

Review Article

Assessment of the Impact of Yoga on the Quality of Life of Breast Cancer Patients: A Systematic Literature Review

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ABSTRACT

Patients with breast cancer (BC) typically undergo multimodal treatment over an extended period and deal with a wide range of symptoms that severely impair their overall quality of life (QoL) and prognosis. Concern about the health-related QoL of persons diagnosed with cancer as well as the calibre of care they receive is increasing every day. This study aims to assess the impact of yoga on the QoL of patients with BC. PRISMA guidelines served as the foundation for the methodologies used to identify the studies. A total of 480 records were found using PubMed/Medline and Google Scholar databases. A final set of 22 studies was assessed for the work based on the exclusion and inclusion criteria and study eligibility. Yoga has a moderate effect on BC patients. Pranayama has been shown to have a positive effect on improving the QoL. The study observed that yoga was more useful during actual treatment for cancer than after completion. The various randomised controlled trials (RCT) and meta-analysis included in this study believe that yoga has a positive effect. However, the outcomes of various studies do not support this point completely. According to the safety information that is currently available, yoga is not associated with severe adverse outcomes. There is no concrete evidence that establishes the role of yoga as one of the alternative medicines in treating BC patients after chemotherapy. More clinical trials are needed to investigate the advantages of yoga in the overall improvement of QoL in BC patients.

Keywords: Health-related quality of life, Breast neoplasm, Yoga, Drug therapy, Rehabilitation

INTRODUCTION

Breast cancer (BC) is the most prevalent cancer in women. The healthcare system now faces new issues regarding how to assist patients in achieving optimal rehabilitation as a result of advancements in diagnosis, treatment, and care that have led to an increase in survival rates.^[1] The diverse rehabilitation requirements of women undergoing BC treatment are problematic. Pain, lymphoedema, exhaustion, and depression are frequently mentioned side effects of illness or therapy. Reduced psychosocial impact and health-related quality of life (HRQoL), such as fewer social interactions and psychological distress are observed in patients with BC. Challenges in resuming normal activities and roles in life as well as unmet information needs have also been described.

To best serve patients with BC in their changing life circumstances, further research is required. Consequently, individuals with BC may have existential, psychological, social, and psychological rehabilitation demands. It is necessary to adopt an individual approach to determine

each patient's unique needs to maximise recovery.^[2] However, neither clinical practice nor research frequently addresses how this will be done regarding pre-requisites. Research frequently examines how a particular rehabilitation intervention affects one or more specific outcomes and advances the knowledge of various approaches. Such knowledge is frequently insufficient to support physicians in promoting personalised rehabilitation. However, this is due to the complexity of patients' rehabilitation demands.

More research is required to close the difference between clinical practice and rehabilitation research to develop a systematic method of providing personalised therapy.^[3] The overwhelming amount of information on rehabilitation after BC treatment that is currently available makes it difficult for healthcare professionals (HCPs) to understand, evaluate, and apply these options in clinical practice. Providing HCPs and medical decision-makers access to a summary of the available research through systematic literature reviews (SLRs) is one strategy to make the research available to them.^[4]

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Studies on patients with BC have shown that high quality of life (QoL) scores before treatment improve responses to treatment. In addition, studies have shown that regardless of the stage of cancer, patients' QoL improves the more actively they participate in their care. Many patients with cancer desire to be intimately involved in emotional and spiritual healing. These patients want to be taken seriously, to have their worries allayed, to feel in control of their treatment options, and most importantly maintain their sense of optimism throughout their illness.^[5] Yoga has been employed in patients with cancer because it is more flexible and adaptive than other exercise regimens.

Yoga poses can be easily adapted with safe modifications to match a variety of functional limitations or limited mobility.^[6] Therefore, yoga may be a more practical or appropriate alternative for patients undergoing chemotherapy for BC. Yoga considers patients' spirituality relevant for managing their diseases as supplemental therapy. Yoga may improve body awareness, normalise immunological and stress responses and help patients regain their ideal homeostasis, according to the evidence.^[7] In some randomised clinical trials (RCTs), yoga's impact on sleep disturbance, fatigue, depression, health-related aspects, and anxiety, including QoL was found to be beneficial for patients with BC receiving chemotherapy.

It has not yet been possible to arrive at a firm conclusion about the safety profile of yoga amongst patients with BC who were instructed to receive chemotherapy. According to a recent meta-analysis, yoga has been shown to improve QoL and mental health in patients with BC. However, as patients undergoing chemotherapy and radiotherapy were not individually examined in this study, it was not possible to determine the pure impact of yoga on individuals receiving chemotherapy alone.^[8]

Yoga is one of the most frequently used supplementary treatments for BC-related impairments. Many BC patients use complementary therapies to cope with the disease.^[9] Yoga, which has its roots in ancient Indian philosophy, combines physical postures with spiritual practices to harmonise the mind, body, and spirit. Asanas, breathing exercises, and meditation are typically associated with yoga in North America and Europe.^[10]

About 15 million American adults are believed to have practised yoga at least once in their lives, with nearly half of them specifically utilising it to treat illness or improve health. In the past, meta-analyses have concluded that regular exercise can enhance the QoL of BC survivors. There are only a few meta-analyses on yoga for patients with BC or survivors even though SLRs and meta-analyses on yoga in various cancer groups have revealed similar outcomes.^[11] Meta-analyses should concentrate on homogeneous cancer groups because cancers of various types differ in terms of sociodemographic characteristics, treatment, side effects, and symptoms.^[12]

RESEARCH OBJECTIVES

The research objective

To assess the impact of yoga on BC patients, their QoL, and the various factors affected by yoga programmes for BC patients.

METHODS

Protocol and Registration: Submitted to PROSPERO. ID: 418615 (<https://www.crd.york.ac.uk/PROSPERO/#myprospero>).

Inclusion criteria

- Studies on the impact of yoga on BC
- Studied on the impact of yoga on BC patients
- Studies associated with coping strategies and interventions that included yoga for BC treatment
- Studies that included BC patients who were adults
- Studies published between 2000 and 2022 were considered.

Exclusion criteria

- General articles on BC
- Articles that were general on coping strategies and interventions for BC patients
- Articles that were not published in English.

Based on the inclusion and exclusion criteria the final references were grouped as those which were specific for BC and those which were on cancer but involved BC as well.

Information sources

1. Medline/Pubmed (https://www.nlm.nih.gov/medline/medline_overview.html)
2. Google Scholar (<https://scholar.google.com/>)
3. Cochrane (<https://www.cochrane.org/>)

All these databases were searched in October 2022 for the selection of references.

Search strategy

The search strategy included keywords associated with 'Breast cancer', 'Yoga', and 'impact of yoga on BC patients'. The web tools used include Google Scholar, Medline/PubMed, and Cochrane. Studies published between 2000 and 2022 were considered. Studies that were published in English were considered. Using search terms such as 'Breast cancer', and 'Yoga' gave too many references. However, using the compounded search term 'impact of yoga on BC patients' helped in the identification of specific references. The initial list of references was further filtered down using the publication time and the language as second criteria.

Study selection

Relevant studies were selected by adopting the search strategy in two distinct steps. First, the articles with appropriate topics

were screened using important keywords concerned with the study. The important information regarding the topic was extracted from the first step. The available titles and abstracts were recognised and examined in terms of revealing the justification of the included studies present in the paper. The second step involved the investigation of the full-text articles appropriately by independently reviewing them. PubMed was used for retrieving the full texts of the papers. The articles were screened independently by three reviewers (JN, AM, and AMS). After study selection, a consensus was made before the inclusion of the studies in this review. Any conflicts were resolved through discussion and consensus between reviewers.

Quality assessment

The selected articles were reviewed independently by two reviewers (AM and AMS) who assessed if the included articles matched the criteria listed for their inclusion. Each of the selected articles was analysed in detail for the quality of the work and database from where they have been collected. Based on the assessment the final list of articles for the study was obtained. The final articles obtained for the study have been indexed in PubMed. The mixed methods assessment tool (MMAT) was used for the quality assessment of the papers identified for the SLR. MMAT methods were proposed for qualitative and quantitative studies. However, this method does not apply to the assessment of the review papers and theoretical papers.^[13] The MMAT summarising the various studies included in the present SLR is shown in [Table 1].

Critical appraisal of the studies

The critical appraisal was done using the critical appraisal skills programme (CASP) tool. A set of 10 questions were used to appraise the studies. CASP qualitative studies checklist was used for the evaluation of the studies.^[14] A summary of the CASP-based appraisal of the qualitative studies included in SLR is shown in [Table 2].

Data collection

Data were extracted separately for each study. A common consensus was reached by the two reviewers (JN and AM) who evaluated the entire process. The various aspects extracted from the papers include the utilisation of yoga as an intervention in BC and cancer patients. The type of experience that patients with BC had in terms of QoL was evaluated based on the objective of the study. Various yoga-based approaches suggested in the identified references were carefully scrutinised. The outcomes obtained based on the observations from each study were used to generate the conclusions from this SLR.

Data items

The various references were searched for yoga as an intervention and improvement in health related QoL in

mastectomy patients and patients with cancer. The primary outcome searched in the selected articles was improvement in HRQoL

Variables for consideration

Participants

Patients who are being treated for BC, post-mastectomy patients, and cancer treatment patients.

Intervention

CAM-based intervention with a specific focus on Yoga.

Funding sources

This was not considered for the review since the above-mentioned are the most vital aspects of this SLR.

RESULTS

PRISMA sheet and the summary of final studies that have been used for the review

The web tools used include Google Scholar, Medline with PubMed, and Cochrane. A total of 480 references were identified based on the keywords described in the search strategy. Of the 480 references, most of them were found to be non-specific in initial screening based on analysis of the title and abstract. A total of 435 references were eliminated in the first step resulting in an analysis of 45 references. Of the 45 references, five references were not in English and were not considered. The remaining 40 references were checked for eligibility resulting in the identification of the final 22 papers for this study. The PRISMA sheet summarising the same has been presented in [Figure 1].

Study characteristics and description of the studies

A description of the study characteristics associated with each of the included studies is provided in [Table 3].

Discussion of the studies included

BC related

A total of 17 eligible studies with 2183 participants were included in the meta-analysis by Dong *et al.*^[10] study. Patients with BC who completed their treatment reported less fatigue after practising yoga than those who were still undergoing it. They discovered that yoga can be used as an alternative treatment for BC patients who have completed their anti-cancer treatment or are currently undergoing it to help with exhaustion. The conclusions of Dong *et al.*^[10] were also supported by Hsueh *et al.*^[15]

El-Hashimi and Gorey^[16] concluded that physical activity (PA) has positive psychosocial impacts not only during but also after cancer therapy. Yoga is now a well-liked method for improving the QoL of patients with BC. However, no additional exercise comparison conditions were employed in the present synthetic evidence of yoga. In this meta-analysis,

Table 1: MMAT analysis of the studies included in the systematic review.

Category of study designs	Methodological quality criteria	Responses			
		Yes	No	Cannot tell	Comments
Screening questions (for all types)	S1. Are there clear research questions? S2. Do the collected data allow me to address the research questions? <i>Further appraisal may not be feasible or appropriate when the answer is 'No' or 'Cannot tell' to one or both screening questions.</i>	✓	✓		
1. Qualitative	1.1. Is the qualitative approach appropriate to answer the research question? 1.2. Are the qualitative data collection methods adequate to address the research question? 1.3. Are the findings adequately derived from the data? 1.4. Is the interpretation of results sufficiently substantiated by data? 1.5. Is there coherence between qualitative data sources, collection, analysis, and interpretation?	✓	✓	✓	Olsson Möller <i>et al.</i> , 2019, Saraswathi <i>et al.</i> , 2021, Panchik <i>et al.</i> , 2019, Campbell <i>et al.</i> , 2020, Samami <i>et al.</i> , 2022, Wei <i>et al.</i> , 2019, Galliford <i>et al.</i> , 2017, Baydoun <i>et al.</i> , 2020, Komatsu <i>et al.</i> , 2016, Blank <i>et al.</i> , 2005, Rao <i>et al.</i> , 2008
2. Quantitative randomised controlled trials	2.1. Is randomisation appropriately performed? 2.2. Are the groups comparable at baseline? 2.3. Are there complete outcome data? 2.4. Are outcome assessors blinded to the intervention provided? 2.5. Did the participants adhere to the assigned intervention?	✓	✓	✓	Dhruva <i>et al.</i> , 2012, Vadiraja <i>et al.</i> , 2009, Rao <i>et al.</i> , 2017, Vadiraja <i>et al.</i> , 2017, Vadiraja <i>et al.</i> , 2009, Rao <i>et al.</i> , 2017
3. Quantitative non-randomised	3.1. Are the participants representative of the target population? 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? 3.3. Are there complete outcome data? 3.4. Are the confounders accounted for in the design and analysis? 3.5. During the study period, is the intervention administered (or exposure occurred) as intended?				
4. Quantitative descriptive	4.1. Is the sampling strategy relevant to address the research question? 4.2. Is the sample representative of the target population? 4.3. Are the measurements appropriate? 4.4. Is the risk of non-response bias low? 4.5. Is the statistical analysis appropriate to answer the research question?				Wang <i>et al.</i> , 2020
5. Mixed methods	5.1. Is there an adequate rationale for using a mixed methods design to address the research question? 5.2. Are the different components of the study effectively integrated to answer the research question? 5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted? 5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? 5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?				Yi <i>et al.</i> , 2021, O'Neill <i>et al.</i> , 2020, El-Hashimi and Gorey, 2019, Hsueh <i>et al.</i> , 2021
MMAT: Mixed methods assessment tool					

the impact of yoga was specifically compared to that of other physical exercise interventions in BC patients. The main

result of interest was QoL. There were 545 participants in eight RCTs. Following the intervention, the sample-weighted

Table 2: CASP evaluation of the various qualitative and quantitative studies included in SLR.

Critical appraisal questions	Olsson Möller et al.	Saraswathi et al.	Panchik et al.	Campbell et al.	Samami et al.	Wei et al.	Galliford et al.	Baydoun et al.	Komatsu et al.	Blank et al.	Rao et al.	Wang et al.	Yi et al.	O'Neill et al.	El-Hashimi and Gorey et al.	Hsueh et al.
Did the review address a clearly focused question?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Did the authors look for the right type of papers?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Do you think all the important, relevant studies were included?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Did the reviewer's authors do enough to assess the quality of the included studies?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
If the results of the review have been combined, was it reasonable to do so?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
What are the overall results of the review?	Yoga-based interventions help in alleviating the mood and reduce the anxiety as seen in many of the studies															
How precise are the results?	Highly precise	Highly precise	Highly precise	Highly precise	Highly precise	Highly precise	Highly precise	Highly precise	Highly precise	Highly precise	Highly precise	Highly precise	Highly precise	Highly precise	Highly precise	Highly precise
Can the results be applied to the local population?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Were all important outcomes considered?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Are the benefits worth the harms and costs?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

CASP: Critical appraisal skills programme, SLR: Systematic literature review

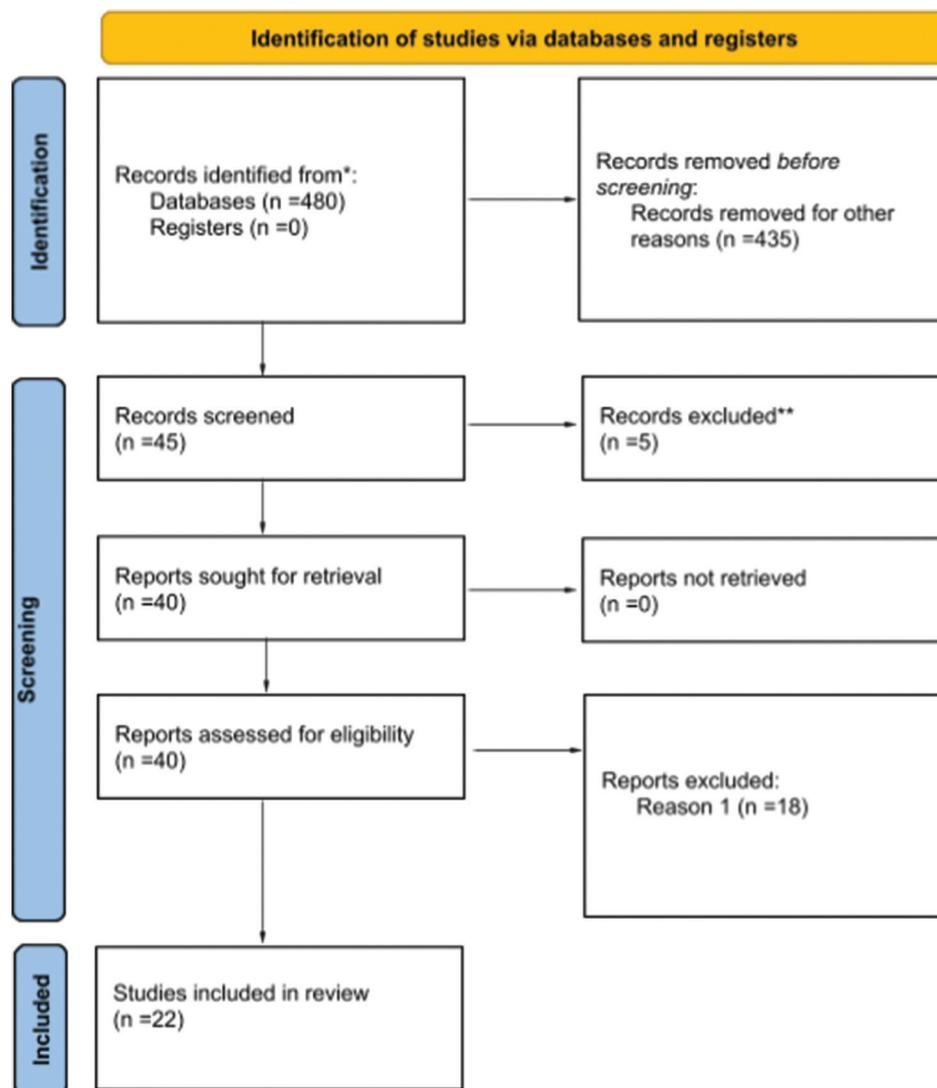


Figure 1: PRISMA sheet summarising the identification of studies for the review.

synthesis showed marginally statistically and modestly practically meaningful differences that might point to yoga's potential for higher efficacy. Galliford *et al.*^[17] reached similar conclusions.

Recent research points to yoga as a possible strategy for enhancing cognitive function in cancer survivors. The feasibility of a yoga programme at home for patients with BC undergoing chemotherapy was investigated by Komatsu *et al.*^[18] The type of yoga course that participants preferred as well as the programme's clinical outcomes were evaluated. Vadiraja *et al.*^[19] and Rao *et al.*^[20] discussed the impact of a yoga programme on the health of BC patients. Vadiraja *et al.*^[19] suggested that yoga may help early BC patients receiving adjuvant radiotherapy manage their self-reported psychological discomfort and modify the circadian cycles of stress hormones. Rao *et al.*^[20] proposed that yoga might be

used as a psychotherapy intervention in patients undergoing conventional treatment for BC.

Similar research on the impact of yoga on the management of patients with BC was conducted by Vadiraja *et al.*^[21,22] The findings led to the conclusion that yoga helps patients with advanced BC feel less worn out. In addition, yoga has a positive impact on BC patients' ability to manage their disease- and treatment-related symptoms. Wei *et al.*^[23] stated that the results could not conclusively show that adding a yoga programme intervention to normal care is better than usual care and that continuing with yoga activity does not significantly increase the benefits.

According to a meta-analysis and comprehensive review by Wang *et al.*^[24] yoga interventions for women can be more effective at managing sleep issues than non-active control circumstances. The meta-analyses revealed that individuals

Table 3: Characteristics of the included studies.

Authors	Year and country	Study design and sample size	Outcomes	Conclusion	References
Olsson Möller <i>et al.</i>	2019; Sweden	A systematic review of 37 selected systematic reviews	Yoga had positive effects on QoL, anxiety, depression, sleep disturbance, fatigue and gastrointestinal symptoms	Study shows positive effects of exercise/PA and yoga for women following BC treatment	[15]
Saraswathi <i>et al.</i>	2021; India	Systematic review	QoL, ROM and musculoskeletal symptoms showed improvement in BC patients with Yoga therapy	Yoga is a safe and feasible intervention for Breast cancer-related lymphoedema patients.	[16]
Wang <i>et al.</i>	2020; Taiwan	Systematic review and meta-analysis. 19 studies were included and 1832 participants were considered	16 of the 19 studies showed that yoga has a positive effect on improving the sleep quality in the participants. However, yoga had no effect on the reduction of insomnia	Yoga intervention could be beneficial in managing sleep problems. There were no adverse effects of yoga-based intervention.	[17]
Panchik <i>et al.</i>	2018; USA	Meta-analysis of 26 articles was done using SAS software	Exercise-based intervention was effective for patients with breast cancer-based lymphoedema. Yoga was effective in improving the overall outcomes like other exercise-based interventions	Non-traditional forms of exercise such as yoga have a tremendous potential in improving the QoL in patients with Breast cancer-based lymphoedema.	[18]
Campbell <i>et al.</i>	2020; New York	A systematic review of 29 RCTs	12 trials reported that exercise helps in the improvement of cognitive function. In women with breast cancer, there was a significant effect of exercise	The role of exercise in mitigating cancer-related cognitive impairment needs to be established	[19]
O'Neill <i>et al.</i>	2020; Canada	Meta-analysis of 24 RCTs	Yoga helped in significant improvement for cancer-related fatigue and QoL in patients when compared to those without any physical activity.	Yoga has a moderate effect on improving the QoL and cancer-related fatigue	[20]
Samami <i>et al.</i>	2022; Iran	Systematic review of clinical or quasi-experimental clinical trials. Nine studies were included	Psychological interventions including yoga reduced chemotherapy-induced nausea and vomiting in breast cancer patients	Yoga should be recommended as an intervention by healthcare providers to reduce chemotherapy-induced nausea and vomiting	[21]
Dong <i>et al.</i>	2019; China	Meta-analysis of 17 studies that included 2183 patients	Yoga had a positive effect on cancer-related fatigue. It had a moderate effect on cognitive fatigue and very little effect on mental fatigue	Yoga should be considered an alternative therapy for reducing the cancer related fatigue post-treatment in breast cancer patients	[10]
Wanchai and Armer	2020; USA and Thailand	Systematic literature review	Different yoga types were tested for the reduction in arm volume in patients with breast cancer-related lymphoedema. The reduction was not the same for various yoga types tested. There is no consensus that yoga is effective in reducing arm volume	More studies are needed to reach a consensus	[22]
Hsueh <i>et al.</i>	2021; Taiwan	Meta-analysis of RCTs. Twenty-six trials	Emotional, functional well-being and sleep quality	Yoga should be provided as supportive therapy	[23]

(Contd...)

Table 3: (Continued).

Authors	Year and country	Study design and sample size	Outcomes	Conclusion	References
		Meta-analysis of RCTs. Twenty-six trials involving 2069 patients were included for study	were significantly higher in yoga group	for patients who have undergone treatment for breast cancer	
Galliford <i>et al.</i>	2017; Australia	Review of 38 articles	Yoga therapy had psychosocial and physical benefits with overall improvement in QoL	Yoga-based therapy should be considered for breast cancer patients undergoing radiation therapy.	[24]
Baydoun <i>et al.</i>	2020; Canada	A systematic review of 10 articles	The study observed that there is no effect of yoga on cancer-associated cognitive decline	More studies are needed to establish the effect of yoga-based therapy on cancer associated cognitive decline	[25]
Rao <i>et al.</i>	2008; India	Single center RCT of 98 female breast cancer patients	Yoga groups showed significant improvement in QoL. There was a reduction of anxiety, depression and symptom severity	Yoga is beneficial in reducing the post-operative distress and enhancing immune response in breast cancer patients	[26]
Vadiraja <i>et al.</i>	2009; India	RCT on 88 breast cancer patients	Patients subjected to yoga therapy showed a significant decrease in psychological distress, fatigue, appetite loss and insomnia	Yoga intervention is beneficial in managing symptoms associated with the treatment of breast cancer patients	[27]
Dhruva <i>et al.</i>	2012; India	Pilot RCT of 16 cancer chemotherapy patients	Yoga breathing improved the overall QoL	Yoga breathing has beneficial effects. However, this needs to be confirmed on a larger sample size	[28]
Rao <i>et al.</i>	2017; India	RCT of 98 breast cancer patients	Yoga-based intervention showed lowered anxiety, depression, severity of symptoms and improved QoL	Yoga can be used as a psychotherapeutic intervention in breast cancer patients undergoing treatment	[29]
Vadiraja <i>et al.</i>	2009; India	RCT of 88 breast cancer patients	Yoga-based intervention showed decrease in anxiety, stress, salivary cortisol and pooled mean cortisol	Yoga can be used in reducing the psychological distress and lowering the levels of stress hormones	[30]
Vadiraja <i>et al.</i>	2017; India	RCT of 91 breast cancer patients	Yoga-based intervention reduce the fatigue, stress, anxiety and diurnal variation of cortisol in breast cancer patients	Yoga reduces fatigue in advanced breast cancer patients	[31]
Komatsu <i>et al.</i>	2016; Japan	Feasibility study on 18 breast cancer patients	Home-based yoga programme showed improvement in cognitive fatigue	Self-directed home-based programme is a safe option for patients undergoing chemotherapy	[32]
Yi <i>et al.</i>	2021; China	Meta-analysis of seven RCTs involving 693 breast cancer patients	Yoga-based intervention showed short-term improvement in sleep, fatigue and depression with overall improvement of QoL	Yoga may help in reducing the outcomes of chemotherapy in the short term	[7]
El-Hashimi and Gorey	2019; Canada	Meta-analysis of eight RCTs with 545 participants	Yoga-based intervention for short-term improves QoL of women	Yoga shows significant improvement in breast cancer patients. However, larger clinical trials are needed to confirm the same	[33]

QoL: Quality of life, RCTs: Randomised controlled trials, BC: Breast cancer, QoL: Quality of life, PA: Physical activity, ROM: Range of motion

in the quasi subgroup and those with BC were linked to greater advantages, with a correlation between total class time and sleep quality amongst other relevant advantages. Yi *et al.*^[7] found from their study that yoga may help in the short term to improve fatigue, anxiety, and depression in patients with BC receiving chemotherapy, improve sleep disturbance, and improve QoL; nevertheless, medium- and long-term effects are not established further due to limitations.

Cancer-related

To compile and assess the evidence of the impact of yoga on cancer-related cognitive decline (CACD), Baydoun *et al.*^[25] carried out a study. Four databases of papers released before 1st January 2020 were used in a systematic review. Ten items met the inclusion criteria requirements. Studies using reduced hatha yoga regimens have mostly been performed with BC patients. It was concluded that there is currently inadequate data to support the claim that yoga can help reduce CACD. Similar data were evaluated by Blank *et al.*^[26] from their investigation. More thorough experiments that adjust for general variables are necessary. To improve practical durability and generalisability, the field might also benefit from investigating self-delivered yoga methods to treat CACD in different cancer groups.

Campbell *et al.*^[27] conducted a systematic review of RCTs to investigate the impact of exercise on cancer-related cognitive impairment (CRCI). They concluded that there is insufficient evidence to recommend exercise as a treatment for CRCI. To confirm the potential significance of exercising in controlling and preventing cognitive deficits in individuals with cancer, further research investigating CRCI as an outcome, incorporating personality and objective assessments, is required. Yoga breathing is a workable intervention among chemotherapy-treated cancer patients.^[28] Pranayama may also help with anxiety, sleep disturbances, and mental health. It was discovered that practising pranayama led to improvements in QoL and symptoms related to chemotherapy. These results should be confirmed in a larger study.

In addition to extending our understanding of the benefits of CAM, yoga, lymphoedema treatment, and psychosocial therapies, Olsson Möller *et al.*^[29] reported a strong positive impact of exercise/PA and yoga amongst women following BC treatment. According to Panchik *et al.*^[30] several types of exercise seem to be risk-free interventions for physicians when caring for this population. These interventions have advantages such as increased QoL, strength, lowered body mass index, improved mental health, and reduced lymph swelling and pain. Yoga offers small to medium benefits in CRF and QoL when compared to non-PA, but not when compared to other PA therapies, according to a meta-analysis by O'Neill *et al.*^[31]

Rao *et al.*,^[32] Samami *et al.*^[33] and Saraswathi *et al.*^[34] discovered that yoga had a positive impact on various illnesses

and enhanced patients' QoL. According to this review, additional research is required to examine yoga processes and determine the best ways to distribute yoga therapy.

DISCUSSION

In addition to stressing the importance of the body, spirit, and mind working in perfect balance with nature, yoga is a great Indian ideology and science that views its practitioners' spirituality as a vital component of disease therapy.^[17] Various medical diseases including diabetes, asthma, heart problems, immunological function, plasma cortisol levels, and lymphoma appear to benefit from it. Previous studies have shown that those who practise yoga consistently have much fewer cytotoxic T cells and experience less damage to DNA while receiving chemotherapy. The information examined here must be interpreted as preliminary because yoga has recently been considered a therapeutic option for BC patients with cancer.^[16] Major cancer institutes in the US are now conducting sizable research on yoga for BC patients that will undoubtedly provide fresh and perhaps contradictory findings. Until then, yoga's undeniable benefits for BC patients' mental health should support its use in this population of patients.^[7] For instance, yoga may be suggested as a treatment for enhancing psychological well-being while receiving active treatment for BC.

BC patients who are undergoing treatment suffer from exhaustion. The various studies that have been presented in the results section support the fact that yoga helps in reducing exhaustion. PA in general in BC patients undergoing treatment helps to improve their overall QoL. Various studies have also observed yoga has potential benefits in improving cognitive function both during and after therapy. Yoga was helpful in controlling sleep-associated issues, short-term fatigue, anxiety, and depression. In patients suffering from different cancers as well the effect of yoga, pranayama, and CAM-based methods was significant. Thus, both in BC and other related cancer patients who were undergoing treatment or post-therapy yoga were found to have beneficial effects in most of the studies that have been reviewed in the SLR.

CONCLUSION

Chemotherapy is frequently used to treat BC, the leading cause of mortality in women between the ages of 35 and 54 years, to lower the likelihood of distant recurrence. However, BC survivors experience a variety of unwelcome side effects during this process, varying from physiological to cognitive, all of which may have a significant influence on QoL and everyday activities. Exercise can help BC patients undergoing chemotherapy maintain their physical health and function while also reducing mood and sleep problems. BC patients with cancer are unable to participate in gymnastic exercise due to cancer-related pain and extreme exhaustion. Yoga's slow, soft motions are easier to modify to a person's

medical problems and have a number of functional limitations on the grounds of safety than other types of exercise. Information on the safety and efficacy of yoga practices is scarce and contradictory, even though few studies exclusively recruit BC survivors receiving chemotherapy. Furthermore, those outcomes were not returned. Further proving yoga's health benefits are crucial in light of findings and the growing popularity of the practise amongst this target audience. Our findings are consistent with past SLRs that discovered solid support for exercise programmes intended to enhance physical outcomes like shoulder mobility and lessen lymphoedema. Our findings further suggest that both generally and especially for shoulder discomfort and mobility, exercise is safe and practical. In addition, weariness and QoL primarily benefit from exercise.

BC is the most prevalent cancer in women. Individualisation is essential for the best rehabilitation because individuals experience side effects after treatment and have a variety of rehabilitation needs. Yoga has been shown to improve various elements of physical and psychological well-being, particularly when receiving active cancer therapy.

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Declaration of patient consent

Patient's consent was not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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