RESEARCH ARTICLE

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Effectiveness of Symptom Management Intervention for Improving the QOL of Cancer Patients

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Abstract

Background: Managing the symptoms of cancer patients is challenging for health care providers and interventions individually designed are required to improve the quality of life (QOL) of cancer patients. **Objective:** to assess the efficacy of symptom management intervention on symptom reduction and the QOL of cancer patients. **Methods:** A Quasi-experimental study using pre and post-test design was conducted among 200 cancer patients selected by a convenient sampling technique from the selected cancer hospitals. The intervention group received symptom management intervention and the control group received routine clinical care. The data were collected from individuals who had been diagnosed with breast/head and neck cancer and were in the third or fourth stages of cancer, using symptom assessment and Functional Assessment of Cancer Therapy (FACT) QOL tool. After the pre-test, symptom management intervention was provided, and a post-test was conducted at one month and three months after the intervention. **Results:** The mean age was 50.93 years among the participants. Fifty-two percent and 68% of them were in stage IV cancer in the intervention group and control group respectively. The mean QOL score of head and Neck cancers in the intervention group increased from 20.76 (1.82) to 97.03 (3.33) and the mean scores of QOL of breast cancer patients in the intervention group increased from 22.44 (2.92) to 94.39 (8.30). Repeated measure ANOVA showed that the intervention program was effective in enhancing symptom reduction and QOL among cancer patients (Head and Neck cancers $F_{(1.3, 114)}$ =391.62, p< 0.001 and Breast cancer $F_{(1, 75)}$ =177.41.41, p=.001). **Conclusion:** Nurses play a vital role in providing care to cancer patients and improving their quality of life since nurses are more involved in care.

Keywords: Cancer patients- quality of life- symptom management- education- pranayama- relaxation

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Introduction

Cancer is one of the leading causes of death worldwide, with a significant global cancer burden. By 2040, the global cancer burden is expected to rise to 28.4 million cases. The International Agency for Research on Cancer (IARC) updated Globocan 2020, reporting that the worldwide cancer burden has increased to 19.3 million cases and 10 million cancer deaths in 2020 (GLOBOCAN 2020).

Cancer patients' QOL is affected by many types of symptoms that they encounter at diagnosis, during, and after treatment. QOL assessment in cancer patients is critical for designing interventions to improve outcomes in the social, financial, psychosocial, and physical domains of QOL of patients (Alam et al., 2020; Satija and Bhatnagar, 2017; De Góes Salvetti et al., 2021; Nayak et al., 2019; Nayak et al., 2019; Viriyasiri et al., 2020). As the life expectancy of cancer patients is increasing, their health-related quality of life and the care they get are becoming increasingly important (Nagarathna et al., 2009). Most cancer patients require physical, psychological, social, and spiritual support in addition to active treatment, which has an impact on their QOL (Catania et al., 2021).

Breast cancer is the most common cancer in women across the world. Despite rapid advancements in mammography, screening, and treatment, women who survive breast cancer continue to face medical, physical, social, and psychosocial challenges which have an impact on them as well as on their caregivers at home (Hariprasad et al., 2018; Srivastava et al., 2020). Head and neck cancer treatment is complicated, requiring intricate surgery, radiation, and chemotherapy, all of which present unique challenges for these patients (Senchak et al., 2019). Because of the apparent deformity and life-threatening effect on vital functions, patients may perceive head and neck cancer (HNC) to be more emotionally traumatic than other cancers (Nayak et al., 2019). Throughout cancer treatment, the nursing team focuses primarily on treatment safety, which is critical, but it is essential to

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give attention to symptom management and psychosocial aspects of care (De Goes Salvetti et al., 2021). Klafke et al., (2019) in their study have shown that nurse-led symptom management intervention is effective in reducing several symptoms. Yoga and meditation reduce fatigue, discomfort and improve patients' quality of life. Psychosocial interventions and telephone interpersonal counselling were found to be effective in reducing depressive symptoms as reported by Meulen et al., (2013); Hsueh et al., (2021). Nurses are in the key position to deliver an intervention to improve health-related quality of life (Van Der Meulen et al., 2014). The psychoeducational program, Family involvement, Optimistic attitude, Coping effectiveness, Uncertainty reduction, Symptom management (FOCUS), Patient educational programme (PEP), Effective Management of Pain: Overcoming Worries to Enable Relief (EMPOWER) had positive effects on cancer survivors and their caregivers outcomes on symptom reduction and QOL (Dockham, et al., 2016; Ohlsson-Nevo et al., 2016; Cagle et al., 2015). The breast cancer patients who practiced yoga at different stages of the disease, experienced an enhancement in physical and psychological wellbeing and improved overall QOL (Prakashet al., 2020). A cancer patient's QOL can be effectively improved by combining pharmacological and non-pharmacological therapies. Most of the published studies were done in European countries. Very minimal studies were found in the Indian scenario. Thus, this study aimed to improve the QOL and reduce the symptoms burden among head and neck and breast cancer patients of the Indian population.

Materials and Methods

A Quasi-experimental study using pre and post-test design was conducted among 200 (100 experimental and 100 control group) cancer patients selected by convenient sampling technique. The objective of the study was to assess the effectiveness of symptom management intervention on symptom reduction and the QOL of head and neck and breast cancer patients. To avoid sample contamination the data were collected from two tertiary care hospitals (from November 2016 to February 2019) after obtaining administrative permission. Both tertiary care hospitals belong to the same administration with similar infrastructure and treatment protocols. The researcher informed the eligible participants about the nature of the study procedure and informed written consent was obtained. The researcher assured the privacy of the data collected. Ethical clearance was obtained from the Institutional Ethical Committee (IEC No: 404/2014). The inclusion criteria for cancer patients who 1) were diagnosed as having cancer of the breast and head and neck (3rd stage and above) 2) had received chemotherapy, radiation, surgery, or a combination of them and on treatment, 3) were aged >30 years and 4) know the local language and willing to participate. Those patients who were not able to perform daily activities were excluded from the study. The researcher identified the type and stage of cancer and residential details from the hospital registers. Before obtaining consent the participants of the study were informed about the study, its purpose, the intervention, as well as the one- and three-month follow-up requirements. To build a rapport with the patient and caregivers, the researcher visited them at the hospital twice a day before collecting the data. The intervention group received symptom management intervention along with standard care, and the control group had regular and routine information as per the requirement. Follow-up was done for both the groups at one and three months. A standardised QOL questionnaire; The functional assessment of Cancer therapy: Head and Neck (FACT – HN), The functional assessment of Cancer therapy: Breast (FACT – B) was used to collect data from cancer patients after obtaining permission from FACIT.org.

The following questionnaires were used to collect the data from the cancer patients:

1. Demographic proforma of patient
2. Symptom assessment tool.
3. QOL questionnaire for cancer patients: FACT – HN, FACT – B.

Tool description:

Description of the tools

Tool 1: Demographic proforma

This tool was developed to obtain the background information of the sample. The items included were: Age, gender, religion, marital status, educational status, type of family, employment status, monthly income, type of cancer, type of treatment, treatment settings, duration of illness, treatment modality received before visiting hospital, duration of treatment, relationship to caregivers, stage of cancer, and area of living. The total number of items after content validity remained 16 (CVI =. 97).

Tool 2. Symptom assessment

The tool consisted of 40 items. These items were meant for collecting the information from the cancer patients on symptoms, which they were suffering in the past 4 weeks. It was scored as – Not at all (0), A little bit (1), Somewhat (2), Moderate (3) and Very much (4). This tool contains the common symptoms experienced by patients with all types of cancers. To name a few: Pain, fatigue, nausea, vomiting, sleeplessness, worry etc. In this study, for reporting frequency and percentage of symptoms, frequencies of 'a little bit' to 'very much' were clubbed together for all major self-reported symptoms. The high score indicates the worst symptom experience. The total number of items after the content validity was 40 (CVI = 1). The maximum possible score was 160 and the minimum was zero. The symptom assessment tool was administered to 20 samples and the data were collected for finding out reliability. The reliability was established by using Cronbach's alpha coefficient formula. The reliability coefficient obtained was r = 0.85. After seeking administrative permission, the tool was pre tested by administering it to five cancer patients who fulfilled the sample selection criteria. This was done to determine the simplicity and clarity of the items, presence of ambiguous terms, time required, and ability to understand the scientific terms and ensure the feasibility of the tools. The cancer patients took 10 minutes on an average for completing answering the questionnaire. All the items were clear and therefore no modification was required. The reliability coefficient obtained was r = 0.85.

Tool 3: Quality of life Questionnaire

To assess the quality of life of cancer patients the FACT – HN, FACT – B and FACT – G standardized tools were used after obtaining permission from FACIT.org.

The functional assessment of Cancer therapy: Head and Neck, Questionnaire is a standardised scale which contains 39 items. The items of the scale were grouped into Two sub scales; General scale with 27 items and HNC specific scale 12 items. The general sub scale consists of 27 questions which are divided into 4 Primary domains; physical well being (7 items - all negative scoring), Social and Family wellbeing (7 items - all positive scoring) , Emotional Well Being (6 items – 5 items are negative scoring) and Functional Well Being (7 items – all positive scoring). Each item is rated from 0 to 4 and is a declarative statement. Quality of life was considered better, indicated by higher scores. This questionnaire was developed and validated by Cella et al., (1999) to assess the quality of life, psychometric and functional assessment of the cancer patients. The sub scale of Head and Neck with 12 items (4 items are negative scoring) covers the quality of life issues specific to HNC patients and is more disease specific. One item in the social/family wellbeing "I am satisfied with my sex life" was excluded since one of the inclusion criteria was getting treatment as inpatients. The respondents were required to select the best option by placing the tick(√) mark in the space provided. 2 items in the head and neck sub scale " I smoke cigarate or other tobacco product" "I drink alcohol" were not included in the final scoring according to the standardised tool scoring guidelines. Thus the highest possible score in the tool was 148 and minimum score was zero.

The functional assessment of Cancer therapy; Breast Questionnaire is a standardised scale which contains 39 items (6 items are negative scoring). The items of the scale were grouped into Two sub scales; General scale with 27 items and Breast specific scale 10 items. one item in the breast sub scale "I have certain parts of my body where I experience pain" was not included in the final scoring according to the standardised tool scoring guidelines. Thus the highest possible score in the tool was 144 and minimum score was zero.

The intervention package include:

1. Pranayama (anuloma-viloma, chandrabhedhana, and brahmari)
2. 61 points relaxation
3. Telephonic reminder
4. Cancer education using a booklet called "Cancer Symptom Management: Take an Active Role."

Data were collected from two tertiary care hospitals and the CONSORT diagram of the research design is depicted in Figure 1.

The intervention had three sessions like counselling, pranayama and 61 points of relaxation and education of 90 minutes duration. After obtaining the informed consent from the selected patients, a pre-test was conducted, which was followed by an intervention program i.e symptom management intervention (Pranayama, 61 points relaxation (Dvivedi, et al., 2008) counselling, and education). Post-tests were carried out at the end of one month and three months after the intervention. A counsellor was appointed under this project to counsel cancer patients with low quality of life scores (less than 50% score from the total score; the maximum score was 148.). A yoga therapist from the department of yoga, taught the participants pranayama (anuloma-viloma, chandrabhedhana, and brahmari), and 61 points relaxation techniques for relaxation of body and mind in a separate room selected from the hospital. The symptom management intervention package was delivered to cancer patients on an individual basis, depending on their needs. With the help of a booklet entitled "Cancer Symptom Management: Take an Active Role," the researcher educated cancer patients on how to care for themselves and informed them about the health schemes available in India for financial support. After the training program, the booklet was given to the intervention group for use whenever they want. The intervention of pranayama, 61 points of relaxation, counselling, and education was given three times in the first week by a yoga therapist, and thereafter observations/follow up were made by the researcher on the 2nd, 3rd, and fourth week of intervention. Post-test 1 was carried out at the end of one month and post-test 2 was done three months after the intervention (Table 1). In-between, the researcher made frequent telephone contacts with the cancer patients and their caregivers to remind them to practice pranayama and relaxation regularly. The information booklet also was given to control group participants after completion of the study.

The data were coded, processed, and interpreted using descriptive and inferential statistics to compare outcomes among groups based on the objectives of the study (SPSS package version 16: IBM SPSS Inc., Chicago).

Results

Two hundred cancer patients (breast and head and neck) were enrolled in the study and baseline (pretest) data were collected. The results on demographic details and symptoms burden and QOL are presented from 200 cancer patients. In a post- test, out of 200 cancer patients, 193 cancer patients completed follow-up assessments in first and third months and constituted the final sample for analysis (97 in the intervention group and 96 in the control group) since a total of seven cancer patients expired during the study period (3 in intervention and 4 in the control group), the post-test results are presented under section A and B.

Description of demographic characteristics among breast and head and neck cancer patients

Out of the 200 cancer patients, 36% of them in the intervention group belong to the age group of 51 to 60 years whereas in the control group 36% belonged to 41 to 50 years. The mean age was 50.93 years. The majority were females in both the groups (63%), 28% had high school level education, in the intervention group and 35% of them

Table 1. Schedule of Symptom Management Intervention

Type of Interventions	Duration	Intervention 3days / week (1st week)			Observation and follow up				Follow up
Cancer patients:		Day1	Day 2	Day 3	2nd Week	3rd Week	4th Week	One month	Third month
Pranayama and 61 points relaxation	30 mts per day	+	+	+	+	+	+	Post-test 1	Post-test 2
Counseling session	30 mts individually/ session	+	+	+	+	+	+		
Educational Program	30 minutes	+	+	+	+	+	+		

had primary level education in the control group. The income of the family in both the groups was in the range of Rs.2500 to Rs.5000 per month (intervention 30% and control 49%). The data further shows that majority of the cancer patients had received a combination of radiotherapy, chemotherapy, and surgery, i.e. 30% in the intervention group and 34% in the control group. Most of the cancer patients were suffering from the illness for less than 1 year (intervention group 81% and control group 75%). The duration of treatment was less than 6 months among both the groups (intervention group 75% and control 66%). Regarding the stage of cancer, 52% were in stage IV cancer in the intervention group whereas 68% were in stage III in the control group.

Description of symptoms burden among breast and head and neck cancer patients

From the baseline data of the cancer patients during the pertest, it was found that various symptoms due to disease or treatment were experienced by the patients. Out of 200 cancer patients, 98% in the intervention and 96% in the control group reported having pain, and in

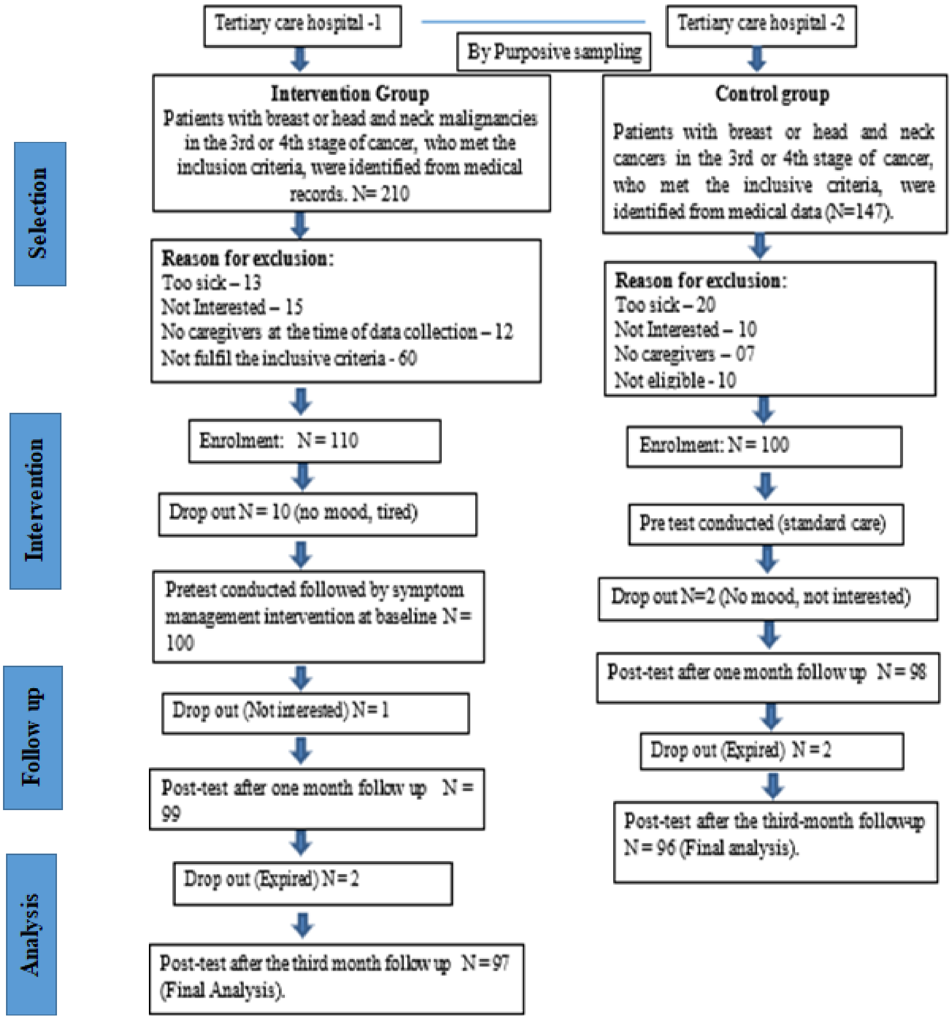

Figure 1. Consort Diagram

Table 2a. Mean and Standard Deviation of Domain Wise QOL Scores of the Head and Neck Cancer Patients

Functional status	Possible score	Obtained score Intervention group (N=60)		Obtained score Control group (N=60)	
		Mean	SD	Mean	SD
Physical well-being (PWB)	0 – 28	3.91	0.64	3.76	0.64
Social/family well-being (SWB)	0 -28	5.98	1.03	6.06	1.54
Emotional well-being (EWB)	0-24	0.96	0.6	1.05	0.42
Functional well-being (FWB)	0-28	3.38	0.95	3.31	1.06
Head and Neck cancer subscale (HNCS)	0 – 40	6.75	1.48	6.63	0.99
FACT-G (PWB+SWB+EWB+FWB)	0-108	14.25	1.97	14.2	1.96
FACT- HandN (FACT-G +HNCS)	0-148	20.88	2.03	21.05	1.94

SD, Standard Deviation

Table 2b. Mean and Standard Deviation of Domain Wise QOL Scores of Breast Cancer Patients

Functional status	Possible score	Obtained Score Intervention group (N=40)		Obtained Score Control group (N=40)	
		Mean	SD	Mean	SD
Physical well-being (PWB)	0 – 28	4.17	0.67	4.02	0.15
Social/family well-being (SWB)	0 -28	6.67	1.7	7.25	1.23
Emotional well-being (EWB)	0-24	0.9	0.67	0.97	0.15
Functional well-being (FWB)	0-28	3.35	0.83	3.62	0.74
Breast subscale (FACT -B)	0 – 40	7.17	1.78	6.32	0.72
FACT-G (PWB+SWB+EWB+FWB)	0-108	15.1	2.29	15.87	1.71
FACT- B (FACT-G +B)	0-144	22.27	3.02	22.2	1.92

SD, Standard Deviation

both groups 98% had tiredness. Ninety-eight percent of cancer patients in the intervention group and 94% in the control group reported disturbed sleep. In the intervention group, 85% of cancer patients had reported irritability and in the control group 98% had irritability. The majority of them (96%) had reported sadness and worries after diagnosis in both groups. From the intervention group 43% and 67% from the control group reported depression, 35% of them in the intervention group and 58% in the control group had anxiety. About 78% of the intervention group had nervousness whereas it was 89% in the control group. According to the findings of this study, 28% of intervention group patients experienced mouth sores while 45% had difficulty in swallowing, whereas 40% as well as 54% of control group patients had mouth sores and difficulty in swallowing, respectively.

Description of QOL of the patients with breast and head and neck cancer

About the quality of life score, the mean and standard deviation of an obtained score of samples in all the domains are depicted in Table 2a and 2b. The results demonstrate that the QOL of breast and head and neck cancer patients in all domains was comparable between the intervention and control groups.

Section A

Effectiveness of symptom management interventions on reduction of symptoms and the QOL of head andneck cancer patients

Four of the 120 patients with head and neck cancer from both groups together expired during the study period. Hence the analysis was performed with data from 59 participants in the experimental group and 57 participants in the control group. The data in Table 3 shows that the mean symptoms score in the intervention group decreased from 36.69 (10.87) to 12.94 (4.95) with a higher mean difference of 23.75 whereas in the control group from 48.87 (13.24) to 31.75 (5.44). The decrease in symptoms scores from pre-test to post-test 1 were 36.69 (10.87) and 21.22 (6.85) respectively with a higher mean difference of 15.47 in the intervention group, whereas in the control group the changes were from 48.87 (13.24) to 32.75 (6.47) with a mean difference of 16.12. During post-test 2 the mean scores of symptoms experienced in the intervention and control group were 12.94 (4.95) and 31.12 (5.44) respectively. The decrease in symptom scores in the intervention group was much higher in both the post-test measures as compared to the control group. Further, the data shows that the mean self-reported symptoms were significantly different within the group (F(1.4, 114) =184.65, $p< 0.001$) using Greenhouse

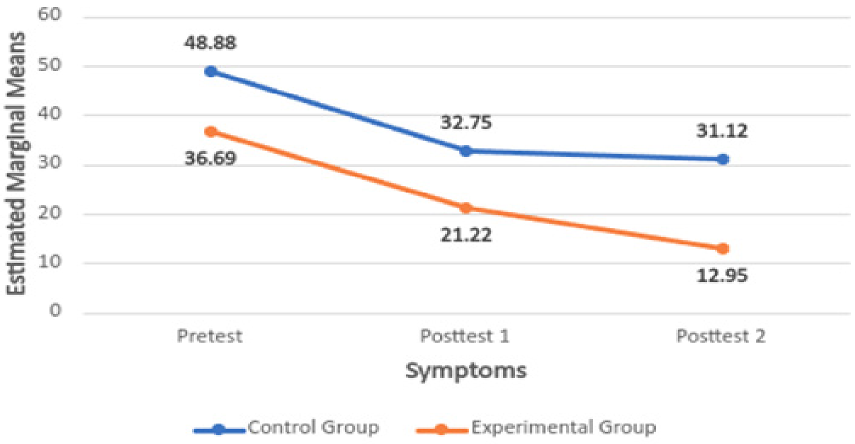

Figure 2. Mean Plots Illustrating the Difference between Estimated Marginal Means of the Post-test of Symptom Burden (Head andNeck) at 1 and 3 Months after Intervention.

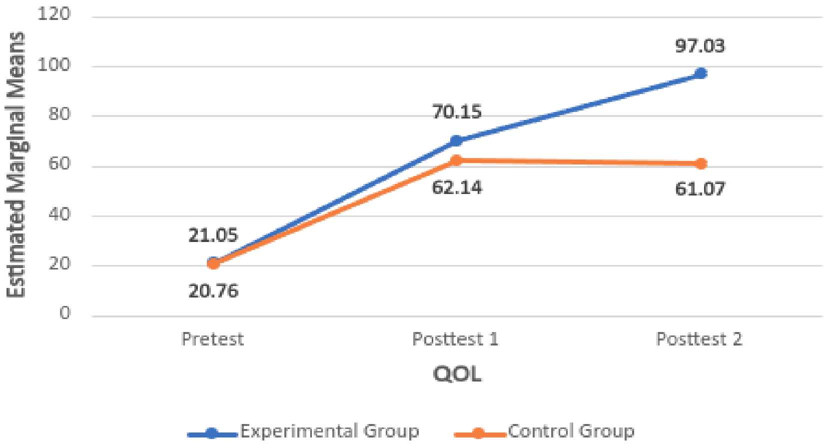

Figure 3. The Difference in the Estimated Marginal Means of the Post-test of QOL (Head and Neck) after 1 and 3 Months of Intervention is Illustrated in Mean Plots.

– Geisser correction. The result also showed that the repeated measures ANOVA between the intervention and control group is statistically significant, F (1, 144) =240.99, p=.001) (Table 3a). The significant difference in symptom scores is plotted in Figure 2. This shows that symptom management intervention was effective in reducing the symptom burden among Head and Neck cancer patients.

Similarly, the QOL of patients with head and neck cancer improved from baseline to post-test 2. Table 4

Table 3. Pre- and Post-test Mean Scores of Self-reported Symptoms in Patients with Head and Neck Cancer Patients in the Intervention and Control Groups

Symptoms measurements	Intervention group (N=59)		Control group (N=57)	
	Mean	SD	Mean	SD
Pre-test (Baseline)	36.69	10.87	48.87	13.24
Post-test 1 (At one month)	21.22	6.85	32.75	6.47
Post-test 2 (At three months)	12.94	4.95	31.12	5.44

SD, Standard Deviation

Table 3a. Repeated Measures ANOVA on Symptoms Burden Scores between and Within the Groups of Head and Neck Cancers Patients. N=116

Self-reported symptoms	Mean square	F Value	df	P	η_p^2
Within the group (n=59)	19198.32	184.65	1.4, 114	0.001	0.618
Between the group (n=116)	16957.73	240.99	1, 114	0.001	0.679

Note, df, degree of freedom; η_p^2, partial eta (effect size).

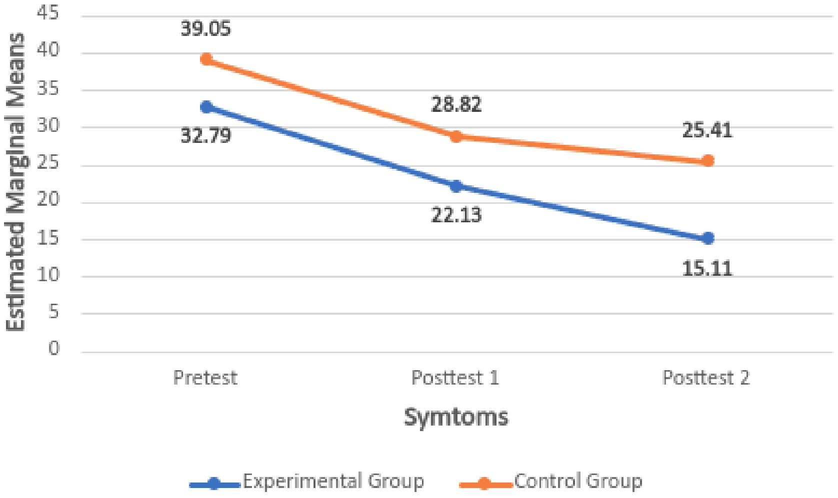

Figure 4. The Difference in Estimated Marginal Means of Post-test Symptom Burden (Breast cancer) at 1 and 3 Months Following Intervention is Illustrated in Mean Plots.

shows that the mean QOL score in the intervention group increased from 20.76 (1.82) to 97.03 (3.33) with a higher mean difference of 26.27 whereas in the control group from 21.05 (1.99) to 61.07 (3.86). The intervention group's increase in QOL scores was significantly higher than the control group's in both post-test measures. Further, the data also shows that the mean QOL score was significantly different within the group (F(1.3, 114) =391.62, $p < 0.001$) using Greenhouse – Geisser correction. This shows that the symptom management intervention was effective in improving the QOL among Head and Neck cancer patients (Table 4a). The significant difference is plotted in Figure 3.

Section B
Effectiveness of symptom management intervention among breast cancer patients

Out of 80 breast cancer patients from both groups three patients expired during the study period. Therefore, the analysis was conducted on 38 participants in the experimental group and 39 participants in the control group. The data shows (Table 5) that the mean symptoms score in the experimental group decreased from 32.78 (11.57) to 15.10 (10.06) with a higher mean difference of 17.68 whereas in the control group from 39.05 (12.18) to 25.41 (6.49). The decrease in symptom scores in the experimental group was much higher in all the post-test measures as compared to the control group. Further, the data shows that the mean self-reported symptoms were significantly different within the group (F(1.7, 75) =67.85, $p < 0.001$) using Greenhouse – Geisser correction. The result also showed that the repeated measures ANOVA between the experimental and control group is showing a statistical significance, F (1, 75) =31.92, p=.001) (Table 5a). This shows that symptom management intervention was effective in reducing the symptom burden among breast cancer patients. The significant difference is plotted in Figure 4.

The mean scores of QOL of breast cancer patients (Table 6) in the intervention group increased from 22.44 (2.92) to 94.39 (8.30) with a higher mean difference of 71.75 whereas in the control group from 22.17 (1.94) to 66.89 (4.14). Further, the data shows that the mean QOL scores were significantly different within the group (F(1.8, 75) =1875.88, $p < 0.001$) using Greenhouse – Geisser

Table 4. Pre-test and Post-Test Mean QOL Scores of Head and Neck Cancer Patients in the Intervention and Control Groups N=116

	Intervention group (N=59)		Control group (N=57)	
QOL	Mean	SD	Mean	SD
Pre-test (Baseline)	20.76	1.82	21.05	1.99
Post-test 1(At one month)	70.15	9.59	62.14	6.96
Post-test 2 (At three months)	97.03	3.33	61.07	3.86

SD, Standard Deviation

Table 4a. Repeated Measures ANOVA on QOL Scores between and Within the Groups of Head and Neck Cancers patients. N=116

QOL	Mean square	F Value	df	P	η_p^2
Within the group (n=59)	15727.65	391.62	1.3, 114	0.001	0.973
Between the group (n=116)	18443.02	544.6	1, 114	0.001	0.827

Note, df, degree of freedom; η_p^2, partial eta (effect size).

Table 5. Mean Scores of Self-reported Symptoms at Pre-test and Post-test in the Intervention and Control Groups of Breast Cancer Patients. N=77.

Self-reported Symptoms measurements	Intervention group (N=38)		Control group (N=39)	
	Mean	SD	Mean	SD
Pre-test (Baseline)	32.78	11.57	39.05	12.18
Post-test 1 (At one month)	22.13	7.49	28.82	4.97
Post-test 2 (At three months)	15.1	10.06	25.41	6.49

SD, Standard Deviation

Table 5a. Repeated Measures ANOVA on Self-reported Symptoms Scores between and Within the Groups of Breast Cancer. N=77

Self-reported symptoms	Mean square	F Value	df	P	η_p^2
Within the group (n=38)	5726.85	67.85	1.7, 75	0.001	0.475
Between the group (n=77)	3469.73	31.92	1, 75	0.001	0.299

Note, df, degree of freedom; η_p^2, partial eta (effect size).

Table 6. Mean QOL Scores of Breast Cancer Patients in the Intervention and Control Groups at Pre-test and Post-Tests N=77

QOL	Intervention group (N=38)		Control group (N=39)	
	Mean	SD	Mean	SD
Pre-test (Baseline)	22.44	2.92	22.17	1.94
Post-test 1(At one month)	71.86	9.51	61.76	8.28
Post-test 2 (At three months)	94.39	8.3	66.89	4.14

SD, Standard Deviation

Table 6a. Repeated Measures ANOVA on QOL Scores Within and between Groups of Breast Cancer Patients. N=77

QOL	Mean square	F Value	df	P	η_p^2
Within the group (n=38)	78502.82	1872.88	1.8, 75	0.001	0.961
Between the group (n=77)	9198.09	177.41	1, 74	0.001	0.995

Note, df, degree of freedom; η_p^2, partial eta (effect size).

correction. The result also showed that the repeated measures ANOVA between the intervention and control group of breast cancer patients is showing a statistical significance, F (1, 75) =177.41.41, p=.001) (Table 6a). This shows that nurse-led intervention was effective in improving the QOL and reducing the symptom burden among breast cancer patients. The significant difference is plotted in Figure 5.

Discussion

In this study, the effectiveness of symptom management intervention among head and neck and breast cancer patients were evaluated. The interventions such as pranayama, 61 points relaxation, telephone contact, and education on symptom management had a beneficial effect in managing the symptoms. Similar findings identified in

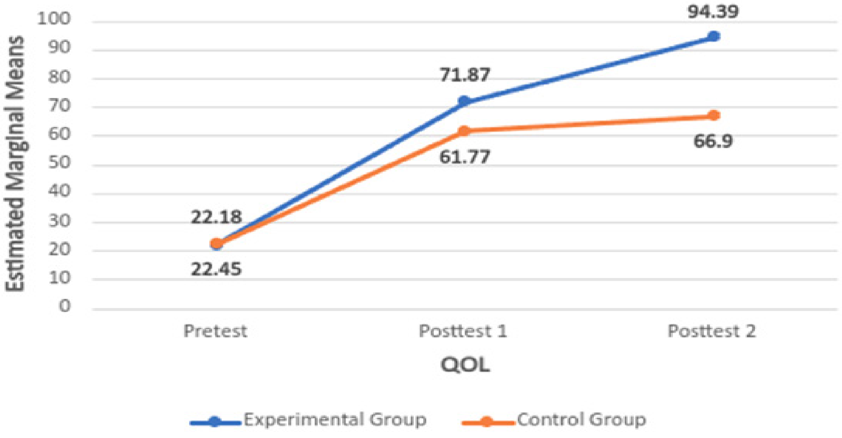

Figure 5. The Difference in the Estimated Marginal Means of the QOL (breast cancer) Post-test at 1 and 3 Months after Intervention is Shown in Mean Plots.

a study done by Hsueh et al., (2021) shows that yoga was effective non pharmacological intervention in reducing anxiety, depression, stress, fatigue, and pain severity also improves overall quality of life of breast cancer patients. According to Pollak et al., (2015), relaxation intervention improves the management of symptoms in cancer patients. Yoga and breathing practice (ujjayi breathing, kapalabhati pranayama, and Nadi shodhana) was shown to be feasible intervention that reduced chemotherapy-related symptoms and improved QOL (Dhruva et al., 2012). According to Kumar et al., (2013); and Chakrabarty et al., (2015) pranayama was a beneficial intervention in lowering stress and pain among advanced-stage breast cancer patients. Integrating education and non-pharmacological measures to empower the patient/FGC is a very effective way to manage pain (Anderson, 2011). In patients with head and neck cancer survivors, the effects of a nurse-led psychosocial intervention/counselling on health-related QOL were found to be beneficial on reducing the physical/psychological symptoms such as pain, depression, fatigue and improved swallowing and opening mouth for a longer period of time (Van Der Meulen et al., 2014).

In patients undergoing treatment for various cancers, nursing interventions with educational initiatives and relaxation techniques demonstrated a significant improvement in appetite loss, a tendency toward decreased insomnia, and improved QOL (De Góes Salvetti et al., 2021; Cheng et al., 2018). The findings of the present study are partially supported by Nayak et al., (2019) who found that there was a moderate positive correlation between the social and emotional domain (r = 0.440, P = 0.001) and emotional versus HNCS (r = 0.487, P = 0.001) QOL domains. A weak-positive correlation found between physical versus functional domain (r = 0.279, P = 0.041). Another study on cancer patients' symptom interference and the relationship between domains of QOL found a statistically significant positive correlation between the domains of general well-being and physical well-being, as well as psychological well-being (r = 0.195, P = 0.001), sexual and personal abilities (r = 0.278, P = 0.001), and body image (r = 0.168, P = 0.001) (Nayak et al., 2019) and also fatigue is having strong association with QOL (Amarsheda and Bhise, 2021).

Limitations

The current study has limitations, including the fact that it was limited to patients only from two tertiary care hospitals, so the results cannot be generalised. During follow-up, it was found that a few patients did not practice pranayama on days when they were really exhausted, but resumed once they were comfortable. They were unable to practice pranayama at the terminal stage of the disease, therefore their QOL dipped slightly during the follow-up. The head and neck cancer patients had difficulty performing the pranayama breathing technique because some patients had Ryles tube insitu and some had a tracheostomy.

In conclusion, cancer is a long-term illness and requires long-term care. Because there is no cure, the only option for cancer patients is symptom management, which reduces symptoms and improves QOL. The findings of the current study demonstrated that symptom management interventions were effective in reducing symptoms in patients with head and neck cancer and breast cancer. As a result, it is essential to use interventions like this to alleviate cancer patients' suffering and improve their QOL. It is the responsibility of all health professionals to ensure that patients receive timely and adequate education and care. Empowering the patient/Family caregivers to improve their QOL by adopting non-pharmacological pain management strategies. India's challenge is to not only extend life, but also to ensure that cancer patients may live full, enriching, and productive lives at their best.

Author Contribution Statement

MGN developed protocol in consultation with AG. MGN and AG equally contributed to the study design. MGN responsible for the data collection, data management and statistical analysis. AG made critical revision to the paper. Both authors have contributed equally towards refinement of manuscript writing. The manuscript has been read and approved by both the authors.

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Ethical approval

This study was approved by the ethics committee of Kasturba Medical College and Kasturba hospital, Manipal IEC No:404/2014. Amendment submitted and study extended up to 2019. Informed consent was obtained from the cancer patients.

Declaration of Conflicting Interests

There are no conflicts of interest among the authors

References

Alam MM, Rahman T, Afroz Z (2020) .Quality of Life (QoL) of cancer patients and its association with nutritional and performance status: A pilot study. *Heliyon*, **6**, e05250.

Amarsheda S, Bhise A (2021). Association of fatigue, quality of life and functional capacity in breast cancer patients receiving adjuvant chemotherapy. *Asian Pac J Cancer Care*, **6**, 59-64.

Anderson M (2011). Yoga improves quality of life in women with breast cancer undergoing radiation therapy. https://www.sciencedaily.com/releases/2011/05/110518181257.htm:

Cagle J, Zimmerman S, Cohen LW, et al (2015). EMPOWER: An Intervention to Address Barriers to Pain Management in Hospice. *J Pain Symptom Mgmt*, **49**, 1-12.

Catania G, Zanini M, Signori A, et al (2021). Providing a nurse-led complex nursing Intervention Focused on quality of life assessment on advanced cancer patients: The INFO-QoL pilot trial. *Eur J Oncol Nurs*, **52**, 101961.

Chakrabarty J, Fernandes D, Joisa G, et al (2015). Effectiveness of pranayama on cancer-related fatigue in breast cancer patients undergoing radiation therapy: A randomized controlled trial. *Int J Yoga*, **8**, 47-53.

Cheng X, Wei S, Zhang H, et al (2018). Nurse-led interventions on quality of life for patients with cancer A meta-analysis. *Medicine (United States)*, **97**, 1–8.

De Góes Salvetti M, Donato SCT, Machado CSP, et al (2021). Psychoeducational nursing intervention for symptom management in cancer patients: A randomized clinical trial. *Asia Pac J Oncol Nurs*, **8**, 156–63.

Dhruva A, Miaskowski C, Abrams D, et al (2012). Yoga Breathing for Cancer Chemotherapy–Associated Symptoms and Quality of Life: Results of a Pilot Randomized Controlled Trial. *J Altern Complement Med*, **18**, 473–9.

Dockham B, Schafenacker A, Yoon H, et al (2016). Implementation of a Psychoeducational Program for Cancer Survivors and Family Caregivers at a Cancer Support Community Affiliate: A Pilot Effectiveness Study. *Cancer Nur*, **39**, 169-80.

Dvivedi J, Dvivedi S, Mahajan K, Mittal S, Singhal A (2008). Effect of "61-points relaxation technique" on stress parameters in premenstrual syndrome. *Indian J Physiol Pharmacol*, **52**, 69-76.

Hariprasad R, Palat G, Mehrotra R, Vallath N (2018). The PEP project - Synergistic community based action in prevention, early detection and palliative care, to impact the cancer burden in India. *Indian J Palliat Care*, **24**, 349–54.

Hsueh EJ, Loh EW, Lin JJA, et al (2021). Effects of yoga on improving quality of life in patients with breast cancer: a meta-analysis of randomized controlled trials. *Breast Cancer*, **28**, 264–76 .

https://www.uicc.org/news/globocan-2020-new-global-cancer-data.

Klafke N, Mahler C, von Hagens C, et al (2019). The effects of an integrated supportive care intervention on quality of life outcomes in outpatients with breast and gynecologic cancer undergoing chemotherapy: Results from a randomized controlled trial. *Cancer Med*, **8**, 3666–76.

Kumar N, Bhatnagar S, Velpandian T, et al (2013). Randomized Controlled Trial in Advance Stage Breast Cancer Patients for the Effectiveness on Stress Marker and Pain through Sudarshan Kriya and Pranayam. *Indian J Palliat Care*, **19**, 180-5.

Meulen Ingeborg C, May AM, Ros WJG, et al (2013). One-Year Effect of a Nurse-Led Psychosocial Intervention on Depressive Symptoms in Patients With Head and Neck Cancer: A Randomized Controlled Trial. *Oncologist*, **18**, 336–44.

Nagarathna R, Rekha M, Vanitha N (2009). Effects of yoga on symptom management in breast cancer patients: A randomized controlled trial. *Int J Yoga*, **2**, 73-9.

Nayak M, George A, Shashidhara Y, Nayak B (2019). Symptom interference and relation between the domains of quality of life among cancer patients of tertiary care hospital. *Indian J Palliat Care*, **25**, 575–9.

Nayak M, George A (2021). Effectiveness of Multicomponent Intervention on Quality of Life of Family Caregivers of Cancer Patients. A*sian Pac J Cancer Prev*, **22**, 2789-95.

Nayak S, Pai M, George L (2019). Quality of life of patients with head and neck cancer: A mixed method study. *J Can ResTher*, **15**, 638–44.

Ohlsson-Nevo E, Karlsson J, Nilsson U (2016). Effects of a psycho-educational programme on health-related quality of life in patients treated for colorectal and anal cancer: A feasibility trial. *Eur J Oncol Nurs*, **21**, 181- 8.

Pollak KI, Lyna P, Bilheimer A, Porter LS (2015). A brief relaxation intervention for pain delivered by palliative care physicians: A pilot study. *Palliative Med*, **29**, 569–70.

Prakash K, Saini SK, Pugazhendi S (2020). Effectiveness of yoga on quality of life of breast cancer patients undergoing chemotherapy: A randomized clinical controlled study. *Indian J Palliat Care*, **26**, 323-31.

Satija A, Bhatnagar S (2017). Complementary therapies for symptom management in cancer patients. *Indian J Palliat Care*, **23**, 468–79.

Senchak JJ, Fang CY, Bauman JR (2019). Interventions to improve quality of life (QOL) and/or mood in patients with head and neck cancer (HNC): a review of the evidence. *Cancers Head Neck*, **4**, 1–11.

Srivastava S, Srivastava A, Tiwari S (2020). Factors affecting Quality of Life (QoL) in Breast Cancer Patients: A Case Study at King George's Medical University, Lucknow. *Int J Nurs Edu*, **12**, 237–42.

Viriyasiri P, Phutthikiat P, Phonmak P, et al (2020). Symptom and Anxiety Assessment in Gynecologic Cancer Patients Receiving Chemotherapy. *Asian Pac J Cancer Care*, **5**, 95-100.

Van Der Meulen IC, May AM, De Leeuw JRJ (2014). Long-term effect of a nurse-led psychosocial intervention on health-related quality of life in patients with head and neck cancer: A randomised controlled trial. *Br J Cancer*, **110**, 593–601.