Chinese guideline network), American Society of Clinical Oncology (ASCO), Society for Integrative Oncology(SIO), National Comprehensive Cancer Network (NCCN), European Society for Medical Oncology(ESMO), Breast Cancer Committee of Chinese Anti-Cancer Association, and Chinese Nursing Association, Joanna Briggs Institute (JBI), Evidence-Based Practice Database and the Cochrane Library, PubMed, CINAHL, Web of Science, China National Knowledge Infrastructure(CNKI), WanFang database, VIP database, and China Biology Medicine (CBM) Database. The search keywords included:

"breast cancer" "breast neoplasm" "breast tumor" "cancer-related fatigue" "CRF" "cancer fatigue" "exercise" "physical activity" "aerobic exercise" "resistance training" "strength training" "yoga" "tai chi" "mind-body therapy" "cognitive behavioral therapy" "psychological intervention" "relaxation" "acupuncture" "acupressure" "auricular therapy" "guideline" "consensus" "evidence summary" "systematic review" "meta-analysis" "best practice" [12]. A search strategy combining subject headings and free-text terms was adopted, with a search timeframe from database inception to April 2026.

2.3. Inclusion and exclusion criteria for evidence

2.3.1. Inclusion criteria

(1) Population
Patients aged ≥ 18 years with a pathological diagnosis of breast cancer;

(2) Content
Studies addressing nonpharmacological management strategies for CRF, including but not limited to exercise intervention, psychosocial intervention, complementary and alternative therapies, sleep management, and nutritional support;

(3) Type of evidence
Clinical practice guidelines, expert consensus statements, best practice recommendations, systematic reviews, and meta-analyses;

(4) Language
Chinese or English.

2.3.2. Exclusion criteria

(1) Guidelines that had been superseded or updated, as well as guidelines interpretations or translated versions;

(2) Duplicate publications or articles for which the full text could not be obtained;

(3) Evidence summary articles, as they represent secondary syntheses and the original evidence they cite can be directly traced back to the included guidelines or systematic reviews.

2.4. Literature quality appraisal tools

Clinical practice guidelines were appraised using the Appraisal of Guidelines for Research and Evaluation II(AGREE II)instrument [13]. The AGREE II instrument covers six domains, comprising 23 key items and two additional items for overall assessment of the evidence. All items, including the additional ones, are rated on a 7-point scale. The score for each domain is the sum of the scores of all items within that domain, and the raw total scores are required to be standardized using the following formula: [(actual score-theoretical minimum score)/ (theoretical maximum score-theoretical minimum score)] × 100%. Quality grading was determined based on the standardized scores: Grade A (recommended), with scores ≥ 60% in all domains; Grade B (recommended with modifications), with at least three domains scoring ≥ 30% but with one or more domains scoring < 60%; and Grade C (not recommended), with three or more domains scoring < 30% [13].

Systematic reviews, expert consensus statements, and best practice recommendations were appraised using the corresponding critical appraisal tools from the Joanna Briggs Institute(JBI) [14]. The JBI critical appraisal checklist comprises 11 items for systematic reviews and 6 items for expert consensus statements. Each item was rated as"Yes", "No", "Unclear", or "Not applicable".

2.5. Literature quality appraisal process

Data were independently extracted by two researchers trained in evidence-based nursing, including literature type, title, and original evidence statements. Disagreements were resolved by a third expert. Evidence synthesis principles:

(1) Consistent evidence was expressed concisely and professionally;

(2) Complementary evidence was merged logically;

(3) Conflicting evidence was resolved by tracing original sources and prioritizing evidence-based, high-quality, and recent authoritative evidence.

Evidence grading: items from JBI evidence summaries retained their original levels; for clinical decisions and guidelines, original studies were traced and graded using the 2014 JBI Evidence Pre-grading System [14].

3. Search results

3.1. General characteristics of included studies

The initial search retrieved 2,047 articles. After removing 687 duplicate records, 1,152 articles were excluded based on title and abstract screening, and a further 180 articles were excluded after full-text review. A total of 28 articles were ultimately included, comprising 2 clinical decision support tools, 5 guidelines, 2 expert consensus statements, and 16 systematic reviews and meta-analyses [8,9,16–41]. Given the lack of recent high-quality secondary research in certain intervention areas, 3 randomized controlled trials were additionally included to ensure the timeliness and completeness of the evidence [16–18]. The literature screening flow diagram is presented in **Figure 1**, and the general characteristics of the included studies are presented in **Table 1**.

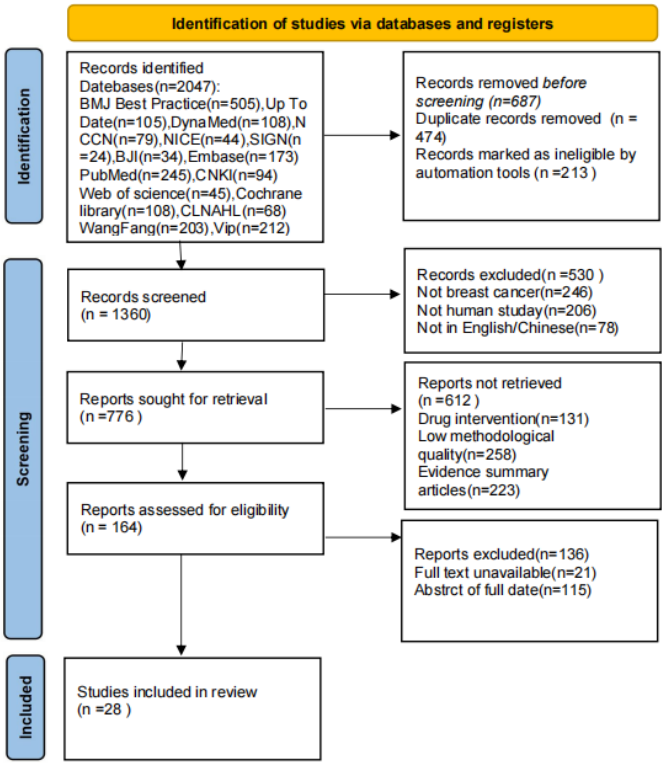

Figure 1. Literature screening flow diagram.

Table 1. General characteristics of the included studies (n = 28)

Author	Publication/ Update date	Source (institution/database)	Type	Research subjects
Escalante [19]	2026	UpToDate	Clinical decision support tools	Prevalence, screening, and clinical assessment of CRF
Escalante [20]	2026	UpToDate	Clinical decision support tools	Treatment of CRF
NCCN [9]	2026	NCCN	Guideline	Screening, assessment, and management of CRF
ASCO [22]	2024	PubMed	Guideline	Whole-course management of CRF
NICE [23]	2025	NICE	Guideline	Supportive care for breast cancer patients
CACA [24]	2025	CNKI	Guideline	Clinical Guideline for Breast Cancer Diagnosis, Treatment, and Rehabilitation
Cui [21]	2023	CNKI	Guideline	Guidelines for integrated traditional Chinese and Western medicine diagnosis, assessment, and comprehensive treatment of CRF
CARM [25]	2025	CNKI	Expert consensus statements	Standardized pathway for CRF screening, assessment, nonpharmacological intervention, and multidisciplinary management
Han [8]	2025	CNKI	Expert consensus statements	Nursing practice of integrated traditional Chinese and Western medicine for CRF
Li [27]	2025	PubMed	Systematic Review	Effects of mind–body exercise on CRF
Li [28]	2024	PubMed	Systematic Review	Effects of 12 interventions on CRF in breast cancer patients
Qi Y [26]	2024	PubMed	Systematic Review	Effects of yoga intervention on the symptom cluster of fatigue, sleep, and pain in breast cancer patients
Lange [29]	2024	PubMed	Systematic Review	Effects of resistance training and combined resistance plus aerobic training on CRF
Wu [30]	2023	PubMed	Systematic Review	Effects of different exercise therapies on CRF in breast cancer patients
Medeiros T D [31]	2022	PubMed	Systematic Review	Effects of exercise on CRF during adjuvant radiotherapy and chemotherapy for breast cancer
Y [32]	2021	Pubmed	Systematic Review	Effects of home-based walking on CRF
Huizinga F [33]	2021	PubMed	Systematic Review	Effects of home-based physical activity on patients with CRF
Cano-Uceda A [34]	2025	PubMed	Systematic reviews and meta-analyse	Effects of supervised exercise programs on fatigue
Lee J [35]	2025	PubMed	Systematic reviews and meta-analyse	Effectiveness of comprehensive exercise interventions during and after treatment
Ke G [36]	2025	BMJ	Systematic Review	Effects of nonpharmacological interventions on CRF
Li Y [37]	2025	PubMed	Systematic reviews and meta-analyse	Effects of 12 exercise modalities on CRF
James [38]	2024	MDPI	Systematic Review	Feasibility, safety, and effectiveness of nutritional counseling during chemotherapy
Yuan Y [39]	2022	PubMed	Systematic Review	Efficacy of six psychosocial therapies on CRF in cancer patients

Lan X [40]	2024	PubMed	Systematic Review	Efficacy of mindfulness-based stress reduction (MBSR) on CRF in breast cancer patients
Habibi S [41]	2025	PubMed	Systematic Review	Effects of oral nutritional supplements on CRF in patients undergoing chemoradiotherapy
Greeley K M [16]	2025	PubMed	RCT	Effects of Cognitive behavioral therapy (CBT) for insomnia (CBT-I) on fatigue in cancer survivors
Vikmoen O [17]	2025	PubMed	RCT	Effects of supervised heavy-load training on breast cancer patients during chemotherapy
Hou X [18]	2025	PubMed	RCT	Effects of Baduanjin exercise on breast cancer patients

3.2. Results of the quality evaluation of the included studies

3.2.1. Quality appraisal of included guidelines

Table 2. Quality appraisal of included guidelines (*n* = 5)

Guideline	Scope and Purpose	Stakeholder Involvement	Rigor of Development	Clarity of Presentation	Applicability	Editorial Independence	Domains ≥ 60% (n)	Domains ≥30% (n)	Grade
NCCN [9]	90	75	70	85	70	85	6	6	A
ASCO [22]	90	85	85	90	65	85	6	6	A
NICE [23]	85	80	85	85	75	90	6	6	A
CACA [24]	85	75	60	80	65	40	5	6	B
Cui [21]	80	65	55	80	60	30	4	6	B

Note: All percentages represent standardized domain scores. Grade A = all six domains ≥ 60%; Grade B = at least three domains ≥ 30% but at least one domain < 60%. All five guidelines were recommended for inclusion.

3.2.2. Quality appraisal of included expert consensus statements

Table 3. Quality appraisal of included expert consensus statements (*n* = 2)

Item	(1)	(2)	(3)	(4)	(5)	(6)	Overall appraisal
Han [8]	Yes	Yes	Yes	Yes	Yes	Yes	Include
CARM [25]	Yes	Yes	Yes	Yes	Yes	Yes	Include

Note: The JBI critical appraisal checklist for text and opinion papers (2016) was used.

3.2.3. Quality appraisal of the included systematic reviews

Table 4. Evaluation Results of Systematic Evaluation Quality (n = 16)

Item	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
L[i [27]]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Li [28]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Qi Y [26]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Lange [29]	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	No	Yes	Yes
Wu [30]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Medeiros Torres D [31]	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes
Y [32]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	No	Yes	Yes

Huizinga F [33]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cano-Uceda A [34]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes
Lee J [35]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ke G [36]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes
Li Y [37]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
James [38]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Unclear
Yuan Y [39]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lan X [40]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Habibi S [41]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: The JBI systematic review critical appraisal checklist was used.

3.2.4. Quality Appraisal of the Included Randomized Controlled Trials

Table 5. Quality appraisal of included randomized controlled trials (n = 3)

Item	True randomization	Allocation concealment	Baseline similarity	Participant blinding	Outcome assessor blinding	Therapist blinding	Identical treatment	Follow-up complete	ITT analysis	Outcome measurement identical	Outcome measurement reliable	Appropriate statistics	Overall appraisal
Vikmoen O [17]	Yes	Yes	Yes	Unclear	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Include
Hou X [18]	Yes	Yes	Yes	Unclear	Unclear	Unclear	Yes	Unclear	Yes	Yes	Yes	Yes	Include
Greeley K M [16]	Yes	Yes	Yes	Unclear	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Include

3.3. Evidence summary and level of evidence

A total of 24 pieces of usable evidence were extracted in this study. After synthesis and analysis, eight evidence themes were ultimately formulated. See Table 6.

Table 6. Evidence summary and level of evidence

Evidence theme	Evidence content	Evidence level
Multidisciplinary team	1. Establish a multidisciplinary team centered on breast cancer patients undergoing chemotherapy, integrating oncology, nursing, rehabilitation, nutrition, and psychology disciplines to provide a comprehensive and individualized fatigue management plan [21,24,25].	5b
Screening and assessment	2. Routine screening for CRF should be conducted for all breast cancer patients undergoing chemotherapy. A 0–10 numeric rating scale (NRS) is recommended for rapid assessment; patients with moderate to severe fatigue (NRS ≥ 4) require further comprehensive evaluation using multidimensional scales [9,19,21,25].	5b
	3. The primary step in managing CRF is to rule out treatable etiologies [19,20,23].	5b
	4. Screening frequency: Regular fatigue screening should be integrated from diagnosis through follow-up across the entire cancer care continuum [9,25].	5b

Exercise intervention principles	5. Exercise for CRF patients should follow the principles of individualization and gradual progression [22,23,34,35].	1a
	6. Supervised combined aerobic and resistance training is the preferred nonpharmacological strategy for CRF in breast cancer patients undergoing chemotherapy and rehabilitation [22].	1a
	7. The recommended exercise frequency and duration are at least 150 minutes of moderate-intensity aerobic exercise per week combined with 2–3 sessions of resistance training per week [9,29–31].	1a
Exercise types and safety	8. Low- to moderate-intensity exercise is recommended during active treatment and can be gradually increased to moderate–high levels after treatment based on physical recovery, with greater CRF improvement seen post-treatment [35].	1a
	9. Types of aerobic exercise include brisk walking, jogging, cycling, swimming, and home-based walking; home-based walking is an effective modality with a low barrier to entry and high adherence, and can significantly alleviate CRF [32–34].	1a
	10. Types of resistance exercise include dumbbells, elastic bands, and fixed-equipment training; intensity at 40–80% 1RM, 8–15 repetitions per exercise, 1–3 sets, with 1–2 minutes of rest between sets [17,29,36].	1a
	11. High-load strength training during chemotherapy is feasible and safe, and can effectively mitigate the decline in capillary density and aerobic enzyme levels, thereby preventing the exacerbation of physical fatigue [17].	1b
	12. Supervised exercise guided by a rehabilitation therapist should be prioritized whenever feasible [34].	1a
	13. Mind–body exercises are integral components of exercise intervention [18,26,27,36,37].	1a
	14. Exercise safety contraindications: Exercise is prohibited when platelets < 50,000/μL, hemoglobin < 10 g/dL, neutrophils < 1,500/mm^3, or in cases of untreated pathological fractures, severe bone pain, or acute infection. Patients with osteoporosis or bone metastases should avoid high-impact, twisting, and weight-bearing flexion and extension movements [25,36].	5b
Psycho-behavioral Intervention	15. CBT-I can significantly improve daytime fatigue levels [16,28,40]. Recommended: one session per week, 90 minutes per session, for 8–20 weeks [28,39].	1a
	16. MBSR can reduce fatigue severity and improve psychological distress. An 8-week group program is recommended [22,36,39,40].	1a
	17. CBT-I can significantly and sustainably improve daytime fatigue levels through the mechanisms of reducing nocturnal wakefulness (by 42%) and increasing total sleep time (by 24%) [16].	1b
	18. The recommended frequency for relaxation training is 1–2 times per day, 15–30 minutes per session [39].	1a
TCM and complementary and alternative therapies	19. Xiaoyao San with modifications is recommended for patients with liver depression and spleen deficiency syndrome [21].	5b
	20. TCM nonpharmacological nursing techniques and traditional Baduanjin exercises are recommended as adjunctive nursing measures to alleviate CRF [8,21,25,36].	5b
Nutrition and multimodal management	21. Nutritional counseling and oral nutritional supplementation (ONS) during chemotherapy can help maintain body weight and muscle mass [38,41].	1a
	22. American ginseng at a dose of 2,000 mg per day for 8 weeks can be used to improve CRF in patients undergoing treatment [21,22,36].	1b
Health education and self-management	23. A structured lifestyle education prescription should be provided to patients [23,35,38].	1a
	24. Patients should be guided to conduct self-monitoring records [9,23].	5b

4. Discussion

4.1. Multidisciplinary team collaboration ensures the implementation of CRF management

Given the complex pathogenesis of CRF, a single-discipline intervention is insufficient to address it

comprehensively. Evidence recommends establishing a multidisciplinary team centered on breast cancer patients undergoing chemotherapy to develop individualized fatigue management plans [20,23,24]. Team collaboration bridges information gaps across disciplines, ensuring consistent evidence implementation at all stages.

4.2. Standardized assessment and screening as the prerequisite for precise intervention

Evidence items 2 to 4 summarized the accurate identification and assessment of CRF in breast cancer patients undergoing chemotherapy. The evidence recommends routine CRF screening for all breast cancer patients undergoing chemotherapy, using a 0–10 NRS for rapid assessment, with scores of 1–3 indicating mild, 4–6 moderate, and 7–10 severe fatigue; patients with moderate to severe fatigue require further comprehensive evaluation using multidimensional scales [9,20,24,41]. Furthermore, the primary step in managing CRF is to rule out treatable etiologies, which necessitates screening for reversible contributing factors such as anemia, hypothyroidism, malnutrition, pain, and sleep disturbances [22,41]. CRF screening should be integrated throughout the entire cancer care trajectory, starting from diagnosis and performed regularly at initial visits, during treatment, and during post-treatment follow-up, to ensure efficient and precise CRF management [9,24]. Nurses should incorporate fatigue screening into the daily assessment routine for chemotherapy patients, and promptly initiate multidimensional assessment and multidisciplinary intervention for those with moderate to severe fatigue. In summary, standardized, continuous screening and assessment constitute the foundational step in the precise management of CRF; only by accurately identifying fatigue severity and ruling out reversible contributing factors can subsequent nonpharmacological interventions be implemented in a targeted and effective manner.

4.3. Exercise intervention as the core strategy for CRF management

Evidence items 5–14 summarized the principles, types, and safety contraindications of exercise intervention. The ASCO-SIO guideline recommends combined aerobic and resistance training as the preferred nonpharmacological strategy for CRF [21]. Supervised combined training ensures proper form, appropriate intensity, and adherence, making it more effective than home-based self-directed exercise; it should be prioritized when feasible [21]. The recommended prescription is at least 150 minutes per week of moderate-intensity aerobic exercise plus 2–3 weekly resistance training sessions [9,28,30]. The treatment stage moderates exercise effects: the effect size for CRF reduction is greater after treatment than during active treatment, indicating that exercise intensity and goals should be dynamically adjusted according to the treatment stage.

Mind–body exercises, as an integral component of exercise intervention, offer the dual benefits of physical conditioning and psychological regulation. Yoga is recommended as an NCCN Category 1 recommendation, with a suggested frequency of 2–3 sessions per week, 60–90 minutes per session [21,25,26,29]. Tai Chi, with a minimum frequency of three sessions per week, 30–60 minutes per session, demonstrates superior overall effectiveness in improving fatigue, quality of life, and depression [35,36]. Baduanjin, performed for 40 minutes per day, three days per week, and continued for 12 weeks [17]. The aforementioned mind–body exercise regimens are all characterized by low intensity and high adherence, making them particularly suitable for implementation in community and home settings.

The safety of exercise is a prerequisite for clinical implementation. The evidence specifies contraindications for exercise during chemotherapy, including a platelet count below 50,000/μL, hemoglobin below 10 g/dL, neutrophil count below 1,500/mm^3, as well as the presence of untreated pathological fractures, severe bone pain, or acute infection, in which cases exercise is prohibited [24,35]. Nurses should

thoroughly assess hematological parameters and bone safety status before guiding patients in exercise. Patients with osteoporosis or bone metastases should avoid high-impact, twisting, and weight-bearing flexion and extension movements.

4.4. Psycho-behavioral intervention as an important collaborative management approach

Psycho-behavioral interventions and exercise interventions form an effective complement to one another. Evidence items 15 to 18 summarized the content of psycho-behavioral interventions. CBT is recognized as one of the most effective psychological interventions for alleviating CRF, with a recommended schedule of one session per week, 90 minutes per session, for 8–20 weeks [27,38]. For patients with comorbid insomnia, CBT-I can significantly improve daytime fatigue levels through the mechanisms of reducing nocturnal wakefulness and increasing total sleep time. MBSR is recommended as an 8-week group program, consisting of one 2–2.5 hour face-to-face session per week combined with 30–45 minutes of daily home practice, and has been shown to effectively reduce fatigue severity and improve psychological distress [21,35,38,39]. Relaxation training, performed 1–2 times per day for 15–30 minutes per session, has a positive effect on improving sleep quality and associated fatigue during chemotherapy [38]. In clinical practice, psychological interventions should be implemented as a vital supplement to exercise programs; particularly for patients with comorbid anxiety, depression, or sleep disturbances, CBT or MBSR should be prioritized and integrated into the care plan to achieve comprehensive management effects through combined physical and psychological treatment.

4.5. TCM techniques as a locally adapted complementary approach

Evidence items 19 to 20 propose that TCM syndrome differentiation and treatment, as well as TCM nursing techniques, offer locally adapted options for CRF management that fit the domestic clinical context [20]. Regarding nonpharmacological techniques, acupuncture, moxibustion, acupressure, and auricular acupressure are all included in the recommendations [20,21,24,35]. Specifically, acupuncture is recommended 2–3 times per week, 20–30 minutes per session; moxibustion is recommended once daily, 20–30 minutes per session; acupressure is recommended 1–2 times per day, 1–5 minutes per acupoint; and auricular acupressure targets ear acupoints such as Liver, Spleen, Kidney, and Shenmen. The above techniques are characterized by ease of operation, low economic cost, and high patient acceptability, and can be independently implemented by clinical nurses after standardized training, holding considerable potential for wider adoption in primary care and community settings.

4.6. Nutritional support playing an adjunctive role

Evidence items 21 to 22 indicate that nutritional counseling and oral nutritional supplementation during chemotherapy are feasible and safe, and can help maintain body weight and muscle mass, thereby indirectly supporting fatigue management; however, indiscriminate supplementation should be avoided [37,40]. American ginseng at a dose of 2,000 mg per day for 8 weeks can be used to improve CRF in patients undergoing treatment [20,21,35]. It should be noted that nutritional support should serve as an adjunctive measure to exercise and psychological interventions rather than a replacement, and its clinical application should be individualized according to the patient's nutritional status and treatment phase.

4.7. Health education implemented throughout the management continuum

Evidence items 23–24 recommend providing patients with a structured lifestyle education prescription. The

educational content should cover CRF knowledge education, energy conservation techniques, and information on psychosocial support resources [22,37]. Meanwhile, patients should be guided to perform self-monitoring and use a fatigue diary to dynamically capture fatigue fluctuation patterns and intervention effects, thereby facilitating patient–clinician communication and dynamic adjustment of the management plan [9,22]. Health education should also focus on fostering patients' self-efficacy, helping them establish accurate expectations of nonpharmacological interventions and sustained intrinsic motivation for continued participation.

5. Summary

This study synthesized the best evidence on nonpharmacological management of CRF in breast cancer patients undergoing chemotherapy, covering seven areas: screening and assessment, exercise intervention, psycho-behavioral intervention, TCM techniques, nutritional support, and health education. Evidence indicates that exercise, particularly combined aerobic and resistance training is the preferred CRF management strategy, complemented by psycho-behavioral and TCM nursing interventions, with standardized screening and health education sustained throughout care. As primary providers, nurses should center on exercise, integrate psychological and TCM approaches to develop individualized, multidimensional plans, and promote evidence translation into home and community settings. Limitations include the predominance of English-language literature, the need for local validation of certain interventions, lower-level evidence in TCM and nutritional support, and insufficient safety data in specific chemotherapy contexts. Future high-quality primary studies are needed to strengthen the evidence base and support safe, effective implementation of nonpharmacological CRF protocols in the Chinese clinical context.

Disclosure statement

The authors declare no conflict of interest.

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