



Faletahan Health Journal, 8 (1) (2021) 1-9
www.journal.lppm-stikesfa.ac.id/ojs/index.php/FHJ
ISSN 2088-673X | e-ISSN 2597-8667

Yoga Improves Quality of Life among Breast Cancer Patients

Henri Setiawan^{1*}, Heri Ariyanto¹, Reffi Nantia Khaerunnisa¹, Fidya Anisa Firdaus¹,
Ade Fitriani¹

¹Department of Nursing, STIKes Muhammadiyah Ciamis
*Corresponding Author: henrisetiawan1989@gmail.com

Abstract

Yoga was a therapy that combined breathing, relaxation and meditation techniques and stretching exercises. The benefits of yoga in general could increase strength, flexibility, train balance, reduce pain, train breathing, smooth organ function, inner calm and improve quality of life. Several differences in the results of studies can influence the decisions of patients and health providers in planning appropriate interventions for breast cancer patients. This literature review aimed to explain the effectiveness of yoga on the quality of life of patients with breast cancer. The research data were identified from five journal databases including PubMed, JSTOR, Willey Online Library, Sage Journal and Taylor Francis Online by using the PLOS (Participant, Intervention, Outcomes and Study Design) method and MeSH term on the advanced search engine. Articles that became research data were articles published in 2007 to 2020 in the English version, open access and full text in the form of original articles or research articles. Of the 1,645 articles found, a screening process was carried out using PRISMA flowchart to eliminate articles that did not meet the criteria. In this literature review study, 9 articles were found that prove that the use of yoga interventions could improve the quality of life of patients. This study reinforced the findings of previous research which showed that yoga could be used effectively in the process of treating patients with breast cancer.

Keywords: Breast Cancer, Quality of Life, Yoga

Introduction

Breast cancer is a disease that often occurs in women, where cells in the breast grow abnormally. There are various types of breast cancer, the type of breast cancer depends on breast cells that turn into cancer (Denkert et al., 2020). Breast cancer can begin in several parts of the breast, the breast consists of three main parts: lobules, lactiferous sinuses, and connective tissue. Lobules is a gland that can produce milk. Lactiferous sinus is a channel under the large areola dilated, finally concentrated into the nipple and empties out. Inside the alveolar wall or ducts there is smooth muscle, if it contracts, it can pump breast milk out. Connective tissue consisting of fibrous and fat tissue, surrounds and unifies them all. Most breast cancers begin in the lobules. Breast cancer can spread outside the breast through blood vessels and lymph vessels (Brooks et al., 2020).

A report from the Breast Cancer Research Foundation (BCRF) on studies of breast cancer in various countries, the number of breast cancer sufferers in 2018 continues to increase by nearly 2 million newly diagnosed breast cancer cases (BCRF, 2018).

Yoga is an interesting intervention because it can be done easily and low risk which requires only a little equipment, the effects of yoga for the body can provide many physical and psychological benefits, one of that is to improve the quality of life in breast cancer patients (Gaynor et al., 2020). Yoga is a therapy that combines mind body, breathing exercises, meditation, imagination, which is most widely used among cancer patients, especially breast cancer patients (Bao ting et al., 2020).

Breast cancer patients often use alternative/complementary therapies, including yoga, to reduce symptoms related to cancer, and to improve quality of life. The beneficial effects are seen in a variety of outcomes, including sleep quality, mood, stress, cancer-related stress, cancer-related symptoms, physiological and overall quality of life (Shohani, Kazemi, Rahmati, & Azami, 2020).

Several related studies have been conducted previously by other researchers. Naciye and Oglem (2015) in their research stated that Yoga provides benefits to improving the quality of life in elderly breast cancer patients (Yagli & Ulger, 2015). Similar to the study, Helger et al in 2017 stated that

the intervention group that was given yoga had improved quality of life and decreased fatigue in breast cancer patients compared to the control group who did not receive yoga intervention. (Cramer et al., 2017).

Both studies have had a positive impact on the quality of life for breast cancer patients. However, the results of the review conducted by Helger et (2017) show a high level of heterogeneity of more than 60%. This shows that Yoga is still at an evidence-moderate low level with an effect size of 0.21 (Cramer et al., 2017). In contrast to the both researchs, Desiree (2016) states that Yoga is not effective in improving the quality of life of breast cancer patients at all stages (Lötzke, et al., 2016).

Several differences in the results of these studies can influence the decisions of patients and health providers in planning appropriate interventions for breast cancer patients. That is why a literature review study is necessary to obtain a theoretical basis that can support this problem

Method

Search Strategy

The search strategy was carried out in several Journal databases including; PubMed, JSTOR, Willey Online Library, Sage Journal and Taylor Pranciss Online by using Mesh terms and keywords in the Advanced search engine; (((("Yoga" [Mesh])) AND "Breast Neoplasms" [Mesh]) AND "Quality of Life" [Mesh]) AND "Randomized Controlled Trial" [Publication Type]). The inclusion criteria in this literature review were articles published from 2007 to 2020 in the English version with open access and full text in the original article form. Participants or populations (P) in this study were patients with breast cancer with Intervention (I) yoga, Outcomes (O) in the form of Quality of life (QoL), Study Design (S) research included was a Randomized Controlled Trial involving female subjects who were being treated in hospitals and patients who continued treatment at home using yoga interventions. The authors critically analyzed each article and retrieved the information needed to assess the effectiveness of yoga on quality of life.

Data Selection

After searching for articles and eliminating duplication, the title of the article was taken in the filtered base data search. The abstract of the

selected article was further analyzed. In the second round of article selection, if there were doubts about including the research article, the author reviewed the article in full (full text). Next, H.S., H.A., and F.A.F. searched and selected relevant studies to be reviewed, using PIOS. All articles that Omet the inclusion criteria were reviewed without meta-analysis.

Critical Review

All articles were criticized and given ranking using Critical Appraisal Skills Programmed (CASP) by independent authors (R.N.K and A.F). Selected articles had good CASP levels (7-8 points) and were sufficient (5-6 points). Disagreements related to ranking scores, resolved by discussion. H.S., H.A. and F.A.F rechecked each assessment point in each article. After disagreements were found, confirmation and clarification were made to the assessors. After the

process is carried out, the senior researcher (A.F.) determines the final decision.

Data Extraction

This research had conducted data extraction in the intervention and control groups, consisting of: the total number of respondents, interventions, administrative methods, results and critical assessments.

Data Synthesis

Because this research review included evidence studies level I, II and III, where the research steps were not homogeneous, no meta-analysis was conducted. These findings were presented as a narrative summary of the study with the treatment group without treatment or usual care.

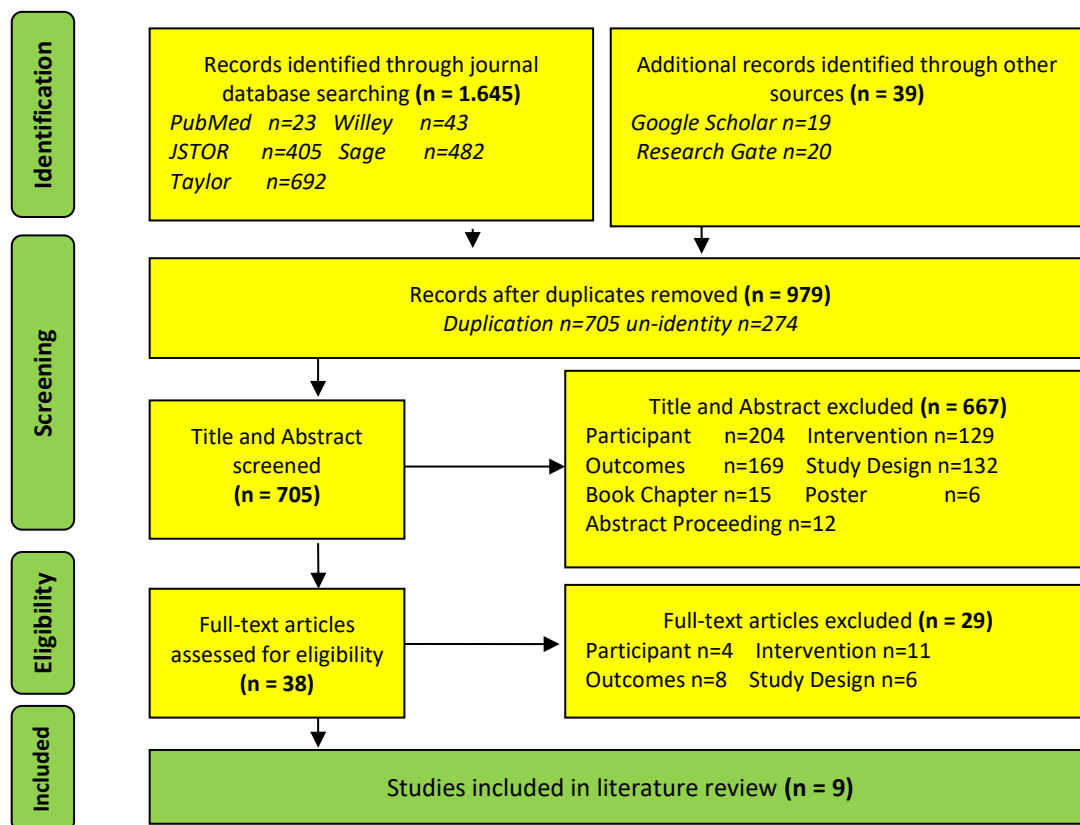


Figure 1
 PRISMA (Search and Screening Strategy) of Literature Review

Result and Discussion

Articles Selection

Articles identified using a search term predetermined in a combined database search conducted from 2007 to 2020 produced 1,645 articles as described in Figure 1. Three times filtered, most studies did not include articles that did not meet PIOS criteria. Subjects were not breast cancer ($n = 204$), did not use yoga interventions ($n = 129$), did not focus on quality of life ($n = 169$) and did not use RCT ($n = 132$).

In addition, 274 articles were excluded because they did not have an identity with 705 duplicate articles. In addition to articles, there were 15 Book chapters, 6 posters and 12 abstract proceeding which have also been eliminated in the EndNote X9 reference manager application.

Research Characteristics

The number of subjects from this study was 742 randomly assigned people with 423 participants in the intervention group and 319 participants in the control group. This study used yoga intervention in patients with breast cancer.

The results of the study in the intervention group had a positive effect on improving the quality of life of patients. The detailed explanation of that can be seen in Table 1.

This literature consisted of 9 articles, and all of these interventions were reported to be significantly effective in being able to improve quality of life. The subjects in this study were patients with breast cancer.

Measurement Result

The instruments used to assess the quality of life of patients include:

1. *Functional Assessment of Cancer Therapy* (FACT)

This measuring tool was used in an article titled *Randomized Controlled Trial of Yoga Among a Multiethnic Sample of Breast Cancer Patients: Effects on Quality of Life*. To measure QoL, Instruments assess four dimensions: physical, social, emotional, and functional well-being, and the overall QoL (FACT-General), which consisted of the sum of the score subscales. The measurement results (QoL), in this study showed yoga intervention was proven to significantly increase QoL in breast cancer patients than in the

control group with mean \pm SD Intervention 78.07 ± 17.17 and control 70.38 ± 22.75 (p value $< .008$) (Moadel et al., 2007).

The FACT instrument was also carried out in a Randomized controlled pilot trial of yoga in overweight and obese breast cancer survivors: effects on quality of life and anthropometric measures. The results showed that there were significant differences between the intervention group and the control group with mean \pm SD Intervention 90.3 ± 11.0 and control 87.7 ± 15.0 (p value = 0.006) (Littman et al., 2012).

The FACT instrument was also used in a study entitled *Restorative yoga for women with breast cancer: findings from a randomized pilot study*. The results showed that yoga intervention significantly increased QoL in breast cancer patients than in the control group with mean \pm SD Interventions 114.8 ± 19.1 and controls 98.4 ± 31.8 (p value = 0.052) (Danhauer et al., 2009).

2. *European Organization for Research and Treatment of Cancer* (EORTCQoL C30)

Article entitled *Effects of yoga program on quality of life and affect in early breast cancer patients undergoing adjuvant radiotherapy: A randomized controlled trial using the EORTCQoL C30 measurement tool*. This 30-item questionnaire provided measures on the dimensions of global health status, physical, role, emotional, cognitive and social functions (with high scores representing good quality of life) and cancer-related symptomatology. The results of this study indicated that yoga intervention was proven to significantly increase QoL with a value (p value = 0.001) (Vadiraja et al., 2009).

The EORTCQoL C30 instrument was also used in a study entitled *Iyengar-Yoga Compared to Exercise as a Therapeutic Intervention during (Neo) adjuvant Therapy in Women with Stage I-III Breast Cancer: Health-Related Quality of Life, Mindfulness, Spirituality, Life Satisfaction, and Cancer-Related Fatigue*. The results of this study showed no significant difference between yoga interventions and conventional therapeutic exercises (p value = 0.611) (Lötzke, Wiedemann, Rodrigues Recchia, et al., 2016).

The EORTCQoL C30 instrument was also used in *A Randomized Study of Yoga for Fatigue and Quality of Life in Women with Breast Cancer Undergoing (Neo) Adjuvant Chemotherapy*. The

results showed no significant difference between the intervention group and the control group (p value = 0.839) (Jong C. Miek et al., 2018).

3. Short-form survey (SF-36)

The SF-36 measuring instrument was used in the *Yoga Improves Quality of Life and Benefit Finding study in Women Undergoing Radiotherapy for Breast Cancer*, to measure the QoL of this instrument assessing several different domains over the past 4 weeks: physical function, physical barriers to role function, pain, perception of general health, vitality, social function, emotional barriers to role function, and mental health. The results of this study showed that yoga interventions had been shown to significantly increase QoL in patients with breast cancer with mean \pm SD intervention 52.8 ± 1.9 and control 47.3 ± 2.1 (p value = 0.01) (Chandwani et al., 2010).

The SF-36 instrument was also used in a study entitled *Randomized, Controlled Trial of Yoga in Women with Breast Cancer Undergoing Radiotherapy*. The results showed that the YG group could increase QoL more significantly than the ST and WL groups (p value <0.05) (Chandwani et al., 2014).

4. Nottingham Health Profile (NHP)

This measurement tool was used in the article entitled *The Effects of Yoga on The Quality of Life And Depression in Elderly Breast Cancer Patients*. This measurement consisted of six different subcategories that test physical activity, energy

levels, pain, social isolation, sleep, and reactions emotional. The results showed that yoga intervention was shown to significantly increase QoL in breast cancer patients than in the control group with mean \pm SD Intervention 91.29 ± 64.15 and control 165.34 ± 100.74 (p value <0.05) (Yagli & Ulger, 2015).

In a *Randomized Controlled Trial of Yoga Study Among Multiethnic Samples of Breast Cancer Patients: Effects on Quality of Life* it was reported that yoga interventions were shown to significantly increase QoL in breast cancer patients. Analysis of variance showed the strong influence of interventions on quality of life between the intervention group versus the control group (Moadel et al., 2007). Littman (2012) in his article reported that yoga could improve the quality of life in breast cancer patients. This study used Chi-square analysis and t tests using the intent-to-treat approach.

In the Randomized article, *Controlled Trial of Yoga in Women with Breast Cancer Undergoing Radiotherapy* showed that yoga interventions had been shown to significantly increase QoL. PROC MIXED procedures in SAS version 9.2 were used to test differences between groups (Chandwani et al., 2014). Still in this study, *Yoga Improves Quality of Life and Benefit Finding in Women Undergoing Radiotherapy for Breast Cancer* reported that the effects of yoga had been shown to significantly increase QoL in breast cancer patients. Differences between groups used two-sample t -tests to compare continuous variables and chi-square tests for categorical variables (Chandwani et al., 2010).

Table 1 Data Extract of Study

Author, Year, Title	Method	Finding
Alyson B. Moadel, (2007) <i>Randomized Controlled Trial of Yoga Among a Multiethnic Sample of Breast Cancer Patients: Effects on Quality of Life</i> (Moadel et al., 2007)	Objective: This study examines the impact of yoga, including physical poses, breathing, and exercise meditation, on quality of life (QOL), fatigue, depressed mood, and spiritual well-being among multiethnic samples of breast cancer patients. Design: Randomized Controlled Trial. Sample: 128 (84 interventions, 44 controls) Intervention : Yoga Instrument: <i>The Functional Assessment of Cancer Therapy (FACT)</i>	Yoga interventions were shown to significantly increase QoL in breast cancer patients than in the control group with mean \pm SD Interventions 78.07 ± 17.17 and controls 70.38 ± 22.75 (p value <0.008)

<p>Alyson J. Littman (2012) <i>Randomized controlled pilot trial of yoga in overweight and obese breast cancer survivors: effects on quality of life and anthropometric measures</i> (Littman et al., 2012)</p>	<p>Objective: To get an estimated time to recruit sample studies, retention, attendance of facility-based classes and home practice for yoga studies in breast cancer sufferers, and their efficacy on fatigue, quality of life (QOL), and weight change. Design: Randomized Controlled Trial. Sample: 63 (32 interventions, 31 controls) Intervention : Yoga Instrument: <i>Functional Assessment of Cancer Therapy-General</i> (FACT-G)</p>	<p>Yoga interventions were shown to significantly increase QoL in breast cancer patients than in the control group with mean \pm SD Interventions 90.3 + 11.0 and controls 87.7 + 15.0 (p value = 0.006)</p>
<p>Desiree Lotzke (2016) <i>Iyengar-Yoga Compared to Exercise as a Therapeutic Intervention during adjuvant Therapy in Women with Stage I-III Breast Cancer: Health-Related Quality of Life, Mindfulness, Spirituality, Life Satisfaction, and Cancer-Related Fatigue</i> (Lötcke, Wiedemann, Rodrigues Recchia, et al., 2016)</p>	<p>Objective: to test the effects of yoga on health-related quality of life, life satisfaction, cancer-related fatigue, attention, and spirituality compared to conventional therapeutic exercises during (neo) cytotoxic adjuvants and endocrine therapy in women with breast cancer. Design: Randomized Controlled Trial. Sample: 92 (45 interventions, 47 controls) Intervention : Yoga Instrument: <i>European Organization for Research and Treatment of Cancer</i> (EORTC-QLQ-C-30),</p>	<p>There was no significant difference between yoga interventions and conventional therapeutic exercises (p value = 0.611).</p>
<p>H.S. Vadiraja, (2009) <i>Effects of yoga program on quality of life and affect in early breast cancer patients undergoing adjuvant radiotherapy: A randomized controlled trial</i> (Vadiraja et al., 2009)</p>	<p>Objective: This study compared the effects of an integrated yoga program with brief support of therapy in breast cancer patients undergoing adjuvant radiotherapy at the cancer center. Design: Randomized Controlled Trial. Sample: 88 (44 interventions, 44 controls) Intervention : Yoga Instrument: <i>European Organization for Research in the Treatment of Cancer-Quality of Life</i> (EORTCQoL C30)</p>	<p>The results of this study indicated that yoga intervention had been shown to significantly increase QoL with a value (p value = 0.001)</p>
<p>Kavita D. Chandwani, (2010) <i>Yoga Improves Quality of Life and Benefit Finding in Women Undergoing Radiotherapy for Breast Cancer</i> (Chandwani et al., 2010)</p>	<p>Objective: This study examined the effects of yoga on QOL and psychosocial outcomes in women with breast cancer undergoing radiotherapy Design: Randomized Controlled Trial. Sample: 61(30 interventions, 31 controls) Intervention : Yoga Instrument: <i>Study 36-item short-form survey</i> (SF-36)</p>	<p>The results of this study showed that yoga interventions had been shown to significantly increase QoL in patients with breast cancer with mean \pm SD intervention 52.8 + 1.9 and control 47.3 + 2.1 (p value = 0.01)</p>
<p>Kavita D. Chandwani, (2014) <i>Randomized, Controlled Trial of Yoga in Women With Breast Cancer Undergoing Radiotherapy</i> (Chandwani et al., 2014)</p>	<p>Objective: Purpose prior research included yoga (YG) in radiotherapy (XRT) for women with breast cancer improvement of quality of life (QOL) Design: RCT 3-arm (yoga [YG], stretching [ST] dan waitlist [WL]) Sample: 163 (53 YG, 56 (ST) dan 54 WL)</p>	<p>The results showed that the YG group could increase QoL more significantly than the ST and WL groups (p value <0.05)</p>

	Intervention : Yoga Instrument: <i>Short-form survey (SF-36).</i>	
Miek C. Jong, (2018) <i>A Randomized Study of Yoga for Fatigue and Quality of Life in Women with Breast Cancer Undergoing (Neo) Adjuvant Chemotherapy</i> (Jong C. Miek et al., 2018)	Objective: To compare the effectiveness of yoga added to standard care (SC) versus SC alone, in women with breast cancer during chemotherapy Design: Randomized Controlled Trial. Sample: 83 (47 interventions, 36 controls) Intervention : Yoga Instrument: <i>European Organization for Research and Treatment of Cancer (EORTC-QLQ-C-30),</i>	There was no significant difference between the intervention group and the control group (p value = 0.839).
Naciye Vardar Yagli, (2015) <i>The effects of yoga on the quality of life and depression in elderly breast cancer patients</i> (Yagli & Ulger, 2015)	Objective: The aim of this study was to investigate the effects of yoga on quality of life in patients with cancer. Design: Randomized Controlled Trial. Sample: 20 (10 interventions, 10 controls) Intervention : Yoga Instrument: <i>Nottingham Health Profile (NHP)</i>	Yoga interventions were shown to significantly increase QoL in breast cancer patients than in the control group with mean \pm SD Intervention 91.29 \pm 64.15 and control 165.34 \pm 100.74 (p value <0.05).
Suzanne C. Danhauer (2009) <i>Restorative yoga for women with breast cancer: findings from a randomized pilot study</i> (Danhauer et al., 2009)	Objective: to determine the feasibility of implementing yoga interventions for women with breast cancer; and to examine groups of emotional, quality of life related to self-reported health, and outcome of symptoms differences Design: Randomized pilot study. Sample: 44 (22 interventions, 22 controls) Intervention : Yoga Instrument: <i>Functional Assessment of Cancer Therapy—Breast scale (FACT-B)</i>	Yoga interventions showed significant differences to increase QoL in breast cancer patients than in the control group with mean \pm SD Interventions 114.8 \pm 19.1 and controls 98.4 \pm 31.8 (p value = 0.052)

Discussion

Based on literature studies it was found that yoga interventions could be used as a reference in an effort to improve the quality of life of breast cancer patients. Yoga was an activity of the body and mind that focused on body strength, flexibility and breathing to improve mental quality and physical function. Posture or a series of movements and breathing were the two main components of yoga (Varambally, George, & Gangadhar, 2019).

Yoga is a unifying mechanism of the body, mind and soul, yoga is useful to calm the mind, reduce stress, provide increased awareness and body alertness. In yoga, there are movements that consist of a set of asanas, body and mind exercises carried out with awareness that must be followed, coupled with the regulation of breath which is regulated slowly through the nose, and meditation (Torre et al., 2020). Meditation in yoga is intended to eliminate existing thoughts by focusing one point and concentrating it with the breath, trying to calm the mind, reconcile the mind, and instill

greater understanding and self-acceptance. This is a technique for relaxation. Relaxation is a mental and physical freedom from tension and stress, in which relaxation techniques give individuals control over themselves when discomfort or pain occurs, physical and emotional stress on pain (Alvarez et al., 2020).

Yoga not only improves the quality of life related to health (QoL) but also improves physical function, physical barriers, role functions, pain, perception of general health, vitality, social function, and mental health (Hegde, Melukote, Srinivasan, & Singh, 2020). Interventions to use yoga effectively can help improve the quality of life in patients with breast cancer. In his research, Alyson B. Moadel (2007) found yoga interventions proved to significantly improve the quality of life in patients suffering from breast cancer, interventions carried out for 12 weeks, 1.5 hours every week available at three locations in the cancer center guided by yoga instructor. Based on yoga techniques, interventions that combine three

main yoga components are: physical stretching or posing, breathing exercises, and meditation. All exercises are carried out in a sitting or leaning position. Mats, blankets, and beams are used for support. Patients were also asked to practice yoga at home every day and were given an audio / compact disk recording for guidance. When breast cancer patients were given yoga interventions to improve quality of life, participants reported a significant improvement over time from giving these interventions to breast cancer patients (Moadel et al., 2007).

However, in the Desiree Lotzke study (2016) yoga interventions did not effectively improve the quality of life in breast cancer patients. Same with the article Miek C. Jong, (2018) showed that there was no significant difference between the intervention and control groups to improve quality of life. Based on the above study, an illustration of the effectiveness of yoga interventions can be used as a reference in efforts to improve the quality of life in breast cancer patients.

Conclusion

This study showed that yoga was effectively used to improve the quality of life of patients in the process of treating patients with breast cancer. Based on the analysis of the results in several studies, it could be found that yoga interventions should be given to all patients suffering from breast cancer to help improve the quality of their life.

Reference

- Alvarez, E., Sutton, A., Barton, B., Vaidya, S., Sutton, A., & Barton, B. (2020). Evaluating a group- - based Yoga of Stress Resilience programme: a pragmatic before – after interventional study protocol, 1–7. <https://doi.org/10.1136/bmjopen-2019-035862>
- Bao ting et al. (2020). Yoga for Chemotherapy-Induced Peripheral Neuropathy and Fall Risk: A Randomized Controlled Trial (646), 1–35.
- Brooks, A., Cabanes, A., Antonio, J., Yataco, D., Mohar, A., Murillo, R., ... Dvaladze, A. (2020). Breast Cancer Early Detection: A Phased Approach to Implementation, 2379–2393. <https://doi.org/10.1002/cncr.32887>
- Chandwani, K. D., Perkins, G., Nagendra, H. R., Raghuram, N. V., Kirschbaum, C., Haddad, R., ... Cohen, L. (2014). Randomized , Controlled Trial of Yoga in Women With Breast Cancer Undergoing Radiotherapy. *Journal of Clinical Oncology*, 32(10). <https://doi.org/10.1200/JCO.2012.48.2752>
- Chandwani, K. D., Thornton, B., Perkins, G. H., Arun, B., Raghuram, N. V., Nagendra, H. R., ... Cohen, L. (2010). Yoga Improves Quality of Life and Benefit Finding in Women Undergoing Radiotherapy for Breast Cancer, 8(2), 43–55. <https://doi.org/10.2310/7200.2010.0002>
- Cramer, H., Lauche, R., Klose, P., Lange, S., Langhorst, J., & Dobos, G. J. (2017). Yoga for improving health-related quality of life, mental health and cancer-related symptoms in women diagnosed with breast cancer. *Cochrane Database of Systematic Reviews*, 2017(1). <https://doi.org/10.1002/14651858.CD010802.pub2>
- Danhauer, S. C., Mihalko, S. L., Russell, G. B., Campbell, C. R., Felder, L., Daley, K., & Levine, E. A. (2009). Restorative yoga for women with breast cancer: findings from a randomized pilot study, 368(February), 360–368.
- Denkert, C., Park, Y. H., Hui, R., Harbeck, N., Takahashi, M., Foukakis, T., ... Aktan, G. (2020). Pembrolizumab for Early Triple-Negative Breast Cancer. *Of Medicine*, 810–921. <https://doi.org/10.1056/NEJMoa1910549>
- Gaynor, A. M., Pergolizzi, D., Alici, Y., Ryan, E., Ahles, T. A., & Root, J. C. (2020). Impact of transcranial direct current stimulation on sustained attention in breast cancer survivors: Evidence for feasibility, tolerability, and initial efficacy. *Brain Stimulation*, 1–34. <https://doi.org/10.1016/j.brs.2020.04.013>
- Hegde, J. R., Melukote, S. K., Srinivasan, T. M., & Singh, D. (2020). Indian aesthetic dance and yoga improves mental health among caregivers of Indian aesthetic dance and yoga improves mental health among caregivers of children with neurodevelopmental disorders : a randomized trial, (June), 2352–2541. <https://doi.org/10.18203/2394-6040.ijcmph20202973>
- Jong C. Miek et al. (2018). A Randomized Study of Yoga for Fatigue and Quality of Life in Women with Breast Cancer Undergoing (Neo) Adjuvant Chemotherapy, 24, 942–953. <https://doi.org/10.1089/acm.2018.0191>



- Littman, A. J., Bertram, L. C., Ceballos, R., Ulrich, C. M., Ramaprasad, J., McGregor, B., & McTiernan, A. (2012). Randomized controlled pilot trial of yoga in overweight and obese breast cancer survivors: Effects on quality of life and anthropometric measures. *Supportive Care in Cancer*, 20(2), 267–277. <https://doi.org/10.1007/s00520-010-1066-8>
- Lötzke, D., Wiedemann, F., Recchia, D. R., Ostermann, T., Sattler, D., Ettl, J., ... Büssing, A. (2016). Iyengar-Yoga Compared to Exercise as a Therapeutic Intervention during (Neo) adjuvant Therapy in Women with Stage I – III Breast Cancer : Health-Related Quality of Life , Mindfulness , Spirituality , Life Satisfaction , and Cancer-Related Fatigue. *Evidence-Based Complementary and Alternative Medicine : ECAM*, 2016(1), 1–9. <https://doi.org/doi.org/10.1155/2016/5931816>
- Lötzke, D., Wiedemann, F., Rodrigues Recchia, D., Ostermann, T., Sattler, D., Ettl, J., ... Büssing, A. (2016). Iyengar-Yoga Compared to Exercise as a Therapeutic Intervention during (Neo)adjuvant Therapy in Women with Stage I-III Breast Cancer: Health-Related Quality of Life, Mindfulness, Spirituality, Life Satisfaction, and Cancer-Related Fatigue. *Evidence-Based Complementary and Alternative Medicine*, 1–9. <https://doi.org/10.1155/2016/5931816>
- Moadel, A. B., Shah, C., Wylie-rosett, J., Harris, M. S., Patel, S. R., Hall, C. B., & Sparano, J. A. (2007). Randomized Controlled Trial of Yoga Among a Multiethnic Sample of Breast Cancer Patients : Effects on Quality of Life. *Journal of Clinical Oncology*, 25(28). <https://doi.org/10.1200/JCO.2006.06.6027>
- Shohani, M., Kazemi, F., Rahmati, S., & Azami, M. (2020). The effect of yoga on the quality of life and fatigue in patients with multiple sclerosis: A systematic review and meta-analysis of randomized clinical trials. *Complementary Therapies in Clinical Practice*, 1–21. <https://doi.org/10.1016/j.ctcp.2020.101087>
- Torre, G. La, Ra, A., Peruzzo, M., Calabrese, L., Cocchiara, R. A., Egidio, V. D., ... Group, Y. C. (2020). Yoga and Mindfulness as a Tool for Influencing A ff ectivity , Anxiety , Mental Health , and Stress among Healthcare Workers : Results of a Single-Arm Clinical Trial. *Clinical Medicine*, 1–13. <https://doi.org/doi:10.3390/jcm9041037>
- Vadiraja, H. S., Rao, M. R., Nagarathna, R., Nagendra, H. R., Rekha, M., Vanitha, N., ... Rao, N. (2009). Effects of yoga program on quality of life and affect in early breast cancer patients undergoing adjuvant radiotherapy : A randomized controlled trial &, 274–280. <https://doi.org/10.1016/j.ctim.2009.06.004>
- Varambally, S., George, S., & Gangadhar, B. N. (2019). Yoga for psychiatric disorders : from fad to evidence-based intervention ?, 2014–2016. <https://doi.org/10.1192/bjp.2019.249>
- Yagli, N. V., & Ulger, O. (2015). The effects of yoga on the quality of life and depression in elderly breast cancer patients. *Complementary Therapies in Clinical Practice*, 21(1), 7–10. <https://doi.org/10.1016/j.ctcp.2015.01.002>