

A Pre-Experimental Study to Evaluate the Effectiveness of a Self-Instructional Module on Knowledge Regarding Breast Self-Examination Among Adolescent Girls in Selected Higher Secondary Schools of Moradabad, Uttar Pradesh

Gaurav Kumar^{1,*}, Nidhi Kumari²

Abstract

Breast cancer remains the most frequently diagnosed cancer among women worldwide and is a major cause of death, with its incidence steadily rising in India. Detecting the disease at an early stage greatly enhances survival rates; however, many cases are identified late due to limited awareness and inadequate access to healthcare resources. Breast self-examination (BSE) is an easy, cost-effective practice that enables women to notice early changes in their breasts. It not only increases awareness but also motivates timely medical consultation and empowers women to take charge of their own health. Introducing BSE education during adolescence can help establish lifelong healthy habits. Despite its benefits, factors such as fear, embarrassment, and insufficient knowledge continue to hinder its consistent practice. The present study aimed to assess the impact of a self-instructional module on adolescents' knowledge of BSE. A quantitative approach was used, employing a pre-experimental one-group pretest and posttest design. The research was carried out at DSB Inter College, Moradabad, involving 50 adolescent girls aged 16–19 years who were selected through purposive sampling. Data collection was conducted using a structured multiple-choice questionnaire that evaluated three areas: knowledge, comprehension, and application. The results showed that before the intervention, 40 participants (80%) had poor knowledge, 8 (16%) had very poor knowledge, and only 2 (4%) demonstrated an average level of understanding. Following the implementation of the self-instructional module, there was a notable improvement: 36 participants (72%) achieved average knowledge scores, 12 (24%) attained good knowledge, and only 2 (4%) remained in the poor category. These findings indicate that the self-instructional module was effective in significantly enhancing the participants' knowledge of BSE. The study findings showed a significant improvement in adolescent girls' knowledge of BSE after the self-instructional module. Initially, most participants had a poor understanding, which improved to average and good levels after the intervention. This highlights the importance of structured educational strategies in promoting awareness and positive health behaviors. The study concludes that early BSE education can encourage lifelong healthy practices, support early detection of breast cancer, and reduce future health risks among women.

*Author for Correspondence

Gaurav Kumar
E-mail: gauravkumartmu81@gmail.com

¹Associate Professor, Teerthanker Mahaveer College of Nursing, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India

²Student, Department of Nursing, Vivekanand College of Nursing Moradabad, Uttar Pradesh, India

Received Date: April 24, 2026

Accepted Date: April 29, 2026

Published Date: May 08, 2026

Citation: Gaurav Kumar, Nidhi Kumari. A Pre-Experimental Study to Evaluate the Effectiveness of a Self-Instructional Module on Knowledge Regarding Breast Self-Examination Among Adolescent Girls in Selected Higher Secondary Schools of Moradabad, Uttar Pradesh. *International Journal of Oncological Nursing and Practices*. 2026; 4(1): 30–36p.

Keywords: Breast self-examination, adolescent girls, breast cancer awareness, health education, self-instructional module

INTRODUCTION

Breast cancer is the most frequently occurring cancer in women worldwide and remains a major

contributor to cancer-related deaths. Although the incidence is higher in developed countries, developing nations such as India are experiencing a rapid rise in incidence due to increasing life expectancy, urbanization, and lifestyle changes. Globally, earlier estimates have reported approximately 1.45 million cases annually. In India, breast cancer ranks second after cervical cancer, with approximately 115,251 new cases and 53,592 deaths reported in 2008, accounting for 22.2% of new cancer cases and 17.2% of cancer-related deaths among women. The age-adjusted incidence rate stands at 22.9, while the mortality rate is 11.1, and approximately one out of every 26 women is likely to develop breast cancer at some point in their life [1].

Longitudinal studies conducted by the Indian Council of Medical Research have shown that the incidence of breast cancer has nearly doubled in major metropolitan cities, such as Delhi, Mumbai, Chennai, and Bengaluru. National-level projections suggest that breast cancer may soon surpass cervical cancer as the most common cancer affecting women in India. Data from various regions further emphasize its impact, showing considerable levels of illness and death across multiple countries [2].

Timely identification of the disease is essential for better survival. When detected at an early stage, the five-year survival rate can be as high as 85%, whereas it drops to approximately 56% in more advanced stages. In many low- and middle-income countries, delayed diagnosis and restricted access to healthcare services are major factors leading to lower survival rates of these patients [3].

Breast self-examination (BSE) is an easy, affordable, and non-invasive method that supports early detection. It helps women understand the normal appearance and feel of their breasts, making it easier to notice any unusual changes. Studies indicate that nearly 90% of breast cancer cases are first identified by women. Performing BSE regularly, ideally once a month after menstruation, is recommended for more accurate evaluation. Despite its advantages, the practice of BSE remains limited due to barriers such as a lack of knowledge, fear, embarrassment, lack of privacy, and negative attitudes. Promoting awareness and education, particularly among adolescent girls, is essential, as early health education fosters lifelong self-care behaviors and improves participation in preventive practices, such as clinical breast examination and mammography [4].

NEED FOR STUDY

BSE is a simple, safe, and cost-free method that can be performed independently by women with minimal training. It serves as an important tool for the early detection of breast abnormalities, thereby facilitating timely diagnosis and treatment. Along with clinical breast examinations conducted by healthcare professionals, BSE has been widely promoted as a practical screening approach to identify breast cancer at an early stage and reduce associated mortality. Breast cancer continues to be a significant contributor to illness and death among women across the globe, underscoring the need for easily accessible and preventive screening approaches.

Each year, approximately one million new cases are reported worldwide, making it the most frequently diagnosed cancer in women and responsible for nearly 18% of all cancers affecting females. It is estimated that approximately one out of every four cancer cases in women involves breast cancer. More than half of these cases occur in developed countries, although a substantial and increasing proportion is being observed in developing nations. Early detection significantly improves prognosis; therefore, promoting BSE among adolescent girls is essential. Educating young females about BSE can help them develop lifelong health-promoting behaviors and increase awareness of the early signs of breast cancer, ultimately contributing to better health outcomes.

REVIEW OF LITERATURE

A study conducted by Nur Anis Izzati Che Mut and Noor Hidayah Abu Bakar (2019) emphasized that BSE is a vital and simple method for the early detection of breast cancer, encouraging women to take responsibility for monitoring changes in their breasts. The authors highlighted adolescence as an ideal period to introduce and promote BSE practice. This study evaluates the knowledge and awareness

of BSE among secondary school girls in Seremban, Negeri Sembilan. A cross-sectional design was adopted, and 502 students were selected from various secondary schools. Information was collected using a structured, self-administered questionnaire that covered sociodemographic details along with aspects related to breast cancer knowledge and BSE awareness [5–7].

The findings indicated that the mean age of the participants was 14.9 years old. Most of them belonged to the Malay ethnic group (86.5%), and only a small proportion (6.1%) reported a family history of breast cancer. The results also showed that the majority of participants had limited knowledge, with only 9% demonstrating a good understanding, while 91% had poor knowledge of BSE. Furthermore, a significant association was found between the participants' age and their level of knowledge and awareness ($P = 0.014$). The study concluded that the overall awareness and knowledge regarding BSE among secondary school girls was insufficient, indicating a strong need for structured educational interventions to improve understanding and promote early detection practices [8–10].

MATERIALS AND METHODS

Research Design

A quantitative pre-experimental one-group pretest–posttest design was used.

Setting

The study was conducted in a selected higher secondary school in Uttar Pradesh, India.

Sample and Sampling Technique

A total of 50 adolescent girls aged 16–19 years were selected using purposive sampling.

Inclusion Criteria

- Adolescent girls aged 16–19 years
- Willing to participate
- Available during data collection

Tool for Data Collection

A structured questionnaire consisting of 40 multiple-choice questions was used to assess the participants' knowledge.

The reliability of the tool was established ($r = 0.8$), indicating acceptable consistency.

Intervention

A self-instructional module (SIM) was developed and administered, which included the following:

- Basic anatomy of the breast
- Risk factors and symptoms of breast cancer
- Step-by-step procedure of BSE

Data Collection Procedure

- Pretest conducted to assess baseline knowledge
- SIM was administered immediately after the pretest
- Posttest conducted after 7 days

Statistical Analysis

Data was analyzed using:

- Descriptive statistics (mean, standard deviation, percentage)
- Paired t-test to compare pretest and posttest scores
- Chi-square test to determine association with demographic variables

A p -value < 0.05 was considered statistically significant.

RESULTS

Data presented in Table 1 revealed that the majority, 22 (44%) of the subjects were in the age group of 16 and 17 years, followed by 5 (10%) were 18 years, and 1 (2%) was 19 years old. This shows that most of the study subjects were adolescents. The majority belonged to the Hindu religion, 24 (48%), followed by 21 (42%) belonging to the Sikh religion, 5 (10%) were in the Muslim religion, and 0 (0%) in the Christian religion. The majority, 28 (56%), were having a joint family, followed by 21 (42%) were nuclear, and 1 (2%) were having an extended family. Most of the mothers, 23 (46%), had secondary education, followed by 13 (26%) were primary education, 9 (18%) were illiterate, and the remaining 5 (10%) had completed their education till graduation and above. Most of the family, that is 36 (72%), have a family income of 5000–10000, followed by 8 (16%) with 10001–15000, followed by 4 (8%) with a family income of 15001–20000, and only 2 (4%) having their family income of more than 20001. The majority of the adolescent group, 43 (86%), do not attend any educational program related to BSE, while only 7 (14%) attended the program. The majority of the two groups, 18 (36%), get the information through newspapers/magazines and through family/friends, followed by 11 (22%) who have information through health personnel, and only 3 (6%) get information through mass media. The results demonstrated a notable increase in knowledge after the intervention.

Table 1. Frequency and percentage distribution of selected demographic variables of adolescent girls.

Variables	Frequency	(%)
<i>Age (years)</i>		
16	22	44
17	22	44
18	5	10
19	1	2
<i>Religion</i>		
Hindu	24	48
Muslim	5	10
Sikh	21	42
Christian	0	0
<i>Type of family</i>		
Nuclear	21	42
Joint	28	56
Extended	1	2
<i>Educational status of the mother</i>		
Illiterate	9	18
Primary	13	26
Secondary	23	46
Graduation and other	5	10
<i>Socio-economic status</i>		
5000-10000	36	72
10001-15000	8	16
15001-20000	4	8
Above 20001	2	4
<i>Attend any educational program related to breast self-examination (BSE)</i>		
Yes	7	14
No	43	86
<i>Previous source of information</i>		
Newspaper/magazine	18	36
Mass media	3	6
Health personnel	11	22
Family/friends	18	36

Table 2. Comparison of pretest and posttest mean knowledge scores of adolescent girls regarding breast self-examination.

	Knowledge score		t-value
	Pretest	Posttest	
Mean	13.78	27.7	19.49
SD	3.38	3.77	

p-value: < 0.001 (highly significant)

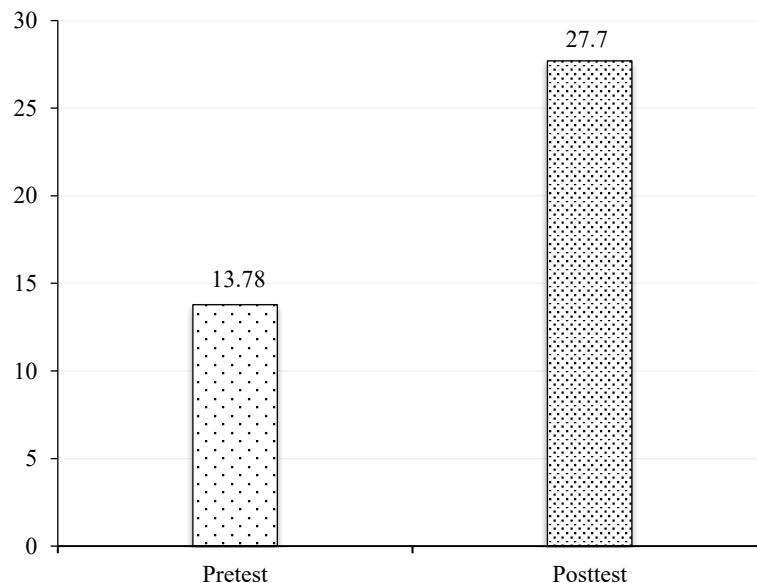


Figure 1. Graph showing comparison of pretest and posttest mean knowledge scores of adolescent girls regarding breast self-examination.

Table 2 and Figure 1 present a comparison of the mean knowledge scores before and after the intervention. The pretest mean score was 13.78 ± 3.38 , which increased to 27.7 ± 3.77 in the posttest. The calculated value, $t(49) = 19.49$ for 50 participants, indicates a highly significant improvement ($p < 0.001$) in the posttest scores. Therefore, Hypothesis 1 (H1) was accepted, confirming a statistically significant difference ($p < 0.001$) in the level of knowledge regarding breast self-examination among adolescent girls before and after the implementation of the SIM.

DISCUSSION

This study evaluated the effectiveness of a SIM in improving knowledge of BSE among adolescent girls. The initial findings indicated that the participants possessed limited knowledge, which can be linked to insufficient exposure to formal health education. Most participants had not previously participated in any educational program on BSE, and their primary sources of information were informal channels such as family members, peers, and printed materials, which may not always provide accurate or complete information.

After the introduction of the SIM, a marked enhancement in knowledge was evident. The average score increased from 13.78 ± 3.38 in the pretest to 27.7 ± 3.77 in the posttest. The calculated t-value of 19.49 was highly significant ($p < 0.001$), indicating that the improvement in the scores was a result of the intervention. These results suggest that the SIM is an effective and feasible approach for improving knowledge of BSE among adolescent girls. The results of this study are in agreement with previous research conducted in 2019, which also reported inadequate baseline knowledge among secondary school girls and highlighted the importance of structured educational interventions.

Furthermore, the findings emphasize that adolescence is a crucial period for introducing preventive health education. Therefore, incorporating self-instructional modules into school-based health programs can play a significant role in increasing awareness, encouraging early detection practices, and fostering long-term healthy behavior among young females.

CONCLUSION

The results of the study clearly demonstrate that the SIM was highly successful in improving adolescent girls' understanding of BSE. A comparison between the pretest and posttest scores demonstrated a statistically significant improvement ($p < 0.001$), confirming that the observed gain in knowledge was the direct result of the educational intervention.

The study further revealed that the initial level of knowledge among participants was insufficient, with most having no prior exposure to formal education related to BSE. This underscores the critical need for organized and structured health education programs in school settings. Following the SIM's administration, participants showed considerable improvement in their understanding of breast anatomy, risk factors, warning signs, and the correct technique for performing BSE.

These results suggest that self-instructional modules serve as practical, economical, and effective educational tools for increasing awareness and encouraging early detection. Integrating such modules into school health services and nursing education programs can significantly contribute to fostering positive health practices from early childhood. In the long term, such initiatives have the potential to promote the timely identification of breast abnormalities and help reduce the overall burden of breast cancer in the community.

RECOMMENDATIONS

Based on the outcomes of the present study, the following recommendations are suggested:

- *Incorporation into school curriculum:* Self-instructional modules on BSE should be formally included in school health education curricula to promote early and systematic awareness among adolescent girls.
- *Periodic health education programs:* Schools should conduct regular awareness sessions, workshops, and seminars focusing on breast health and early detection strategies to reinforce this knowledge.
- *Involvement of healthcare professionals:* Qualified personnel, such as nurses, health educators, and community health workers, should be engaged to provide structured teaching and practical demonstrations.
- *Utilization of audio-visual resources:* Teaching-learning materials, including videos, charts, and informational pamphlets, should be used to enhance comprehension and retention.
- *Family and community participation:* Educational initiatives should involve parents and community members to create a supportive environment for promoting adolescent health.
- *Expansion of research:* Further studies with larger sample sizes and diverse settings are recommended to improve the generalizability of the findings.
- *Follow-up evaluation:* Future research should incorporate long-term follow-up to assess the retention of knowledge and the extent of actual BSE practice.
- *Broader awareness initiatives:* Basic information on breast cancer awareness should be extended to male students to encourage a more inclusive and informed community.
- *Policy-level implementation:* Health authorities should consider integrating breast cancer awareness and BSE education into national adolescent health programs.

REFERENCES

1. Che Mut NAI, Abu Bakar NH, Kamal I, Abdullah Suhaimi SA, Mawaddah Mohammad N, Ahmad R, et al. Knowledge and awareness of breast self-examination among secondary school girls in Seremban, Negeri Sembilan. *Asian Pac J Cancer Care*. 2019;4(2):39–43. doi:10.31557/apjcc.2019.4.2.39-43.

2. Sarker R, Islam MS, Moonajilin MS, Rahman M, Gesesew HA, Ward PR. Effectiveness of educational intervention on breast cancer knowledge and breast self-examination among female university students in Bangladesh: A pre-post quasi-experimental study. *BMC Cancer*. 2022;22(1):199. doi:10.1186/s12885-022-09311-y.
3. Koc G, Gulen-Savas H, Ergol S, Yildirim-Cetinkaya M, Aydin N. Female university students' knowledge and practice of breast self-examination in Turkey. *Niger J Clin Pract*. 2019;22(3):410–415. doi:10.4103/njcp.njcp_341_18.
4. Sachdeva S, Mangalesh S, Dudani S. Knowledge, attitude and practices of breast self-examination amongst Indian women: A Pan-India study. *Asian Pac J Cancer Care*. 2021;6(2):141–147. doi:10.31557/apjcc.2021.6.2.141-147.
5. World Health Organization. (2026). Breast cancer. [online] World Health Organization. Available from: <https://www.who.int/news-room/fact-sheets/detail/breast-cancer>
6. Mathur P, Sathishkumar K, Chaturvedi M, Das P, Sudarshan KL, Santhappan S, et al. Cancer statistics, 2020: Report from National Cancer Registry Programme, India. *JCO Glob Oncol*. 2020;6:1063–1075. doi:10.1200/GO.20.00122.
7. Yerpude PN, Jogdand KS. Knowledge and practice of breast self-examination (BSE) among females in a rural area of South India. *Natl J Community Med*. 2013;4:329–332.
8. Smith RA, Caleffi M, Albert US, Chen THH, Duffy SW, Franceschi D, et al. Breast cancer in limited-resource countries: Early detection and access to care. *Breast J*. 2006;12(Suppl 1):S16–S26. doi:10.1111/j.1075-122X.2006.00200.x.
9. American Cancer Society. *Breast Cancer Facts & Figures 2019–2020*. Atlanta (GA): American Cancer Society; 2019.
10. Islam RM, Bell RJ, Billah B, Hossain MB, Davis SR. Awareness of breast cancer and barriers to breast screening uptake in Bangladesh: A population-based survey. *Maturitas*. 2016;84:68–74. doi:10.1016/j.maturitas.2015.11.002.