e- ISSN – 3117-3527
Print ISSN - 3117-3519

International Journal of Obstetrics and Gynaecology Nursing

IJOGN

Journal homepage: www.mcmed.us/journal/ijogn

EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING BREAST SELF-EXAMINATION AMONG SCHOOL TEACHERS IN TIRUTTANI: A PRE-EXPERIMENTAL STUDY

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Article Info

Received 22/02/2026; Revised 16/03/2026; Accepted 10/04/2026

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Abstract

Background: Breast cancer is the most prevalent cancer among women globally and in India. Breast Self-Examination (BSE) is a cost-effective, non-invasive early detection strategy. Despite its clinical importance, knowledge and practice of BSE remain inadequate among women, including educated professionals. School teachers, as community role models, represent a high-impact target group for structured health education. **Objectives:** To assess pre-test and post-test levels of knowledge regarding BSE among school teachers; to evaluate the effectiveness of a Structured Teaching Programme (STP); and to associate post-test knowledge with selected demographic variables. **Methods:** A quantitative, pre-experimental one-group pre-test–post-test design was adopted. A purposive sample of 45 female school teachers from GRT Mahalakshmi Vidyalaya, Tiruttani, Tiruvallur District, Tamil Nadu, was selected. Data were collected using a validated, self-administered structured knowledge questionnaire (20 items). The STP, delivered as a PowerPoint presentation (PPT) with live BSE demonstration, was administered for approximately 10 minutes, followed by post-test assessment after one hour. **Results:** Pre-test mean score was 14.73 ± 3.24, which improved significantly to 17.98 ± 2.09 post-intervention (mean difference = 3.25, 22.06% gain). Paired t-test yielded $t = -5.66$ ($df = 44$, $p < 0.001$), confirming high statistical significance. Participants achieving 'Excellent' knowledge increased from 17.8% to 68.9%, while the 'Poor' knowledge category was completely eliminated post-intervention. Chi-square analysis showed no statistically significant association between post-test knowledge and any of the ten demographic variables ($p > 0.05$), indicating uniform effectiveness across all subgroups. **Conclusion:** The STP was highly effective in enhancing BSE knowledge among school teachers regardless of demographic background. A single structured educational session can yield clinically and statistically significant knowledge improvement. Scale-up of such interventions is recommended for community-level breast cancer awareness programmes.

Keywords: Breast Self-Examination, Structured Teaching Programme, Breast Cancer Awareness, Nursing Education, Pre-experimental Study, School Teachers, UGC.

INTRODUCTION

Breast cancer is one of the leading causes of cancer-related morbidity and mortality among women worldwide. It occurs due to the uncontrolled growth of abnormal cells in the breast tissue, most commonly arising from the ducts or lobules. Breast cancer has become a major public health concern because of its increasing

incidence and the significant impact it has on women's health, families, and healthcare systems. Early detection and timely treatment play a crucial role in improving survival rates and reducing mortality associated with breast cancer.

Globally, breast cancer is the most commonly diagnosed cancer among women. According to the World Health Organization, approximately 2.3 million women were diagnosed with breast cancer in 2022, accounting for about 11.7% of all new cancer cases worldwide, and nearly 670,000 women died from the disease in the same year. These statistics highlight the growing burden of breast cancer across both developed and developing countries (1).

The incidence of breast cancer is also increasing rapidly in low- and middle-income countries due to factors such as urbanization, lifestyle changes, delayed childbearing, reduced breastfeeding, and increasing life expectancy. According to the International Agency for Research on Cancer, the global number of breast cancer cases is projected to rise to more than 3 million new cases annually by 2040, indicating a significant future burden on healthcare systems (2).

In India, breast cancer has emerged as the most common cancer among women. The Global Cancer Observatory (GLOBOCAN) reported that in 2020 there were approximately 178,000 new breast cancer cases and about 90,000 deaths in India, making it the leading cause of cancer-related deaths among Indian women (3). Studies also indicate that one in 28 women in India is likely to develop breast cancer during her lifetime, with higher incidence reported in urban areas compared to rural populations (4).

A study by World Health Organization (2023) emphasizes that early detection strategies, including awareness and screening, significantly improve breast cancer survival rates, especially in low- and middle-income countries.Early detection of breast cancer significantly improves the chances of successful treatment and survival. Screening methods such as mammography, clinical breast examination, and Breast Self-Examination (BSE) are important strategies for early identification of breast abnormalities. Among these methods, Breast Self-Examination is a simple, inexpensive, and non-invasive technique that women can perform themselves to detect any unusual lumps or changes in the breast. Regular practice of BSE increases breast awareness and encourages women to seek medical attention at an early stage if abnormalities are detected.

Breast Self-Examination is particularly important in developing countries where access to advanced screening techniques such as mammography may be limited. Health education and awareness programs emphasizing BSE can play a significant role in promoting early detection of breast cancer and reducing mortality. However, despite the importance of BSE, many women lack adequate knowledge and awareness about the correct method and frequency of performing breast self-examination.

Kandasamy et al. (2024) conducted a web-based cross-sectional study among women and found that 77.6% had poor knowledge and 94% had poor practice of BSE**.** The study emphasized that lack of awareness, limited education, and inadequate health information source**s** contributed significantly to poor BSE practices.. Therefore, assessing women's knowledge regarding breast self-examination is essential to identify gaps in awareness and to develop effective educational interventions that can improve breast health practices. In this context, the present study aims to assess the knowledge on Breast Self-Examination among women, which may contribute to early detection and prevention of breast cancer.

OBJECTIVES

1.To assess the Pretest and Post Test level of Knowledge regarding Breast Self-Examination among the School Teachers in selected school Tiruttani

2, To assess the effectiveness, od Structured Teaching Programme regarding Breast Self-Examination among the School Teachers in selected school Tiruttani

3. To associate the Post Test level of Knowledge on Breast Self-Examination with their selected Demographic Variables

Research Hypothesis

H1: There is a significant difference in pre-test and post-test knowledge scores regarding BSE among school teachers

H2:There is a significant association between the level of knowledge regarding Breast Self-Examination and their selected demographic variables.

RESEARCH METHODOLOGY

Research Design

A quantitative approach with a pre-experimental one-group pre-test–post-test design was employed. This design is appropriate to evaluate knowledge change attributable to a single educational intervention when a control group is not feasible.

Setting and Population

The study was conducted at GRT Mahalakshmi Vidyalaya, a CBSE-affiliated co-educational senior secondary school located in Tiruttani, Tiruvallur District, Tamil Nadu, India. The target population comprised all female school teachers at Tiruttani; the accessible population consisted of all female teachers employed at the study institution.

Sample and Sampling Technique

A purposive (non-probability convenient) sampling technique was used to recruit 45 female school teachers who satisfied the inclusion criteria. Inclusion criteria: female school teachers who could read and write in English. Exclusion criteria: teachers absent on the day of data collection.

Data Collection Tool and Procedure

A validated, self-administered structured knowledge questionnaire comprising 20 items was used for both pre-test and post-test assessment. The STP was administered as a PowerPoint presentation supplemented by live BSE demonstration for approximately 10 minutes. Post-test was conducted one hour after the intervention to allow for immediate knowledge consolidation. Data collection required approximately 20 minutes per session.

Variables

The independent variable was the Structured Teaching Programme (STP/PPT presentation with live demonstration). The dependent variable was the level of knowledge regarding BSE, operationalised through the structured knowledge questionnaire (maximum score: 20).

Statistical Analysis

Descriptive statistics (frequency, percentage, mean, standard deviation) were computed for all variables. Inferential statistics included the paired t-test to evaluate pre-test–post-test differences in knowledge scores, and chi-square test to examine associations between post-test knowledge levels and demographic variables. The level of significance was set at $p < 0.05$. All analyses were performed using standard statistical software.

Ethical Considerations

Institutional ethical clearance was obtained prior to data collection. Written informed consent was secured from all participants. Confidentiality of data was maintained, and participation was entirely voluntary.

DATA ANALYSIS AND INTERPRETATION

This chapter deals with analysis and interpretation of the data collected from 45 teachers. The data was organized, tabulated and analyzed according to the objectives. The findings are presented under the following sections.

ORGANIZATION OF THE DATA

SECTION A: Description of the demographic variables of the teachers.

SECTION B: Assessment of level of knowledge regarding Breast self-examination for teachers

SECTION C: Effectiveness of Structured Teaching Programme on knowledge regarding Breast self-examination for teachers.

SECTION D: Association of level of knowledge regarding Breast self-examination among teacher with selected demographic variables.

SECTION A: DESCRIPTION OF THE DEMOGRAPHIC VARIABLES OF THE TEACHERS.

Table 1: Frequency and percentage distribution of demographic variables of the teachers.

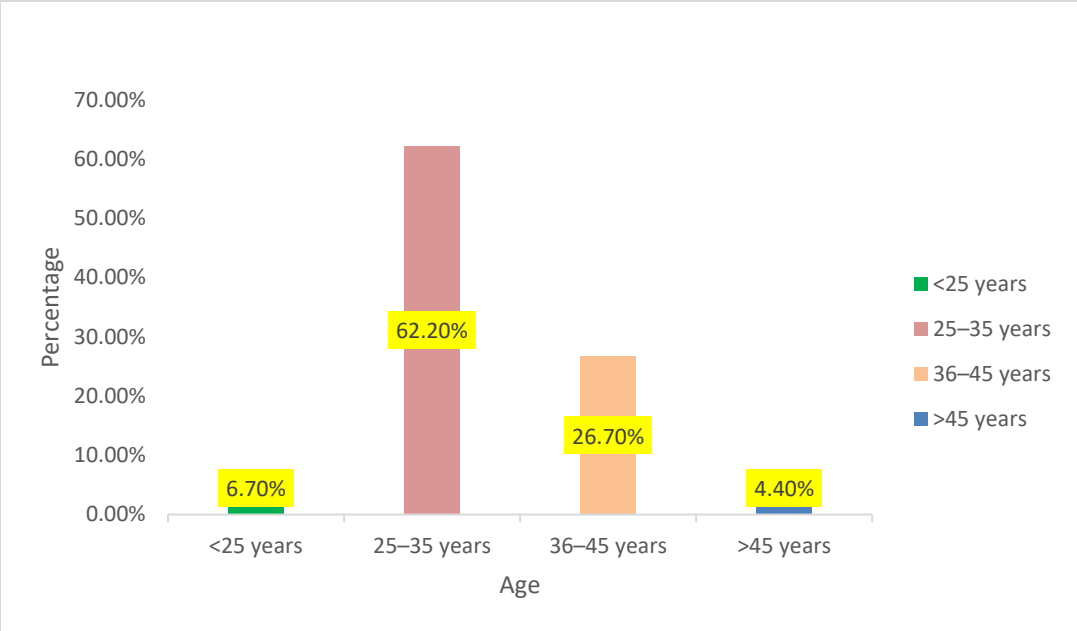
n = 45

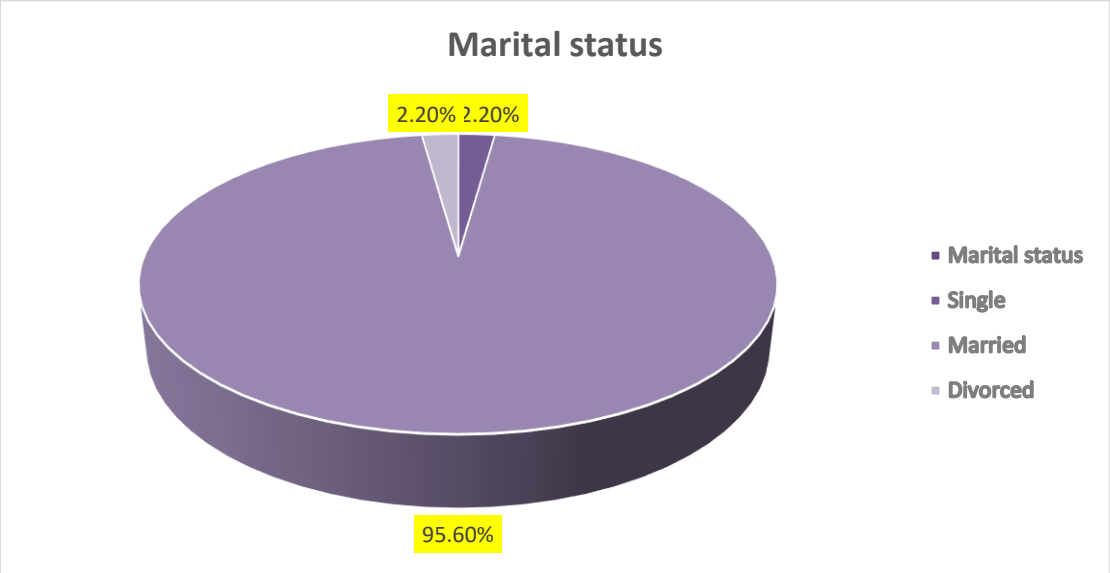
Demographic Variables	Frequency (f)	Percentage %)
Age in years		
<25 years	3	7%
25–35 years	28	62%
36–45 years	12	27%
>45 years	2	4%
Marital status		
Single	1	2%
Married	43	96%
Divorced	1	2%
Education		
UG	2	4%
PG	17	38%
M.Phil/PhD	24	54%

Demographic Variables	Frequency (f)	Percentage %)
Other	2	4%
Teaching Experience		
<5 Years	8	18%
5-10Years	18	40%
11-20Years	13	29%
>20Years	6	13%
Monthly income		
<15,000	5	11%
15,000–30,000	30	67%
30,001–45,000	4	9%
>45,000	6	13%
Religion		
Hindu	35	78%
Christian	10	22%
Area of residence		
Urban	13	29%
Rural	18	40%
Semi urban	12	27%
Semi-rural	2	4%
Family History of BC		
Yes	4	9%
No	41	91%
Previous knowledge of BC		
Yes	10	22%
No	35	78%
If yes, source		
TV/Radio	1	10%
Health Professionals	6	60%
Internet	1	10%
Books/Pamphlets	2	20%

The table 1 shows that the majority of the participants were in the age group of 25–35 years (62%), married (96%), and held M.Phil / PhD qualifications (54%). Most had 5–10 years of teaching experience (40%), the predominant income group was INR 15,000–30,000 per month (66.7%), belonged to the Hindu religion (78%), and resided in rural areas (40%). A large proportion had no family history of breast cancer (91%) and previous knowledge of breast cancer (100%). Health professionals were the most common source of prior information (60%).

Age distribution of teachers





SECTION B: ASSESSMENT OF LEVEL OF KNOWLEDGE REGARDING BREAST SELF EXAMINATION AMONG TEACHERS

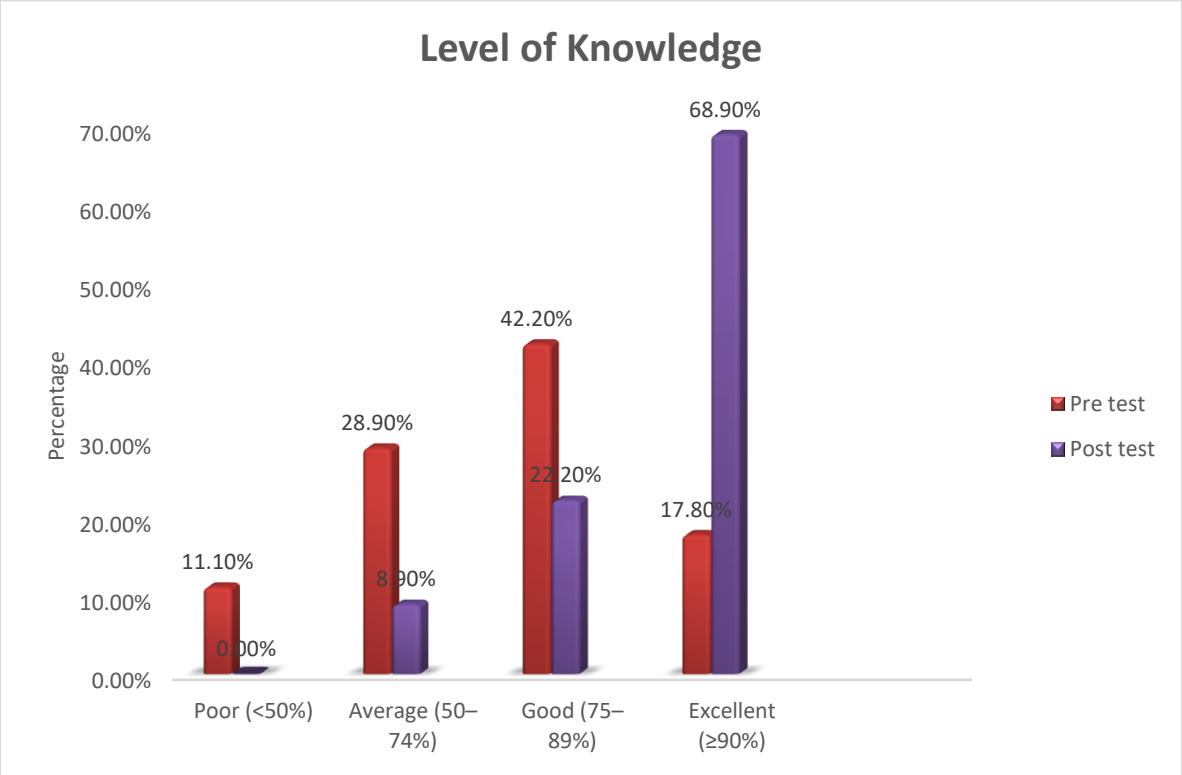
Table 2: Frequency and percentage distribution of pretest and post test level of knowledge regarding breast self-examination among teachers.
n = 50

Level of Knowledge	Pretest		Post Test	
	F	%	F	%
Poor (<50%)	5	11.1%	0	0.0%

Average (50–74%)	13	28.9%	4	8.9%
Good (75–89%)	19	42.2%	10	22.2%
Excellent (≥90%)	8	17.8%	31	68.9%

Classification: Poor = <50%, Average = 50–74%, Good = 75–89%, Excellent = ≥90% of total score (20 marks).

The above table 2 shows that in the pretest, 19(42.2%) had good knowledge regarding breast self-examination, 13(28.9%) had average knowledge, 8(17.8%) had excellent knowledge and 5(11.1%) had poor knowledge and after the intervention, 31(68.9%) had excellent knowledge, 10(22.2%) had good knowledge and 4(8.9%) had average adequate knowledge regarding breast self-examination among teachers



Percentage distribution of pretest and post test level of knowledge regarding nutritious diet for breast feeding among mothers

SECTION C: EFFECTIVENESS OF ON KNOWLEDGE REGARDING BREAST SELF EXAMINATION AMONG TEACHERS.

Table 3: Effectiveness of Structured Teaching Programme on knowledge regarding breast self-examination among teachers.

N = 45

Knowledge	**Mean**	**S.D**	**Mean Difference & %**	**Paired "t" test & p-value**
Pretest	14.73	3.24	3.25 (22.06%)	**t = -5.66**
Post Test	17.98	2.09		**p=0.0001, S*** **

***p<0.001, S – Significant

The table 3 shows the pre-test mean score was 14.73 (SD = 3.24) and the post-test mean score was 17.98 (SD = 2.09) out of a maximum of 20. The paired t-test yielded t = -5.66 with 44 degrees of freedom and a p-value of less than 0.001. Since the calculated p-value is less than the level of significance (0.05), the null hypothesis is rejected. It is therefore concluded that

the PPT presentation was highly effective in improving the knowledge of teaching faculty regarding breast self-examination. The proportion of participants with excellent knowledge increased significantly from 17.8% (pre-test) to 68.9% (post-test), and no participant remained in the poor knowledge category after the intervention.

SECTION D: ASSOCIATION OF LEVEL OF KNOWLEDGE REGARDING NUTRITIOUS DIET FOR BREAST FEEDING AMONG MOTHERS WITH SELECTED DEMOGRAPHIC VARIABLES.

Table 4: Association of post test level of knowledge regarding nutritious diet for breast feeding among mothers with their selected demographic variables.

Demographic Variables	Moderately Adequate knowledge (8 –14)		Adequate Knowledge (16 – 20)		Chi-Square Test & p-value
	No.	%	No.	%	
Age in years					
<25 years	1	2%	4	9%	x2=1.008 p=0.799 (NS)
25–35 years	2	4%	24	54%	
36–45 years	1	2%	11	25%	
>45 years	0	0	2	4%	
Marital status					x2=6.708 p=0.010 (S*)
UnMarried	2	4%	1	2%	
Married	2	4%	40	90%	
Education					x2=1.628 p=0.653 (NS)
Diploma in education	0	0%	1	2%	
UG	3	7%	13	29%	
PG	2	4%	24	54%	
Other	0	0%	2	4%	
Teaching Experience					
<5 Years	1	2%	9	20%	x2=1.099 p=0.777 (NS)
5-10Years	1	2%	16	36%	
11-20Years	2	4%	12	27%	
>20Years	0	0%	4	9%	
Religion					
Hindu	4	9%	35	78%	x2=0.003 p=0.959 (NS)
Christian	0	0	6	13%	
Muslim	0	0	0	0	
Others	0	0	0	0-	
Area of residence					
Urban	2	4%	15	34%	x2=1.420 p=0.492 (NS)
Rural	0	0	11	24%	
Semi urban	2	4%	15	34%	
Monthly income					
<20,000	0	0%	5	11%	x2=2.422 p=0.490 (NS)
20,000–40,000	4	9%	25	56%	
40,00–60,000	0	0%	4	9%	

Demographic Variables	Moderately Adequate knowledge (8 –14)		Adequate Knowledge (16 – 20)		Chi-Square Test & p-value
	No.	%	No.	%	
>60,000	0	0%	7	15%	
Family History of Breast Cancer					x2=0.000 p=1.000 (NS)
Yes	0	0	2	4%	
No	4	9%	39	87%	
Previous Information about Breast self- examination					x2=0.240 p=0.624 (NS)
Yes	0	0%	10	22%	
No	4	9%	31	69%	
If yes, source					x2=10.000 p=0.019 (S*)
TV/Radio	1	10%	0	0%	
Health Professionals	0	0%	6	60%	
Internet	1	10%	0	0%	
Books/Pamphlets	0	0%	2	20%	

*p<0.05, S – Significant, N.S – Not Significant

The table 4 shows that none of the selected demographic variables — age, educational qualification, teaching experience, religion, area of residence, monthly income, family history of breast cancer and previous knowledge of breast cancer showed a not statistically significant association with post-test knowledge levels ($p > 0.05$ for this variables). The marital status and sources of information showed significant association with posttest knowledge levels ($p > 0.05$ for tis variables) This indicates that the structure teaching program presentation was uniformly effective across all demographic subgroups. The variable with the highest chi-square value was Sources of Information ($\chi^2 = 6.517$, df = 3, $p = 0.089$), which approached but did not reach statistical significance, possibly due to the limited sample size.

DISCUSSION

The present study demonstrates that a single, well-structured STP delivered through PowerPoint presentation and live demonstration significantly improved BSE knowledge among school teachers. The mean knowledge gain of 3.25 marks (22.06%) and complete elimination of the 'Poor' knowledge category are clinically and statistically meaningful outcomes.

These findings align with the broader literature on structured health education. PowerPoint-based presentations are recognised as effective pedagogical tools that engage both auditory and visual learning channels, facilitating schema formation and information retention. The intervention design—progressing from anatomical awareness through to BSE technique—is consistent with Knowles' model of andragogy, which emphasises structured, goal-directed, immediately applicable knowledge for adult learners.

The demographic profile of the study population—predominantly 25–35-year-old, married, postgraduate-educated, rural-residing women—reflects a group where domain-specific health knowledge cannot be assumed from general academic attainment. This underscores the necessity of targeted health education even in educated cohorts, and validates the inclusion of health-specific training in professional development frameworks for teachers.

The uniform effectiveness across all demographic subgroups, as evidenced by non-significant chi-square values, suggests that the STP is equitable and does not differentially benefit any particular subgroup. This is a crucial attribute for public health interventions intended for community-level scale-up. The slight trend toward significance for Sources of Information ($p = 0.089$) warrants further investigation in studies with larger sample sizes.

Limitations of this study include the pre-experimental design without a control group, which precludes attributing knowledge change solely to the STP; the use of non-probability sampling limiting generalisability; the small sample size; and the absence of long-term follow-up to assess knowledge retention and behavioural change.

CONCLUSION

This study confirms that the Structured Teaching

Programme was highly effective in improving BSE knowledge among school teachers, yielding a statistically significant knowledge gain ($t = -5.66$, $p < 0.001$) within a single educational session. The intervention demonstrated uniform effectiveness across all demographic subgroups, supporting its potential as a scalable and equitable public health education strategy. Nursing professionals and health educators are encouraged to adopt and disseminate similar STP models to promote community-level breast cancer awareness and early detection in India

RECOMMENDATIONS

Future studies should (i) adopt randomised controlled trial designs with matched control groups; (ii) expand to larger, multi-site samples for greater generalisability; (iii) incorporate long-term follow-up (3–6 months) to assess knowledge retention and BSE practice behaviour; (iv) utilise multimodal interventions combining STP with peer-led workshops, mobile health platforms, and video-assisted instruction; and (v) conduct comparative studies across urban and rural populations and between genders to identify differential educational needs.

IMPLICATIONS FOR NURSING PRACTICE AND EDUCATION

Nursing Practice

Community health nurses should develop and deploy structured BSE awareness programmes targeting women in educational and occupational settings. Findings can inform the design of health education packages for broader community outreach by nursing personnel.

Nursing Education

BSE and breast health content should be strengthened in undergraduate and postgraduate nursing curricula. Nurse educators should integrate evidence-based STP models into both classroom teaching and community placements, equipping nursing students with the tools to function as effective health educators.

Nursing Administration

Nurse administrators should institutionalise periodic in-service education programmes on breast health for healthcare staff and community members. Collaborative partnerships with schools and employers should be pursued to reach women in occupational settings.

Nursing Research

Research findings should be widely disseminated through peer-reviewed publications, conferences, and seminars. Future research should develop and validate culturally adapted BSE educational tools and evaluate the impact of nursing-led community interventions on breast cancer detection rates at the population level.

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