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The relationship between knowledge about breast cancer and self-examination behavior in adolescents

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Abstract

Background: Breast cancer at the end of 2020, 7.8 million women were still alive and had been diagnosed with breast cancer in the past five years, making breast cancer the most common type of cancer worldwide, with the highest prevalence rate in the Special Region of Yogyakarta (2.4% or 4,325 cases). Adolescents' awareness of breast cancer plays a crucial role in their early screening through breast self-examination (BSE). Early detection can reduce breast cancer deaths by up to 20%.

Purpose: to determine the relationship between knowledge about breast cancer and BSE behavior in adolescents.

Method: This study used a quantitative method with a correlational design with a cross-sectional approach. The sample was taken using a probability sampling technique with a population of 60 adolescents and a sample of 54 respondents in grade 12. The research instruments used were a breast cancer knowledge questionnaire and a BSE behavior questionnaire adopted from research with a reliability value of 0.598 for the breast cancer knowledge questionnaire and 0.694 for the BSE behavior questionnaire so that the questionnaire was declared valid. The results were analyzed using the Spearman sign rank test.

Results: The results obtained were insufficient knowledge of 72.2%, sufficient knowledge of 22.2%, and good knowledge of 5.6%. Adequate behavior of 5.6%, and poor behavior of 94.4%. The results of the relationship obtained using the Spearman rank test obtained the value of breast cancer knowledge and awareness behavior of $p = 0.004 < 0.05$.

Conclusion: So that there is a significant relationship between knowledge about breast cancer and BSE behavior in adolescents.

Keywords: BSE Behavior; Adolescents; Knowledge About Breast Cancer.

INTRODUCTION

Breast cancer is the type of cancer with the highest number of cases in Indonesia and is also one of the leading causes of death from breast cancer (Ministry of Health of the Republic of Indonesia,

2022). The World Health Organization (WHO) recorded that in 2020, 2.3 million women were diagnosed with breast cancer and there were 685,000 deaths worldwide. At the end of 2020, 7.8 million

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women were still alive and had been diagnosed with breast cancer in the past five years, making breast cancer the most prevalent type of cancer worldwide (World Health Organization, 2022). Breast cancer is the type of cancer with the highest number of cases in Indonesia and is also one of the leading causes of death from breast cancer (Ministry of Health of the Republic of Indonesia, 2022). Three provinces have the highest breast cancer prevalence rates: the Special Region of Yogyakarta (2.4% or 4,325 cases), East Kalimantan (1.0% or 1,879 cases), and West Sumatra (0.9% or 2,285 cases) (Saputri, Fitriah, Nisrina, Bebasari, & Merry, 2024). Breast self-examination (BSE) is a screening method used to detect abnormal signs that could indicate breast cancer. Women who perform breast self-examinations typically do so once a month, but this is often influenced by a lack of understanding of how to perform them.

One factor contributing to the increasing incidence of breast cancer is the lack of information about breast cancer among adolescents, both regarding treatment and early detection of the disease. This results in adolescents' low health literacy, leading to a lack of awareness and sensitivity to abnormal symptoms that appear in the body (Heryani, Afianti, Azidin, Syafwani, Solikin, & Rahmayani, 2025; Azzahra, 2022). Breast cancer is the disease with the highest number of cases, reaching 1.194 new cases, not only women are affected, there are also 7 cases in men and 1.207 cases in women, with a total of 635 deaths (Sari, Saputri, & Lubis, 2022). The exact cause of this cancer is still unknown, but there are several risk factors that can make a woman more susceptible to breast cancer (Rizka, Akbar, & Putri, 2022). Early detection of breast cancer in Yogyakarta using the BSE method recorded a figure of 7.60%, which is still far from the national target of 50% for women of childbearing age who have undergone breast examinations by 2019 (Ministry of Health of the Republic of Indonesia, 2019).

Breast self-examination (BSE) is a screening method used to detect abnormal signs that may indicate breast cancer. Adolescents' knowledge of breast cancer plays a crucial role in their early screening for breast cancer through BSE techniques. BSE can be performed independently without cost,

and it also increases awareness and attention to any abnormal lumps in the breast (Romdiyah, Indriani, Setiani, & Resmi, 2025). BSE is performed monthly to detect abnormalities early and provide prompt treatment (Saputri & Fransiska, 2024). Awareness of BSE plays a vital role in increasing their knowledge and motivating them to perform it consistently (Khairunnissa, Wahyuningsih, & Irsyad, 2017). Research findings indicate that predisposing factors, such as knowledge, cultural values, perceptions, and individual characteristics, are the most common factors found in BSE (Sexual Self-Examination). Adolescents' limited understanding of early breast cancer detection contributes to their low level of awareness regarding early detection (Marhaeni, Suindri, Arneni, Habibah, & Dewi, 2024).

The difference between this and previous research is that this study was conducted at MAN 1 Bantul, Yogyakarta, involving 12th-grade respondents aged 17-18 years within the school environment. Based on BSE behavior data conducted in Yogyakarta at SMAN 1 Sewon, Bantul, 73.6% of respondents had never performed BSE. Therefore, the rate of non-BSE behavior remains the highest in Yogyakarta (Helianti & Wahyuhidaya, 2025). Differences in previous research conducted in Bekasi, West Java, by taking adolescent respondents from grades 10 to 12 at SMA Nurul Yaqin Bekasi with differences in breast cancer data in Bekasi, West Java, reaching 136 per 100,000 residents in 2023 (Ningtias, Putri, Swarsih, Sari, Sartika, & Ismoyowati, 2025). and in West Java showing an increase in prevalence-based BSE behavior data in West Java obtained results of poor behavior (68.6%), and good behavior (57.1%), so that the BSE behavior rate in Bekasi, West Java is still relatively good compared to Yogyakarta (Triana, Aulia, & Handayani, 2023).

RESEARCH METHOD

This study used a quantitative method with a correlational design and a cross-sectional approach. The study was conducted from February 10-13, 2026, at MAN 1 Bantul. The sample was drawn using a probability sampling technique, with a population of 60 adolescents and a sample size of 54 12th-grade adolescent respondents at MAN 1 Bantul. The research instruments used were a breast cancer

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knowledge questionnaire and a BSE behavior questionnaire. The questionnaires have been tested for reliability, with a value of 0.598 for the breast cancer knowledge questionnaire and 0.694 for the BSE behavior questionnaire, thus confirming validity.

The results were analyzed using the Spearman sign-rank test. The study was conducted from February 10-13, 2026. The ethical code number for this study is No. 5236/KEP-UNISA/II/2026.

RESEARCH RESULTS

Table 1. Characteristics of Respondent (N=54)

Variable	Results
Age (Mean±SD) Years	(17.70 ± 0.46) (17-18)
17	16/29.6
18	38/70.4
Class (n/%)	
12 Science	16/29.6
12 Social Studies	22/40.7
12 Religion	16/29.6
Tribal Origin (n/%)	
Javanese	49/90.7
Sundanese	4/7.4
Sumatra	1/1.9
Get BSE Training (n/%)	
Yes	4/7.4
No	50/92.6
Knowledge (n/%)	
Good	3/5.6
Enogh	12/22.2
Poor	39/72.2
BSE Behavior (n/%)	
Good	3/5.6
Poor	51/94.4

Based on the results of descriptive statistical tests, it shows that the age characteristics of respondents are 17 years old (29.6%), 18 years old (70.4%). It is known that the average age of respondents is 18 years old, which is shown by a value of 70.4%. The results of the characteristics of the class of respondents in Man 1 Bantul, class 12 IPA is (29.6%), while respondents in class 12 IPS are (40.7%), while class 12 Religion is (29.6%). So most respondents are in class 12 IPS, which is (40.7%). The results of the ethnic characteristics in Man 1 Bantul, respondents come from the Javanese tribe, which is (90.7%), the Sundanese tribe is (7.4%), and the Sumatran tribe is (1.9%). It can be concluded that respondents in Man 1 Bantul come from the Javanese tribe, which is (90.7%). The results of the characteristics of BSE training among 12th-grade female adolescents at Man 1 Bantul

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showed that 92.6% had never received BSE training, and 7.4% had received BSE training through home counseling. It can be concluded that the average respondent had never received BSE training (92.6%). Based on the results of descriptive statistical tests, knowledge about breast cancer among 12th-grade female respondents was as follows: 72.2% had poor knowledge, 22.2% had adequate knowledge, and 5.6% had good knowledge. It can be concluded that the average level of knowledge for respondents was 72.2% and based on the results of descriptive statistical tests on BSE behavior among 12th-grade female adolescents, 54 respondents were in the poor category (94.4%), and 5.6% were in the adequate category (5.6%). This indicates that knowing how to perform BSE is not sufficient to motivate someone to practice it. The reasons for the low BSE behavior among 12th-grade female adolescents are a lack of understanding of breast cancer and a lack of education about BSE examination techniques from health services during school.

Table 2. Results of the Spearman Rank Test Bivariate Correlation

Variables	r- (Spearman-s rho)	p-value
Breast cancer knowledge – BSE behavior	0.389	0.004

Based on the results of the correlation analysis using the Spearman rank test between breast cancer knowledge and BSE behavior, a correlation coefficient value of $r = 0.389$ was obtained with a p-value of 0.004 ($p < 0.05$). This value indicates a significant relationship with a weak to moderate correlation strength. The magnitude of the relationship strength is indicated by the percentage cc value of 38.9%, which means that the higher the knowledge, the better the BSE behavior.

DISCUSSION

Based on the distribution of respondent characteristics regarding BSE training information, 51 (92.6%) adolescent girls had never received BSE training information, and 4 (7.4%) had received BSE training information through their home environment. These results align with research by Dwi Oktafiani et al., 2026. Lack of health knowledge, particularly regarding BSE, is also evident through social media. Based on the distribution of breast cancer knowledge, respondents in Man 1 Bantul have an average of 39 respondents (72.2%) with poor knowledge, 12 (22.2%) with adequate knowledge, and 3 (5.6%) with good knowledge. These results are supported by data on respondents receiving BSE training. Fifty respondents (92.6%) have never received information about BSE practices. Based on the distribution of breast self-examination behavior results in

adolescents, on average, 51 adolescents (94.4%) had poor behavior, and sufficient behavior was 51 adolescents who had never performed examinations because they had never performed breast self-examinations and had never received counseling regarding the practice of BSE by health services during their time at school. This is in line with the fact that early detection behavior in adolescents has not been optimally formed, indicated by the proportion of behavior that is still higher (57.1%). The Relationship Between Knowledge About Breast Cancer and BSE Behavior in Adolescents Based on the results of the Spearman rank test, a correlation coefficient value of 0.389 was obtained with a significant value of 0.004 ($p < 0.05$) so that there is a relationship between breast cancer knowledge and BSE behavior.

The lack of knowledge regarding breast cancer in this study aligns with other research which revealed that if someone lacks understanding about breast cancer, they are likely to not perform BSE as a first step to detect breast changes that could lead to breast cancer. Having good knowledge does not always guarantee that someone will perform BSE correctly and according to the procedure (Tauho, Dary, & Ondowapo, 2025). This study aligns which found that the majority of 52 respondents (70.3%) reported a lack of knowledge about breast cancer. Adolescents who lack understanding are usually influenced by several factors, including a lack of

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attention and affection from parents, and a lack of willingness to explore the changes occurring in their bodies, especially in the breasts. When adolescents face the transformation that occurs in their breasts, there is a wealth of information available (Retnoningsih & Fatimah, 2025).

These results indicate a positive and significant relationship between breast cancer knowledge and BSE behavior in adolescent girls, indicating a unidirectional relationship. The positive correlation indicates that the higher the level of knowledge, the higher the number of adolescent girls in practicing BSE after menstruation. The results of this study are supported by the results of the characteristics of respondents aged 18 years as many as 36 respondents (70.4%), and aged 17 years as many as 16 respondents (70.4%), so that the age in this study is considered large at the age of 18 years. Furthermore, the results of this study are strengthened by the results of the training frequency data on getting BSE as many as 50 respondents, 92.6% of respondents have never received BSE practice training, further strengthened by the frequency data on breast cancer knowledge in respondents as many as 39 respondents as many as 72.2% lack of knowledge regarding breast cancer knowledge in adolescents, further strengthened by the results of the frequency of BSE behavior in adolescents, as many as 51 respondents as many as 94.4% have never practiced BSE behavior and have never received health counseling from health services while at school, thus causing adolescent girls to lack information on BSE training, resulting in BSE knowledge and behavior in adolescents still being relatively low.

The results of this study are in line with other research which showed a bivariate result of $p = 0.004$, which means there is a relationship between Young Women's Knowledge of Breast Cancer and BSE Behavior. Some reasons that make women not regularly perform BSE or even avoid it are laziness, fear, the assumption that they are not in a risk position, shame, lack of knowledge about the method or technique, feeling unnecessary, forgetfulness and taboo. This is a form of negative attitude that then has an impact on poor behavior. One factor contributing to the increasing incidence of breast cancer is the lack of information about breast cancer among

adolescents, both in treatment and in early detection of the disease (Yani, Rossita, & Ayudiah, 2025). This results in low adolescent understanding of health, so they become less concerned and insensitive to abnormal symptoms that appear in the body (Heryani et al., 2020; Azzahra et al., 2022).

Lack of knowledge can result in young women not understanding how to perform BSE to detect breast cancer early. Information sources can be obtained through television, radio, the internet, print media, peers, health workers, and family. Limited access to information about breast cancer prevention can increase the frequency of breast cancer; if breast cancer is identified early, the chance of recovery is greater (Siregar, 2022). Knowledge about breast self-examination (BSE) and breast cancer can encourage women to increase their understanding of breast health. This serves as an important foundation for expanding knowledge about breast examinations (Pitriyani, 2026). Breast self-examination is recommended during menstruation, especially between the 7th and 10th days after the first day of the menstrual cycle, and it is recommended to perform this examination regularly to detect lumps in the breast (Oktarida, 2020; Purba, Sidabutar, & Widya, 2024). An indifferent attitude towards these initiatives can encourage young women to have a negative view of early detection as a breast cancer prevention measure. Behavior is an individual's response or reaction to external stimuli (Nuraeni, Triwidiyanti, & Iriani, 2024). Identifying early signs of breast cancer will encourage women to consult a doctor immediately (Jaya, Rosnani, Athiutama, Dwi, Kumalasari, Afdal, & Rahayu, 2025).

CONCLUSION

A significant correlation was found with a p-value of $0.004 < 0.05$, indicating a relationship between breast cancer knowledge and BSE behavior among adolescents. The better the respondents' knowledge, the more likely they were to perform BSE as a first step in detecting breast cancer. The better the respondents' knowledge, the more likely they were to perform BSE as a first step in detecting breast cancer. Parents, especially mothers, play a crucial role in providing accurate information about breast cancer and how to perform BSE. Information from mothers significantly helps adolescent girls understand the

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importance of breast cancer and the implementation of BSE. Suggestions for future research include using a larger sample size than previous research and considering variables that may influence BSE behavior, such as attitudes, self-efficacy (self-confidence), family support, or perceived barriers (fear/shame).

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