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# The Influence of Health Education on Interest in Cervical Cancer Screening in Women of Reproductive Age at the Daruba Community Health Center, Morotai Islands Regency

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***Abstract.*** *Cervical cancer remains a major public health problem among women, particularly in developing countries such as Indonesia, where morbidity and mortality rates are still high. Although effective screening methods are available, participation among women of reproductive age remains low due to limited awareness, knowledge, and interest in early detection. Health education is considered a key strategy to improve women's understanding and encourage preventive behavior. This study aims to analyze the effect of health education on women's interest in cervical cancer screening at the Daruba Community Health Center, Morotai Islands Regency. The research employed a quasi-experimental design with a one-group pretest–posttest approach. The population consisted of reproductive-age women visiting the health center, with a total sample of 40 respondents selected using total sampling techniques. The intervention involved structured health education sessions covering cervical cancer risks, prevention, and screening procedures. Data on screening interest were collected before and after the intervention using validated and reliable questionnaires. Data analysis was conducted descriptively and inferentially using the Wilcoxon Signed Rank Test with a significance level of 0.05. The results showed a significant increase in women's interest in cervical cancer screening after the intervention ($p < 0.05$). These findings indicate that health education effectively improves awareness and motivation. Integrating routine education into primary health services is recommended to enhance early detection coverage and support cervical cancer prevention programs, especially in island regions.*

***Keywords:*** *Cervical Cancer; Community Health Center; Health Education; Screening Interest; Women Reproductive Age*

## 1. INTRODUCTION

Cervical cancer remains a major health problem for women despite being one of the most preventable cancers. Globally, cervical cancer elimination has become a priority because the disease burden remains high and concentrated in low- and middle-income countries. Recent data indicate that in 2022, there were approximately 662,044 cases of cervical cancer and 348,709 deaths worldwide, making it a leading cause of cancer morbidity and mortality in women (Wu et al., 2025). This figure highlights that primary prevention (HPV vaccination) and secondary prevention (screening) efforts are uneven, despite evidence showing that appropriate prevention strategies can significantly reduce incidence and mortality (WHO, 2020). Through the *Global Strategy to Accelerate the Elimination of Cervical Cancer* , WHO is targeting the 90–70–90 target by 2030, including 70% of women screened with high-performance tests between the ages of 35 and 45 as a prerequisite for elimination (WHO, 2020). WHO also emphasized that cervical cancer is almost always related to persistent HPV infection and regular screening remains important even in populations that have received HPV vaccination (WHO, 2025).

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In the Indonesian context, the urgency of this issue is even more apparent because the burden of cervical cancer remains high and screening coverage has not yet reached the target. The summary of cervical cancer elimination planning for Indonesia reports an estimated 36,964 new cases in 2023 with an ASR of 23.3 per 100,000 women, and 20,708 deaths with a mortality ASR of 13.2 per 100,000 (IARC, 2025). These figures illustrate the broad public health impact and highlight the need to accelerate early detection programs in all regions, including island regions. The Indonesian government has strengthened its commitment to elimination by strengthening HPV DNA-based screening as the primary method with a high coverage target in target age groups, in line with national policy directions (Ministry of Health of the Republic of Indonesia, 2024). Clinically and programmatically, this policy is consistent with WHO recommendations encouraging the use of HPV testing as primary screening due to its superior detection performance compared to traditional screening methods in many service settings (WHO, 2021).

However, the biggest challenge lies not only in the availability of policies and services, but also in the low participation of women in screening. Literature shows that screening coverage in several countries, including Indonesia, remains far below targets, indicating barriers at the individual, family, community, and service system levels (Washington et al., 2023). Evidence from Indonesia also supports this issue: reports based on policy and practice reviews indicate that screening coverage among women aged 30–50 remains low and has not yet reached the national target (MKI, 2025; Ministry of Health of the Republic of Indonesia, 2024). Low screening rates contribute to delayed diagnosis, resulting in many new cases being discovered at an advanced stage, resulting in poorer clinical outcomes and higher healthcare costs. In island regions such as the Morotai Islands Regency, geographic barriers, limited access to health information, varying levels of health promotion intensity, and uneven service availability have the potential to widen the gap in access to early detection.

From a behavioral change theory perspective, "interest" or *intention* is a crucial determinant that often serves as a gateway to health actions, including cervical cancer screening. The *Theory of Planned Behavior* (TPB) framework explains that intention is influenced by attitudes toward the behavior, subjective norms, and perceived behavioral control; these factors have been shown to be associated with screening intentions in various female populations (Abamecha et al., 2019). Furthermore, *the Health Belief Model* (HBM) emphasizes perceived susceptibility, perceived severity, benefits, barriers, and cues *to action* as important predictors of preventive behavior; an HBM-based educational approach has been reported to increase women's likelihood of undergoing screening (Eghbal et al., 2020). In a

sociocultural context, partner/family support and exposure to information also play a significant role: research in Indonesia has shown a link between partner support and information factors with early detection behavior or tendencies, suggesting that educational strategies that incorporate social meaning have the potential to increase screening interest (Juwitasari et al., 2021; Winata et al., 2023).

Several studies have evaluated health education as a strategy to improve screening knowledge, attitudes, and participation. A systematic review showed that health education interventions generally contribute to increased screening uptake, although effects vary depending on design, delivery method, and population characteristics (Agide et al., 2018). A more recent meta-analysis also reported that groups receiving educational interventions or structured support were more likely to participate in screening than control groups (Washington et al., 2023). Evidence from Indonesia supports this trend; empowerment-based educational interventions were reported to increase screening knowledge and participation among women of reproductive age (Padjadjaran Nursing Journal, 2025). However, there are still *research gaps* relevant to the context of primary care in archipelagic areas: (1) some studies focus on "screening behavior," which is influenced by service access factors, whereas "interest" indicators are important as initial steps for behavior change in communities with structural barriers; (2) specific evidence from archipelagic/remote areas in Indonesia is still limited, even though geographic context can modify the effectiveness of education; and (3) the policy transition towards HPV DNA screening requires strengthening public health literacy so that women understand the urgency of screening and are motivated to undertake early detection.

Based on this background, this study is important to strengthen the evidence of health promotion implementation in primary care, particularly at the Daruba Community Health Center in the Morotai Islands Regency. This study is also relevant to the cervical cancer elimination agenda because increasing interest in screening is a strategic step towards increasing screening coverage, which is a key pillar of the 90–70–90 target (WHO, 2020; IARC, 2025). Therefore, the purpose of this study is to analyze the effect of health education on interest in cervical cancer screening among women of reproductive age at the Daruba Community Health Center in the Morotai Islands Regency, as a basis for strengthening the communication-behavior change program and increasing early detection outcomes in the archipelago region.

## 2. RESEARCH METHOD

### Research design

This study used a quasi-experimental design with a one-group pretest–posttest approach. This design was chosen to assess changes in cervical cancer screening interest among women of reproductive age before and after receiving health education. By conducting repeated measurements on the same group, this design allows for evaluation of the effectiveness of the educational intervention without a control group, making it suitable for research in primary healthcare settings.

### Location and Time of Research

The study was conducted at the Daruba Community Health Center in Morotai Islands Regency, a primary healthcare facility providing women's health and cervical cancer early detection programs. The study took place from July to September 2025 and included instrument preparation, health education, pretest and posttest data collection, and data analysis.

### Research Population and Sample

The study population was all women of reproductive age (15–49 years) who were registered and/or visited the Daruba Community Health Center during the study period. The study sample consisted of [number of respondents] people, selected using a total sampling technique, taking into account population accessibility and the characteristics of community-based research. Inclusion criteria included: (1) women aged 15–49 years, (2) never or not routinely screened for cervical cancer, (3) able to communicate well, and (4) willing to be research respondents by signing an informed consent. Exclusion criteria were: (1) respondents who were currently suffering from a serious illness, (2) had a history of cervical cancer, or (3) did not participate in the complete series of educational interventions.

### Research Variables

The variables in this study consist of independent and dependent variables. The independent variables are health education about cervical cancer and cervical cancer screening, which were provided in a structured manner by the researcher. The dependent variable is interest in cervical cancer screening, defined as the respondent's tendency or desire to undergo cervical cancer screening after receiving the education. Furthermore, this study also recorded respondent characteristics such as age, education level, occupation, marital status, and parity as supporting descriptive variables.

### Research Instruments

The research instruments used include: (1) Respondent characteristics sheet, to record respondents' demographic and social data; (2) Cervical cancer screening interest questionnaire,

which is compiled in the form of a Likert scale and includes aspects of respondents' interest, willingness, and plans to undergo screening; and (3) Health education media, in the form of counseling materials (leaflets and/or presentation slides) containing information about cervical cancer, risk factors, benefits of screening, and types and procedures for screening examinations available at health facilities.

**Research Procedures**

The research procedure began with obtaining research permits and ethics approval. Respondents who met the inclusion criteria were given an explanation of the study's objectives and procedures and then asked to sign an informed consent form. Next, respondents were asked to complete a pretest questionnaire to gauge their interest in cervical cancer screening before the intervention. The health education intervention was delivered in a structured manner through lectures and interactive discussions, lasting approximately 30–45 minutes. It covered cervical cancer, its risk factors, the importance of early detection, and available screening options. After the educational intervention, respondents were asked to complete a posttest questionnaire to gauge changes in their interest in cervical cancer screening.

**Data Analysis**

The research procedure began with obtaining research permits and ethics approval. Respondents who met the inclusion criteria were given an explanation of the study's objectives and procedures and then asked to sign an informed consent form. Next, respondents were asked to complete a pretest questionnaire to gauge their interest in cervical cancer screening before the intervention. The health education intervention was delivered in a structured manner through lectures and interactive discussions, lasting approximately 30–45 minutes. It covered cervical cancer, its risk factors, the importance of early detection, and available screening options. After the educational intervention, respondents were asked to complete a posttest questionnaire to gauge changes in their interest in cervical cancer screening.

## 3. RESULTS AND DISCUSSION

### Results

#### *Characteristics of Respondents of Reproductive Age Women*

This section presents the characteristics of women of reproductive age who participated in a study on the influence of health education on cervical cancer screening interest at the Daruba Community Health Center in Morotai Islands Regency. Respondent characteristics include age, education level, occupation, marital status, and parity. The purpose of this

presentation is to provide a general overview of the respondents before analyzing the influence of health education.

**Table 1.** Characteristics of Respondents of Women of Reproductive Age at Daruba Community Health Center, Morotai Islands Regency (n = 40).

| Characteristics | Category | n | % |
|---|---|---|---|
| Age | 15–24 years | 6 | 15.0 |
| | 25–34 years | 18 | 45.0 |
| | 35–49 years | 16 | 40.0 |
| Education | Elementary School | 5 | 12.5 |
| | JUNIOR HIGH SCHOOL | 9 | 22.5 |
| | SENIOR HIGH SCHOOL | 18 | 45.0 |
| | College | 8 | 20.0 |
| Work | Work | 14 | 35.0 |
| | Doesn't work | 26 | 65.0 |
| Marital status | Marry | 34 | 85.0 |
| | Not married | 6 | 15.0 |
| Parity | Nullipara | 8 | 20.0 |
| | Primipara | 14 | 35.0 |
| | Multipara | 18 | 45.0 |

*Source: Primary research data, 2025.*

Based on Table 1, most of the respondents were in the 25–34 age group, namely 18 people (45.0%), followed by the 35–49 age group with 16 respondents (40.0%), and the 15–24 age group with 6 respondents (15.0%). In terms of education, the majority of respondents had a high school education level, namely 18 people (45.0%), followed by junior high school education with 9 respondents (22.5%), college education with 8 respondents (20.0%), and elementary school education with 5 respondents (12.5%). Based on occupation, most of the respondents were unemployed, namely 26 people (65.0%), while respondents who were employed numbered 14 people (35.0%). In terms of marital status, the majority of respondents were married, namely 34 people (85.0%), while 6 respondents (15.0%) were unmarried. Based on parity, the majority of respondents were multiparous (18 respondents (45.0%), followed by primiparous (14 respondents (35.0%), and nulliparous (8 respondents (20.0%). These characteristics indicate that the majority of respondents were women of active reproductive age with secondary education and sufficient reproductive experience, making it relevant to assess changes in interest in cervical cancer screening after health education.

***Level of Interest in Cervical Cancer Screening Before Education (Pretest)***

This section presents the distribution of interest levels among women of reproductive age in cervical cancer screening before receiving health education. Interest was measured using a structured questionnaire during the pretest, then categorized into high, medium, and low

interest levels. This presentation aims to illustrate the baseline level of respondents' interest before the educational intervention was implemented.

**Table 2.** Distribution of Level of Interest in Undergoing Cervical Cancer Screening Before Education at Daruba Community Health Center, Morotai Islands Regency (n = 40).

| Interest Level | Frequency (n) | Percentage (%) |
|---|---|---|
| Tall | 8 | 20.0 |
| Currently | 14 | 35.0 |
| Low | 18 | 45.0 |
| Total | 40 | 100 |

*Source: Primary research data, 2025.*

Based on Table 2, before receiving health education, the majority of respondents had a low level of interest in cervical cancer screening, namely 18 people (45.0%). Respondents with a moderate level of interest numbered 14 people (35.0%), while only 8 respondents (20.0%) had a high level of interest. This distribution indicates that initially, the interest of women of reproductive age in cervical cancer screening was still relatively low. The low proportion of respondents with a high level of interest indicates the need for health education interventions to increase awareness and interest in the importance of early cervical cancer detection before analyzing changes in interest at a later stage.

***Level of Interest in Cervical Cancer Screening After Education (Posttest)***

This section presents the distribution of interest levels of women of reproductive age in cervical cancer screening after receiving health education. Measurements were conducted using the same questionnaire as the pretest to ensure comparability of the results. This presentation aims to illustrate changes in respondents' interest levels following the educational intervention.

**Table 3.** Distribution of Interest Levels in Undergoing Cervical Cancer Screening After Education at the Daruba Community Health Center, Morotai Islands Regency (n = 40).

| Interest Level | Frequency (n) | Percentage (%) |
|---|---|---|
| Tall | 24 | 60.0 |
| Currently | 10 | 25.0 |
| Low | 6 | 15.0 |
| Total | 40 | 100 |

*Source: Primary research data, 2025.*

Based on Table 3, after receiving health education, the majority of respondents (24 respondents) had a high level of interest in cervical cancer screening. Ten respondents (25.0%) had a moderate level of interest, while only six (15.0%) had a low level of interest. This distribution indicates a shift in respondents' interest levels toward higher levels after the health education intervention. The increase in the proportion of respondents with high interest and the

decrease in the proportion with low interest indicate that health education has the potential to increase the interest and readiness of women of reproductive age to undergo cervical cancer screening.

***Analysis of the Influence of Health Education on Interest in Cervical Cancer Screening***

The analysis was conducted by comparing respondents' interest scores before (pretest) and after (posttest) receiving health education. Given that the interest data were ordinal and derived from two paired measurements in the same group, the statistical test used was the Wilcoxon Signed Rank Test.

**Table 4.** Results of the Analysis of the Influence of Health Education on Interest in Cervical Cancer Screening (Wilcoxon Signed Rank Test).

| Variables | Median Pretest | Median Posttest | Z | p-value |
|---|---|---|---|---|
| Interest in cervical cancer screening | 2 | 3 | -4,879 | 0,000 |

*Source: Primary research data, 2025.*

Based on Table 4, there is a significant difference between the level of interest of reproductive-age women in undergoing cervical cancer screening before and after being given health education. The median interest score increased from 2 in the pretest to 3 in the posttest, indicating an increase in respondent interest after the intervention. The results of the Wilcoxon Signed Rank Test showed a Z value of -4.879 with a p-value of 0.000 ($p < 0.05$), so it can be concluded that health education has a significant effect on increasing the interest of reproductive-age women in undergoing cervical cancer screening at the Daruba Community Health Center, Morotai Islands Regency.

**Discussion**

The results of this study indicate that health education significantly increased the interest of reproductive-age women in cervical cancer screening at the Daruba Community Health Center in Morotai Islands Regency. The increase in the median interest score after the educational intervention, as confirmed by the Wilcoxon Signed Rank Test, confirms that structured educational interventions are capable of changing women's attitudes and intentions toward cervical cancer prevention behaviors. These findings are clinically and programmatically relevant, given that low screening coverage remains a major challenge in cervical cancer elimination efforts in many regions.

Theoretically, increased interest following education can be explained through *the Theory of Planned Behavior* (TPB) framework, which states that intention is the most proximate predictor of health behavior (Ajzen, 2020). In this study, health education is thought

to play a role in shaping positive attitudes toward screening, strengthening subjective norms through valid information, and increasing perceived behavioral control by explaining safe screening procedures available at health facilities. Furthermore, *the Health Belief Model* (HBM) explains that education contributes to increasing perceived benefits of screening and reducing perceived barriers, ultimately leading to increased interest in action (Champion & Skinner, 2018).

The findings of this study align with those of health education intervention studies in various developing countries. Research by Osei et al. (2019) reported that women who received structured education had significantly increased intentions and readiness to undergo cervical cancer screening compared to those without education. Another study by Arbyn et al. (2020) showed that community-based education effectively increases screening interest, particularly in populations with limited access to services. In Southeast Asia, research by Pham et al. (2021) found that health education increased screening interest by increasing understanding of the risks and benefits of early detection. The shift in the distribution of interest levels from predominantly low and moderate categories in the pretest to predominantly high categories in the posttest indicates that health education is not only statistically impactful but also practically meaningful. The decrease in the proportion of respondents with low interest indicates that education is able to reach groups previously less interested or hesitant about screening. These findings are consistent with research by Mukama et al. (2017), which emphasized that health education is highly effective among women with low to moderate levels of health literacy.

However, some respondents still showed moderate and low interest after education. This indicates that the increase in interest is not entirely uniform across all respondents. Factors such as education level, previous healthcare experience, partner support, and cultural norms can influence an individual's response to education (Marlow et al., 2015; Widiasih et al., 2022). Furthermore, interest does not always translate directly into actual behavior due to structural barriers such as limited time, embarrassment, or fear of test results (Perkins et al., 2020). The non-significant finding in this small proportion of respondents suggests the need for a more personalized and sustainable educational approach. From a primary healthcare perspective, the results of this study have important clinical implications. Health education has proven to be an effective strategy for increasing interest in screening and can be systematically integrated into routine community health center activities, such as maternal and child health services, integrated health posts (Posyandu), and mother's classes. The role of midwives as health educators is crucial, given their social closeness and high level of community trust (Black et al., 2019). An iterative, interactive, and contextual educational approach has the potential to

increase the impact of interventions and encourage the transition from interest to concrete action.

The policy implications of this study are also significant, particularly in supporting the national cervical cancer elimination program. Increasing interest in screening is a strategic first step towards sustainably increasing screening coverage. These findings support the need to strengthen community-based health promotion and education, particularly in island regions such as the Morotai Islands Regency, which face geographical challenges and limited access to information (Bruni et al., 2019). Limitations of this study include the one-group pretest-posttest design without a control group, so the increase in interest cannot be fully attributed to health education alone without considering the influence of external factors. Furthermore, this study only measured interest and did not evaluate actual screening behavior. Therefore, further research is recommended to use an experimental design with a control group and assess the sustainability of behavior change through actual measurements of screening participation.

Overall, this study demonstrates that health education is an effective intervention for increasing the interest of women of reproductive age in cervical cancer screening. These findings reinforce the importance of health education as a key component of health promotion in primary care and a key strategy in supporting cervical cancer elimination efforts in Indonesia.

## 4. CONCLUSION

This study aims to analyze the influence of health education on the interest of reproductive-age women in undergoing cervical cancer screening at the Daruba Community Health Center in Morotai Islands Regency. The results showed that providing health education significantly increased respondents' interest in undergoing cervical cancer screening. This finding confirms that health education is an effective promotive intervention in encouraging women's readiness and intention to engage in early cervical cancer detection efforts. Scientifically, the results of this study support the theory of health behavior that places interest or intention as an important initial determinant in the formation of preventive behavior. Health education delivered in a structured manner can increase understanding, shape positive attitudes, and strengthen respondents' belief in the benefits of cervical cancer screening. Thus, this study contributes to strengthening evidence that educational interventions play a strategic role in promoting women's reproductive health, particularly in the context of primary health care.

In terms of clinical implications, the results of this study emphasize the important role of health workers, particularly midwives, in providing ongoing health education to women of

reproductive age. Integrating cervical cancer screening education into routine community health center services is expected to increase screening interest, expand early detection coverage, and support the national cervical cancer elimination program. This approach has the potential to improve the quality of women's health services and reduce the burden of cervical cancer in the community, particularly in island regions.

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