

HEALTH BELIEFS AND SOCIAL SUPPORT ASSOCIATED WITH BREAST SELF-EXAMINATION PRACTICE AMONG INDONESIAN ADOLESCENT GIRLS A CROSS-SECTIONAL STUDY

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ABSTRACT

Breast self-examination (BSE) is a simple and cost-effective approach to promoting breast awareness and facilitating the early detection of breast cancer. However, BSE practice among adolescent girls remains inadequate and is influenced by multiple psychosocial factors. This study aimed to examine the associations between health beliefs, social support, and BSE practice among Indonesian adolescent girls. A cross-sectional study was conducted among 191 adolescent girls from vocational high schools in Lhokseumawe, Indonesia. Data were collected using a structured questionnaire based on the Health Belief Model and Social Support Theory. Chi-square tests were performed to assess bivariate associations, followed by multivariable logistic regression to identify independent predictors of BSE practice. Bivariate analysis showed significant associations between several health belief and social support variables and BSE practice. In the multivariable analysis, perceived barriers emerged as the strongest independent predictor of BSE practice ($p < 0.001$). These findings suggest that reducing psychological and practical barriers is essential to improve BSE practice among adolescent girls. School-based breast health promotion programs should integrate practical BSE training, strengthen breast cancer awareness, and actively involve families to promote sustainable early detection behaviors.

Keywords: *Adolescent girls; Breast self-examination; Breast cancer; Health Belief Model; Social Support.*

INTRODUCTION

Breast cancer remains the most frequently diagnosed cancer among women worldwide and continues to be a major public health concern. Although its incidence increases with age, breast cancer can occur in women shortly after adolescence, making early awareness and preventive behaviors increasingly important. In 2020, approximately 2.3 million women were newly diagnosed with breast cancer worldwide, resulting in 685,000 deaths, while an estimated 7.8 million women were living with a breast cancer diagnosis within the previous five years (WHO, 2023). In Indonesia, breast cancer is the leading cancer among women, with an estimated 66,271 new cases reported in 2022, accounting for approximately 30.1% of all newly diagnosed cancer cases in the country (The Global Cancer Observatory. Cancer Incident in Indonesia. Int Agency Res Cancer, 2024). These figures emphasize the importance of strengthening early detection strategies before women enter the age group at highest risk.

Breast Self-Examination (BSE) is an inexpensive and accessible method that promotes breast awareness and facilitates early recognition of suspicious changes, particularly in low- and middle-income countries where mammography remains limited. Among Indonesian adolescent girls, BSE promotion has been shown to improve breast cancer knowledge, exposure to breast health information, and family support for early detection behaviors (Dewi, C. Ruiter, et al., 2022). However, limited screening and diagnostic services continue to delay breast cancer diagnosis in Indonesia (Icanervilia et al., 2023).

Previous studies indicate that breast cancer knowledge and health perceptions influence adolescents' willingness to perform BSE. Although digital platforms have improved breast cancer awareness (Panjaitan et al., 2023), many adolescents still perceive breast cancer as a disease affecting older women, leading to low perceived susceptibility and confidence in performing BSE (Hindmarch et al., 2023). Current evidence suggests that Breast Self-Examination behavior is influenced by a complex interaction of cognitive, psychological, and social factors. A systematic review and meta-analysis conducted in Indonesia identified knowledge, attitudes, perceived benefits, perceived barriers, and health behaviors as the primary determinants of BSE practice (Azhar et al., 2023). Likewise, promoting breast cancer knowledge, increasing family support, and improving access to health information have been reported to encourage BSE practice among Indonesian adolescent girls (Dewi, C. Ruiter, et al., 2022). Previous studies have identified breast cancer knowledge, self-efficacy, perceived susceptibility, perceived severity, perceived benefits, and cues to action as key predictors of BSE practice (Dewi, C. Ruiter, et al., 2022); (Semagn, 2023). These factors align with the Health Belief Model (HBM), a widely used framework for explaining preventive health behaviors.

Beyond individual beliefs, social support also plays a critical role in shaping adolescents' preventive health behaviors. Encouragement from parents, family members, peers, teachers, and health professionals can strengthen adolescents' confidence, reinforce positive health beliefs, and facilitate regular BSE practice. Recent evidence among Indonesian adolescent girls also showed that misconceptions regarding breast cancer, lack of knowledge, limited privacy, and social barriers significantly reduce BSE practice, highlighting the importance of supportive social environments in promoting early detection behaviors (Tauho et al., 2025)

Evidence regarding the combined influence of health beliefs and social support on Breast Self-Examination (BSE) practice among Indonesian adolescent girls remains limited. Therefore, this study aimed to analyze the association of health beliefs and social support with Breast Self-Examination (BSE) practice among Indonesian adolescent girls attending vocational high schools in Lhokseumawe, Indonesia, to inform culturally appropriate breast health promotion and early detection strategies.

METHODS

This observational analytic study employed a cross-sectional design among female students at a vocational high school in Lhokseumawe, Indonesia, in May 2025. From a population of 305 students, 191 participants were selected using simple random sampling based on Slovin's formula with an additional 10% allowance for non-response. Data were collected using a structured self-administered questionnaire. Health beliefs and Breast Self-Examination (BSE) practice were assessed using an adapted validated instrument developed by Bashirian et al. (2019), with breast cancer knowledge included as an additional explanatory variable. Descriptive statistics and multiple logistic regression were performed using IBM SPSS to examine factors associated with BSE practice, with statistical significance set at $p < 0.05$ and results reported as adjusted odds ratios with 95% confidence intervals.

RESULTS AND DISCUSSION

Results

Table 1. Distribution of Breast Self-Examination Practice, Breast Cancer Knowledge, Health Beliefs, and Social Support among the Participants (n = 191)

Variables	n	%
Breast Self-Examination (BSE) Practice		
Poor Practice	86	45.0
Good Practice	105	55.0
Breast Cancer Knowledge		
Poor	68	35.6
Good	123	64.4
Perceived Susceptibility		
Low	45	23.6
High	146	76.4

Perceived Severity		
Low	82	42.9
High	109	57.1
Self-Efficacy		
Low	67	35.1
High	124	64.9
Response Efficacy		
Low	71	37.2
High	120	62.8
Perceived Barriers		
Low	41	21.5
High	150	78.5
Family Support		
Low	83	43.5
High	108	56.5
Peer Support		
Low	73	38.2
High	118	61.8

Base on table 2, that most participants had good BSE practice and breast cancer knowledge, accompanied by high levels of health beliefs, family support, and peer support.

Table 2. Bivariate Analysis of Factors Associated with Breast Self-Examination (BSE) Practice Among Adolescent Girls

Study Variables	Breast Self-Examination (BSE) Practice						p- value	OR (95% CI)
	Poor		Good		Total			
	n	%	n	%	n	%		
Perceived Susceptibility								
Low	21	46.7	24	53.5	45	100	.800	1.090 (.558-2.132)
High	65	44.5	81	55.5	146	100		
Perceived Severity								
Low	48	58.5	34	41.5	82	100	.001	2.638 (1.462-4.759)
High	38	34.9	71	65.1	109	100		
Self-Efficacy								
Low	41	61.2	26	38.8	67	100	.001	2.768 (1.500-5.109)
High	45	36.3	63.7	63.7	124	100		
Response Efficacy								
Low	36	50.7	35	49.3	71	100	.225	1.440 (.798-2.598)
High	50	41.7	70	58.3	120	100		
Perceived Barriers								
Low	29	70.7	12	29.3	41	100	.000	3.943 (1.864-8.341)
High	57	38	93	62	150	100		
Breast Cancer Knowledge								
Poor	39	57.4	29	42.6	68	100	.011	2.175 (1.190 -3.973)
Good	47	38.2	76	61.8	123	100		
Family Support								
Low	51	61.4	32	38.6	83	100	.000	3.324

High	35	32.4	73	67.6	108	100		(1.828-6.046)
Peer Support								
Low	45	61.6	28	38.4	73	100	.000	3.018
High	41	34.7	77	65.3	118	100		(1.648-5.528)

Table 2 shows the bivariate analysis of factors associated with BSE practice. Six variables were significantly associated with BSE practice, with perceived barriers demonstrating the strongest association ($p < 0.001$). Variables with $p < 0.25$ were entered into the multivariable logistic regression model

Table 3. Multivariable Logistic Regression Analysis of Factors Associated with Breast Self-Examination (BSE) Practice Among Adolescent Girls

Variables	B	p-value	AOR (Exp(B))	95% CI
Breast Cancer Knowledge	1.031	0.003	2.805	1.419–5.545
Perceived Severity	0.649	0.055	1.914	0.967–3.712
Perceived Barriers	1.580	<0.001	4.854	2.061–11.430
Family Support	1.276	<0.001	3.581	1.851–6.927
Constant	-7.299	<0.001	0.001	

After adjustment for potential confounding variables, breast cancer knowledge, perceived barriers, and family support remained independently associated with breast self-examination (BSE) practice among adolescent girls. Among these variables, perceived barriers emerged as the strongest predictor of BSE practice p -value <0.001. In contrast, perceived severity was no longer significantly associated with BSE practice in the final model (Table 3)

DISCUSSION

The present study demonstrated that breast cancer knowledge, perceived barriers, and family support were independently associated with breast self-examination (BSE) practice among Indonesian adolescent girls after controlling for potential confounding variables. These findings suggest that adolescents' engagement in BSE is determined by an interaction between cognitive factors, health beliefs, and the social environment rather than by a single psychological construct. This pattern is consistent with the Health Belief Model (HBM), which proposes that preventive health behaviors are influenced by individuals' perceptions of disease, perceived barriers, and cues that facilitate action (Assfa Mossa, 2022; Dewi et al., 2025; Dewi, Massar, et al., 2022). Likewise, the systematic review conducted by (Azhar et al., 2023) concluded that psychosocial and social support factors consistently influence BSE practice among Indonesian women.

Breast cancer knowledge remained an independent predictor of BSE practice, indicating that greater knowledge enhances awareness of breast cancer, the importance of early detection, and the adoption of preventive behaviors. Similar findings have been reported across different populations.

(Azhar et al., 2023) identified knowledge as one of the most robust determinants of BSE practice among Indonesian women, while studies conducted in Ethiopia demonstrated that women with greater knowledge were significantly more likely to perform regular BSE (Asmare et al., 2022; Assfa Mossa, 2022; Dinegde et al., 2020). Consistent evidence from Indonesia also showed that knowledge strengthens positive health beliefs that ultimately promote regular breast self-examination (Adimuntja et al., 2022; Dewi, Massar, et al., 2022; Kinteh et al., 2023). Furthermore, (Sugiantini & Watiningsih, 2020) reported that women possessing adequate knowledge together with positive health beliefs were more likely to perform monthly BSE consistently, suggesting that educational interventions should focus not only on increasing factual knowledge but also on translating knowledge into preventive practice.

Perceived barriers were the strongest predictor of BSE practice. According to the Health Belief Model, barriers such as embarrassment, fear, uncertainty about BSE techniques, privacy concerns, and misconceptions about breast cancer may discourage adolescents from performing BSE (Hindmarch et al., 2023). Similar barriers have been identified in Indonesia, where qualitative evidence revealed that cultural beliefs, inadequate access to reliable information, and low confidence discourage adolescents from participating in early breast cancer detection (Icanervilia et al., 2023). Collectively, these findings indicate that interventions aimed at improving BSE practice should prioritize reducing psychological and practical barriers through hands-on training, supportive counseling, and culturally appropriate breast health education.

Family support was independently associated with BSE practice, highlighting its important role in promoting preventive health behaviors during adolescence. Consistent with Social Support Theory, emotional and informational support from family members may strengthen adolescents' confidence and encourage regular BSE practice (Bashirian et al., 2021). Similar findings have been reported in Indonesia, where family encouragement positively influenced adolescents' willingness to practice BSE (Simanjuntak et al., 2021; Tauho et al., 2025). Furthermore, (Azhar et al., 2023) identified family support as one of the determinants consistently associated with BSE practice among Indonesian women. Evidence from Aceh also supports these findings, as (Elizar et al., 2024) reported that protection motivation, which incorporates cognitive appraisal together with supportive environmental factors, was significantly associated with BSE behavior among midwifery students. These findings collectively highlight the importance of involving families in breast health promotion programs targeting adolescents.

Self-efficacy and peer support were significantly associated with BSE practice in the bivariate analysis but were not retained in the final multivariable model. This finding may indicate that their effects overlap with stronger predictors such as knowledge, perceived barriers, and family support. Nevertheless, previous intervention studies have consistently shown that

improving self-efficacy through practical demonstrations and repeated practice substantially increases adolescents' confidence and BSE performance (Aksoy & Kocoglu, 2020; Bashirian et al., 2021). Likewise, peer education has been recognized as an effective strategy for improving breast cancer awareness and reducing embarrassment associated with breast examination, thereby encouraging regular BSE among adolescents and university students (Panjaitan et al., 2023; Sitindaon & Nasution, 2024). These findings suggest that peer-based educational strategies may complement family centered interventions in promoting breast health awareness.

Overall, these findings support the Health Belief Model and Social Support Theory, indicating that school-based breast cancer prevention programs should integrate educational, psychological, and social strategies by improving breast cancer knowledge, reducing perceived barriers, and strengthening family support through interactive BSE education. Although this study was limited by its cross-sectional design, self-reported data, and recruitment from a single city, it provides valuable evidence to inform future longitudinal and intervention studies among Indonesian adolescent girls.

CONCLUSION

Breast cancer knowledge, perceived barriers, and family support were independently associated with breast self-examination (BSE) practice among Indonesian adolescent girls, with perceived barriers identified as the strongest predictor. These findings suggest that school-based interventions should focus on improving breast cancer knowledge, reducing perceived barriers, and strengthening family involvement to promote regular BSE practice and enhance breast health awareness among adolescents. Future programs should integrate interactive BSE education with family and peer support to encourage sustainable early detection behaviors.

ACKNOWLEDGEMENT

The authors would like to express their sincere gratitude to the Director of Poltekkes Kemenkes Aceh, the Head of the Department of Midwifery, and the Head of the Diploma III Midwifery Study Program, Aceh Utara, for their valuable institutional support throughout this study. The authors also extend their appreciation to the participating school principals, teachers, and all adolescent girls who generously devoted their time and participated in this research. Their cooperation and support were invaluable to the successful completion of this study.

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