

## Exploring the Role of Yoga in Alleviating Chemotherapy - Induced Fatigue and Nausea-Vomiting in Women with Breast Cancer - A Narrative Review


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Cancer is a leading cause of death worldwide, accounting for approximately 9.6 to 10 million deaths across the world in 2023. Breast cancer is the most frequently diagnosed cancer (with more than 2.3 million new cases/year) and the leading cause of cancer death in females worldwide. Even though survival rates are continually increasing, breast cancer is often associated with long-term psychological distress, chronic pain, fatigue and impaired quality of life. There are around 364 studies (2024) done on the effect of yoga on breast cancer. Yoga comprises advice for an ethical lifestyle, spiritual practice, physical activity, breathing exercises and meditation. It is a complementary therapy that is commonly recommended for breast cancer-related impairments and has been shown to improve physical and mental health in people with different cancer types. In conclusion, Yoga has emerged as a valuable complementary therapy in the management of chemotherapy induce fatigue and nausea- vomiting offering physical, emotional, and psychological benefits.

**Keywords:** Breast Cancer, Women and Yoga, Yoga and Cancer, chemotherapy and Yoga

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## Introduction

Today's woman is a multi-tasker. Illness or death of a woman negatively impacts children, spouse, family and community. Women need to understand importance of their health and its effects on their family and loved ones as it is key to a healthy community.[1] Ancient texts and modern science have made mankind aware of fact that yoga is a science which is practical and useable with guaranteed scope of growth at all levels of human existence- physical, mental, emotional, psychological and spiritual. Today, everyone knows that yoga helps a female at all stages of their life. It is highly beneficial from menarche to menopause along with pre and postnatal periods. Cancer is a leading cause of death worldwide, accounting for approximately 9.6 to 10 million deaths across world in 2023. Breast cancer is most frequently diagnosed cancer (with more than 2.3 million new cases/year) and leading cause of cancer death in females worldwide. Approximately only 0.5–1% of breast cancers occur in men and is mostly seen in women. Breast cancer can affect women at any age after adolescence, however its prevalence rises with age. Even though survival rates are continually increasing, breast cancer is often associated with long-term psychological distress, chronic pain, fatigue and impaired quality of life. There are around 364 studies (2024) done on effect of yoga on breast cancer. *Yoga* comprises advice for an ethical lifestyle, spiritual practice, physical activity, breathing exercises and meditation.[2] It is a complementary therapy that is commonly recommended for breast cancer-related impairments and has been shown to improve physical and mental health in people with different cancer types. A meta-analysis provides updated clinical practice guidelines from Society for Integrative Oncology on use of integrative therapies for specific clinical indications during and after breast cancer treatment, including anxiety/stress, depression/mood disorders, fatigue, quality of life/physical functioning, chemotherapy-induced nausea and vomiting, lymphedema, chemotherapy-induced peripheral neuropathy, pain, and sleep disturbance.[3] Meditation and *Yoga* are recommended to improve all symptoms along with quality of life. Evidence supports recommendation of *Yoga* as a supportive intervention for improving health-related quality of life and reducing fatigue, anxiety, low mood and sleep disturbances.[2]

Another study suggests that personalized yoga therapy is beneficial for QoL and weight maintenance among women undergoing chemotherapy for early-stage or locally advanced breast cancer. Weight maintenance associated with yoga therapy may be of clinical significance in this population given the poorer prognosis associated with weight gain in breast cancer survivors.[4] In cancer survivors, higher levels of physical activity decrease pain intensity. Due to the multi-morphism of cancer pain, certain mind-body therapies are efficient in reducing the severity of cancer pain and improving other parameters as mentioned above. Betterment of quality of life of breast cancer survivors is also the need of the hour.[5]

## Aims and Objectives

To Explore the Effect of *Yoga* as an Adjuvant therapy for Chemotherapy-induced fatigue, nausea-vomiting

## Discussion

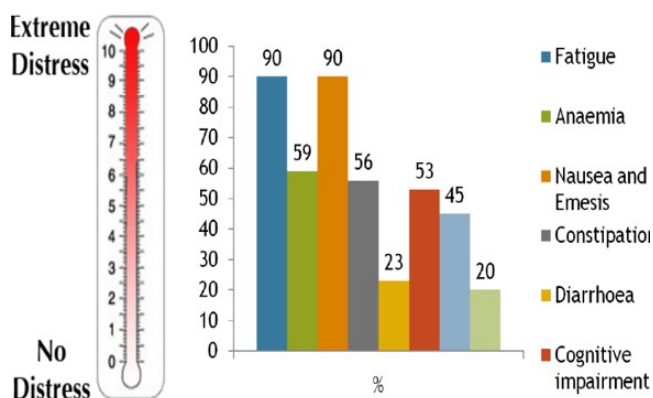
### Role of *Yoga* in Oncology

According to 21 International Peer Reviewed Publications *Yoga* can be used as an effective tool in the treatment of oncological diseases in different stages.

**Table 1: Role of *Yoga* in oncology**

Surgery	Wound Healing, Immunity, Pain management, Anxiety
Chemotherapy	Nausea and Emesis, Fatigue, Stress, Mood
Radiotherapy	Speech Articulation, Fatigue, Myofascial Pain
Supportive Care	Pain management, Immunity, QoL, Constipation, Fatigue

### Prevalence of symptom burden and distress in cancer patients



**Figure 1: Prevalence of symptom burden and its distress**

Fatigue and Nausea - Vomiting are the first two most common and highest distressing symptoms which can be seen in cancer patients who are under treatment.

### 1. Cancer Related Fatigue

Although better diagnostics and treatment modalities have reduced mortality, a large number of survivors face cancer treatment-related long-term symptoms.[6] Around 75-90% of cancer survivors experience persistent fatigue of unknown origin, causing significant impairment in quality of life. Despite the prevalence and impact of this symptom, currently, there are no empirically validated treatments for persistent cancer-related fatigue (CRF).

CRF is defined as a distressing, persistent, subjective sense of physical, emotional, and/or cognitive tiredness or exhaustion related to cancer or cancer treatment that is not proportional to recent activity and interferes with usual functioning. [7] Approximately one in four breast cancer survivors suffer from severe fatigue. It is obvious that the number of breast cancer patients with fatigue is enormous and the management of CRF is urgent. The meta-analysis including 2183 participants demonstrated that Yoga can be considered as an alternative therapy to relieve fatigue in breast cancer patients who have completed chemotherapy or are undergoing treatment. An 8-week program with 60/90-min yoga class had a significant effect.[8] Another study suggests that *Yoga* practice is able to reduce stress and inflammation levels over time. And suggested further studies to include a larger number of patients to increase the power and to consider other inflammatory or pro-inflammatory factors and long-term *Yoga* program to gain more evidence on *Yoga* practice benefits.[9] In a clinical trial, acute effects of *Yoga* on fatigue, autonomic function, and blood biomarkers were investigated. The effect yoga on fatigue was assessed by the Profile of Mood Status (POMS) questionnaire immediately before and after the session. Autonomic nervous function (heart rate variability) and blood biomarkers (cortisol, DHEA-S, TNF- $\alpha$ , IL-6, IFN- $\gamma$ , IFN- $\alpha$ , prolactin, carnitine, TGF- $\beta$ 1, BDNF, MHPG, and HVA) were compared before and after the session. Decreases in fatigue scores correlated with changes in plasma levels of TGF- $\beta$ 1 and BDNF. In contrast, increased vigor positively correlated with HVA.[10]

*Yoga* has also been reported to improve dysfunctions of the HPA axis, e.g. the blunted cortisol diurnal slope and to reduce peripheral pro-inflammatory markers such as nuclear factor kappa B (NF- $\kappa$ B) and TNF- $\alpha$  in cancer patients.[11]

### 2. Chemotherapy Induced Nausea and Vomiting

Nausea and emesis are two major side effects of chemotherapy and known to be partly psychological rather than purely pharmacological in nature (66-91%).[12] *Yoga* as a complimentary modality is extensively known to reduce anxiety, physiological arousal and stress associated with chemotherapy. Despite recent advances in the understanding of chemotherapy induced nausea and vomiting (CINV) and development of new generation antiemetic agents, nausea and vomiting continue to be the most feared distressing side effect of chemotherapy. [13]

The occurrence of nausea and vomiting relative to chemotherapy administration can be classified as either acute (within first 24 hrs with a peak of 5-6 hours), delayed (after 24 hours of administration) or anticipatory (nausea and emesis prior to subsequent doses of chemotherapy). This inadequacy in CINV control stems from the fact that antiemetic regimens are tailored to manage acute emesis only and not delayed emesis and nausea,[14] where *Yoga* can be a solution. A study conducted by Raghavendra RM, et.al.,2007 suggested that *Yoga* intervention helped reduce post-chemotherapy-related nausea and vomiting compared with supportive therapy and coping preparation in stage II and III breast cancer subjects receiving adjuvant chemotherapy. There was a trend towards reduction in post-chemotherapy related vomiting in the *Yoga* group.[15]

Another comprehensive review demonstrated the potential of *Yoga* as a complementary therapy for managing CINV. While the outcomes of the studies vary, evidence suggests that yoga can significantly reduce vomiting and improve quality of life, especially when combined with standard antiemetic therapy.[16] In an RCT, a group of *Yoga* practices were designed in such a way that they relax abdominal region and calm down the mind which might help reduce muscular contractions in the gastrointestinal tract that accompany post CINV or may decrease the sensitivity of chemoreceptor trigger zone to vomiting response (stimuli).

As per *Yoga* texts chemotherapy induced nausea and vomiting is as a result of sluggish flow of downward life force called *Apana Vayu* due to antiemetic therapy resulting in derangement in the digestive fire called *Samana Vayu*. Practice of supine postures with *Uttanapadasana* (Extended stretch foot pose), *Pavanamuktasana* (Wind relieving pose) and prone such as *Bhujangasana* (Cobra pose), *Makarasana* (Crocodile pose) will help restore the downward flow of *Apana Vayu* which translates to earlier gastric emptying thereby reducing symptoms of nausea and vomiting. These asanas have prokinetic action that acts on the gastric musculature to relieve symptoms.[16] Practice of cooling pranayama like *Shitali* and *Sheetakari Pranayama* involves swallowing air through mouth and exhalation through nostrils. This is known to distend the abdomen and stimulate gastric emptying, leading to decrease feeling of nausea and vomiting.[18]

## Conclusion

In conclusion, *Yoga* has emerged as a valuable complementary therapy in the management of chemotherapy induce fatigue and nausea- vomiting offering physical, emotional, and psychological benefits. By reducing stress, alleviating treatment-related side effects, improving physical function, and enhancing overall quality of life, yoga supports patients during treatment and survivorship. While it is not a substitute for medical treatment, integrating *Yoga* into a holistic care plan can empower patients, promote healing, and foster resilience. Future research is essential to further validate its efficacy and establish standardized practices, but the existing evidence underscores the profound potential of *Yoga* as a supportive tool during and after chemotherapy care.

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