

## Interventions to Improve Quality of Life Among Patients with Breast Cancer: A Scoping Review

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### ABSTRACT

Breast cancer is the most common cancer that affects women and can impact the quality of life (QoL) of patients. Objective: The aim of this study is to identify interventions to improve the QoL of breast cancer patients. Method: This study uses a scoping review approach on Pubmed, CINAHL, Cochrane Library, and ScienceDirect with a publication range of articles from 2018-2022, full-text articles, and randomized controlled trials. The quality assessment of the study uses critical appraisal checklist tools for randomized controlled trial research from the Joanna Briggs Institute (JBI). Results: Overall, 11 studies found interventions that are effective in improving the QoL of breast cancer patients, including nutritional counseling, Qigong, Yoga, music therapy, lymphedema self-management education, adapted physical activity and diet "APAD," patient-centered self-management support programs, Calorie Restriction and Synbiotics (CRS), and patient navigation. Recommendation: Our study highlights the potential of self-management approaches to improve the QoL of breast cancer patients. These findings can be a recommendation for nurses and other healthcare professionals in determining interventions to improve the QoL of breast cancer patients.

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## 1. INTRODUCTION

Breast cancer is a cancer that occurs in the breast area and is one of the most common non-communicable diseases that affects women. In this type of cancer, there is uncontrolled cell growth and the process of cell division spreads rapidly throughout the body [1] [2].

The prevalence of breast cancer ranks second as the largest disease in the world. The data on the number of cancer patients worldwide reaches 14 million cases with a death rate of 8.2 million per year [3]. Breast cancer is the most dominant type of cancer in Indonesia, reaching 30% of the total types of cancer compared to cervical cancer which reaches 24% [2]. The prevalence of breast cancer in Indonesia in 2018 reached 42.1 people per 100,000 population, with an average incidence of death reaching 17 people per 100,000 population [4].

Breast cancer patients experience many physical and psychological changes such as pain, weakness, disturbance of rest and sleep, as well as psychological changes such as self-appearance, self-concept, and negative feelings [5]. Breast cancer patients require therapy or treatment, while therapy or treatment will have a negative impact on the patient's condition. The problems experienced by breast cancer patients in the long term will affect the quality of life (QoL) of breast cancer patients [6].

QoL can be interpreted as total well-being which includes physical, psychological and social well-being [7]. Several factors affect QoL, namely age, marital status, education level, occupation, health status, health insurance and parity. There are several aspects that affect the QoL in cancer patients which can be in the form of physical aspects including body image, response to treatment and care. The psychological and social aspects include self-esteem, happiness, spirituality, relationships with other people, financial problems, self-perception of QoL, positive feelings and social well-being [8], [9].

There is a need for nursing interventions both independently and in collaboration with other health workers to help women overcome the negative physical and psychological impacts on the reduced quality of life of breast cancer sufferers from their diagnosis and treatment. This study aims to identify interventions that can improve the QoL of breast cancer patients by using a scoping review.

## 2. METHOD

### Research Method

This research uses a scoping review method with a framework from Arskey and O'Malley [10], [11], and the Preferred Reporting Item for Systematic Review and Meta-analysis extended for Scoping Review (PRISMA-ScR). The scoping review method is a comprehensive method for exploring specific topics [12]. The framework consists of 5 stages, which are identifying the research question, conducting relevant studies, screening studies, analyzing the results, and reporting the study results.

### Search Strategy

The article search was conducted on four databases: Cochrane, Pubmed, Sciencedirect, and CINAHL with full text. The keywords were adjusted using the medical subject heading (MeSH) and included (breast cancer OR breast neoplasm OR breast carcinoma OR breast tumor) AND (interventions OR treatment OR management) AND (quality of life OR QoL OR health-related quality of life OR HRQoL).

Population : people with breast cancer  
Intervention : interventions, treatment, and management  
Comparison : No Comparison  
Outcome : quality of life

### Article Criteria

The criteria for this scoping review follow the PICO (Population, Intervention, Comparison, Outcome) framework [13], [14]. The population of this review is patients with breast cancer, the concept is FCE, and the context is QoL. Moreover, the included criteria are articles from the publication years 2018 to 2022, full text, and studies from randomized controlled trials (RCTs). Fourth authors (A.M.M., H.P., R.D.N.P., and S.M) independently screened the articles.

### Data Analysis and Extraction

Data extraction of the included studies was conducted using the manual tabulation method in Microsoft Excel (Microsoft corp., New York, USA). The extracted data was analyzed using a qualitative method. The identified items include author, year of publication, setting, country, sample, age, study design, intervention method, and results.

## 3. RESULTS AND DISCUSSION

### Results

#### Study selection description

A total of 1,008 studies were obtained from the four databases used. Screening based on title and abstract excluded 985 studies. Further screening based on full-text articles and study design resulted in 12 articles being selected. After the full-text criteria assessment, 11 articles were included for quality appraisal. Overall, the study quality was deemed acceptable. The study selection process flowchart for this scoping review is shown in Figure 1.

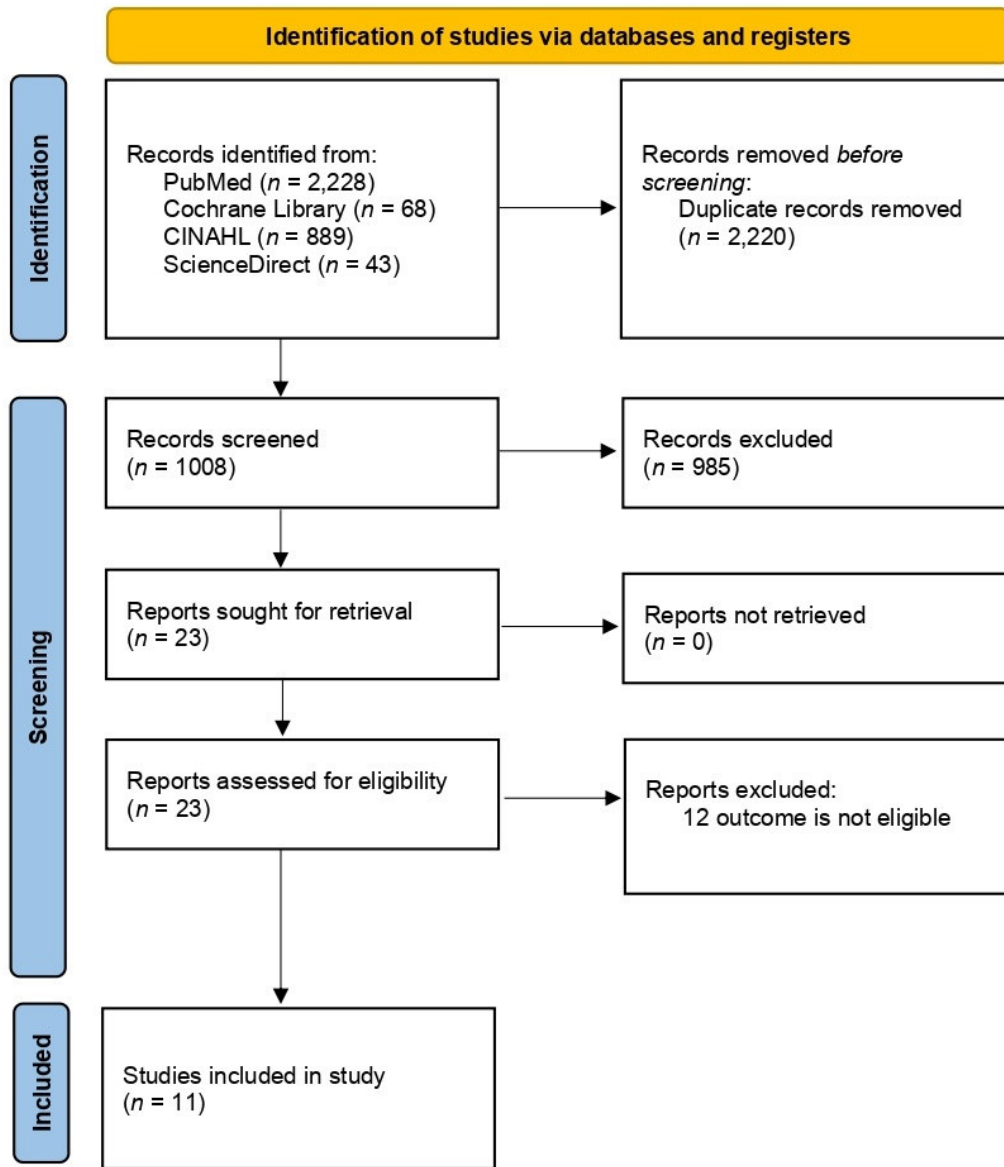


Figure 1. PRISMA flow diagram

### Study characteristics

The included studies were RCTs published between 2018 and 2022. The studies were conducted in Iran (n=3), the United States (n=2), France (n=1), Japan (n=1), India (n=1), Turkey (n=1), Brazil (n=1), and Italy (n=1), with a total study sample of 1,004 participants (see Table 1).

Table 1. Characteristics and outcome of included studies

Author and Year	Sample	Design	Country	Intervention	Duration	Instrument	Result
Khodabakhshi et al. (2020) [15]	80	RCT	Iran	Provide specific nutritional counseling for each participant in individual face-to-face meetings. Patients in the KD group were asked to refrain from eating grains, grain products, starchy vegetables, fruit or sugar.	12 weeks	QOL QLQ-C30	No significant differences were seen in quality of life or physical activity scores between the two groups after 12 weeks. However, the KD group showed higher global physical activity and quality of life scores compared to the control group at 6 weeks. Compliance among KD subjects ranged from 66.7 to 79.2% as assessed by food intake and serum ketone levels. Serum lactate and ALP levels decreased significantly in the KD group compared to the control group at the end of the intervention. No significant between-group differences were observed in thyroid hormones, electrolytes, albumin, LDH or ammonia.
Myers et al. (2019) [16]	50	RCT	Amerika	This Qigong form consists of a combination of controlled diaphragmatic breathing, slow chanting of the six healing sounds (to increase meditative focus), and special gentle movements of the arms.	8 weeks	The neuropsychological tests	The most increase in cognitive function was in the Qigong group. Improvement was shown for the Trail Making a (light exercise) and F-A-S (support group) verbal fluency tests. Qigong participants report the greatest reduction in pressure. Qigong participants reported the greatest reduction in distress. Quality of life improved

Author and Year	Sample	Design	Country	Intervention	Duration	Instrument	Result
Omidi et al. (2020) [17]	95	RCT	Iran	Five sessions of between 60 – 90 minutes twice a week, held in the form of face-to-face group discussions and debriefings in groups of 5 in a quiet room at the clinic. In the lymphedema self-management session, five skills are trained consisting of problem solving and decision making, using resources, implementing personalized care, working with the treatment team, and sharing skills with caregivers	2-3 weeks	QOL QLQ-C30	for all three groups, a significant improvement was light exercise between T2 (week 8) and T3 (week 12) when compared to the support group. Although there was no significant decrease in FCR scores, the results showed improvement in most aspects of QoL after three months of intervention. While social network-based educational methods are effective, group-based educational methods are more profitable. Education affects total LILI, psychosocial, and functional. There is an increase in the quality of life of cancer patients after implementing education based on lymphedema self-management.
Marion et al. (2019) [18]	143	RCT	Perancis	The APAD program was implemented over the course of chemotherapy and radiotherapy (approximately 26 weeks), including planned exercise sessions three times a week (individually supervised hospital-based exercise sessions and unsupervised	26 weeks	EORTC QLQ-C30	Implementation of the APAD intervention program during 1 year follow-up in patients with early-stage breast cancer in chemotherapy and radiotherapy sessions can improve quality of life. Significant effects on fatigue and quality of life persisted for up to 12 months. Significant reductions in BMI, fat mass, and

Author and Year	Sample	Design	Country	Intervention	Duration	Instrument	Result
Komatsu et al. (2020) [19]	155	RCT	Jepang	home-based sessions) and nine in-hospital-based and in-person nutrition therapy education sessions. advance targeting weight control and to change eating behavior according to WCRF recommendations  The intervention group received two sessions of a patient-centred, medication self-management support program conducted by trained personnel	3 weeks	QOL QLQ-C30	increases in muscle endurance and cognitive flexibility were observed at 26 weeks, but did not persist thereafter. Recreational physical activity was increased in the APAD vs UC group at 18 and 26 weeks. No significant effect of the intervention was found on intake of key macronutrients.  In the primary outcome, both the intervention and control groups maintained more than 90% MPR and there was no significant difference. On the secondary outcome, only general self-efficacy differed significantly in the two groups. In a qualitative study, intervention nurses perceived increased patient self-efficacy, ability to anticipate the effects of treatment and adjust to life, and avoid loneliness. Improved quality of life identified from the Likert scale score on measurements using FACT-B.
Prakash et al. (2020) [20]	100		India	Patients in the experimental group were taught diaphragmatic breathing techniques, systematically relaxation, and alternate nostril breathing, and neck	3 weeks	QOL QLQ-C30	The practice of yoga is effective in improving the quality of life of breast cancer patients in the experimental group in the areas of global health status, physical function, role function, and

Author and Year	Sample	Design	Country	Intervention	Duration	Instrument	Result
Vafa et al. (2020) [21]	135		Iran	and shoulder exercises Joints and Glands were instructed to practice twice a day at home.  The CRS group was instructed to consume one synbiotic capsule consisting of 109 CFU/g of seven probiotic strains. The CRP group was instructed to consume one placebo capsule consisting of lactose. Meanwhile, the control group did not receive any intervention	2 weeks	Lymphedema Life Impact Scale (LLIS)	emotional function as well as reducing symptoms of fatigue, insomnia, loss of appetite, and constipation, during the chemotherapy period. Yoga practice consisting of relaxation techniques reduces many side effects and improves the quality of life of women undergoing chemotherapy for breast cancer.  The CRS group showed significant reductions in total quality of life score, and psychosocial and functional domain scores, edema volume, and BMI compared to the control group. In conclusion, daily synbiotic supplementation plus a low-calorie diet for ten weeks led to significant improvements in quality of life, edema volume, and BMI. Therefore, it is advisable to add a low-calorie diet along with synbiotic supplements to the treatment protocol used for overweight and obese breast cancer survivors with lymphedema.
Ramirez et al. (2020) [22]	120		Amerika	Intervention group: Patient Navigators accompanied by educational materials according to the	24 weeks	FACT-G dan FACT-B (FACT-Breast)	PN+ participants had significantly improved QoL measures in patients with general and breast cancer compared with PN at 6-

Author and Year	Sample	Design	Country	Intervention	Duration	Instrument	Result
Eyigor et al. (2018) [23]	44	RCT	Turki	<p>participant's culture (PN+). While the control group received the Patient Navigators (PN) intervention</p> <p>Practice yoga with 5 minutes of sitting meditation and then 10 minutes of shavasana in several restorative poses, to which relaxing music is played during the practice. At the end of each session, the patient was covered with a light blanket while in the resting position, and lavender eye patches were placed over the eyelids.</p>	10 weeks	Visual analogue scale (VAS), The European Organization for Research and Treatment of Cancer Quality of life (EORTC QLQ-C30), The Beck Depression Inventory (BDI)	<p>month follow-up on all subscales except physical well-being. All subscales show a significant effect, except for physical well-being and social/family well-being.</p> <p>The group that received yoga showed a significant reduction in their pain severity from baseline to post-treatment, and benefits were maintained at 2.5 months post-treatment.</p> <p>The functional and symptom quality of life scores of patients in the yoga group were observed to show significant improvement at only 5 months compared to baseline.</p>
Lima et al. (2020) [24]	33	RCT	Brazill	<p>Musical interventions with relaxing music including classical, traditional pieces containing slow, consistent, melodic instrumental pieces, and well-known film music tracks have been used in previous studies and shown benefits in symptom control and quality of life</p>	30 menit	Brazilian Portuguese Version of the Beck Anxiety Inventory (BAI) Beck Depression Inventory–2nd ed (BDI-II) World Health Organization Quality of Life (WHOQOL)-BREF questionnaire Common Terminology Criteria	<p>Higher QoL scores on the functional scale were observed for the intervention group compared to the control group after the first and third chemotherapy sessions. Depression, anxiety scores, and vomiting were lower for the intervention group at the third session of chemotherapy. All participants in the intervention group reported positive changes in life, fatigue and reduced stress levels.</p>



Author and Year	Sample	Design	Country	Intervention	Duration	Instrument	Result
Lembo et al. (2021) [25]	49	RCT	Italia	Group 1 based on output, that is drainage removed when <30 ml/day. Whereas, group 2 early removal removed the drain on discharge from the hospital, 3-4 days after surgery.	3 weeks	for Adverse Events (CTCAE) Subjective Impression of the Subject (SIS) Questionnaire of patient QoL, visual analog scale (VAS), discomfort, sleep disturbance, and repercussion on daily activities and social life	Lower wound fluid production and shorter wound healing time for the early drainage release group. Differences in infection, impaired wound healing, and seroma formation period were not significant. The early drain discharge group experienced less breast pain, fewer limitations in daily activities, in mobility, and in social life, and better quality of sleep than the output-based group. The early drainage release group did not require home care after discharge from the hospital.

### Study finding

Eleven studies show that various interventions can improve the QoL of breast cancer patients. Effective ways to improve the QoL of cancer patients include nutritional counseling, Qigong, Yoga, music therapy, self-management education of lymphedema, adapted physical activity and diet “APAD”, patient-centered self-management support programs, Calorie Restriction and Synbiotics (CRS), and patient navigation (PN+).

## Discussion

Breast cancer is the most common cancer among women, and patients with breast cancer undergo several physical and psychological changes. Breast cancer patients require therapy or treatment to manage the disease and symptoms. Cancer is an abnormal condition of cells that experience rapid and uncontrolled growth [26]. Breast cancer is the second most deadly cancer after cervical cancer, which develops in the breast gland, milk ducts, fat tissue, and connective tissue in women's breasts [27].

The changes experienced by breast cancer patients can be exacerbated by the presence of comorbidities. Comorbidities are negatively associated with the QoL of breast cancer patients. Hypertension, arthritis, and diabetes are some of the comorbidities that have a negative association with breast cancer [28]. An individual with breast cancer can experience psychological, physical, social, sexual, and life disturbances, which can affect the patient's QoL [26]. In line with Paraskevi's research [29], breast cancer patients receiving chemotherapy may experience several side effects and symptoms that have a negative effect on their QoL. Psychological distress, anxiety, depression, pain, fatigue, and insomnia are common in breast cancer patients. Various subdomains can affect the QoL of breast cancer patients.

Health-related QoL is considered the most important part of cancer clinical trials. Assessing and managing the improvement of QoL in cancer patients can contribute to better treatment and can function as a prognostic factor along with medical parameters. QoL is a well-accepted outcome measure for cancer patients and is an integral part of cancer patient management. It is important to consider care to improve the QoL of breast cancer patients [29]. To reduce worsening conditions and improve the performance of breast cancer patients, nurses need to consider interventions to improve their QoL.

Several interventions have been conducted in previous studies. Interventions can be designed to manage comorbidities and optimize the QoL of breast cancer patients [28]. Findings from previous research indicate that the QoL of breast cancer patients has improved over the last decade. Simple and effective interventions can be performed, such as physical activity and psychosocial interventions to improve the QoL of breast cancer patients [30]. In this study, the author explores what interventions can be applied to improve the QoL of breast cancer patients with or without comorbidities.

Effective ways to improve the QoL of breast cancer patients include nutritional counseling, Qigong, Yoga, music therapy, self-management education of lymphedema, adapted physical activity and diet "APAD", patient-centered self-management support programs, Calorie Restriction and Synbiotics (CRS), and patient navigation (PN+). For a more detailed explanation, please refer to the following description.

## Implication to Practice and further research

The findings of this scoping review on interventions to improve QoL among patients with breast cancer have important implications for practice and further research. The review highlights the need for healthcare professionals to adopt a patient-centered approach that incorporates interventions that address the physical, psychological, and social aspects of the disease. The interventions that were found to be most effective in improving QoL among breast cancer patients included exercise, psychotherapy, and educational programs.

Furthermore, this review also points towards the need for further research to identify other effective interventions, particularly in the areas of complementary and alternative medicine, and to explore the long-term effects of these interventions. Additionally, future research should focus on identifying subgroups of patients who may benefit from specific interventions, as well as on developing interventions that are tailored to the individual needs and preferences of patients with breast cancer. Overall, this review provides valuable insights that can inform the development of evidence-based interventions and improve the QoL of patients with breast cancer.

## Study limitation

The findings of this scoping review on interventions to improve QoL among patients with breast cancer have important implications for practice and further research. The review highlights the need for healthcare professionals to adopt a patient-centered approach that incorporates interventions that address the physical, psychological, and social aspects of the disease. The interventions that were found

to be most effective in improving QoL among breast cancer patients included exercise, psychotherapy, and educational programs.

#### 4. CONCLUSION

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