



Characteristics and Knowledge of Women of Reproductive Age Regarding Early Detection Of Breast Cancer Through Breast Self-Examination Techniques at The Oepoi Community Health Cente (Puskesmas) Kupang

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Abstract

Introduction: Breast cancer remains one of the leading causes of death among women globally. Breast Self-Examination (BSE) has been promoted as an accessible, affordable, and effective early detection method—one that, if practiced from adolescence, can help reduce this risk. Nevertheless, adolescent girls are still observed to lack consistent BSE practices. A preliminary study at SMA Negeri 3 (Public Senior High School 3) in Kupang City revealed that many students do not fully understand the correct BSE procedure, and the practice is rarely performed. This study aims to examine how adolescent girls at SMA Negeri 3 Kupang—located within the service area of the Oepoi Community Health Center (Puskesmas)—perceive and respond to the importance of being proactive and attentive toward their own health.

Method: This study involved 94 students from grades 10 and 11 at SMA Negeri 3 Kupang, selected through consecutive sampling using an analytical cross-sectional design. Data were collected via a structured questionnaire that met validity and reliability criteria (Cronbach's alpha > 0.80). Statistical analysis was performed using the Chi-Square test via SPSS software (version 30), with a significance threshold set at $p < 0.05$.

Results: The findings indicate that 58.5% of participants possessed good knowledge, 53.2% held a positive attitude, and 72.3% demonstrated good BSE practices. Statistical analysis revealed no significant correlation between knowledge and behavior ($p = 0.792$); however, a significant correlation was found between attitude and behavior ($p = 0.026$). Respondents with a negative attitude were 2.14 times more likely to fail to perform BSE effectively.

Conclusion: There is no statistically significant correlation between knowledge and the practice of Breast Self-Examination (BSE). Consequently, improved health education is essential to raise awareness among adolescent girls regarding the importance of early breast cancer detection. Students at SMA Negeri 3 Kupang are very enthusiastic about participating in training and receiving instruction on how to perform SADARI (breast self-examination) to detect breast cancer at an early stage.

Protocol registration: -

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INTRODUCTION

On a hot afternoon, in a classroom at SMA Negeri 3 (State High School 3) in Kupang City, a health teacher asked students about SADARI—an acronym for breast self-examination. Most of the students could not provide an answer when asked to explain the steps involved, leading them to simply share their own personal (and often uninformed) opinions. Some students had encountered the term *SADARI* on social media but did not know how to perform the procedure correctly. This situation highlights that, despite increasingly easy access to healthcare services, adolescent girls still lack a proper understanding and application of early breast cancer detection methods.

A 2023 performance report from the Directorate General of Disease Prevention and Control (Ditjen P2P) of the Indonesian Ministry of Health confirms that breast cancer is the most prevalent type of cancer in Indonesia. An early detection rate of 14.52% was recorded among the 4,284,861 women—out of a target group of 41,881,534 women aged 30 to 50—who underwent screening. Nevertheless, the province of East Nusa Tenggara continues to face challenges in raising public awareness regarding the importance of the SADARI (breast self-examination) program for the early detection of breast cancer.

The highest percentage of early breast cancer detection in Indonesia is found in the East Nusa Tenggara (NTT) region, reaching 31.76%—equivalent to 884,251 out of 2,784,167 women aged 30 to 50 in 2023. These figures exceed the general national standard. Eleven community health centers (puskesmas) in Kupang City, including the Oepoi Community Health Center, have participated in an early breast cancer detection program for women of reproductive age. This increased coverage in early detection is supported by the efforts of healthcare facilities, particularly these community health centers.

According to data from the Prof. Dr. W. Z. Johanis Regional General Hospital (RSUD) in Kupang, the number of inpatients with breast cancer has increased annually. In 2022, there were 518 such patients; this figure rose to 747 in 2023, before decreasing to 649 in 2024. These case numbers indicate that comprehensive treatment for breast cancer—particularly among women—remains necessary.

In regions with limited access to healthcare, such as East Nusa Tenggara (NTT), the management of breast cancer often relies on personal knowledge, individual beliefs, and family support. Consequently, understanding breast self-examination (BSE)—known in Indonesia as *SADARI*—is considered crucial for the early detection of breast cancer. Kupang City, the capital of NTT Province, possesses distinct social and cultural characteristics; however, there has been little scientific research conducted on this issue. A decline in quality of life, delays in medical intervention, and non-adherence to prescribed therapy can stem from inadequate approaches to breast self-examination—such as avoiding self-checks, prolonged denial of the illness, or opting for alternative treatments that lack a medical basis (Karokaro et al., 2020; Xia et al., 2024).

Breast cancer patients experience physical and emotional changes, as well as psychosocial and emotional shifts. This condition can affect women by altering their “body image” and “self-confidence” (Malkanathi et al., 2021). Breast self-examination (BSE) is crucial in such situations, as it helps patients cope with the physical and mental stress encountered during the treatment process (Maryam, 2017).

According to the World Health Organization, breast cancer originates from the activity of abnormal cells in the breast, which can proliferate uncontrollably and spread to other parts of the body. If not addressed promptly, this condition is a leading cause of death among women. A practical method for identifying breast cancer in its early stages is breast self-examination (BSE)—a procedure performed independently to detect any lumps or irregularities in the breast.

According to Johns Hopkins Medicine, approximately 40% of breast cancer cases are first discovered by the women themselves. Breast self-examination (BSE) is highly effective because it can be performed independently, is easy to do, and requires no special equipment. The use of BSE in a study conducted in Myanmar has shown a significant surge in women's awareness regarding the importance of detecting breast cancer at an early stage.

Enhancing in-depth understanding regarding the early detection of breast cancer is of significant importance for adolescent girls. The level of knowledge and personal perceptions one holds about their own health during adolescence can profoundly influence their behavior. According to Lawrence Green's theory, health-related behaviors are shaped by a combination of factors: predisposing factors (such as knowledge and attitudes), enabling factors, and reinforcing factors. Therefore, the relationship between knowledge, attitudes, and the practice of breast self-examination (BSE)—known in Indonesian as SADARI—warrants further clarification.

Previous studies have yielded varying findings. Some research has identified a link between knowledge and the practice of breast self-examination (BSE), yet attitudes appear to be more significant than knowledge alone. Consequently, further research is warranted, particularly among adolescent groups from diverse social and cultural backgrounds.

In April 2026, 25 students from SMA Negeri 3 Kupang—located within the service area of the Oepoi Community Health Center (Puskesmas)—participated in a pre-research study conducted prior to the main study. Participants, who completed a questionnaire during class, were selected randomly based on their willingness to take part. The objectives of this preliminary study were to: (1) enhance our understanding of the knowledge, attitudes, and practices regarding breast self-examination (BSE) among adolescent girls; (2) gain insights to inform the sample size for the main study; and (3) determine a more accurate sample size for the main study. Findings from this preliminary study indicated that only 40% of respondents performed BSE regularly, while 52% demonstrated a good understanding of the practice. Furthermore, the sample size for the main study was determined based on these preliminary results, taking into account that discussions surrounding breast health are still often perceived as embarrassing, and that most students were unaware of the appropriate timing for performing BSE.

This study was conducted at SMA Negeri 3 Kupang because the majority of its female students are in late adolescence—a period when awareness regarding reproductive health typically increases. Furthermore, no prior research has examined the relationship between knowledge, attitudes, and the practice of breast self-examination (BSE) within the working area of the Oepoi Community Health Center (Puskesmas Oepoi). Consequently, this study was carried out with the objective of identifying the relationship between breast self-examination and the behaviors of adolescent girls at SMA Negeri 3 Kupang, which is located within the catchment area of the Oepoi Community Health Center in East Nusa Tenggara.

METHOD

This study employs a cross-sectional, observational-analytical design. In other words, the independent variables—knowledge and attitudes—and the dependent variable—the practice of breast self-examination (BSE)—are measured simultaneously among the study participants.

Statistical Analysis

The IBM SPSS statistical software was used to process the data for this study. Univariate analysis procedures were employed to describe the frequency distribution and the percentage for each variable. Subsequently, to identify the relationship between knowledge, attitudes, and the practice of breast self-examination (SADARI), a chi-square test was used for bivariate analysis. With a 95% confidence level, the prevalence ratio (PR) was calculated to determine the strength of the association between the variables. Statistical significance was defined as a p-value of less than 0.05.

Research Ethics

Ethical approval for this study was obtained from the Health Research Ethics Committee of the Faculty of Medicine, Nusa Cendana University, Kupang (reference number: 041/KEPK/FK/III/2026). The study ensured the protection of participants' identities and maintained their privacy. Comprehensive information was provided to participants before they completed the informed consent form.

RESULTS

Out of a total of 94 questionnaires distributed to respondents, all were returned and deemed suitable for analysis, resulting in a 100% response rate. As the questionnaires were completed in person—monitored by the researcher via Google Forms within the school environment—there were no instances of incomplete data or missing respondents during the data collection process.

Respondent Characteristics

The majority of respondents from public high schools (SMA Negeri) in Kupang City were students in grades X and XI, aged between 16 and 17 years. Most information regarding breast self-examination (SADARI) was obtained via social media (46.8%), followed by healthcare professionals (24.5%), teachers (18.1%), and family members (10.6%).

Knowledge, Attitudes, and Practice of Breast Self-Examination (SADARI)

Regarding knowledge, 58.5% of respondents (n=55) demonstrated a good understanding of breast self-examination (SADARI), while 46.8% (n=44) exhibited a negative attitude. Most respondents did not perform breast self-examination (SADARI) on a frequent basis. This is because 30.8% of people do not know the right time to do it, 26.9% feel embarrassed or afraid when they discover a lump in their breast, and 19.8% believe that they are too young to develop breast cancer.

Table 1. Distribution of Knowledge and Attitudes Among Respondents

Variable	Category	(n)	(%)
Knowledge	Poor	39	41.5
	Good	55	58.5
Attitude	Negative	44	46.8
	Positive	50	53.2

Table 1 shows that more than 50% of respondents have a good understanding of SADARI (58.5%) and support the practice (53.2%).

Relationship between knowledge and age regarding breast self-examination (BSE) among adolescent girls

Bivariate analysis revealed a relationship between knowledge and age regarding breast self-examination (BSE) among adolescent girls. Those with good knowledge were 1.1 times more likely to demonstrate good BSE practices compared to those with poor knowledge. However, the statistical test result ($p=0.792$) indicates that this relationship is not statistically significant. After controlling for the variables of age and sources of health information, a logistic regression analysis was performed. The results show no significant correlation or statistical effect ($OR = 1.14$; 95% CI = 0.48–2.69; $p = 0.761$).

Percentage of Good Breast Self-Examination (BSE) Practices (%)

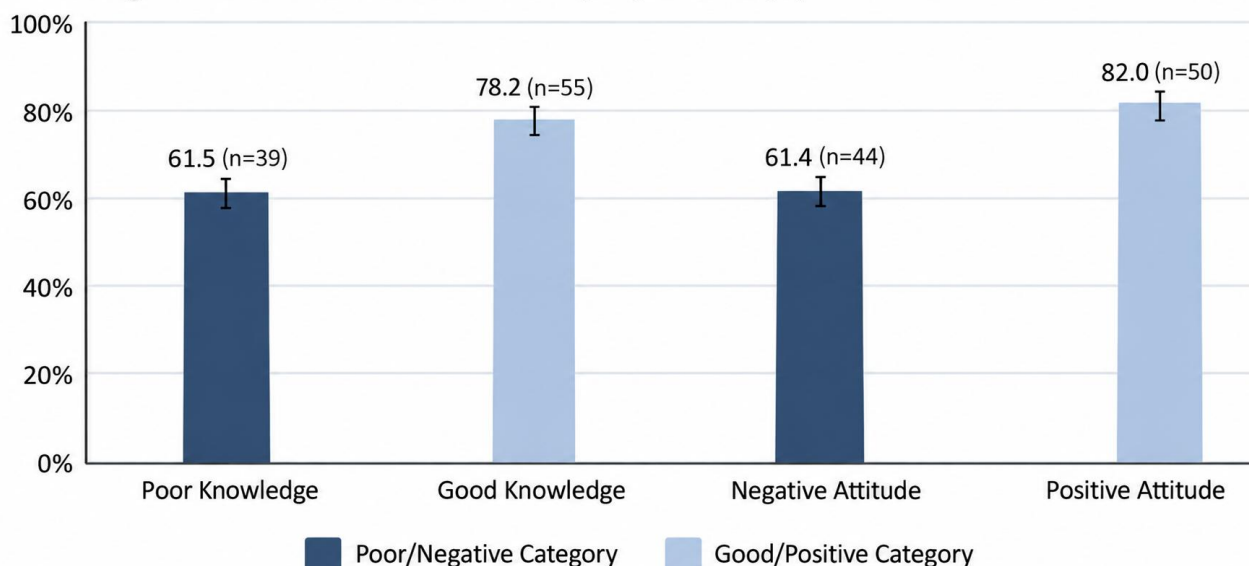


Figure 1. Proportion of Breast Self-Examination (BSE) Practices Based on Levels of Knowledge and Attitude

Table 2. Logistic Regression Analysis of Factors Associated with Breast Self-Examination (BSE) Practices

Variable	B	Wald	P-value	OR	95% CI
Knowledge (good vs poor)	0.132	0.092	0.761	1.14	0.48 – 2.69
Attitude (positive vs negative)	0.764	4.982	0.026	2.14	1.06 – 4.31
Sources of information: healthcare professionals vs. others	0.417	1.824	0.177	1.51	0.82 – 2.78

Note: The Nagelkerke model has an R-square value of 0.241.

The attitude variable shows a distinct pattern of association. According to the multivariate analysis, respondents with a positive attitude toward breast self-examination (BSE) are 2.1 times more likely to engage in good BSE practices compared to respondents with a negative attitude ($p = -0.026$). Conversely, there is no significant correlation between the source of incentives and the age variable.

Attitude	Poor Behavior	Good behavior	Total
Negative	17 (38.6%)	27 (61.4%)	44
Positive	9 (18%)	41 (82%)	50

* The analysis results show that respondents with a positive attitude exhibit better SADARI (breast self-examination) behavior compared to respondents with a negative attitude.

DISCUSSION

This study finds that the attitudes of adolescent girls are more strongly associated with breast self-examination (BSE) behavior than their level of knowledge. Those who hold a positive view regarding the importance of early breast cancer detection are more inclined to perform BSE frequently compared to those with a negative attitude. Nevertheless, possessing good knowledge does not automatically translate into effective BSE practice. These results indicate that health-related knowledge alone is not always sufficient to change health behaviors unless accompanied by personal conviction and awareness.

What attitudes are the most significant? An adolescent's self-perception, self-confidence, and emotional acceptance often exert a greater influence on health behaviors than theoretical knowledge. Many respondents in this study were aware of the meaning and benefits of BSE, yet they remained anxious about the possibility of discovering a lump or felt embarrassed to examine their own breasts. Furthermore, research conducted by Mulyani and Nuryani (2022) found that adolescents with a positive outlook on reproductive health are twice as likely to perform BSE regularly compared to those with a negative outlook. This highlights the critical role of psychological factors in the practice of BSE.

Additionally, social and cultural factors shape the respondents' attitudes. During brief interviews conducted as part of the data collection process, some students noted that their families still consider discussions about breast health to be taboo. Others mentioned that they find it difficult to talk about bodily changes with their parents or teachers. Consequently, information regarding BSE is more frequently obtained from social media than from healthcare professionals or family members. This situation suggests that while adolescents rely on digital media as a primary source for health education, the information they encounter is often irrelevant or lacks proper guidance.

The findings of this study are noteworthy, as they reveal that knowledge does not have a significant correlation with BSE behavior. While it is often assumed that a stronger link exists between knowledge and health-related behavior, the results of this study align with previous research conducted by Sari et al. (2023), which found that knowledge alone is insufficient to establish the practice of breast self-examination (SADARI) among adolescent girls in the absence of strong motivation and environmental support. Many

respondents were aware of the steps for performing breast self-examination, yet they did not carry it out on a regular, monthly basis.

Another factor that may have an impact is the age of the respondents, who are in their mid-adolescence. At this stage, the ability to make independent health-related decisions is not yet fully developed. Adolescents tend to focus more on social and academic activities than on health-preventive behaviors. Furthermore, some respondents still hold the view that adolescents do not need to perform breast self-examinations (BSE), under the assumption that breast cancer only affects adult or older women.

In this study, the practice of breast self-examination (BSE) reached 72.3%, which is relatively high compared to findings in several major cities. This can be attributed to the increasing ease of accessing information via the internet and social media. Most respondents own personal smartphones and are active users of platforms such as TikTok, Instagram, and YouTube. However, since health information on social media is often presented in a brief and superficial manner, a comprehensive understanding of the urgency of early breast cancer detection has yet to be fully established.

This study has several limitations. First, the cross-sectional design precludes the determination of clear causal relationships between knowledge, attitudes, and behaviors. Second, because the study relied on self-reported data to assess behavior, there is a potential for response bias.

Third, the findings cannot be generalized, as the study was conducted at only one school. Future research should employ a longitudinal or cohort design to examine how BSE practices evolve over time.

Further investigation is needed to determine how health education interventions influence BSE-related behaviors. Additionally, school-based educational programs are essential to enhance adolescents' understanding of the importance of reproductive health screenings. Moreover, social media should be utilized in more creative and interactive ways to disseminate health-related messages to the adolescent population more effectively.

CONCLUSION

This study examines the perspectives of female students at SMA Negeri 3 Kupang—located within the working area of the Oepoi Community Health Center (Puskesmas)—regarding the practice of Breast Self-Examination (BSE). Students who perceive early detection of breast cancer as important are 2.1 times more likely to perform BSE compared to those who do not view it as significant. However, there is no statistically significant correlation between the practice of BSE and the level of knowledge.

These findings demonstrate that knowledge alone is insufficient to change the health-related behaviors of adolescents. An approach is required that fosters greater awareness, conviction, and a positive outlook regarding the importance of early breast cancer detection from a young age. Consequently, health promotion initiatives in schools should go beyond mere theoretical instruction; they must incorporate methods that account for the psychology and emotions of adolescents.

This research suggests the need for more interactive, school-based reproductive health education—such as BSE demonstrations, peer education, adolescent counseling, and the use of social media—as engaging and accessible ways to teach reproductive health. Furthermore, schools and healthcare professionals must collaborate to create an environment where adolescents feel comfortable discussing reproductive health without fear.

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