

*Full Length Research Paper*

# Knowledge of high school female students about breast self-examination

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It is important for high school female students, to be familiar with their own bodies and regularly examine their own breasts to check for any changes that could potentially be indicative of breast cancer. It is important to educate students about breast self-examination (BSE) as a means of detecting potential breast cancer early. A quasi-experimental pre and post-test design were implemented to evaluate the effectiveness of the educational program on high school female students by comparing the knowledge level obtained before and after the conduction of the educational program. The sociodemographic results of this study found that before conducting the educational program, a large number of participants (76.5%) had poor knowledge about BSE, but after the conduction of the educational program, there was a significant increase in knowledge, with 90.2% showing a positive effect of the program. The test of significance revealed that the increase in BSE knowledge score as a result of the educational program was highly significant ( $P < 0.000$ ).

**Key words:** Breast cancer, breast self-examination, secondary school female students, educational intervention.

## INTRODUCTION

Breast cancer is a type of cancer that affects the cells of the breast. It is the most common cancer among women worldwide and the second most common cause of cancer death in women. The incidence of breast cancer has been increasing in Saudi Arabia in recent years, and it is now the leading cause of cancer deaths among Saudi women. Early detection of breast cancer is important for improving the chances of successful treatment. One way that women can detect potential breast cancer early is by practicing breast self-examination (BSE). BSE is a

technique that involves women regularly examining their own breasts to look for any changes or abnormalities. It is not a substitute for clinical breast exams or mammograms, which should also be a part of a woman's regular health care routine, but it can be an important supplement to these exams (Sadoh et al., 2021). Women who practice BSE become familiar with the normal look and feel of their breasts and are more likely to notice any changes that may occur. Due to the cultural and religious values in Saudi Arabia, many women may feel hesitant or

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uncomfortable about touching or feeling their own breasts, even for medical reasons. As a result, educational program may be more acceptable to receive by high school female students.

It is important for women to discuss any concerns or questions they have about BSE with their healthcare providers and to follow their recommendations for breast cancer screening. By being proactive about their breast health, women can take an important step in detecting potential breast cancer early and improving their chances of successful treatment when they perform BSE regularly. It is easy, safe and convenience technique that can be enhanced by educational program. Alsolami et al. (2019) conduct study in Saudi Arabia to determine risk factors of breast cancer in Saudi women from Makkah emphasizes on the importance of educational program to improve the women knowledge.

Educational program on breast self-examination among high secondary school female students can provide valuable insights into the knowledge, attitudes, and practices related to breast health and breast cancer.

High secondary school female students are at an age where they may be starting to develop breast tissue and become more aware of their bodies. Research studies on BSE can help to provide them with age-specific education and resources to help them understand the importance of breast health and develop good habits around self-examination.

High secondary school female students may not be aware of the risk factors for breast cancer and the importance of regular breast self-examination. By conducting educational program about BSE for high secondary school female students, leads to increase awareness and helps to remove the stigma and fear surrounding breast cancer.

## MATERIALS AND METHODS

Quasi-experimental pre and post-test designs were implemented to collect data from the participants at two different points in time: before and after the educational program. The educational program was implemented in the "Second High School for female students" classroom; the school located is in Sabia province, Jazan Region, Kingdom of Saudi Arabia. The researchers' selected 51 female students from the third grade (final year). This sample was selected conveniently because the students were busy with their regular classes. The plan and schedule of the educational sessions were communicated to the school's principal. The students were invited by the school principal to participate in the educational program. The program was introduced to the students during school-day in the classrooms for two days, two hours per day. Classrooms were used to implement the program with privacy to ensure all participants feel comfortable and valued.

The program includes a PowerPoint presentation, a video presentation, and a Q&A session after the end of presentation. The researchers clarified questions and doubts the students have about breast self-examination. Q&A allows for a deeper level of interaction and understanding between the researchers and the students, and helps to reinforce the key messages of the presentation.

The educational program covered the anatomy of the breast and

how it changes throughout a woman's life, the importance of performing regular self-examinations, what to look for during a self-examination, including signs and symptoms of breast cancer, when to seek medical attention and what to expect during a clinical breast exam or mammogram, and how to reduce the risk of breast cancer through healthy lifestyle choices and regular medical checkups. The participants were taught how to perform self-examination, including the different techniques and positions to use, that women should stand in front of a mirror with their arms by their sides and look for any changes in the shape or contour of their breasts, as well as any swelling or dimpling of the skin. They should also raise their arms above their head and look for any changes in the shape or contour of their breasts. Women should then feel their breasts for any lumps or abnormalities, using a circular motion with the pads of their fingers. They should also feel around the underarms for any lumps or abnormalities (Tuyen et al., 2019)

The researchers used a questionnaire to gather information about the participants' demographic characteristics, previous knowledge about (BSE), sources of information about breast cancer, and knowledge about breast cancer risk factors and symptoms.

The questionnaire was prepared in Arabic to make it simple for high school students to utilize. Closed-end questions were used to collect students' responses, typically in the form of multiple choice, rating scales, and yes/no responses. Closed-end questions gathered quantitative data to measure the knowledge of the students.

The research was carried out in four stages. The first phase comprised the preparation of the questionnaire and educational program covering a wide range of breast cancer-related issues, such as general information, causes, signs and symptoms, risk factors, therapy, consequences, and prevention.

The second phase of the study involved providing the pre-test to the students to assess their knowledge of breast cancer and BSE. The students were informed about the purpose of the study and were given the questionnaire to complete. The participants took an average of 10±3 min to fill the questionnaires. The researchers were available to assist the students if they have question while filling in the questionnaire.

The third phase of the study involved presenting the PowerPoint, video, and a Q&A session for all of the participating students. The students were encouraged to ask questions and give comments. The fourth phase of the study involved administering a post-test to assess the students' knowledge about breast cancer and BSE after the educational program had been completed.

## Ethical approval

The researchers obtained ethical approval from the Science Research Deanery at Jazan University in Saudi Arabia, [Future Researcher 7] Grant number: FS 10-035[. before proceeding with data collection. They also obtained permission from the school authority and ensured that participants were told about the goal of the study and gave oral informed consent to participate. Maintaining the confidentiality of the participants is an important ethical principle in research. The researchers in this study took steps to ensure that the confidentiality of all participants was maintained at all times during the study period. This included measures such as de-identifying the data and securing it in a secure location.

## Statistical analysis

The data sets analyzed using Statistical Package for the Social Sciences (SPSS version 24). The demographic characteristics were summarized and described using descriptive statistics such as frequencies, means, and standard deviations. Paired sample t-

**Table 1.** Respondent's socio-demographic profile.

Characteristic	Group	N	Percentage	Mean	Std. deviation
Age	16	1	2.0	17.6	2.86
	17	9	17.6		
	18	37	72.5		
	19	4	7.8		
Age of menarche (year)	≤11	4	7.8	1.92	0.272
	≥11	47	92.2		
Marital status	Married	2	3.9	1.96	0.186
	Single	49	96.1		
Family history of breast cancer	No	42	82.4	1..29	0.756
	Yes, my family	6	11.8		
	Yes, my friends	3	5.9		

Source: Author.

tests, were used to compare two sets of data (pre-intervention and post-intervention) and to determine whether any observed differences were statistically significant. The questionnaire asks students to rate their knowledge about the effect of risk factors on breast self-examination on a scale of 1 to 3, with 1 being "decrease," with 2, being "no effect," and with 3 being "increase." Each response category assigned "decrease," a value of 1, and "increase," assigned a value of 3. Knowledge about the symptoms of breast self-examination calculated from Yes or No questions. Each response category "No," was assigned a value of 1, and "Yes," assigned a value of 2. The knowledge about BSE and mammographs calculated from "know" or "do not know" questions. Each response category "do not know," was assigned a value of 1, and "Know," assigned a value of 2. Then, the percentage of students who gave each response was calculated and presented in a table. The criteria for Poor knowledge scored between 0-33%, Fair knowledge scored between 34-66%, and Good knowledge as scores between 67-100%, then the percentage of students calculated in each category by dividing the number of respondents who fell into each category by the total number of respondents and multiplied by 100. A significance level of  $p < 0.05$  was used to determine statistical significance, meaning that there was a less than 5% probability that the observed differences were due to chance.

## RESULTS

The findings of the study showed information about socio-demographic characteristics of the participants. The mean age of the participants was 17.6 years and the standard deviation was 2.86, which indicates that the ages of the participants were relatively evenly distributed around the mean.

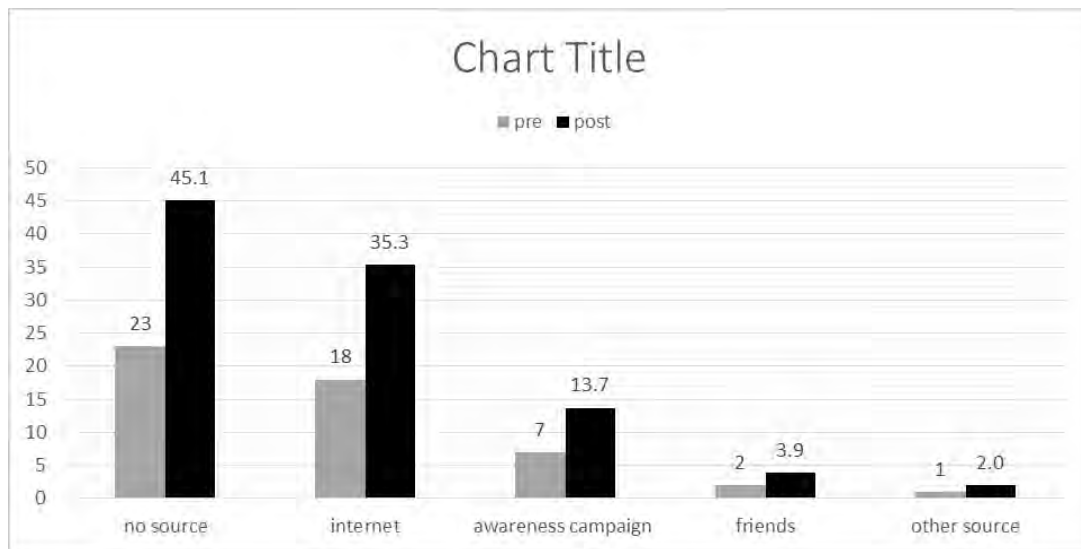
Table 1 show that the majority of the participants had an age of menarche more than 11 years old (92.2%). A small number of participants had an age of menarche less than 11 years old (7.8%). (96.1%) were single and (3.9%) were married. (82.4%) had no family history of

breast cancer or had a family member or friend with breast cancer (11.8 and 5.9%, respectively).

According to the results, the main sources of information about BSE for the participants were the internet (45.18%), books (13.70%), and friends (3.90%). A near to half of participants (45.10%) reported having no sources of information about BSE (Figure 1).

The students' knowledge about breast self-examination improved significantly after the educational program. The participants' good knowledge about breast self-examination increased from 13.7% before conducting the educational program to 90.2% after conducting the educational program. The test statistic ( $t=10.183$ ) and  $p$  value ( $p=0.000$ ) indicate that this difference was statistically significant, implying that it did not happen by chance. This study found that the educational program had a positive impact on the students' knowledge about breast self-examination (Table 2).

In addition, Table 2 shows that a large proportion of the participants (56.9%) had poor knowledge about mammography before the educational program, while after the educational program, the proportion of participants with good knowledge about mammography increased significantly to 72.5%. The mean knowledge score for mammography also increased significantly from pre- to post-intervention. The observed mean knowledge about mammography score was (1.49) and (2.25) pre and post intervention respectively. The  $t$ -statistic for this item was (3.321) with  $p=0.002$ , indicating a statistically significant difference in knowledge level before and after the educational program. These results suggest that the educational program was effective in improving the participants' knowledge about breast self-examination. The increase in knowledge was statistically significant for all of the items assessed in the study. These findings



**Figure 1.** Distribution of responders according to their BSE-related information sources.  
Source: Author

**Table 2.** Distribution of students' breast cancer and breast self-examination knowledge levels before and after the educational intervention.

Knowledge Item Level	(N=51)				Test statistic P value
	Pre		Post		
	N	%	N	%	
<b>Level of knowledge about BSE</b>					
Poor	39	76.5	4	7.8	t=10.183 P=0.000*
Fair	5	9.8	1	2	
Good	7	13.7	46	90.2	
Mean ± SD	2.25±0.977		3.82±0.555		
<b>Knowledge about risk factors</b>					
Poor	32	62.7	5	9.8	t=8.641 P=0.000*
Fair	18	35.3	28	54.9	
Good	1	2	18	35.3	
Mean ± SD	4.4902±1.34020		6.8894±1.44846		
<b>Knowledge about clinical manifestation</b>					
Poor	29	56.9	13	25.5	t=4.484 P=0.000*
Fair	7	13.7	1	2	
Good	15	29.4	37	72.5	
Mean ± SD	0.3990 ±0.38185		0.7342±0.40860		
<b>Level of knowledge about mammograph</b>					
Poor	29	56.9	9	17.6	t=3.321 P=0.002*
Fair	19	37.3	33	64.7	
Good	3	5.9	9	17.6	
Mean ± SD	1.49± 6.12		2.25± 1.508		

\*Significant at P<0.05.

Source: Author

highlight the importance of providing education and resources to promote breast cancer awareness and

encourage the practice of breast self-examination, especially among young women.

It is important to note that the sample size for this study is relatively small ( $n=51$ ) and may not be representative of the larger population.

## DISCUSSION

Students' awareness of breast self-examination increased as a result of the implementation of the educational program (BSE). One study conducted in Saudi Arabia found that a health education program consisting of a lecture, a video presentation, and a demonstration of BSE techniques increased the knowledge and confidence of women in performing BSE (Alomair et al., 2020). This study also found that the program increased the frequency of BSE among the women who participated.

The educational program was an effective means of increasing knowledge of the participants about risk factors of breast cancer. However, it is important to note that BSE is not a substitute for regular mammograms and clinical breast exams, which are considered to be more effective at detecting breast cancer, in addition BSE is consider the first, easy and convenience method to detect breast cancer.

Breast cancer is a serious health concern for women around the world, and it is the most common type of cancer among women in Saudi Arabia (Bashirian et al., 2019). According to the Saudi Cancer Registry, breast cancer accounted for 27.9% of all new cancer cases among women in Saudi Arabia by Al-Zalabani (2018) (Bazarbashi et al., 2017). While, BSE may be useful in helping students and women to be more familiar with their own bodies and to detect breast changes at an early stage. It is important for women in Saudi Arabia to have access to reliable, accurate information about breast cancer and BSE, and for there to be ongoing efforts to raise awareness about the importance of early detection and prevention. The annual national campaign for breast cancer awareness, which was initiated by the Saudi MOH in 2015 as a promotion to raise awareness about early screening and detection for breast cancer definitely (Kissal and Kartal, 2019).

This study showed that about half of the participants (43%) did not have knowledge about BSE, suggesting that there may be a need for more education and awareness about this topic. This may be especially important in light of the high incidence of breast cancer in Saudi Arabia and the importance of early detection in the treatment of this disease; a similar study (Gosadi, 2019) showed that 43.3% of students had not heard about it before (Gursoy et al., 2009).

## Conclusion

In conclusion, this study demonstrated that the educational intervention program was effective in improving the knowledge of female high school students

in Sabia about breast cancer and breast self-examination. The students' knowledge about risk factors, clinical manifestation, and mammography also improved significantly after the educational intervention. These findings highlight the importance of implementing educational programs about breast cancer and breast self-examination in schools to increase awareness and improve knowledge about these topics among young people. It is also important to continue to educate and raise awareness about breast cancer and breast self-examination among the general population to encourage early detection and improve outcomes for those affected by this disease.

It is also recommended that further research be conducted on a larger scale, with a diverse sample and in different settings, to confirm the effectiveness of educational interventions in improving knowledge about breast cancer and BSE.

It is also important to assess the long-term impact of such interventions on the behavior and practices of individuals with regard to breast cancer screening. Additionally, it would be useful to explore the factors that influence the uptake of breast cancer screening and to identify any barriers to the adoption of healthy behaviors related to breast cancer prevention.

## CONFLICTING INTERESTS

The authors have not declared any conflict of interests.

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