



Prevention Strategies Of Breast Cancer

Nita Patel¹, Dipika Valand², Shreena Patel², Mohammad Zahid A. Sheikh², Rohankumar Tarabada²

Assistant Professor¹, Post Basic B.Sc. Nursing Students²

Corresponding Author

Nita Patel

Assistant Professor

Parul Institute of Nursing, Parul University, Vadodara, Gujarat, India

ORCID ID: <https://orcid.org/0009-0007-0240-2731>

Abstract: Breast cancer is the most prevalent cancer among women worldwide and remains a leading cause of mortality. Early detection and preventive strategies are crucial in mitigating its impact. This study delves into an array of preventive measures, including awareness programs, self-breast examination, lifestyle modifications, and the role of dietary supplements in reducing breast cancer risk. The comprehensive literature review exposes significant gaps in awareness, particularly within rural areas, underscoring the critical need for community-based interventions. Furthermore, the study evaluates the effectiveness of various dietary supplements and their potential benefits in breast cancer prevention. The findings strongly advocate for targeted education and screening programs, highlighting that such initiatives can markedly improve early detection rates, thereby significantly reducing mortality. This research emphasizes the importance of a multi-faceted approach to breast cancer prevention, combining education, lifestyle changes, and dietary considerations to foster a holistic strategy against this pervasive disease.

Index Terms - Breast cancer, prevention, screening, early detection, awareness, self-examination.

I. INTRODUCTION

The female breast has historically been perceived as a symbol of beauty, sexuality, and motherhood. Diseases or injuries affecting the breast can have significant physical and psychological impacts on women, particularly in cases of breast cancer. Psychological factors associated with breast cancer include mental health issues, fatigue, anxiety, low self-esteem, and concerns about body image. Women who develop breast cancer at an early age often face greater mental health challenges related to body image.

Cancer is a major global health issue, causing more deaths annually than AIDS, malaria, and tuberculosis combined. It is the second leading cause of death worldwide, with over 14 million new cases each year. Projections indicate that by 2030, cancer incidence will rise to at least 21 million, with a significant proportion of deaths occurring in developing countries lacking adequate healthcare resources.

In India, cancer awareness is particularly low in rural areas, highlighting the need for effective health education and early detection strategies. The National Cancer Control Programme, initiated in 1975 and supported by the Ministry of Health and Family Welfare, plays a crucial role in planning and evaluating cancer control activities. Breast self-examination (BSE) is recommended as a simple, non-invasive, and cost-effective method for early detection of breast cancer. Women are encouraged to begin BSE in their 20s to familiarize themselves with the normal look and feel of their breasts and report any changes promptly. Awareness and

practice of BSE are vital for early detection, especially in low-resource settings where access to diagnostic facilities is limited.

II. METHODOLOGY

This review article follows a structured literature review approach to explore prevention strategies of breast cancer. A comprehensive search was conducted using various academic search engines and databases, including PubMed, Google Scholar, Scopus, Web of Science, and CINAHL. The selection criteria focused on peer-reviewed articles, systematic reviews, meta-analyses, and relevant reports published in the last 10 years (1,2).

III. SEARCH STRATEGY:

Keywords used: Breast cancer, prevention, screening, early detection, awareness, self-examination.

Boolean operators (AND, OR) were applied to refine the search.

1. **Inclusion criteria:** Studies published in English, addressing incidence, prevention and strategies of breast cancer.
2. **Exclusion criteria:** Articles with limited accessibility, non-peer-reviewed sources, and studies lacking scientific rigor.

IV. DATA EXTRACTION AND ANALYSIS:

The selected literature was critically analysed for key themes, trends, and gaps in breast cancer research. Findings were synthesized to highlight the causes, socioeconomic impact, healthcare disparities, and advancements in treatment options. This methodology ensures a comprehensive and evidence-based review of breast cancer.

V. REVIEW OF LITERATURE

The literature on breast cancer highlights its multifaceted nature, encompassing biological, social, and lifestyle factors. Cancer as the second leading cause of death after heart diseases. Higher fatality rates than AIDS, malaria, and tuberculosis combined. Projected increase to 21 million new cancer cases annually by 2030, with two-thirds of deaths in developing countries.

Table 1. Review of literature of prevention strategies of breast cancer

Study Title	Name of the Author	Methodology	Major Findings	Conclusion
The Incidence of Breast Cancer Recurrence 10-32 Years After Primary Diagnosis	Pedersen, R. N., Esen, B. Ö., Mellekjær, L., Christiansen, P., Ejlersen, B., Lash, T. L., Nørgaard, M., & Cronin-Fenton, D.	The study utilized the Danish Breast Cancer Group clinical database to identify women with early breast cancer diagnosed between 1987 and 2004. The focus was on women who survived 10 years without a recurrence or second cancer (10-year disease-free survivors). The researchers followed these women from 10 years after their breast cancer diagnosis until late recurrence, death, emigration, second cancer, or December 31, 2018. Incidence rates per 1000 person-years and cumulative incidences for late breast cancer recurrence (BCR) were calculated, stratified by patient and tumor characteristics. Cox regression was used to calculate adjusted hazard ratios for late BCR, accounting for competing risks.	- Among 36,924 women with breast cancer, 20,315 became 10-year disease-free survivors. - Of these, 2,595 developed late BCR, with an incidence rate of 15.53 per 1000 person-years (95% confidence interval: 14.94 to 16.14) and a cumulative incidence of 16.6% (95% confidence interval: 15.8% to 17.5%) from year 10 to 32 after primary diagnosis. - Tumor size larger than 20 mm, lymph node-positive disease, and estrogen receptor-positive tumors were associated with increased cumulative incidences and hazards for late BCR.	Recurrences continued to occur up to 32 years after the primary diagnosis. Women with high lymph node burden, large tumor size, and estrogen receptor-positive tumors had an increased risk of late recurrence. These patients may warrant extended surveillance, more aggressive treatment, or new therapy approaches

Breast Cancer Prevention and Treatment	Thorat MA, Balasubramanian R. (2020)	The study conducted a hand-coded content analysis on 797 Pinterest posts ("pins") mentioning the terms "breast cancer" or "breast" and "cancer," collected in November 2018. The analysis aimed to quantify and describe the incidence of misinformation about breast cancer on the social media platform Pinterest, which is a leading source of women's health information.	Out of the original sample of 797 posts, 178 (22.3%) made a factual claim about what social media users could do to prevent or treat breast cancer. Among these, more than half—91 posts (51.1%)—contained misinformation. Therefore, 11.4% of the overall sample contained misinformation related to breast cancer prevention or treatment.	The study concluded that the planned demonstration programme on self-breast examination was effective in improving both the knowledge and practice of self-breast examination among rural women in the selected area of Mysuru. This underscores the importance of such educational interventions in promoting early detection and prevention of breast cancer. The study highlights the prevalence of misinformation about breast cancer on social media platforms like Pinterest. It underscores the need for accurate and reliable information to be disseminated to the public to prevent the spread of false claims and ensure that individuals have access to trustworthy health information.
Breast Cancer Prevention (IBIS-II): Long-Term Results of a Randomised Controlled Trial	Cuzick, J., Sestak, I., Forbes, J. F., Dowsett, M., Cawthorn, S., Mansel, R. E., Loibl, S., Bonanni, B., Evans, D. G., Howell, A., & IBIS-II investigators	The IBIS-II study is an international, randomised, double-blind, placebo-controlled trial. Postmenopausal women at increased risk of developing breast cancer were recruited and randomly assigned (1:1) to receive either anastrozole (1 mg per day, oral) or a matching placebo daily for 5 years. After completing the treatment, the women were	- A significant decrease in non-breast cancers was observed for anastrozole (147 cases) compared to the placebo group (200 cases), with an odds ratio of 0.72 (95% CI 0.57-0.91, $p=0.0042$), primarily due to a reduction in non-melanoma skin cancer. - No excess of fractures or	The IBIS-II study demonstrated that anastrozole significantly reduces the incidence of breast cancer in high-risk postmenopausal women without increasing the risk of fractures or cardiovascular disease. The findings support the use of anastrozole as a preventive measure for breast cancer in this population.

		followed on a yearly basis to collect data on breast cancer incidence, death, other cancers, and major adverse events (cardiovascular events and fractures). The primary outcome measured was the incidence of all breast cancers.	cardiovascular disease was observed in the anastrozole group.	
Risk-Reducing Mastectomy for the Prevention of Primary Breast Cancer	Carbine, N. E., Lostumbo, L., Wallace, J., & Ko, H.	The study updated a review by searching Cochrane Breast Cancer's Specialized Register, MEDLINE, Embase, and the WHO International Clinical Trials Registry Platform (ICTRP) on 9 July 2016. Only studies in English were included. Due to heterogeneity in study designs and insufficient reporting, a quantitative meta-analysis was not feasible. All 61 included studies were observational, and no randomized trials were present. The studies presented data on 15,077 women with various risk factors for breast cancer who underwent risk-reducing mastectomy (RRM).	• All 61 included studies were observational and had some methodological limitations. • The studies reported on 15,077 women with diverse risk factors for breast cancer who underwent RRM. • Twenty-one studies on bilateral risk-reducing mastectomy (BRRM) reported reductions in breast cancer incidence or disease-specific mortality, particularly for women with BRCA1/2 mutations. • Twenty-six studies on contralateral risk-reducing mastectomy (CRRM) consistently reported	The study found that RRM, particularly BRRM, is associated with reduced breast cancer incidence and disease-specific mortality for women with BRCA1/2 mutations. CRRM reduces the incidence of contralateral breast cancer, though its impact on disease-specific survival is less clear. Despite the observational nature of the studies and the absence of randomized trials, the findings support the consideration of RRM for high-risk women as a preventive strategy.

			reductions in the incidence of contralateral breast cancer but had inconsistent findings regarding improvements in disease-specific survival.	
Women's Knowledge, Attitudes, and Practices about Breast Cancer in a Rural District of Central India	Gangane, N., Ng, N., & Sebastian, M. S.	The study combines findings from two cross-sectional studies conducted in the predominantly rural district of Wardha. The first study was a population-based cross-sectional survey of 1000 women, utilizing face-to-face interviews with a questionnaire covering demographic and socio-economic aspects related to breast cancer. The second study was a patient-based cross-sectional study involving 212 breast cancer patients. Data on patient delay were collected from all 212 patients, while data on system delay, quality of life, and self-efficacy were collected from 208 female breast cancer patients due to incomplete information from 4 patients.	• One third of the respondents had not heard about breast cancer. • Over 90% of women from both rural and semi-urban areas were unaware of breast self-examination. • Patient delay of more than 3 months was observed in almost half of the participants. • System delay of more than 12 weeks was seen in 23% of the breast cancer patients.	The study highlights the significant gaps in knowledge, attitudes, and practices regarding breast cancer among women in the rural district of Wardha. The high levels of patient and system delays underscore the urgent need for improved breast cancer awareness, education, and healthcare services in rural and semi-urban areas.

Effectiveness of Self-Instructional Module on Awareness on Screening Regarding Breast Cancer with Intelligent Breast Examination Among Primary Schoolteachers in Karad	Walvekar, S. S., Mohite, V. R., Mohite, R. V., & Kakade, S. V.	The study employed an evaluative research approach and utilized a pre-experimental research design. The sample consisted of 60 primary schoolteachers, selected using random sampling (for schools) and purposive sampling (for study participants). Data were collected in two phases (pre- and post-intervention) using a structured questionnaire, followed by the administration of a Self-Instructional Module.	The results indicated a significant increase in mean knowledge scores regarding awareness on screening of breast cancer with Intelligent Breast Examination (IBE). The mean pre-intervention score was 11.16 (SD = 2.631), which increased to a mean post-intervention score of 21.2 (SD = 1.842). The calculated paired t-value (23.902) was greater than the table value ($t = 1.67$) at the 0.05 level of significance.	The study concluded that the Self-Instructional Module was effective in significantly increasing awareness and knowledge regarding breast cancer screening with Intelligent Breast Examination among primary schoolteachers in Karad. This highlights the potential of educational interventions in promoting breast cancer awareness and early detection practices.
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VI. CONCLUSION:

Early detection and preventive strategies are crucial in reducing breast cancer mortality. Education and self-exams raise awareness and help women identify abnormalities early. Significant gaps in awareness, particularly in rural areas, highlight the need for community interventions.

Lifestyle changes, such as a healthy diet and regular exercise, are vital in reducing breast cancer risk. Dietary supplements offer insights but should be used cautiously under professional guidance. Community interventions effectively increase awareness and screening rates, fostering a supportive health environment.

Addressing disparities between urban and rural areas requires tailored strategies. A holistic approach, combining education, lifestyle changes, and dietary measures, provides a robust framework for breast cancer prevention. Future research should focus on evaluating the long-term effectiveness of these preventive measures.

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