ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25may2244

A Study to Assess the Impact of Nurse-Led Intervention on Breast Cancer and Breast Self-Examination Practices Among Women

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Publication Date: 2025/06/09

Abstract: Breast cancer is a significant public health concern among women globally, with late detection in rural areas often leading to poorer outcomes. This study aimed to assess the impact of a nurse-led educational intervention on knowledge and practices of breast cancer and Breast Self-Examination (BSE) among women in rural Kuppam, Andhra Pradesh. A pre-experimental, one-group pre-test post-test design was utilized with 200 women selected via convenient sampling. Data were collected using a structured questionnaire before and after a nurse-led teaching program. Results indicated a significant improvement in both knowledge and practice scores post-intervention. The mean pre-test knowledge score of 25.1±12.43 increased to 40.09±19.8 (t=2.02, p=0.023), and the mean pre-test practice score of 5.71±3.365 rose to 13.16±2.274 (t=26.696, p=0.000) post-intervention. The nurse-led intervention was effective in enhancing breast cancer awareness and BSE practices among rural women, highlighting the potential of such programs to improve early detection rates.

Keywords: *Breast Cancer; Breast Self-Examination; Nurse-Led Intervention; Health Education; Rural Women; Knowledge; Practice*

How to Cite: S. Subhavelvizhi; T.K. Sreedevi; Elsha S; Elgiya Eldhose; Elizabath Manoj; G. Priyanka; G. Prema (2025) A Study to Assess the Impact of Nurse-Led Intervention on Breast Cancer and Breast Self-Examination Practices Among Women. *International Journal of Innovative Science and Research Technology*, 10(5), 3970-3973. https://doi.org/10.38124/ijisrt/25may2244

I. INTRODUCTION

Breast cancer is one of the most common cancers affecting women worldwide and a leading cause of cancer-related deaths, accounting for nearly 25% of all cancer cases in women [1, 2]. The global burden is increasing, particularly in low- and middle-income countries, where diagnosis often occurs at later stages, reducing survival rates [6]. In India, cancer incidence and mortality have more than doubled between 1990 and 2016, with breast cancer being a significant contributor [4].

Early detection strategies such as Breast Self-Examination (BSE), clinical breast examination (CBE), and mammography are crucial in improving outcomes [5]. BSE is a simple, cost-free procedure that empowers women to become familiar with their breasts and detect changes early.

Despite its benefits, BSE practice remains low in many regions, including India, due to factors like lack of knowledge, time, fear, and embarrassment [3]. Nurse-led interventions have been shown to be effective in increasing awareness and promoting early detection practices [7, 8]. This study was conducted to assess the impact of a nurse-led educational intervention on knowledge and practices regarding breast cancer and BSE among women in rural areas of Kuppam, Chittoor District, Andhra Pradesh, where access to screening facilities may be limited. The aim was to evaluate if such an intervention could significantly improve awareness and BSE practices, thereby contributing to earlier detection.

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II. MATERIALS AND METHODS

A. Research Approach and Design

A quantitative, pre-experimental one-group pre-test post-test design was adopted.

B. Setting and Population

The study was conducted in selected rural areas (Nalagampalli, Begillapalli villages) of Kuppam, Chittoor District, Andhra Pradesh, India. The target population comprised women residing in the selected rural areas.

C. Sample Size, Sampling Technique & Criteria

A sample of 200 women was selected using a non-probability convenient sampling technique. Women willing to participate, able to understand Telugu, and available during data collection were included. Women already diagnosed with breast cancer or critically ill were excluded.

D. Data Collection Tool

A structured questionnaire was developed by the investigators based on literature review and validated by experts. It consisted of three parts:

Part A: Socio-demographic variables (age, education, marital status, occupation, family type, income, etc.).
Part B: Knowledge questionnaire with 30 multiple-choice questions on breast cancer (definition, risk factors, signs, diagnosis, treatment, prevention).
Part C: Practice questionnaire with 15 questions to assess BSE practices.

E. Intervention

The intervention consisted of a structured teaching program on breast cancer and BSE practices, delivered by nurses. This nurse-led intervention included information on breast cancer risk factors, signs and symptoms, importance of early detection, and the correct technique for performing BSE, supported by audio-visual aids. The session lasted approximately 30-45 minutes.

F. Ethical Considerations

Ethical clearance was obtained from the Institutional Research Committee (IRC) & Institutional Human Ethics Committee of PESIMSR, Kuppam. Informed consent was obtained from the participants.

H. Data Collection and Analysis

The pre-test questionnaire was administered. Following this, the nurse-led educational intervention was provided. A post-test using the same questionnaire was conducted seven days after the intervention. Colleced data were analyzed using SPSS. Descriptive statistics (frequency, percentage, mean, standard deviation) were used to summarize socio-demographic data and knowledge/practice scores. Inferential statistics, including paired t-tests, were used to compare pre-test and post-test scores. A p-value < 0.05 was considered statistically significant.

III. RESULTS

A. Demographic Profile of Participants

The study included 200 women from rural Kuppam, with a demographic profile revealing that the largest proportion (68.0%, n=136) belonged to the 30-39 years age group, while 32.0% (n=64) were aged 40-49 years. The vast majority were married (87.5%, n=175). In terms of education, 46.5% (n=93) had completed basic level education, 25.5% (n=51) were illiterate, 14.5% (n=29) had secondary level education, and 13.5% (n=27) had attained higher education. Occupationally, housewives constituted the largest group (54.5%, n=109), followed by those in agriculture (22.0%, n=44). Most participants (60.0%, n=120) lived in nuclear families, and regarding family income, 35.0% (n=70) reported earnings between ₹10001-20000 per month, with 19.5% (n=39) earning below ₹10000. The majority (79.5%, n=159) reported household asset values of less than ₹50000.

B. Impact on Knowledge Scores

There was a statistically significant improvement in knowledge scores regarding breast cancer and BSE post-intervention. In the pre-test, 70.0% (n=141) of women had moderate knowledge, 12.5% (n=34) had adequate knowledge, and 17.0% (n=25) had inadequate knowledge. In the post-test, 94.5% (n=189) demonstrated adequate knowledge, and 5.5% (n=11) had moderate knowledge, with no participants remaining in the inadequate knowledge category.

The mean knowledge score significantly increased from Pre-test mean 16.32±5.156, Post-test mean 26.75±3.251, t=24.510, p<0.001.

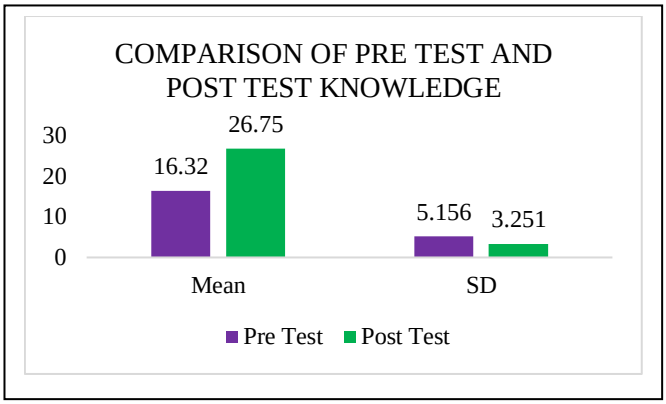

Fig.1

C. Impact on Practice Scores

A significant improvement was also observed in BSE practice scores. In the pre-test, 53.0% (n=106) of women had inadequate practice, 39.0% (n=78) had moderate practice, and 8.0% (n=16) had adequate practice. Post-intervention, 93.5% (n=187) reported adequate practice, 3.5% (n=7) moderate practice, and 3.0% (n=6) inadequate practice.

The mean practice score significantly increased from a pre-test mean of 5.71 ± 3.365 to a post-test mean of 13.16 ± 2.274 (t=26.696, p<0.001).

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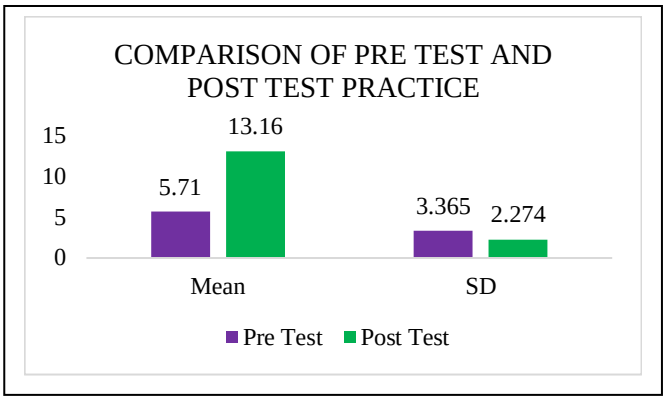

Fig.2

D. Correlation between Knowledge and Practice

A positive and highly significant correlation was found between knowledge and practice scores both in pre-test ($r=0.353$, $p<0.001$) and post-test ($r=0.538$, $p<0.001$), indicating that as knowledge increased, BSE practices also improved.

D. Association of Health Status with Demographic Variables

The study further investigated the association between post-intervention knowledge and practice scores and selected socio-demographic variables. The analysis of post-test knowledge scores regarding breast self-examination with variables such as age, education, family type, marital status, and household assets revealed no statistically significant associations. However, a significant association was found between post-test knowledge scores and occupation ($\chi^2=24.411$, $p=0.000$) and family income ($\chi^2=10.855$, $p=0.013$), suggesting these factors might have influenced the level of knowledge retained or gained after the intervention.

When post-test practice scores for BSE were analyzed against these socio-demographic variables, no statistically significant associations were found for age, education, family type, marital status, household assets, or family income, indicating that the improvement in practice following the intervention was generally consistent across different demographic subgroups within the study cohort.

IV. DISCUSSION

The findings of this study demonstrate that a nurse-led educational intervention significantly improved knowledge about breast cancer and BSE, as well as the reported practices of BSE among rural women. The pre-intervention assessment revealed moderate to inadequate levels of knowledge and practice, consistent with other studies in similar settings which highlight a lack of awareness as a barrier to early detection.

The significant increase in both mean knowledge and practice scores post-intervention supports the effectiveness of targeted educational programs delivered by healthcare professionals. This aligns with research by Muntode et al. (2024) and Syed Arifa et al. (2020), who also found structured teaching programs to be effective in enhancing BSE knowledge and awareness. The positive correlation found between knowledge and practice in this study further underscores the importance of education; as women become more knowledgeable, they are more likely to adopt preventive health behaviors like BSE.

The improvement in BSE practices, from a majority having inadequate practice pre-intervention to a majority having adequate practice post-intervention, is a crucial outcome. Regular and correct BSE can lead to earlier detection of breast abnormalities, potentially improving treatment outcomes and survival rates, especially in rural areas where access to clinical screening might be delayed.

The study's pre-experimental design is a limitation, as the absence of a control group makes it difficult to definitively attribute all changes solely to the intervention. However, the substantial and statistically significant improvements observed provide strong suggestive evidence of the intervention's impact.

V. CONCLUSION

The nurse-led educational intervention on breast cancer and Breast Self-Examination proved to be highly effective in significantly enhancing the knowledge and self-reported practices among women in the rural areas of Kuppam. The findings suggest that such targeted educational initiatives by nurses can play a vital role in empowering women with the necessary information and skills for early detection of breast cancer, thereby potentially contributing to reduced morbidity and mortality in resource-limited settings. Further efforts to implement and scale up similar interventions are recommended.

ACKNOWLEDGMENT

We extend our Special thanks to the IRC and IEC of PESIMSR and our heartfelt thanks to all the women who participated in this study.

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