

ARTICLE INFORMATION

Received: January, 20, 2025

Revised: May, 27, 2025

Available online: May, 29, 2025

at : <https://e-jurnal.iphorr.com/index.php/minh>

Awareness of breast cancer among adolescent girls in Lombok Tengah

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Abstract

Background: Knowledge of BSE among adolescents is very high. Through breast self-examination, early changes can be detected, health awareness can be increased, and breast cancer prevention can be contributed. Breast cancer is one of the most common types of cancer in women and is a malignant tumor that grows in breast tissue. Early detection is needed to prevent breast cancer in adolescents. State Senior High School 1 Batukliang is one of the Senior High Schools in Batukliang District, Central Lombok Regency that has not received information about breast cancer.

Purpose: To determine the relationship between the level of knowledge of female adolescents in grade XII of State Senior High School 1 Batukliang and efforts to detect breast cancer early.

Method: This is an analytical observational study using a cross-sectional research design that only takes data at one time, which was conducted from July to December 2023. The population in this study were all female adolescents in grade XII of State Senior High School 1 Batukliang totaling 68 people. Data analysis was carried out using univariate analysis and bivariate analysis using the Chi square test and Spearman test.

Results: The majority of respondents were at a high level of knowledge of 27 respondents (46.6%), sufficient knowledge of 25 respondents (43.2%), and the lowest knowledge of less than 6 respondents (10.3%). In addition, most female students made early detection efforts, namely 36 respondents (62.1%) and those who did not make early detection efforts were 22 respondents (37.9%). Based on the Spearman test, there was a statistically significant relationship between BSE knowledge and the attitudes of young women (p value = $0.00 < 0.05$).

Conclusion: There is a relationship between the level of respondent knowledge and early detection efforts of breast cancer in Central Lombok Regency in 2023, with the results of the chi square test obtained a value of $p = 0.000 < 0.05$.

Keywords: Adolescent Girls; Breast Cancer; Early Detection; Knowledge.

INTRODUCTION

According to WHO (World Health Organization), around 9-8% of women have the potential to develop breast cancer. Breast cancer is the most common type of cancer in women. Every year more than 250,000 new cases of breast cancer are diagnosed in Europe and approximately 175,000 in the United States (Tanto, Liwang, Hanifati, & Pradipta, 2014; World Health Organization, 2024). Breast cancer is a cancer disease with a total of 2,296,840 cases with a

percentage with the second incidence rate in the world after lung cancer. In Asia, there are 985,817 cases recorded in 2024 with a mortality rate of 47.3%. In addition, over time, the number of breast cancer patients in Indonesia continues to grow with a mortality rate of 13 to 16 percent (Ferlay, Ervik, Lam, Colombet, Mery, Piñeros, & Bray, 2024).

At first breast cancer attacks women who are over 30 years old but now the age of breast cancer

sufferers is becoming a young woman or teenager. Age is one of the important factors for the onset of breast cancer. Epidemiologically recorded women aged more than 50 years have a greater chance of developing breast cancer (Menon, Alkabban & Ferguson (2022). Breast cancer cases in developing countries have reached more than 580,000 cases each year and approximately 372,000 patients or 64% of the number of cases die from breast cancer. Breast cancer (carcinoma mammae) is a condition where cells have lost their normal control and mechanism, resulting in abnormal, rapid and uncontrolled growth that occurs in breast tissue (Tanto, et al., 2014)

In Indonesia, the annual incidence of new cancer cases is estimated to be approximately 100 per 100,000 populations. This indicates that among a population of 237 million, approximately 237,000 new cancer patients are diagnosed annually. In line with this, empirical data also shows that cancer prevalence increases with age. Furthermore, malignant neoplasms account for approximately 2.2% of all-cause mortality. The prevalence of tumors and cancers in Indonesia is 1.4 per 1,000 populations. In Indonesia, the problem of breast cancer is even bigger because more than 70% of patients come to the doctor at an advanced stage. Many ways can be done to prevent breast cancer. Early examination or early detection of breast cancer symptoms is very important (Putra, 2015). Based on the research on breast self-examination on BSE behavior in adolescents, which states that health education on breast self-examination can make respondents gain better BSE knowledge. Without knowledge-based behavior, the behavior will not last. Providing health education on proper breast self-examination can change the knowledge of BSE, which initially thought that breast self-examination was unnecessary, now adolescents understand that these things are a must in order to prevent breast cancer (Syaiful & Aristantia, 2016).

In the case of breast cancer, screening can be done with mammography. The sensitivity and specificity of classical mammography range from 75% to 95%, with a mean rate of 80% to 95%. For women with a family history of breast cancer, magnetic resonance mammography is employed as a screening modality. In instances where a suspicious lesion is identified on mammography, subsequent ultrasound examination is conducted, and if deemed

necessary, a biopsy is performed, accompanied by histopathological examination of the tumor (Smolarz, Nowak, & Romanowicz, 2022). Providing health education about proper breast self-examination can change the knowledge of BSE, which initially thought that breast self-examination was unnecessary, now adolescents understand that these things are a must in order to prevent breast cancer (Restuningdyah, Cahyawati, & Wedayani, 2024). Breast cancer remains a significant public health challenge worldwide, making effective screening and early detection crucial. Mammography serves as a primary instrument in this effort, as it facilitates the identification of abnormalities prior to the manifestation of symptoms. According to the American Cancer Society, the regular administration of mammograms can result in a 20-40% reduction in breast cancer mortality among women aged 40 and older, thereby underscoring the significance of this screening modality in the preservation of lives (American Cancer Society, 2022).

Public education, particularly regarding breast self-examination, plays a pivotal role in breast cancer prevention. Research indicates that the implementation of health education programs can lead to a significant enhancement in the knowledge and practices surrounding BSE among adolescents. A study found that when young women understand the importance of regular breast self-examinations, their attitudes shift from viewing BSE as unnecessary to recognizing it as a crucial preventive measure. This shift in perception has the potential to lead to earlier detection of abnormalities, which can ultimately improve outcomes for individuals diagnosed with breast cancer (Restuningdyah et al., 2024). Furthermore, national health organizations advocate for the incorporation of BSE education into school health programs to cultivate awareness from an early age. Programs that instruct adolescents in the proper techniques for self-examination can empower them to take ownership of their health, thereby promoting a proactive approach to breast cancer prevention (World Health Organization, 2024).

In 2021, the detection rate of early-stage breast cancer through clinical examinations in several sub-districts and health centers in West Nusa Tenggara Province was 36,084. Breast screening examinations can be performed independently or as part of a series of supporting examinations at health facilities.

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According to data from the West Nusa Tenggara Provincial Health Office in 2021, 36,084 women of childbearing age underwent breast examinations, including: with the highest incidence rate in North Lombok, as many as 24,053 people (66.7%) and in East Lombok as many as 3,492 people (9.7%) (Health Office of West Nusa Tenggara Province, 2021). It is therefore imperative to emphasize the significance of early detection in reducing breast cancer mortality rates. Early detection through clinical examinations facilitates timely intervention, a critical element given that breast cancer is frequently more manageable when diagnosed early. Studies have demonstrated that early detection can substantially enhance survival rates, with localized breast cancer exhibiting a 5-year relative survival rate of 99% when detected in the early stages (Icanervilia, Choridah, Van Asselt, Vervoort, Postma, Rengganis, & Kardinah, 2023). Moreover, the efficacy of community-based screening programs in enhancing awareness and engagement in breast cancer screening among women has been acknowledged as a strategy to overcome barriers to access, including geographical constraints and limited knowledge about breast health. In West Nusa Tenggara Province, the substantial number of women participating in breast examinations indicates a growing awareness of the importance of early detection. However, continuous efforts are needed to further enhance screening coverage and ensure that all women, especially in rural areas, have access to necessary health services (Icanervilia et al., 2023; Das, 2021).

State Senior High School 1 Batukliang is one of the high schools in Batukliang sub-district, Central Lombok district with a population of 700 students in class X, class XI and class XII. This school was chosen by the researcher because according to the teacher's statement all students had not received information about breast cancer before so that it became the basis for the researcher to conduct research at State Senior High School 1 Batukliang.

RESEARCH METHOD

The research was conducted from July to December 2023. This research encompasses analytical observational research, specifically designed as an observational study employing a

cross-sectional research design. This design is characterized by collecting data at a single point in time (One Point One Time), where data regarding both dependent and independent variables are gathered simultaneously (Azwar & Prihartono, 2014). The population targeted in this study consisted of all grade XII of State Senior High School 1 Batukliang, totaling 68 individuals. The population from which the sample for the study was drawn consisted of 58 XII grade female teenagers, who were selected to represent the larger group effectively.

The data collection techniques employed in this research entailed the distribution of questionnaires to the young women of State Senior High School 1 Batukliang, who were selected as respondents for the study. The primary data collection instrument employed in this study was a structured questionnaire, which was meticulously designed to elicit pertinent information. Knowledge can be categorized into good with correct values between 80%-100%, categorized as sufficient with correct values of 56%-79%, and categorized as less with correct values <50%.

The analysis conducted in this study incorporated both univariate and bivariate analyses to comprehensively interpret the data. Univariate analysis was used to describe the characteristics of the respondents, providing essential insights into their demographics and other relevant attributes. This form of analysis entails the examination of each variable independently, thereby enabling researchers to summarize and comprehend the distribution of data points within the sample. Conversely, bivariate data analysis involves the examination of the relationship between two variables suspected of being linked or correlated. This approach is instrumental in discerning potential associations and comprehending the dynamics between the variables under investigation. To perform this bivariate analysis, we employed the chi-square test, a statistical method that helps determine whether there is a significant association between the two variables being studied.

This research has been declared to meet ethical requirements by the Health Research Commission of the Faculty of Health, Qamarul Huda Badaruddin Bagu University, with the number: 015/EC/FIKES-UNIQHBA/YPPQH/IX/2020.

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RESEARCH RESULTS

Table 1. Characteristics of The Respondents (N=58)

Variable	Results
Age (n/%)	
(Mean±SD)(Range)(Year)	(16.72±0.522)(16-18)
16	18/31.0
17	38/65.5
18	2/3.5
Knowledge (n/%)	
Low	6/10.3
Moderate	24/41.4
High	28/48.3
Early Detection Efforts (n/%)	
No	22/37.9
Yes	36/62.1

In this study, the respondents were 58 female teenagers. Table 1 shows that the average age of respondents and standard deviation is 16.72 ± 0.522 with an age range between 16 to 18 years, the majority are 17 years old as many as 38 (65.5%). The level of knowledge of the most respondents is at a high level of knowledge as many as 28 (48.3%), moderate knowledge as many as 24 (41.4%), and the lowest with low knowledge as many as 6 (10.3%). The results of the most respondents making early detection efforts are as many as 36 (62.1%) and those who did not make early detection efforts are as many as 22 (37.9%) people.

Table 2. Relationship between Knowledge and Early Detection Efforts

Variable	Knowledge			p-value
	Low (n=6)	Moderate (n=24)	High (n=28)	
Early Detection Efforts (n/%)				
No	6/100	15/62.5	0/0.0	0.000
Yes	0/0.0	9/37.5	28/100	

Table 2 presents the relationship between knowledge and early detection efforts carried out by female adolescents at State High School 1 Batukliang, Central Lombok Regency. The relationship between the level of knowledge and early detection efforts for breast cancer based on the Chi Square test obtained a value of $p = 0.000 < 0.05$, so H_0 is rejected and H_1 is accepted, so it is concluded that there is a relationship between knowledge and early detection efforts for breast cancer. Based on the contingency coefficient test, there is a strong relationship between knowledge of BSE and early detection of breast cancer, namely $p > \alpha$, namely

< 0.05 . The better the knowledge of adolescents about BSE, the higher the chance of early detection of breast cancer which has a positive impact on the health and quality of life of adolescents in the future.

DISCUSSION

Knowledge is a very important domain in shaping one's actions (over behavior). Experience shows that behaviors based on knowledge tend to be better and more purposeful. Individuals who understand the consequences and benefits of their actions are more likely to make positive decisions. In contrast, actions that are not informed by knowledge often lead to

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mistakes or unnecessary risks. Therefore, improving knowledge is vital to encourage more responsible and effective behavior in daily life (Notoatmodjo, 2016).

The results showed that the average age of respondents was 17 years old, with the youngest age being 16 years old and the oldest being 18 years old. Of the total respondents, most had a high level of knowledge, as many as 28 respondents (48.3%). Meanwhile, 24 respondents (41.4%) showed a sufficient level of knowledge. In contrast, the number of respondents with poor knowledge was the lowest, with 6 respondents (10.3%). This finding highlights the need for increased education to improve knowledge on the importance of breast self-examination. The average knowledge of adolescent girls in Garut District after being given counseling increased. The average knowledge of adolescents before being given counseling amounted to 14.53 and an attitude of 35.22 while after being given counseling amounted to 20.25 and an attitude of 45.40. Bivariate results showed a p-value of knowledge of 0.000 and an attitude of 0.000. There is an effect of health counseling on the knowledge and attitudes of adolescent girls about breast self-examination (Sandi, Rindu, & Pangestu, 2024).

Measurement of knowledge can be done through asking questions directly or indirectly in the form of written questions or questionnaires. The indicator of knowledge is the high knowledge of respondents about health or the percentage of the respondent group (Notoatmodjo, 2016). The results of the BSE observation study on medical students at Al-Azhar Islamic University using the Spearman Rank test obtained a p-value of age of 0.020 (<0.05), level of knowledge of 0.000 (<0.05), attitude of 0.041 (<0.05). These results indicate that there is a significant relationship between age, level of knowledge and attitude with breast self-examination behavior (Ayattulla, Suanjaya, Rosmala, & Utary, 2024).

Early Detection Efforts

Based on the results of research conducted by researchers, it shows that most of them made early detection efforts, namely 36 respondents (62.1%) and 22 respondents (37.9) who did not make early detection efforts. BSE is an examination performed as an early detection of breast cancer to identify lumps that are likely to develop into malignant cancer (Restuningdyah et al., 2024). The prevention methods

are as follows: Primary prevention is the most important prevention. This is done by avoiding exposure to various risk factors and implementing a healthy lifestyle (Suryaningsih & Sukaca, 2017).

Things that can be done with primary prevention, namely: Understand your own condition, regulate the age of reproduction, breastfeed your children, maintain weight, avoid alcohol and cigarettes, healthy food diet/reduce fat, avoid stress, exercise, eat more fruits and vegetables, fulfill your vitamin D needs. Secondary prevention is carried out on individuals who have a risk of developing breast cancer. Secondary prevention is carried out by conducting early detection through several methods such as mammography or BSE (breast self-examination) (Restuningdyah et al., 2024; Mawardika & Suwanti, 2023).

Primary prevention of breast cancer involves implementing strategies aimed at reducing risk factors and promoting healthy behaviors to prevent the disease before it occurs. Key actions include understanding personal health conditions, regulating reproductive age, and breastfeeding, all of which can lower risk. The maintenance of a healthy body mass is imperative, given the established correlation between obesity and an elevated risk of breast cancer, particularly in postmenopausal women. Moreover, abstaining from alcohol and tobacco is imperative, as these substances have been associated with an elevated risk of breast cancer. A diet characterized by a high consumption of fruits and vegetables, coupled with a low-fat intake, has been shown to contribute to overall health and may further reduce cancer risk. Effective stress management and regular exercise are integral components of a healthy lifestyle, which support weight maintenance and hormonal balance, thereby potentially mitigating breast cancer risk. Furthermore, ensuring adequate vitamin D intake may also play a role in prevention. For individuals with a higher risk, secondary prevention strategies emphasize early detection through methods such as mammography and breast self-examination (BSE). These measures, when taken collectively, have been shown to enhance awareness and facilitate early diagnosis, which, in turn, can lead to significantly improved health outcomes for individuals. By integrating these primary and secondary prevention strategies, individuals can make substantial progress in reducing their risk of

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breast cancer and enhancing their overall health (Kolak, Kamińska, Sygit, Budny, Surdyka, Kukiela-Budny, & Burdan, 2017)

Relationship between Knowledge and Early Detection Efforts

The findings of the study showed a substantial correlation between the level of knowledge of the respondents and their engagement in early detection efforts. Specifically, there were 6 (100%) who demonstrated low knowledge and were not involved in any form of early detection efforts. This finding underscores the important role of knowledge in health behavior, particularly in the context of breast cancer screening. In contrast, respondents with high knowledge 28 (100%), indicated being actively involved in early detection initiatives. This finding suggests that increasing awareness and understanding of breast cancer significantly influences proactive health behaviors, leading to higher rates of early detection. Furthermore, 15 (62.5%) demonstrated moderate knowledge but refrained from participating in early detection initiatives. This finding underscores the need for interventions that target not only the dissemination of knowledge but also motivation to take action. This finding is consistent with existing literature that emphasizes the important role of health education in promoting early detection behaviors. Studies have shown a positive correlation between knowledge about breast cancer and its screening methods and the adoption of early detection practices, which can lead to improved health outcomes (Benedict, Steinberg, Claassen, Mofolo, & van Rooyen, 2023; Toan, Son, Hung, Minh, Mai, & Hoat, 2019).

The respondents' limited awareness regarding the benefits and procedures of the BSE can be attributed to their apparent disinterest in acquiring information about breast cancer and BSE methods. This disinterest is evident in their reluctance to seek information from various sources, including the internet, magazines, brochures, and mass media. It is imperative for respondents to possess a comprehensive understanding of the benefits and procedures associated with the BSE, as this information constitutes the most crucial aspect of the examination. It is imperative for adolescent girls to possess a comprehensive understanding of BSE procedures, as this knowledge is a primary motivator

for their participation in the examination. The application of this knowledge can be conceptualized as an individual's capacity to apply learned material in real-world scenarios (Siagian, Wilyus, & Nurdiansyah, 2020).

The results of this study are in line with research on the relationship between the level of knowledge about BSE and the right method in socializing it. There is an impact on changes in the ability of young women to detect breast cancer early through BSE training with a demonstration method (Wina, Pertiwi & Wati, 2024). Knowledge is needed as a psychological boost in developing daily attitudes and behavior (Restuningdyah et al., 2024). Attitude consists of 3 components, namely belief (ideas and concepts about objects), emotional life or people's assessment of objects (how assessments are contained in emotional factors) and tendencies to act (Notoatmodjo, 2016). Forming an attitude based on emotions that function as a channel for frustration or a diversion of ego defense mechanisms. Such an attitude can be a temporary attitude and can pass quickly. In other words, in determining a complete attitude, knowledge, thoughts, beliefs and emotions play an important role (Mawardika & Suwanti, 2023).

Good and sufficient knowledge in adolescent girls resulted in 90% positive attitudes. This shows/supports the theory that a complete attitude is obtained from one of them, namely knowledge. The lack of knowledge of adolescent girls only resulted in 50% positive attitudes. The lack of knowledge can be caused by the absence of reproductive health subjects so that the lack of knowledge affects the attitude of adolescent girls. Multimedia facilities with adequate internet services can be utilized by students to increase knowledge about BSE outside of class hours. Thus, it is known that there is a close relationship between the knowledge and attitude of adolescent girls about early detection of breast cancer through BSE (Manurung, Lebuan, Rasmada, & Sada, 2024).

The results of this study are in line with research conducted on female junior high school students in Muarakuang District, Ogan Ilir Regency in 2023, showing a relationship between knowledge, attitudes, and family support with breast cancer detection through BSE management (Rapika, Amlah, Dhamayanti, & Dessmansyah, 2023). The relationship is classified as "strong". Adequate

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knowledge about BSE has been shown to be able to foster high interest among female adolescents to carry out early detection of breast cancer through BSE. This contributes to broader efforts aimed at reducing the incidence of breast cancer among female adolescents.

The above data is also supported by research at Pandutama Vocational High School, Bogor in 2021 which found that there was a significant relationship between female adolescents' knowledge of BSE and early detection of breast cancer (Sari, Saputri, & Lubis, 2022). Researchers suspect that this may be related to the lack of interest of respondents in seeking information about breast cancer and how to check BSE and the lack of awareness of breast cancer. Based on the results of statistical tests using Spearman's Rank, a correlation coefficient of $\pi = 0.674$ was obtained with a significance level of 0.00 ($P < 0.05$). So it can be concluded that the hypothesis is accepted, namely that there is a significant relationship between knowledge about awareness and behavior in carrying out awareness. It can also be interpreted that knowledge about awareness has a correlation with behavior in carrying out awareness.

In female students of the Faculty of Medicine, Al-Azhar Islamic University, it was also found that there was a significant relationship between age, level of knowledge and attitude with breast self-examination behavior (Ayattulla et al., 2024).

In a study conducted on female adolescents at the Bina Mandiri Sawangan Depok Vocational School of Nursing in 2023, it was also explained that there was a relationship between the attitudes of female adolescents towards BSE behavior. In his study, it was also stated that there are several things that can influence a person's knowledge and behavior towards BSE, including educational background and age. Another factor that can also influence BSE behavior is the counseling factor (Wijaya, Trisna, Lilis, & Rahmawati, 2024). The results of data analysis in a study in Bondowoso Regency showed that most of the BSE behavior before receiving counseling was good, namely 21 people (55.3%), and almost all respondents showed good BSE behavior after receiving counseling, namely 31 people (81.6%). Respondents are advised to routinely carry out BSE behavior and immediately check with a health worker if there are changes in their breasts (Yuniarsi, Hikmatin, & Suhartin, 2024).

Different results were found in a study at Yapim Taruna Sei Gelugur Senior High School-Vocational High School which showed that there was no statistically significant correlation between knowledge and BSE behavior ($p = 0.075$). In contrast, a significant positive correlation was identified between attitude and BSE behavior ($p = 0.010$) (Susanti, Afifah, Sihotang, & Siregar, 2024). The majority of respondents were 17 years old, which was 48.8% of the sample. The results of the analysis showed a strong relationship between high levels of knowledge and BSE practice, with 60.5% of participants with high levels of knowledge reporting BSE experience, compared to 74.4% of those with positive attitudes. This study concluded that attitude has a significant influence on BSE behavior in adolescent girls. Consequently, there is a need for educational initiatives designed to foster the development of positive attitudes towards BSE. This suggests that BSE factors are not only caused by knowledge, but there are still many other factors that influence.

CONCLUSION

There is a relationship between the level of knowledge of female adolescents in grade XII of State Senior High School 1 Batukliang and early detection efforts of breast cancer in Central Lombok Regency in 2023, with the results of the chi square test obtaining a value of $p = 0.000 < 0.05$.

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DOI: <https://doi.org/10.33024/minh.v8i3.653>