

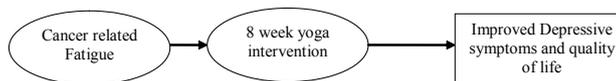
## A Case Study: Investigation of Yoga's Potential to Treat Breast Cancer Survivors Facing Cancer Related Fatigue

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### Abstract

Purpose of this study was to investigate efficiency of Yoga as an adjuvant therapy for breast cancer survivors who faced Cancer Related Fatigue, after post treatments like chemotherapy, radiation therapy etc. We prepared a randomized trial with yoga in Stan Cancer Rogi Seva Kendra, Radiotherapy Dept, SMS Hospital, Jaipur (India) in collaboration with the "Koshish" and the "Green Earth Foundation". The authors of the manuscript are associated with both of them. We organized Yoga classes for 5 days in a week for two months (Monday to Friday) non stop. Among 93 of the participants, 62 were allowed to attend Yoga sessions and 31 were kept as control. There was a slow decrease in depressive symptoms on the Beck Depression Inventory-II (BDI-II) for experimental group of participants that were age above fifty from first intervention to second intervention of the session to intervention periods (mean: 1<sup>st</sup> intervention- 70.790 to 2<sup>nd</sup> intervention-69.368), this showed that the first intervention were quite effective and the patients were benefited from the yoga. Also for the other experimental group of participants i.e. below the age of fifty where the value arose from (mean: 1<sup>st</sup> intervention-68.081 to 2<sup>nd</sup> intervention-57.174) they were improved in their depressive symptoms and their quality of life.



**Keywords:** Yoga; Cancer related fatigue; BDI-II; Quality of life

### Introduction

Breast cancer is the commonest cancer worldwide among women. In India, it is the second leading cause of death among women suffering from malignancy followed after cancer of cervix. Radiotherapy, chemotherapy, hormonal therapy although are conventional methods that are accepted worldwide but results in general body fatigue. Contribution of medicinal, immunological, biotechnological and other fields to treat cancer is indispensable. Cancer treatment commonly results in patient's body fatigue and mental distress.

Fatigue is the most common and disabling symptom which is elevated during cancer treatment [1] and persists beyond treatment completion in a substantial minority of women, with approximately 30% of breast cancer survivors reporting moderate to severe symptoms of fatigue one or more years post-treatment [2-4]. Fatigue has a negative impact on work, social relationships, and daily activities and causes significant impairment in overall quality of life among breast cancer survivors [4-6]. The experience of Cancer Related Fatigue (CRF) by cancer survivors involves multiple biopsychosocial signs and symptoms (Figure 1) that are usually reported by patients as concurrent cancer-or treatment-related side effects [7].

There are few evidence-based interventions currently available to manage this symptom [8]. There is growing evidence that behavioral interventions may be effective in reducing fatigue among cancer patients undergoing treatment. Mustian KM, et al. [7] tells the integrative non pharmacologic behavioral interventions that was organized into three main categories: (a) exercise, (b) psychosocial interventions, and (c) other integrative therapies (Figure 2). However, only a few behavioral intervention studies have been conducted with cancer survivors [9], and only one randomized trial specifically targets survivors with persistent fatigue [10]. Cancer survivors with persistent fatigue may be unwilling or unable to participate in standard exercise interventions, such as walking or cycling. Recent evidence suggests that fatigue is one

of the primary barriers to participation in exercise programs among cancer survivors [9].

Yoga is a promising alternative treatment for cancer survivors with persistent fatigue [6]. Yoga involves physical postures (*asanas*) that develop strength, flexibility, and relaxation and also promotes present awareness through the focus on body and breath in each pose [11]. A growing number of predominantly uncontrolled yoga intervention trials have been conducted among patients with a variety of medical conditions and have shown preliminary evidence of beneficial effects on physical and behavioral outcomes, including fatigue [12-14]. Yoga interventions have also demonstrated positive effects on behavioral symptoms related to fatigue, including depressed mood [15-17], pain [18-20], and physical function [21].

### Methodology

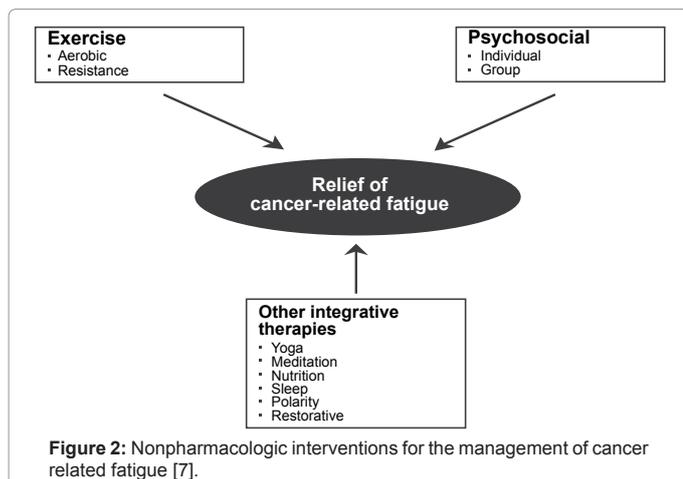
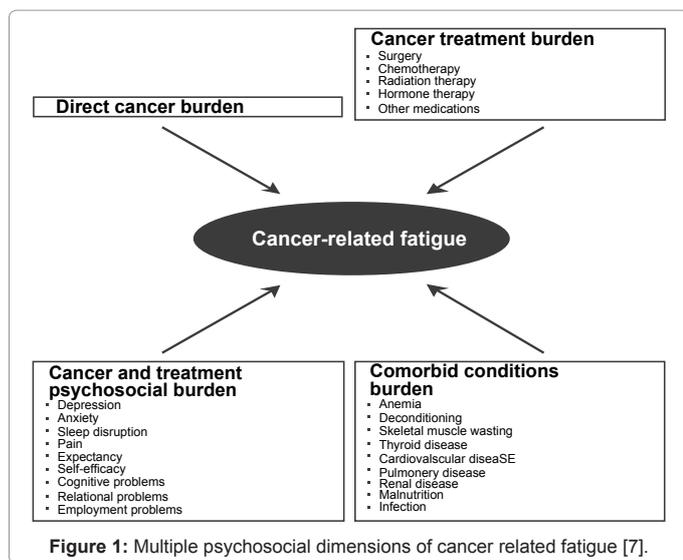
This article describes a randomized clinical trial of yoga for breast cancer patients organized by two NGO's, (non government organization) the "Koshish" and the "Green Earth Foundation". The senior author "Prof. Subhasini Sharma" of the manuscript is associated with both of these organizations.

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Yoga is popularly understood as a holistic healing system that has built up its mark in dealing and healing cancer patients and survivors. Survivors are basically people who have completed with their chemotherapy dosage. The aim of the study was to determine whether yoga could contribute as to enhance anti-depression effects in life of patient after they survive their chemotherapies and similar technical sessions and are facing cancer related fatigue.

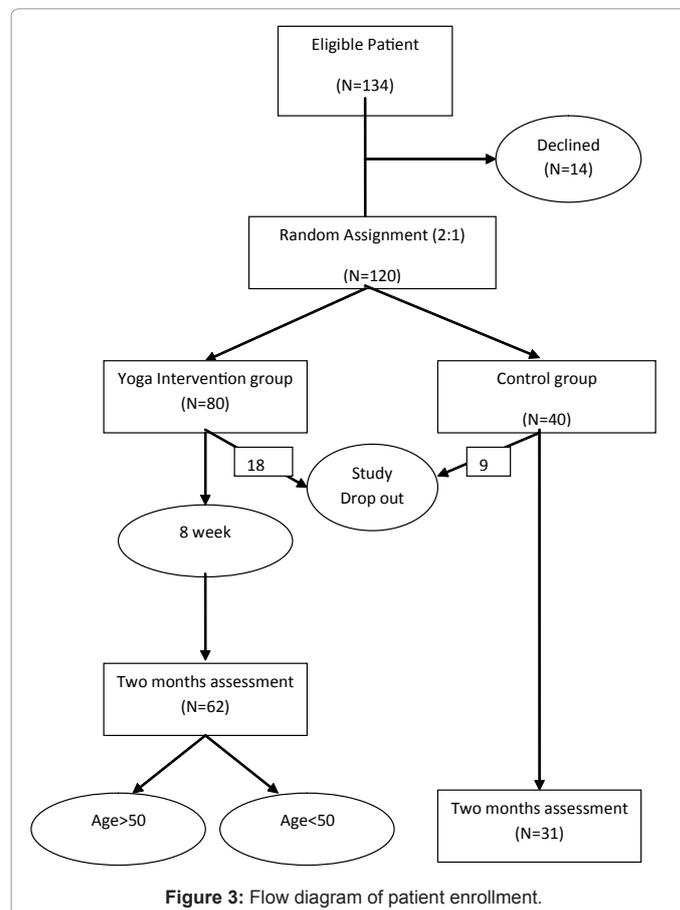
As to start, we prepared a randomized trial with yoga in Stan Cancer Rogi Seva Kendra, Radiotherapy Dept, SMS Hospital, and Jaipur India. We organized for 5 days in a week for two months. Yoga classes (Monday to Friday, 9-10 A.M.) for the Breast cancer survivors who had problems with general body fatigue and sleeping patterns, depressed moods which are collectively called Cancer Related Fatigue (CRF).

Oncology outpatients were recruited among oncology clinics from SMS medical center and private clinics during 2008-2010. As far as eligibility is concerned, the cancers survivors had to meet the following criteria like no signs of active or recurring breast cancer, no current treatments like normal blood pressure, and no anemic conditions diagnosed, if they were currently engaged in intensive yoga practice which would set as an excluding group for study. 134 patients

were eligible to attend the yoga classes, of which 10% patients were not interested to attend the yoga class. In the remaining 120 patients, some of them refused to come for yoga intervention sessions because some were too busy and also because of some practical barriers (eg. transportation). Only 93 patients were left in which 62 patients were attending Yoga classes (Yoga intervention group) and 31 were not attending yoga classes (Control group), as shown in Figure 3.

Control group (N=31) i.e. persons falling in age group of 35-65 years were not asked to participate or attend Yoga sessions. Yoga intervention group were divided into two groups: Above the age of fifty (N=31) and below the age of fifty (N=31). The idea for this grouping was to investigate success rate of yoga sessions on participants of broadly two age groups (above 50 and below 50). Control group were not divided into different age groups for the reason that as per their strength or number, they were mostly falling in a single group of below 50. Support this investigation receiving depression status using BDI-II.

The yoga intervention consisted of 1.2 to 1.5 hour daily classes from Monday to Friday that were available at only one location in Jaipur (Stan Cancer Rogi Seva Kendra, Radiotherapy Dept, and SMS Hospital). The number of sessions chosen was based on the number found to be efficacious in other similar interventions [22,23]. Participants were permitted to attend daily classes, with such activity documented. Yoga instructor gave yoga intervention to both groups (>50 age and <50 age). Yoga was based on the Hatha yoga techniques; the intervention incorporated the following three major yoga components: physical stretches and poses; breathing exercise and meditation. All exercises were done in a seated or reclined position. Participants were not given



Characteristics	% of Patients			
	Total Sample (N=93)	Control Group (N=31)	Intervention Group (N=62)	
			>50 year Age (N=31)	<50 year Age (N=31)
Education				
High School	74	65	84	85
College/graduate	26	35	16	15
Marital status				
Married	35	38	28	25
Other	65	62	72	75
Language				
English	10	12	05	15
Hindi	90	88	95	85
Places				
Urban	30	28	22	31
Rural	70	62	68	69
Employment Status				
Employed	80	70	65	90
Unemployed	20	30	35	10

**Table 1:** Sociodemographic and Medical Characteristics of the participants suffering from Breast Cancer.

Charac-teristics	% of Patients					
	Total Sample (N=93)	Control Group (N=31)	Intervention Group (N=62)			
			>50 years of age (N=31)		<50 years of age (N=31)	
Ist Inter-vention			IInd Inter-vention	Ist Inter-vention	IInd Inter-vention	
Mean	69.616	82.306	70.790***	69.368***	68.081***	57.174***
S.D.	11.43	3.926	4.670	5.776	10.242	5.049
Range	42-84	73-84	63-74	59-74	42-74	42-59

\*\*\* denotes highly significant ( $P < 0.0001$ ) Abbreviation: SD, Standard Deviation

**Table 2:** Results of patients after 2 month of yoga intervention (using BDI-II, modified by team).

“homework” or specifically instructed to practice postures outside of class; this was done to reduce participant’s burden.

Worldwide accepted techniques like sleeping index based on Pittsburg Sleep Quality Index (PSQI) and Depressive symptom (Beck Depression Inventory-II) have been used in such studies (ref). Following BDI-II, we prepared a set of 21 questions in which we rated their response with 0-4 which gave an account of their physical, social, emotional, depressive moods and existential well being. This measure is influenced by BDI-II and updates fatigue as wholesome. Group participants received instruction in yoga, a meditative practice that does not include postures or breathing. Control group was never given active intervention but only responded to questionnaire on same time when the experimental groups were approached.

Feedback or interventions were collected in a period of three and half week (interrupting yoga sessions) and once at the end of the session. Data was analyzed applying ANOVA using SYSTAT Version 5.0

## Results

The characteristics of the sample are listed in the Table 1. Participants were 30% from urban places and 70% from the rural places; the mean age was 69.616 years, and 65% of patients were not currently married; 74% patient educated in high school degree or less and 26% patient have their college degree; 90% patients knows Hindi language and 10% also knows English language.

Table 2 provides the mean value, standard deviation, range and P-value after the 2 months of yoga session to the cancer survivors.

The results were found to be highly significant ( $P < 0.0001$ ) for both the intervention times. There was a slow decrease in depressive symptoms on the BDI-II for group second that was age group of above fifty from first intervention to second intervention of the session to intervention periods (mean:1<sup>st</sup> intervention-70.790\*\*\* to 2<sup>nd</sup> intervention-69.368), this showed that the first intervention were quite effective and the patients were benefited from the yoga. Also for the other group i.e. below the age of fifty, where the value arose from (mean: 1st intervention-68.081\*\*\* to 2<sup>nd</sup> intervention-57.174), they were improved in their depressive symptoms and their quality of life. All participants reported that the intervention was beneficial, that they planned to continue with yoga, and would recommend the intervention to other fatigued cancer survivors. They reported that they had better sleep and stable emotional status.

## Discussion

Similar results were found by Bower and her team in 2010. There was significant decrease in depressive symptoms on the BDI-II from pre to post interventions (mean change which is 7.9,  $t(10)=3.3$ ,  $P=0.008$ ) that persisted at the 3-month post-intervention follow-up (mean change=6.7,  $t(9)=3.4$ ,  $P=0.007$ ). There was also significant improvement on the general health subscale of the SF-36 (mean change=14.5,  $t(10)=3.5$ ,  $P=0.005$ ) that persisted at the 3-month post-intervention follow-up (mean change=14.3,  $t(9)=5.1$ ,  $P=0.001$ ).

Similarly Aziz NM, Rowland JH [24] also observed improvements in social well being when they studied minority groups and those who are medically underserved groups.

Research studies shows that among similar groups particularly socioeconomically burdened minority population, there is a requirement of support, need of adjustment to cancer and positive state of patient’s psychology after yoga [25].

Study by Alferi SM [26] confers importance of social support and encouragement from family also plays vital role in participants to actively attend yoga sessions and benefits by it.

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