STM JOURNALS

Journal of
Nursing Science & Practice

https://journals.stmjournals.com/jonsp

ISSN: 2249-4758 (Online)
ISSN: 2348-957X (Print)
Volume 15, Issue 3, 2025
September–December
DOI (Journals): 10.37591/JoNSP

Research JoNSP

Effect of a Multi-Component Intervention on the Quality of Life of Breast Cancer Patients Undergoing Chemotherapy in a Selected Oncology Centre

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Abstract

Breast cancer remains the most commonly diagnosed cancer among women globally and continues to be a leading cause of cancer-related mortality among females. In India, it has become the most prevalent cancer among women, with a noticeable rise in incidence annually. The growing burden of breast cancer highlights the urgent need for effective supportive care strategies that address not only the physical but also the emotional and psychosocial well-being of patients. This study aimed to evaluate the effectiveness of a multi-intervention package in enhancing the quality of life among breast cancer patients admitted to a selected oncology unit. A pre-experimental research design was employed, specifically using a one-group pre-test and post-test approach. The multi-intervention package included components such as educational sessions, psychological counselling, relaxation techniques, and nutritional guidance, tailored to the needs of the patients. Data were collected using a standardized quality of life assessment tool before and after the intervention. Statistical analysis was carried out to compare pre- and post-intervention scores, aiming to determine the significance of observed improvements. The findings suggest a positive impact of the intervention package on various dimensions of quality of life, including physical health, emotional stability, and social well-being. This study underscores the importance of holistic care strategies in oncology settings and recommends further research with larger sample sizes and control groups to validate the effectiveness of such interventions.

Keywords: Breast cancer, quality of life, multi-intervention package, pre-experimental study, oncology care

INTRODUCTION

Cancer encompasses a group of over 200 distinct diseases, all generally characterized by the uncontrolled growth and spread of abnormal cells. These malignant cells can invade surrounding tissues and spread to distant parts of the body through the lymphatic system or bloodstream. The causes of cancer are multifactorial and may arise from internal influences such as inherited genetic mutations, hormonal imbalances, immune system deficiencies, and metabolic conditions, or from external sources including exposure to tobacco, harmful chemicals, radiation, and infectious agents [1].

The 20th century is often referred to as the "disease century" due to the identification of over a hundred types of cancer during this period and the extensive global medical efforts aimed at combating them. In the early part of the century, cancer was

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Received Date: August 19, 2025
Accepted Date: October 09, 2025
Published Date: October 20, 2025

Citation: Nakka Surya Teja: Effect of a Multi-Component Intervention on the Quality of Life of Breast Cancer Patients Undergoing Chemotherapy in a Selected Oncology Center. Journal of Nursing Science & Practice. 2025; 15(3): 11–18p.

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largely seen as a terminal illness. However, advancements in medical science have significantly transformed its prognosis. While certain cancers still pose serious threats, many are now treatable and, in some cases, even curable [2].

Breast cancer ranks as the second most commonly diagnosed cancer worldwide. Statistics indicate that one woman is diagnosed with breast cancer every 3 min, and approximately one in eight women will receive a breast cancer diagnosis in their lifetime. This form of cancer originates from breast tissue, typically arising from the inner lining of milk ducts or the lobules responsible for producing milk. Breast cancer is considered a clonal disease, meaning it develops from a single abnormal cell that undergoes a series of acquired (somatic) or inherited (germline) mutations, ultimately gaining the potential to become fully malignant. In its early stages, breast cancer can remain either non-invasive or invasive without metastasizing for a significant period [3].

Treatment for breast cancer often involves surgical intervention to remove the tumour. The primary goal of surgery is not only to excise the cancerous tissue but also to accurately determine the stage of the disease. Surgical treatment options vary based on several factors, including the size and location of the tumour. A common surgical approach is breast-conserving therapy, which aims to remove the tumour while preserving as much of the breast as possible. This method is typically followed by radiation therapy to eliminate any remaining cancer cells. The specific surgical procedure recommended will depend on individual patient factors and tumour characteristics [4].

NEED FOR THE STUDY

According to the Indian population census data, cancer-related mortality rates in India have been significantly high and concerning, with approximately 806,000 existing cases reported by the end of the previous century. Cancer stands as the second leading cause of death in the country, accounting for nearly 300,000 fatalities each year. Among various types of cancer, breast cancer has emerged as the most prevalent form affecting women in India. In 2015, a sum of 112,800 new cases were reported, and the number is continuing to rise: currently one in ten Indian women are expected to develop breast cancer in their lifetime (Figure 1). Breast cancer is a common cancer in urban Indian females, and second common in rural Indian women. For the first time, breast cancer is the leading cancer in Indian women.

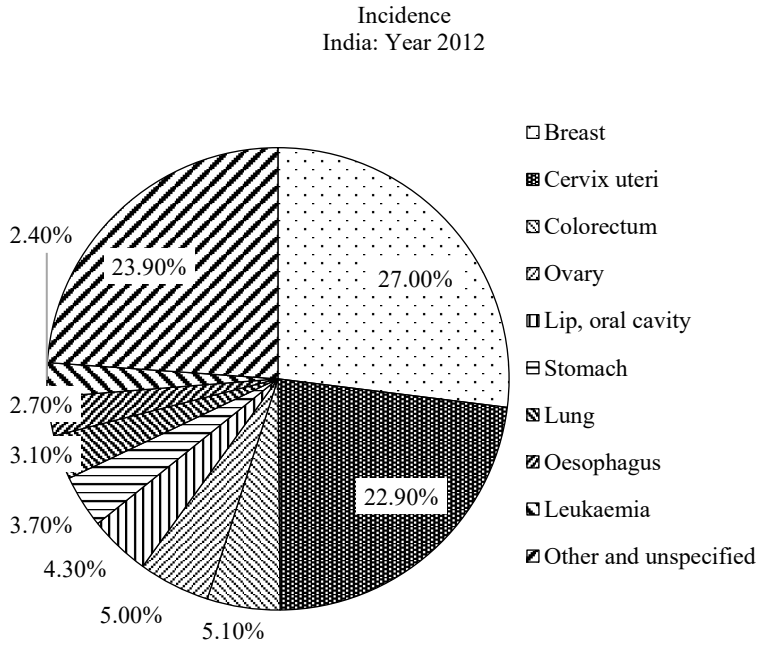

Figure 1. Distribution of the incidence of various types of cancer (Globocan).

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OBJECTIVES OF THE STUDY

a. To evaluate the quality of life among breast cancer patients undergoing chemotherapy, both before and after the implementation of a multi-intervention package.
b. To assess the effectiveness of the multi-intervention package in improving the quality of life in breast cancer patients receiving chemotherapy.
c. To explore the relationship between pre-intervention quality of life scores and selected socio-demographic variables among breast cancer patients.

DESCRIPTION OF THE MULTI-INTERVENTION PACKAGE

The multi-intervention package consists of a combination of supportive therapies designed to improve overall well-being. These include:

- Supplementation with Amla (Indian gooseberry) juice.
- One-on-one counselling sessions focused on spiritual wellness.
- Acupressure combined with guided imagery techniques.
- Encouragement of daily living activities, including light aerobic exercises such as mild walking.

Research Hypotheses

- *H01:* There will be no statistically significant difference in the quality of life scores of breast cancer patients before and after the administration of the multi-intervention package.
- *H02:* There will be no significant association between pre-intervention quality of life scores and selected socio-demographic factors among breast cancer patients receiving chemotherapy.

Assumptions

1. Breast cancer patients undergoing chemotherapy may experience a diminished quality of life.
2. Implementation of the multi-intervention package is expected to contribute positively to the quality of life in these patients.

Conceptual Frame Work

The conceptual framework guiding this study is derived from *Pender's Health Promotion Model.* According to Pender, this model suggests that various modifying factors influence health behaviours by acting through cognitive and perceptual processes, which in turn have a direct impact on individuals' actions related to health promotion [5].

MATERIALS AND METHODS

Research Approach: The research approach chosen for the study is quantitative evaluative research approach. The quantitative paradigm is based on positivism.

Research design: The design used for the present study was pre-experimental design. A one-group pre-test and post-test design was employed to assess the impact of the multi-intervention package on the quality of life in breast cancer patients.

Setting of the Study

The study was carried out at the Cancer Centre of Kidwai Memorial Institute of Oncology, a facility comprising two hospital units with a total capacity of over 200 beds. The centre serves a wide population from nearby regions, offering a range of specialized cancer treatments, including chemotherapy, radiotherapy, surgical oncology, and teletherapy. On a daily basis, the hospital provides care for 50 to 60 patients diagnosed with various types of cancer through its outpatient services. Among these, approximately 10 patients were undergoing treatment specifically for breast cancer, with 2 to 3 of them receiving chemotherapy during the study period. The participants demonstrated a high level of cooperation and willingly took part in the research, showing active engagement without any reluctance.

Variables

A variable refers to a characteristic or attribute of a person or object that can assume different values.

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Independent Variable

An independent variable is one that is presumed to influence or cause changes in another variable, often referred to as the manipulated variable.

In the context of this study, the independent variable is the multi-intervention package.

Dependent Variable

The dependent variable is the outcome or response that the researcher aims to explore, explain, or predict.

In this study, the dependent variable is the *quality of life among breast cancer patients.*

Socio-demographic and *clinical data included:* Age, Marital status, occupation, education, Monthly Income, Duration of taking treatment, duration of illness, Type of family, Relaxation technique, Dietary pattern, History of Hormonal therapy, History of using oral contraceptives, History of PCOD, Family history of breast cancer and associated conditions.

Sample and Sample Size

A sample refers to a subset of individuals from the larger population who are selected to provide information relevant to the research objective. In this study, breast cancer patients undergoing chemotherapy and meeting the inclusion criteria were recruited from the oncology unit to serve as the study sample. To determine an adequate sample size for meaningful statistical analysis, a power calculation was conducted. Based on this analysis, a total of 200 participants were deemed sufficient to detect significant differences between groups in the quantitative phase of the study. Ethical clearance was obtained from the appropriate institutional review board, and written informed consent was secured from all participants prior to their involvement. Accordingly, the researcher enrolled 200 breast cancer patients receiving chemotherapy for the study [6].

Sampling Technique

Purposive sampling technique was adopted for the study which is selected based on the characteristics of population, objectives of the study and needs of the study. The breast cancer patients who met the both inclusive and Exclusive criteria were selected by the purposive sampling technique. The investigator selected the samples from Cancer centre, by using purposive sampling technique [7].

Description of the Instrument

The Data collection tool consist of two sections:

Section A: Demographic Variables

It consists of demographic characteristics of breast cancer patients, i.e. Age, Marital status, type of family, occupation, monthly income, educational qualification, duration of illness, duration of taking treatment, relaxation techniques such as watching Television and yoga, personal habits, diet, history of hormonal therapy, history of using oral contraceptives, history of PCOD, family history of breast cancer and associated conditions.

Section B: Quality of life scale FACT-B

The FACT-B is a Multi-dimensional HRQOL instrument designed for the breast cancer patients. Its format is concise and exhibits ease of administration. The questions are grouped into five subscales assessing Physical, Functional, Social, Emotional and additional concerns. It consists of FACT-B scale to assess the quality of life of the breast cancer patients receiving chemotherapy.

Plan for Data Analysis

The gathered data was carefully arranged, systematically tabulated, and analysed using descriptive statistical methods, including percentages, means, and standard deviations. The inferential statistics like

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paired 't' test was used to find out the effectiveness of multi-intervention package. Chi-square was used to find the association between demographic variables with post test scores of Quality-of-life scale [8, 9].

DATA ANALYSIS, INTERPRETATION

H1: The calculated 't' value comparing pretest and post-test quality of life scores revealed a statistically significant improvement from before to after the intervention at the 5% significance level (P<0.05). Therefore, the research hypothesis was supported, and the null hypothesis was rejected.

H2: There is a significant relationship between pretest quality of life scores and selected socio-demographic variables among breast cancer patients undergoing chemotherapy.

Table 1. Paired *t*-test analysis of pre-test and post-test quality of life scores among breast cancer patients undergoing chemotherapy.

S.N.	QoL items	Paired "t" test	Level of significance
1	Physical well being	7.189	P<0.05
2	Family well being	6.220	P<0.05
3	Emotional well being	16.232	P<0.05
4	Functional well being	7.119	P<0.05
5	Additional concern	5.873	P<0.05
6	Trial outcome index	10.566	P<0.05
7	FACT-G	14.718	P<0.05
8	FACT-B	14.986	P<0.05

All domains showed statistically significant improvement at p<0.05 level.

The data analysis supports both research hypotheses. Regarding H1, the calculated paired *t*-test values demonstrated a statistically significant improvement in quality of life (QOL) scores from pretest to post-test across all measured domains at the 5% level of significance (P<0.05). This indicates that the intervention was effective in enhancing the quality of life among breast cancer patients undergoing chemotherapy, thereby *supporting the research hypothesis (H1) and rejecting the null hypothesis.*

As shown in *Table 1*, the highest improvement was observed in the domain of *Emotional Well-being* (*t*=16.232), followed by overall scores on the FACT-B (*t*=14.986) and FACT-G (*t*=14.718). Other domains, including *Physical Well-being*, *Family Well-being*, *Functional Well-being*, *Additional Concerns*, and *Trial Outcome Index*, also showed statistically significant improvements.

In relation to H2, a significant association was observed between pretest QOL scores and selected socio-demographic variables, suggesting that patient background characteristics influenced baseline QOL levels [10–12].

To calculate and analyse paired t-test for want of the effectiveness between pre and post test score of FACT-B total score on quality of life of interventional groups manifested that the t-test score was 14.986, and when the same was compared to table value, it was high [13].

DISCUSSION

Chi-square value have revealed that, there is a significant association between the pretest scores of Intervention group among the breast cancer patients when compared to Age in years, Type of family, Occupation, Educational Qualification and Duration of illness. Duration of taking treatment, personal habit and relaxation technique (P<0.05). History of hormonal therapy, history of using oral contraceptives, history of PCOD, family history of breast cancer and associated conditions (P<0.05). Furthermore, there is no association between post test scores of breast cancer patients with marital

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status, monthly income and diet pattern. Thus, null hypothesis has been rejected and the alternative hypothesis has been accepted [14, 15].

CONCLUSION

With the support of the findings, the study concluded that most of the breast cancer patients were in the age group of 21 to 30 and 31 to 40 years. Besides that, most of the patients were married. It is learnt that half of the percentage had the duration of illness 1 to 5 years. During the pretest assessment, most breast cancer patients were found to have a poor quality of life. However, in the post test evaluation, 34% of the patients demonstrated an excellent quality of life. These results indicate that the quality of life significantly improved following the implementation of the multi-intervention package. It was proved that multi-intervention package has found to be effective in terms of improving quality of life. Furthermore, women with breast cancer administered with multi-intervention package concluded that there were changes in the quality of life in the following domains: Physical, Functional, Family and Emotional wellbeing. It was also revealed that there is a significant association found between post test scores of qualities of life among the breast cancer patients and their demographic variables of Interventional group.

Nursing Implications

The study's findings highlight the need for ongoing in-service education programs for nurses. To update the newer changes in the breast cancer treatment, it is understood that short term courses can be organized. It is necessary to emphasise on the development of curriculum that targets various components of the recent modifications followed by the renewal of health programme. It is mandatory to explore the side effects of the anti-cancer drugs on cancer patients which need to be researched further.

Nursing Education

As the incidence of breast cancer is increasing day by day all over the world.

- The Nursing students must be able to identify the Breast Cancer patients in the early Identification of aspects like Breast self-examination, early diagnosis, treatment, and prevention of breast cancer.
- Nurse education is a means in which Nurses are prepared for practice in various settings and the study results can be used as an informative illustration for students. Students should be given more emphasis on early detection of Breast Cancer by self-Breast examination.

Nursing Practice

- Nurses and other health team members have the responsibility to promote knowledge on Breast Cancer. A Community Health Nurse must take the initiate to educate the public on Breast Cancer and Other preventive measures.
- Health education programmes can be conducted by the health personnel in various settings to promote the knowledge on Breast cancer among public. In clinical practice, all Nurses are able to assist the patients in empowering them with more knowledge, and help the patients to assume greater responsibility for their own care.

Nursing Research

- There should be more scope for research in the knowledge on Breast Cancer and the management.
- Study reveals that overall quality of life was poor to Best. It reveals a greater need for Nurses to conduct research on Breast Cancer.
- Nurse researchers should come forward to develop and validate new strategies and effective implication on Nursing Research.

Nursing Administration

- The Nursing administration needs to motivate and initiate the health personnel in organizing,

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conducting and participating in various educational programmes that would continue to improve health promoting behaviour.

- Planning and organizing such programmes require efficient team work, adequate manpower, proper materials, appropriate methods and effective time management to ensure successful education programme. The findings of the study indicate the need for conducting in service education and training programme for practicing nurse to enhance their awareness. Nurse administrators should find the appropriate ways to improve the knowledge of Breast Cancer patients.

Recommendations

- A descriptive study can be conducted to assess the knowledge of women regarding breast cancer.
- A comparative study can be conducted to assess the awareness regarding breast cancer among women between rural and urban community.
- The longitudinal study can be conducted to assess the quality of life regarding breast cancer patients receiving chemotherapy.
- A comparative study can be conducted to assess the improvement of quality of life of the breast cancer patients regarding multi-intervention package.

Limitations of the Study

- The study is limited only to the breast cancer patients who are admitted in and out patients at cancer centre.
- Breast cancer patients who are receiving TAC and FAC regimen only are included.
- The study is limited to 200 Breast cancer patients receiving chemotherapy.

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