



Effectiveness of Peer Group Education on Breast Self-Examination Skills for Early Detection of Fibroadenoma Mammae: A Quasi-Experimental Study among Adolescent Girls in Indonesia

Andi Tenri Abeng^{1*}, Sunarti², Linda Hardianti Saputri¹

¹Midwifery Study Program, Faculty of Public Health, Muslim University of Indonesia, Indonesia

²Nursing Science Study Program, Faculty of Public Health, Muslim University of Indonesia, Indonesia

*Correspondence Address: anditenri.abeng@umi.ac.id

Article Info

Article History

Received: Dec 10, 2025

Revised: May 05, 2026

Accepted: May 23, 2026

Keywords:

Peer Education;
Breast Self-
Examination;
Fibroadenoma
Mammae;
Adolescent Health;
Health Promotion.

ABSTRACT

ibroadenoma Mammae (FAM) is the most common benign breast tumor occurring in adolescent girls and women under 30 years of age. This study aims to determine whether peer group education can significantly enhance students' ability to perform breast self-examination (BSE) as a preventive effort against Fibroadenoma Mammae. This research employed a quasi-experimental design with a one-group pre-test and post-test approach. The study was conducted at State Senior High School 3 Gowa with 50 respondents, consisting of female students from grades X and XI selected through purposive sampling based on inclusion and exclusion criteria. The intervention involved Peer Group Education, where selected students (peer educators) were trained to educate their peers using discussion sessions, video demonstrations, and educational tools. Data were collected through questionnaires and observation sheets and analyzed using the Wilcoxon Signed Rank Test to assess differences before and after the intervention. The average pre-test score of early detection skills was 3.46, which increased to 8.60 after the intervention. The Wilcoxon test result showed $Z = -6.557$ with $p = 0.000$ ($p < 0.05$), indicating a statistically significant improvement in early detection skills after the Peer Group Education intervention. In conclusion, Peer Group Education was proven effective in enhancing the early detection skills of Fibroadenoma Mammae among adolescent girls at State Senior High School 3 Gowa. The peer-led approach increased motivation, engagement, and practical understanding, demonstrating that peer-based learning can be a valuable method for promoting adolescent reproductive health awareness.

INTRODUCTION

Fibroadenoma Mammae (FAM) is the most common benign tumor found in female breast tissue, particularly among adolescent girls and women under the age of. Although benign, its symptoms—such as a firm, painless lump—can resemble breast cancer, leading to significant concern (Soltanian & Lee, 2019). If FAM is not detected early, it may grow large and mimic malignant tumors both clinically and radiologically, causing unnecessary anxiety and potentially leading to inappropriate medical interventions if misdiagnosed (Soltanian & Lee,

2019). Early detection, therefore, plays a crucial role in preventing FAM from developing into malignant or cancerous conditions (Mukesh Verma & and Sudhir Srivastava, n.d.).

The World Health Organization (WHO) recommends the Breast Self-Examination (BSE) method as an effective early detection strategy to reduce breast cancer morbidity and mortality rates (World Health Organization, 2021). According to WHO data in 2021, there were more than 2.3 million new breast cancer cases globally, with 685,000 deaths, making it the most common type of cancer worldwide (World Health Organization, 2025). In Indonesia, breast cancer ranks first with 65,858 cases (16.6%) of all new cancer diagnoses in 2020, based on the Global Cancer Observatory report (World Health Organization, 2024).

Globally, the prevalence of FAM continues to rise, especially among young women. Recent reports indicate that approximately 10% to 20% of women of reproductive age experience FAM, with higher incidence rates in developing countries. This emphasizes the importance of early detection to distinguish FAM from more serious conditions such as breast cancer (Das et al., 2024). However, the practice of BSE remains low, particularly in developing countries, due to limited knowledge, awareness, and skills (Rebbeck et al., 2021).

One effective educational approach is Peer Group Education, which has been shown to improve adolescent girls' knowledge and skills in independently detecting FAM. This approach utilizes peer-to-peer interaction, making information easier to understand and apply. In developing countries, community-based educational approaches have also been proven to enhance confidence in performing early detection activities such as BSE programs (Zhou et al., 2024).

A preliminary survey of 10 students revealed that 90% had no knowledge of FAM and had never performed early detection. Although several studies have reported that health education and Breast Self-Examination (BSE) programs can improve adolescents' knowledge and awareness regarding breast cancer prevention (Das et al., 2024), evidence specifically examining the effectiveness of peer education interventions on BSE practices for early detection of Fibroadenoma Mammae (FAM) remains limited. Previous studies have mainly focused on breast cancer awareness, attitudes, and general BSE knowledge, while practical BSE skill development related to FAM among adolescent girls has not been adequately explored, particularly in the Indonesian context ((Soltanian & Lee, 2019). In addition, only a few studies have evaluated peer group-based educational approaches as an interactive strategy to improve adolescents' practical ability to perform BSE correctly and independently (Zhou et al., 2024). Therefore, this study aimed to analyze the effectiveness of Peer Group Education on breast self-examination skills for early detection of Fibroadenoma Mammae among adolescent girls at State Senior High School 3 Gowa, Indonesia.

METHODS

This study employed a quasi-experimental design with a one-group pre-test and post-test approach to evaluate the effectiveness of Peer Group Education on Breast Self-Examination (BSE) skills for the early detection of Fibroadenoma Mammae (FAM) among adolescent girls at State Senior High School 3 Gowa. The study was conducted among female students enrolled at the school during the study period.

The study population comprised all female students at State Senior High School 3 Gowa. A total of 50 participants were recruited using a purposive sampling technique based on predetermined inclusion and exclusion criteria. The inclusion criteria were female students who were actively enrolled at State Senior High School 3 Gowa, had never received formal education regarding the early detection of Fibroadenoma Mammae (FAM) or Breast Self-Examination (BSE), and were willing to participate in the study by providing written informed consent. Students who were ill or unable to attend the entire research process, declined to complete the intervention, or were absent during either the pre-test or post-test assessment were excluded from the study.

The intervention consisted of Peer Group Education, whereby selected students were trained as peer educators to facilitate the delivery of educational content related to FAM and BSE. Educational activities included group discussions, video-based demonstrations, breast model simulations, and guided BSE practice sessions. The intervention was implemented in three sessions over a two-week period, with each session lasting approximately 60–90 minutes.

Data were collected before and after the intervention using a validated questionnaire and an observation checklist designed to assess participants' BSE skills. Prior to the main study, the research instruments were tested on 20 respondents with characteristics comparable to those of the target population. Validity testing indicated that all questionnaire items were valid, with item-total correlation coefficients exceeding the critical r -table value ($r > 0.444$). Reliability testing demonstrated good internal consistency, with a Cronbach's alpha coefficient of 0.82.

Descriptive statistics were used to summarize participants' characteristics and BSE skill levels. Differences in BSE skills before and after the intervention were analyzed using the Wilcoxon Signed Rank Test, with statistical significance set at $p < 0.05$. Ethical approval for this study was obtained from the Research Ethics Committee of Universitas Muslim Indonesia (Ethical Clearance No. 742/A.1/KEP-UMI/IX/2025). Written informed consent was obtained from all participants prior to data collection, and confidentiality of participant information was maintained throughout the study.

RESULTS

Respondent Characteristics

Table 1 presents the demographic characteristics of the participants and their sources of information regarding Fibroadenoma Mammae (FAM) and breast cancer. Most participants were 14 years old (88.0%, $n = 44$), followed by 15 years old (10.0%, $n = 5$) and 16 years old (2.0%, $n = 1$).

Regarding sources of information on Fibroadenoma Mammae and breast cancer, more than half of the participants reported obtaining information from other sources (58.0%, $n = 29$). Social media was the second most frequently reported source (24.0%, $n = 12$), followed by teachers (8.0%, $n = 4$), health services (6.0%, $n = 3$), and books or articles (4.0%, $n = 2$). Most participants had never previously received information related to Fibroadenoma Mammae and breast cancer (98.0%, $n = 49$), while only one participant (2.0%, $n = 1$) reported having received such information before the study.

Table 1. Distribution of Adolescent Girls Based on Characteristics

Characteristics		n	%
Age	14 years	44	88,0
	15 years	5	10,0
	16 years	1	2,0
Sources of Information on Fibroadenoma Mammae and Breast Cancer	Teacher	4	8,0
	Social media	12	24,0
	Books/Articles	2	4,0
	Health services	3	6,0
	Other sources	29	58,0
Previous Exposure to Information on Fibroadenoma Mammae and Breast Cancer	Yes	1	2,0
	No	49	98,0
Total		50	100,0

Source: Primary Data, 2025

Table 2. Distribution of Knowledge and Breast Self-Examination (BSE) Skills Among Adolescent Girls Before and After Peer Group Education Intervention

Variables		Pre-Test n		Post-Test	
		n	%	n	%
Knowledge Level	High	6	12,0	42	84,0
	Moderate	18	36,0	8	16,0
	Low	26	52,0	0	0,0
BSE Skills	Competent	0	0,0	43	86,0
	Not Competent	50	100,0	7	14,0
Total		50	100,0	50	100,0

Source: Primary Data, 2025

Table 2 shows that respondents' knowledge and Breast Self-Examination (BSE) skills improved after the Peer Group Education intervention. Before the intervention, most respondents had low knowledge levels (52%) and all participants (100%) were categorized as not competent in performing BSE. After the intervention, 84% of respondents demonstrated high knowledge levels and 86% became competent in performing BSE correctly. These findings indicate that Peer Group Education effectively improved both knowledge and practical skills related to early detection of Fibroadenoma Mammae among adolescent girls

Table 3. Average Skills of Adolescent Girls Before and After Peer Group Education Intervention

BSE Skills	n	Mean	SD	CI for Mean 65%
Before Intervention	50	3,46	0,706	3,26-3,66
After Intervention	50	8,60	1,863	8,07-9,13

Source: Primary Data (Processed), 2025

Table 3 shows that the average skill score of female adolescents in detecting Fibroadenoma Mammae before the Peer Group Education intervention was 3.46 with a standard deviation of 0.706. The 95% confidence interval ranged from 3.26 to 3.66, indicating that, with 95% confidence, the mean skill level before the intervention fell within this range. After the intervention, the mean skill score increased to 8.60 with a standard deviation of 1.863, and the 95% confidence interval ranged from 8.07 to 9.13. This demonstrates a clear improvement in the ability of female adolescents to detect Fibroadenoma Mammae following the implementation of Peer Group Education.

DISCUSSION

The findings of this study demonstrated that Peer Group Education significantly improved adolescents' knowledge and Breast Self-Examination (BSE) skills for early detection of Fibroadenoma Mammae (FAM). Before the intervention, most respondents had low knowledge levels and were not competent in performing BSE (İzmir Bakırçay Üniversitesi et al., 2025). After the intervention, there was a substantial increase in both knowledge and practical skills, indicating that peer-based educational approaches are effective in promoting preventive health behaviors among adolescents. Peer interaction encourages active participation, improves communication effectiveness, and increases adolescents' confidence in independently practicing BSE (Obeagu & Obeagu, 2024).

These findings are consistent with previous studies conducted by Mukesh Verma & and Sudhir Srivastava (2022), which reported that peer education and demonstration-based interventions significantly improved adolescents' breast cancer awareness and BSE practices. Compared with conventional lecture-based education, peer group methods provide a more interactive and supportive learning environment, allowing adolescents to learn through observation, discussion, and repeated practice. The use of video demonstrations and breast model simulations in this study also contributed to improved psychomotor skills and practical understanding among participants.

The findings also support Anderson's Skill Acquisition Theory, which explains that skills develop through cognitive understanding, guided practice, and repeated performance until individuals are able to perform actions independently (Ogunmodede et al., 2024). During the intervention process, participants actively engaged in group discussions and guided simulations, which enhanced both cognitive understanding and psychomotor performance related to BSE procedures. This learning approach is considered appropriate for adolescents because peer influence plays an important role in shaping health behaviors during this developmental stage (Maria Qubtia et al., 2026).

The added value of this study lies in its specific focus on Breast Self-Examination (BSE) skills for early detection of Fibroadenoma Mammae among Indonesian adolescent girls, an area that remains limited in current public health research (Aina, 2026). Most previous studies primarily emphasized breast cancer awareness and general knowledge outcomes, whereas this study specifically evaluated practical BSE skill improvement through a peer education approach. However, several limitations should be acknowledged (Mahar et al., 2026). The absence of a control group in the quasi-experimental design limits the ability to establish strong

causal relationships between the intervention and observed outcomes. In addition, the relatively small sample size may reduce the generalizability of the findings. The use of purposive sampling also increases the potential risk of selection bias, as participants may not fully represent the broader adolescent population (Sagoe et al., 2026). Therefore, future studies are recommended to use randomized controlled designs, larger and more representative samples, and longer follow-up periods to evaluate the long-term sustainability of behavioral changes related to BSE practices.

CONCLUSION

This study concludes that Peer Group Education is effective in improving adolescent girls' Breast Self-Examination (BSE) skills for early detection of Fibroadenoma Mammae. Peer-based educational approaches create an interactive learning environment that enhances adolescents' knowledge, confidence, and practical skills in performing BSE independently. Therefore, the integration of peer education-based BSE programs into school health promotion and national adolescent reproductive health initiatives is recommended to strengthen early detection awareness among young women. Future studies are also recommended to employ more robust experimental designs with control groups, larger and more representative samples, and longer follow-up periods to evaluate the sustainability of behavioral changes related to Breast Self-Examination practices.

ACKNOWLEDGMENTS

The author would like to express profound gratitude to the Rector of the Muslim University of Indonesia and the LP2S institution for their invaluable support and research funding that made this study possible. Deep appreciation is also extended to the management and academic community of State Senior High School 3 Gowa for their kind cooperation, facilitation and assistance throughout the research process. Their contribution was instrumental in ensuring the smooth execution and successful completion of this research.

REFERENCES

- Aina, M. A. (2026). The Effectiveness of Breast Self-Examination (BSE) Training on Skill Improvement among Nursing Mothers: A Comparative Study of Intervention and Control Groups in Osun State, Nigeria. *Journal of Health, Wellness and Safety Research*. <https://doi.org/10.70382/hujhwsr.v11i3.031>
- Das, S., Dey, M. K., Devireddy, R., & Gartia, M. R. (2024). Biomarkers in Cancer Detection, Diagnosis, and Prognosis. In *Sensors* (Vol. 24, Number 1). Multidisciplinary Digital Publishing Institute (MDPI). <https://doi.org/10.3390/s24010037>
- İzmir Bakırçay Üniversitesi, Hemşirelik Bölümü, & Sağlık Bilimleri Fakültesi. (2025). The Effect of Peer Education on University Students' Breast Self-Examination and Health Beliefs_ Quasi-Experimental Study [#1436006]-3724541. *YOBU Faculty of Health Sciences Journal*, (1).
- Mahar, B., Osman, M. B., Fauzi, F. A., & Aliyu, S. (2026). The impact of educational interventions on breast self-examination practice, knowledge, and beliefs among women: A systematic

- review and meta-analysis. In *Journal of Public Health Research* (Vol. 15, Number 1). SAGE Publications Ltd. <https://doi.org/10.1177/22799036261423725>
- Maria Qubtia, Asma Mahmood, & Noman Shahid. (2026). A School-Based Pre-Post Interventional Study in Toba Tek Singh, Pakistan on Breast Cancer Knowledge and Breast Self-Examination Among Adolescent Female Students Using Peer-Assisted Learning. *Educational Intervention on Breast Cancer Using Peer-Assisted Learning*, 6(2).
- Mukesh Verma, & and Sudhir Srivastava. (2022). Epigenetics in cancer: implications for early detection and prevention. *The Lancet Global Health*.
- Obeagu, E. I., & Obeagu, G. U. (2024). Breast cancer: A review of risk factors and diagnosis. *Medicine (United States)*, 103(3), E36905. <https://doi.org/10.1097/MD.00000000000036905>
- Ogunmodede, E. O., Ajala, D. E., Aluko, J. O., Anokwuru, R. A., Awotunde, T. A., Olajide, A. O., Dosumu, T. O., Olabisi, O. I., & Ajala, R. G. (2024). Promoting breast health among female adolescents: a comparative analysis of the effects of two didactic tools on knowledge and practice regarding breast self-examination in Southwest Nigeria. *BMC Cancer*, 24(1). <https://doi.org/10.1186/s12885-024-12949-5>
- Rebbeck, T. R., Burns-White, K., Chan, A. T., Emmons, K., Freedman, M., Hunter, D. J., Kraft, P., Laden, F., Mucci, L., Parmigiani, G., Schrag, D., Syngal, S., Tamimi, R. M., Viswanath, K., Yurgelun, M. B., & Garber, J. E. (2021). Precision prevention and early detection of cancer: Fundamental principles. *Cancer Discovery*, 8(7), 803–811. <https://doi.org/10.1158/2159-8290.CD-17-1415>
- Sagoe, S., Clotey, P. T., Kwakye, I. N., Lamptey, E., Sagoe, S., Degley, T. A., Nukpezah, R. N., & Adom-Fynn, D. (2026). Adolescent Girls' Breast Self-Examination Practices in Eastern Region of Ghana. *Breast Journal*, 2026(1). <https://doi.org/10.1155/tbj/5207043>
- Soltanian, H., & Lee, M. (2019). Breast fibroadenomas in adolescents: current perspectives. *Adolescent Health, Medicine and Therapeutics*, 159. <https://doi.org/10.2147/ahmt.s55833>
- World Health Organization. (2021). Global population ageing: implications for health and development. *The Lancet Healthy Longevity*, 2. <https://www.who.int/news-room/questions-and-answers/item/population-ageing>
- World Health Organization. (2024). *Breast Cancer*. World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/breast-cancer>
- World Health Organization. (2025). *Child Growth Standards: Methods and Developmen* (World Health Organization, Ed.). <https://doi.org/WorldHealthOrganization>
- Zhou, M., He, X., Zhang, J., Mei, C., Zhong, B., & Ou, C. (2024). tRNA-derived small RNAs in human cancers: roles, mechanisms, and clinical application. In *Molecular Cancer* (Vol. 23, Number 1). BioMed Central Ltd. <https://doi.org/10.1186/s12943-024-01992-2>