

## Effectiveness of health education Breast Self Examination (BSE) on knowledge of breast cancer prevention

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### ABSTRACT

Breast cancer remains a health issue among women of reproductive age. There is breast self-examination (BSE) to prevent breast cancer. This study aimed to examine the effectiveness of health education using a leaflet about BSE. This study was supported by Senior high school number 2 Langowan. The study sample was 30 students from ages 14 to 16 years old in grades X and XI. The knowledge in this study was categorized as good and not. The result revealed increasing students with good knowledge from 73.3 to 90.0. Using paired t-tests this study revealed the effectiveness of health education using leaflets to improve BSE knowledge. There is a need for collaboration among stakeholders to emphasize this issue.

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## INTRODUCTION

Breast self-examination (BSE) is a method that can aid in the early detection of breast abnormalities and potential breast cancer (Mihret et al., 2021). Studies have indicated that the prevalence of BSE practice varies among different populations, with some groups demonstrating low compliance with recommended screening guidelines (Bourdeanu et al., 2020). Enhancing education and encouraging breast examination by healthcare professionals are crucial strategies to increase the proportion of women engaging in BSE (Mohammed et al., 2020). Factors such as knowledge, attitude, and perceived benefits significantly influence individuals' likelihood of practicing BSE (Usman et al., 2020). Educational programs and interventions have been recommended to enhance knowledge and awareness of routine BSE, particularly in settings where access to clinical breast examinations and mammography is limited (Kothiyal et al., 2023; Yeshitila et al., 2021). Additionally, the use of mobile text messaging has been proven effective in increasing knowledge about breast cancer and BSE among women (Labrague et al., 2020). Tailored interventions, such as psychotherapeutic approaches based on the Health Belief Model, have been shown to improve perceptions of disease severity and the benefits of BSE, leading to increased practice of BSE (Ștefănuț & Vintila, 2022). Moreover, educational initiatives, including training videos and

demonstrations, have positively influenced BSE knowledge and practice among diverse populations (Çelik & Çalim, 2023; Rachna, 2021).

To enhance breast cancer knowledge and promote breast self-examination (BSE), various educational interventions have been explored. Studies have emphasized the importance of raising awareness and educating women on the significance of BSE as a preventive measure for breast cancer (Dadzi & Adam, 2019). Healthcare providers play a crucial role in instructing women on the correct method of performing BSE, thereby improving their ability to detect abnormalities and report them promptly (Alshahrani et al., 2018). Additionally, educational interventions targeting female university students have demonstrated the potential to increase breast cancer awareness and BSE practices (Sarker et al., 2022). Peer education has been recognized as an effective strategy for increasing awareness about breast cancer and BSE among female adolescents (Sadoh et al., 2021). Furthermore, interventions based on the Health Belief Model have proven successful in enhancing health beliefs and BSE practices among nursing students (Kissal, 2019). Tailored educational programs for specific populations, such as high school students in Ghana, have been effective in enhancing knowledge and awareness of breast cancer and BSE (Nsaful et al., 2022). Studies on factors influencing BSE behavior in young women have underscored the importance of enhancing knowledge and encouraging regular BSE practices (Patui et al., 2023). Self-instruction modules and structured teaching programs have been shown to significantly improve knowledge and attitudes towards breast cancer and its prevention among adolescents (Japannavar & Vijaykumar, 2023). In Indonesia's context, some studies with similar topics have been done in another setting (Angrainy, 2017; Jaya & Rusman, 2020; Ningsih et al., 2020; Pratiwi et al., 2018; Suastina et al., 2013; Wijayanti et al., 2020), but there is no study in North Langowan.

There are limited studies that have been done before to educate on the importance of breast self-examination (BSE). This study can contribute to the policymaker's consideration of the program of breast self-examination in primary health care and school. Moreover, the prevalence of breast cancer is increasing so it is urgent to force the government to arrange the prevention program at an early age. Since several tools could be effective in improving BSE, this study aimed to examine the effectiveness of health education using leaflets to improve BSE knowledge and breast cancer prevention.

## RESEARCH METHOD

This study is quasi-experimental using pre and post-tests employed by one group. Within the test, there is given intervention which is health education. This study was done in Senior High School Number 2 Langowan, in North Langowan sub-district, Minahasa District, North Sulawesi Province. The data was collected from August 2023 to September 2023. The population in this study was students in grades X and XI with a total of 30 students. From all populations, it was used Federer formula to retrieve the sample size. The total sample size was 30 students. Within those, there are inclusion criteria including respondents who were willing to participate by signing the informed consent and want to follow the intervention which is health education for breast self-checking. Then, the exclusion criteria included those who did not present at the survey date.

The tools of this study are a questionnaire and a leaflet. The questionnaire in this study was adopted and modified from the previous study (Saragih, 2020). The scale used is Guttman with true (score 2) and false (score 1). The category of good is for those who had scores 14 to 26 and not good who had scores 1 to 13. Another tool used in this study is a leaflet to educate and inform about breast self-checking. The health education consists of several pieces of information about *SADARI/Periksa Payudara Sendiri* or breast self-checking including the definition of SADARI, the purpose of SADARI, the benefits of SADARI, and the technique of SADARI.

The independent variable in this study is intervention by giving health education through leaflets. The dependent variable in this study is knowledge about breast self-examination which consists of breast cancer prevention and breast health. This study tested for univariate which

presented in frequency and percentage and bivariate which used paired t-tests. A confidence interval of 95% was used as the cut-off of the significance level. This survey guarantees the anonymity of the study sample. The data collection was under the permission of number 0394/FK/UNPI-M/IP/VIII/2023 and 4.237304/SMA.N.2.Lgn/XI-2023.

## RESULTS AND DISCUSSIONS

The results in this study will be divided into sample characteristics, normality tests, and bivariate analysis. Table 1 below describes the general characteristics of the sample. According to their age, the highest percentage was students aged 15 years old (46.7%) and at grade XI (80%).

**Table 1.** General characteristics of the study sample

Characteristics	Frequency	Percentage
Age (years old)		
14	5	16.7
15	14	46.7
16	11	36.6
Grade		
X	6	20.0
XI	24	80.0
Knowledge before intervention		
Good	22	73.3
Not good	8	26.7
Mean = 1.73		
Standard deviation = 450		
Knowledge after intervention		
Good	27	90.0
Not good	3	10.0
Mean = 1.90		
Standard deviation = 305		
Total	30	100.0

The normality test in this study was a preliminary test before conducting bivariate analysis. It was done using Shapiro-Wilk because the study sample was less than 50. The result came out with a p-value of 0.000 for both before and after giving health education. As a result, the data was revealed as normal and the paired t-test is the fittest statistical test for this study.

**Table 2.** The normality test result of effectiveness of health education of breast self-checking

Variables	Shapiro wilk (p-value)
Knowledge before giving health education	0.000
Knowledge after giving health education	0.000

Table 3 below shows the bivariate analysis using a paired t-test which revealed the significant correlation between health education related to breast self-examination and knowledge about breast self-examination.

**Table 3.** The impact of health education on knowledge related to breast self-checking

Variables	Mean	Std. deviation	95% CI	p-value
Knowledge of breast self-checking before and after giving health education	0.167	0.379	0.308 - 0.025	0.023

The findings in this study can be concluded that health education using leaflets effectively improves the knowledge about breast self-examination among students in Senior High School Number 2 Langowan.

Previous studies in Klaten, Parepare, and Manado with similar topics to this study found the effectiveness of health education on breast self-examination revealed the characteristic of age, grade, and level of knowledge (Angrainy, 2017; Jaya & Rusman, 2020; Ningsih et al., 2020; Pratiwi et al., 2018; Suastina et al., 2013; Wijayanti et al., 2020). However, this study focused on the leaflet as a tool of health education, that different from the study in Klaten that used video (Wijayanti et al., 2020).

Breast self-examination (BSE) is a valuable tool for detecting breast abnormalities, particularly in settings with limited access to clinical examinations and mammography. Studies in Ethiopia have emphasized the importance of BSE among female healthcare workers and undergraduate students, highlighting the role of awareness and knowledge in promoting regular self-examination practices (Mihret et al., 2021; Shallo & Boru, 2019). Educational awareness programs on breast cancer and BSE have been shown to improve detection rates among women in Ethiopia (Yeshitila et al., 2021). Additionally, research in Eastern Ethiopia has demonstrated that the practice of BSE among female health professionals is essential for reducing the morbidity and mortality associated with breast cancer (Dechasa et al., 2022). These findings underscore the significance of promoting BSE as a cost-effective and accessible method for early detection and prevention of breast cancer in developing countries.

Health education interventions, peer counseling, and training programs have been shown to improve knowledge, attitudes, and skills related to BSE among adolescent females, thereby enhancing their awareness and engagement in early detection practices for breast cancer. By implementing targeted educational strategies and interventions, adolescents can be empowered to adopt regular BSE practices, contributing to improved breast health outcomes. One of the first steps to prevent breast cancer is to provide health education to adolescents to increase awareness in doing breast self-examination (Metasari & Nurlina, 2022). The post-test of a study in Oman demonstrated significant improvements in students' performance of BSE, attributed to skills activities involving demonstration, video guidance, and tactile learning (Ranganath et al., 2020). Peer counselors have been shown to impact self-awareness and BSE practices among female teenagers, emphasizing the need for ongoing support and coordination (Apriliyanti et al., 2022). Interventions in Nigeria have effectively enhanced BSE knowledge and practice among adolescent female students (Amosu et al., 2021). Studies in Malaysia have aimed to assess breast cancer knowledge and awareness among adolescent girls in secondary schools (Norsa'adah et al., 2022).

Breast self-examination (BSE) is a method that has been promoted for the early detection of breast cancer among women. Studies have indicated that encouraging BSE among young women and adolescents is crucial to raising awareness and promoting regular self-examination practices (Dagne et al., 2019). Factors such as knowledge and attitudes have been identified as significant influencers of BSE behavior in young women, impacting the adoption of this preventive measure (Patui et al., 2023). Educational interventions, including using technology like WhatsApp reminder messages, have effectively enhanced knowledge and practices related to BSE among adolescent females (Mohammed et al., 2020). Community empowerment programs focusing on early cancer awareness, including BSE, have successfully increased knowledge and promoted preventive behaviors in specific regions (Mustika et al., 2019).

The practical implications of the study show a similar program can effectively improve the knowledge of the student which can be adopted as the priority of the program in the school. Health education through leaflets effectively improves BSE knowledge. However, the findings in this study could not be generalized to other places and times. The small sample size is another limitation of this study. Future studies could use other media as health education tools. Moreover, exploring the barriers to implementing BSE using control variables among a wider study sample might be a novelty.

## CONCLUSION

The study sample who was categorized as good was increased between before and after giving the intervention. The intervention is to provide a leaflet with information about BSE (Breast Self Examination). The bivariate analysis revealed a significant correlation between health education and BSE knowledge. Improving knowledge about BSE would be better done at an earlier age. Stakeholders related to this issue can collaborate to improve BSE knowledge as prevention ways of breast cancer.

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