Determinants of Sociodemographic and Health Information Factors on the Decision to Undergo Pap Smear among Women of Reproductive Age in Pulau Harapan

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Cervical cancer was the fourth most common cancer among women worldwide in 2022, with an estimated 604,000 new cases and 342,000 deaths. In Indonesia, according to the 2018 Basic Health Research (Riskesdas), cervical cancer ranks second after breast cancer, with an incidence of approximately 23 cases per 100,000 population and a mortality rate of 17 per 100,000 population. This study employed a quantitative approach with a cross-sectional design. The population consisted of 561 women of reproductive age residing in Pulau Harapan Village. The sample size was determined using a two-proportion test, resulting in 150 respondents. Data were collected using a questionnaire that had been tested for validity and reliability. Data analysis included univariate and bivariate analyses using the Chi-square test. The majority of respondents were aged 30–39 years, married, had higher education, were unemployed or housewives, and had a monthly income of less than IDR 3,000,000. Most respondents reported easy access to healthcare facilities and received information and education about cervical cancer from healthcare professionals. Sociodemographic factors significantly associated with Pap smear utilization were age (p = 0.000) and marital status (p = 0.000). Meanwhile, the health information factor significantly associated with Pap smear utilization was the source of health information (p = 0.040). These findings indicate that improving Pap smear utilization in island communities requires strengthening community-based health education strategies and optimizing the role of healthcare professionals as primary sources of health information. It is recommended that community health centers and local governments intensify active promotion, expand periodic mass screening programs, and integrate Pap smear education into routine health services to increase early cervical cancer detection among women of reproductive age.

Keywords: Cervical Cancer, Pap Smear Utilization, Women Of Reproductive Age, Health Information, Sociodemographic Factors.

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1. Introduction

Cervical cancer, derived from the Latin term Carcinoma Cervicis Uteri, refers to a malignant tumor that attacks the epithelial lining of the cervix. In this condition, epithelial cells undergo abnormal proliferation and transformation, causing them to lose their normal physiological functions. This uncontrolled cell proliferation may form tumors or masses and can sometimes lead to lesions or wounds that produce clinical symptoms such as foul-smelling vaginal discharge or abnormal bleeding. Cervical cancer is one of the most common malignancies affecting the female reproductive system. It accounts for approximately 1% of all malignant tumors in women and about 66% of malignancies occurring within the female reproductive system (Asrina et al., 2025).

Globally, cervical cancer was the fourth most common cancer among women in 2022, with an estimated 604,000 new cases and approximately 342,000 deaths each year (Aini et al., 2025). In Indonesia, based on the 2018 National Basic Health Research (Riskesdas), cervical cancer ranks as the second most common cancer among women after breast cancer, with an incidence of around 23 cases per 100,000 population and a mortality rate of approximately 17 deaths per 100,000 population (Khoirunnisa, 2025). Data from Cancer Today also reported that cervical cancer was the third most common cancer in Indonesia in 2022, with 36,964 recorded cases after lung and breast cancer (Aini et al., 2025). According to Globocan data published by the Indonesian Ministry of Health in 2024, cervical cancer remains the second most prevalent cancer among women after breast cancer, with an incidence rate of 23.3 per 100,000 population and a mortality rate of 13.2 per 100,000 population (Kartikasari, 2025). Cervical cancer is therefore considered one of the most significant public health problems in Indonesia. For example, in 2018 the prevalence of cervical cancer in West Sumatra Province reached approximately 0.9% or 2,285 cases, while in Central Java Province the number of cases reached 19,734 (Asrina et al., 2025).

The 2018 Riskesdas report also showed that the highest cancer prevalence in Indonesia occurs in the 55–64 year age group, accounting for 4.62% of total cases. In addition, cancer prevalence tends to be higher among women than men, a pattern consistently observed across several survey periods. Within this age group, cancer prevalence increased significantly, rising from 0.6% to 2.2% among men and from 0.74% to 2.85% among women. Furthermore, the gender disparity in cancer prevalence widened compared to the 2013 Riskesdas survey, increasing from 0.14% to 0.65%. Despite the high burden of cervical cancer, screening coverage remains low. Previous research reported that only around 5% of women had undergone cervical cancer screening using the Pap smear method (Samadi & Heru, 2010). The high prevalence of cancer among women is closely associated with the high incidence of breast and cervical cancers, which are specific to women and represent the most frequently reported types of cancer in Indonesia (Asrina et al., 2025).

Cervical cancer is generally classified into five stages: stage 0, stage I, stage II, stage III, and stage IV. Stage 0 is referred to as carcinoma in situ, indicating that cancer cells have not yet spread beyond the epithelial layer of the cervix. At this stage, abnormal cells remain confined to the outermost cervical layer. Stage I indicates that cancer cells have developed within the cervix and uterus but have not spread to other parts of the body. This stage is further divided into stage IA and stage IB. Stage IA includes IA1 and IA2, where cancer has invaded cervical tissue but can only be detected microscopically, with an invasion depth of less than 5 mm. In stage IA1, the invasion depth is less than 3 mm, while in stage IA2 it ranges from 3 to 5 mm. Stage IB indicates that the tumor is clinically visible without microscopic examination but remains confined to the cervix. Stage IB1 indicates tumors smaller than 4 cm, whereas stage IB2 refers to tumors larger than 4 cm (Azlina & Firdausi, 2025).

Stage II indicates that cervical cancer has spread to the upper vagina or surrounding cervical tissues but has not yet reached the pelvic wall or other organs. This stage is divided into stage IIA, where the spread is limited to the upper vagina, and stage IIB, where cancer has spread to tissues surrounding the cervix and reached the pelvic wall. Stage III indicates that the cancer has spread to the pelvic wall or the lower part of the vagina. Stage IIIA refers to cancer spreading to the lower vagina but not yet reaching the pelvic wall, whereas stage IIIB occurs when cancer affects the pelvic wall or causes kidney problems due to urinary tract obstruction. Stage IV is the most advanced stage and indicates that cancer has spread to distant organs. Stage IVA refers to cancer spreading to nearby pelvic organs such as the rectum, bladder, or vagina, while stage IVB indicates distant metastasis to organs such as the lungs or liver (Azlina & Firdausi, 2025).

Cervical cancer is widely considered a preventable disease because it typically develops through a long precancerous phase. At the early or precancerous stage, recovery rates can reach nearly 100%. The

progression from Human Papillomavirus (HPV) infection to cervical cancer usually takes approximately 3 to 20 years. However, despite the long progression period, cervical cancer mortality remains high because diagnosis is often delayed. Early symptoms are frequently unclear or unnoticed, causing many patients to seek treatment only when the disease has reached an advanced stage. As a result, disease management becomes less effective. Therefore, both primary and secondary prevention strategies are essential. Primary prevention aims to reduce risk factors such as risky sexual behavior, HPV infection through vaccination, and poor reproductive hygiene. Secondary prevention focuses on early detection and treatment of precancerous lesions before they develop into cervical cancer, including routine Pap smear examinations at least once a year (Sirait et al., 2025).

In principle, all women are at risk of developing cervical cancer; however, several factors may increase the likelihood of contracting the disease. These factors include age and early age at first sexual intercourse. Several studies indicate that approximately 20% of cervical cancer cases occur in women who began sexual activity before the age of 16. Risky sexual behaviors, such as having multiple sexual partners, increase the likelihood of Human Papillomavirus (HPV) infection, which is the primary cause of cervical cancer. Other contributing factors include long-term use of oral contraceptives, lack of HPV vaccination, and poor reproductive hygiene, which may trigger cervical infections (Yuliastuti & Nudhira, 2021). In addition to biological and behavioral factors, an individual's level of knowledge and access to health information also influence the risk of cervical cancer. Lack of understanding regarding prevention and the importance of medical examinations often leads women to neglect regular early detection. Furthermore, sociodemographic factors may also contribute to increased cervical cancer risk (Nabak & Putri, 2024).

The term sociodemography originates from two concepts: social and demographic. The social aspect relates to the study of humans as social beings who interact with others through cooperation, communication, and community life. Demography, on the other hand, refers to the scientific study of population characteristics in a specific area, including population size, age and sex composition, educational level, and other demographic attributes, as well as changes in these characteristics over time. Therefore, sociodemography can be defined as an analytical approach that integrates social and population characteristics to explain how population attributes influence patterns of social interaction within society (Ovillia, 2015). Several sociodemographic characteristics commonly examined in health research include age, marital status, income, educational level, and occupation.

Age refers to the length of time a person has lived from birth until the present. Age is associated with cervical cancer risk because in very young women, particularly those under 20 years of age, the transformation zone of the cervix tends to be wider and epithelial tissue remains vulnerable to metaplasia, which is the transformation of mature cells into a different cell type. This condition increases susceptibility to Human Papillomavirus (HPV) infection. Conversely, after the age of 35, the body's ability to repair and regenerate cells begins to decline. In addition, long-term exposure to risk factors and reduced immune resistance, particularly within the reproductive organs, may allow HPV infections to persist longer. This persistence increases the likelihood of cervical cell abnormalities that may develop into precancerous lesions (Daulay, 2025).

Marriage is defined as a legal and social bond between a man and a woman as husband and wife with the objective of forming a harmonious and sustainable family life based on religious and moral values (Government of Indonesia, 2019). A marriage is considered legally valid if conducted according to religious regulations and registered officially under national law. In sociodemographic studies, marital status is commonly classified into categories such as never married, married, separated, widowed, or divorced. Marital status is associated with cervical cancer risk because women who have had multiple marriages may experience increased exposure to Human Papillomavirus (HPV) infection. However, having only one sexual

partner does not completely eliminate the possibility of HPV infection, as the virus is transmitted through sexual contact. An increased number of sexual partners, either for the woman or her partner, raises the likelihood of HPV exposure, thereby increasing cervical cancer risk (Aini et al., 2025).

Educational level refers to the stage of formal learning completed through a recognized educational system (Hartina, 2020). Educational attainment plays an important role in cervical cancer risk because it influences lifestyle, health literacy, and women's ability to access and utilize healthcare services. Women with lower educational levels may lack knowledge about proper reproductive hygiene, cervical cancer symptoms, or the importance of early detection. Consequently, they are less likely to participate in screening programs such as Pap smear examinations. Epidemiological studies have shown that women with lower educational levels face a significantly higher risk of cervical cancer compared with those who have higher education (Daulay, 2025).

Occupation refers to activities that utilize an individual's physical and mental abilities to generate income and fulfill daily needs. In addition to serving as a source of income, occupation also reflects social status and may influence health conditions. According to Widyastuti (as cited in Hartina, 2020), occupation is not only related to income but also to varying levels of health risk exposure across different population groups. Long working hours, high stress levels, or unhealthy work environments may limit women's time and opportunity to access health information or undergo early detection screening such as Pap smear examinations. Women working in informal sectors or with low incomes often have limited access to healthcare services such as HPV vaccination and cervical cancer screening programs. Furthermore, occupational type may influence lifestyle and health behaviors, including hygiene practices, sleep patterns, and decision-making related to reproductive health, which indirectly increase vulnerability to HPV infection.

Income refers to all earnings obtained from work activities or business operations, including wages, salaries, service revenues, rental income, or other financial sources. According to Djola (as cited in Hartina, 2020), income levels are generally categorized into high-income and low-income groups based on the regional minimum wage standard. Income below the minimum wage threshold is classified as low income, whereas income above the threshold is categorized as high income. In general, income level is closely associated with health status. Families with higher income levels typically have better access to basic needs such as healthcare services, balanced nutrition, and healthier living environments. Conversely, low-income families often experience difficulties accessing adequate healthcare services and are therefore more vulnerable to various health problems.

Based on these issues and previous research findings, it has been demonstrated that sociodemographic factors, health information factors, and knowledge are associated with the decision to undergo Pap smear examinations among women of reproductive age. Therefore, this study aims to further investigate the relationship between these variables and the decision to undergo Pap smear screening among women of reproductive age in Pulau Harapan.

2. Literature Review and Problem Statement

Literature Review

Cervical cancer remains one of the most significant public health issues affecting women worldwide. Despite the availability of effective screening methods, such as the Pap smear test and Human Papillomavirus (HPV) testing, participation in cervical cancer screening programs remains relatively low in many developing countries. The Pap smear examination is a cytological screening method designed to detect abnormal cellular changes in the cervix before they develop into invasive cancer. Early detection

through regular screening plays an essential role in reducing cervical cancer incidence and mortality rates, as precancerous lesions can be identified and treated at an early stage (Maryati et al., 2023).

Several studies have identified various determinants that influence women's participation in cervical cancer screening programs. Sociodemographic factors, including age, marital status, education level, occupation, and income, are often associated with health-seeking behavior and utilization of preventive healthcare services (Mensah et al., 2023). These factors influence individuals' perceptions, knowledge, and accessibility to healthcare services, which ultimately shape their decisions to participate in screening programs.

Age is one of the most frequently examined variables in cervical cancer screening studies. Women aged 30–49 years are generally considered the primary target group for cervical cancer screening because the risk of developing precancerous cervical lesions increases with age. According to the World Health Organization, screening programs are most effective when targeted at women within this age group, as early detection at this stage can significantly reduce the risk of developing invasive cervical cancer (World Health Organization, 2023). Previous research has also demonstrated that older women tend to have higher levels of awareness and perceived susceptibility to cervical cancer, which increases their likelihood of participating in screening programs (Mensah et al., 2023).

Marital status has also been identified as an important determinant of cervical cancer screening behavior. Women who are married tend to undergo Pap smear examinations more frequently than unmarried women. This is because marital status is often associated with sexual activity, which is the primary route of transmission for Human Papillomavirus (HPV), the main etiological agent of cervical cancer (Hakimah, 2016). Additionally, married women often interact more frequently with healthcare services during pregnancy, childbirth, or family planning consultations, which may increase their exposure to reproductive health education and cervical cancer screening recommendations.

Educational attainment plays an important role in shaping individuals' knowledge and awareness regarding health issues. Women with higher levels of education generally have better health literacy, enabling them to understand disease risks, access health information, and make informed decisions regarding preventive healthcare behaviors (Daulay, 2025). However, several studies have shown that education alone does not always guarantee participation in cervical cancer screening programs. Behavioral change often requires not only knowledge but also motivation, perceived risk, and access to healthcare services (Situmorang et al., 2020).

Occupation and income level may also influence women's ability to access healthcare services. Employment status may provide individuals with greater access to information through workplace environments and social interactions. However, women with demanding work schedules may also experience time constraints that limit their ability to attend preventive healthcare services (Pratiwi et al., 2023). Income level is often associated with the ability to afford healthcare services, transportation costs, and other expenses related to medical care. Women with higher income levels are generally more capable of accessing healthcare services compared with those from lower socioeconomic backgrounds (Mensah et al., 2023).

In addition to sociodemographic characteristics, access to health information plays a crucial role in influencing women's health behavior. Health information obtained from healthcare professionals, mass media, social media, or community networks can significantly influence knowledge, attitudes, and perceptions regarding cervical cancer screening. According to the health behavior theory proposed by Lawrence Green, health behavior is influenced by predisposing factors, enabling factors, and reinforcing factors. Health information may function as a predisposing factor that increases knowledge and awareness, as well as a reinforcing factor that motivates individuals to adopt preventive health behaviors (Notoatmodjo,

2018). Previous studies have shown that recommendations from healthcare professionals are among the most influential factors encouraging women to undergo Pap smear examinations (Pratiwi et al., 2023).

Problem Statement

Although cervical cancer screening programs have been widely promoted in Indonesia, the utilization of Pap smear services among women remains relatively low. Many women still lack adequate knowledge about cervical cancer prevention and the importance of early detection. In addition, misconceptions, fear of medical procedures, embarrassment, and limited access to reliable health information may discourage women from participating in screening programs.

Previous studies have shown that various sociodemographic factors and access to health information may influence women's decisions to undergo Pap smear examinations. However, most existing studies have been conducted in urban or mainland areas, where healthcare services and health information are more readily accessible. Research focusing on island communities remains relatively limited, despite the fact that such communities may face unique challenges related to geographic isolation, limited healthcare infrastructure, and restricted access to health promotion activities.

Pulau Harapan, located in the Thousand Islands Regency of Jakarta, represents a community where healthcare accessibility and information dissemination may differ from mainland urban settings. Women living in island communities may experience barriers related to healthcare access, limited health education programs, and insufficient exposure to cervical cancer prevention campaigns. These conditions may affect women's awareness and decisions regarding cervical cancer screening.

Therefore, it is important to examine the determinants influencing Pap smear utilization among women of reproductive age in Pulau Harapan. Understanding how sociodemographic characteristics and health information factors influence screening behavior can provide valuable insights for designing more effective community-based health promotion strategies. The findings of this study are expected to contribute to improving cervical cancer early detection programs and increasing Pap smear coverage among women of reproductive age in island communities.

3. Method

Research Design

This study employed a quantitative research approach using a cross-sectional study design. The cross-sectional design was selected because it allows researchers to examine the relationship between independent variables and the dependent variable at a single point in time. This design is commonly used in public health research to identify factors associated with health behavior and service utilization within a specific population. The study aimed to analyze the relationship between sociodemographic factors and health information factors with the utilization of Pap smear services among women of reproductive age in Pulau Harapan Village, Thousand Islands Regency, Jakarta.

Population and Sample

The population in this study consisted of women of reproductive age living in Pulau Harapan Village, with a total population of 561 individuals. Women of reproductive age are defined as women who are biologically capable of reproduction, generally within the age range of 15–49 years. The sample size was determined using the two-proportion hypothesis test formula, resulting in a minimum required sample of 150 respondents. Sampling was conducted among eligible women of reproductive age who met the inclusion criteria and were willing to participate in the study. The inclusion criteria for this study were:

1. Women of reproductive age residing in Pulau Harapan Village.

2. Individuals who were willing to participate in the study and signed the informed consent form.
3. Respondents who were able to read and write.
4. Respondents who were willing to complete the questionnaire honestly and voluntarily without coercion.

The exclusion criteria included:

1. Women of reproductive age who were not present during the data collection period.
2. Respondents who experienced health conditions or other limitations that prevented them from completing the questionnaire independently.
3. Respondents who submitted incomplete questionnaires.
4. Respondents who withdrew from the study during the data collection process.

Data Collection

Primary data were collected using an offline structured questionnaire. The data collection process began with obtaining official permission from the Head of Pulau Harapan Village. After receiving approval, the researcher conducted a preliminary survey to identify local health issues and to coordinate the schedule and location for data collection activities.

Subsequently, the researcher conducted a field visit to Pulau Harapan Village to implement health education activities related to cervical cancer and Pap smear examinations. During these activities, participants were informed about the objectives and procedures of the study. Respondents who agreed to participate were asked to sign an informed consent form before completing the questionnaire. The questionnaire consisted of several sections, including:

1. Sociodemographic characteristics of respondents.
2. Health information exposure related to cervical cancer and Pap smear examinations.
3. Utilization of Pap smear services.

All respondents completed the questionnaire independently. Throughout the data collection process, the researcher ensured that confidentiality and anonymity of respondents were maintained, and participation was entirely voluntary without any form of pressure or coercion.

Variables of the Study

The study consisted of both independent and dependent variables. The independent variables included several sociodemographic factors and exposure to health information. The sociodemographic factors examined in this study comprised marital status, educational level, occupation, monthly income, and number of children. These variables were selected because sociodemographic characteristics are often associated with individual health behavior and may influence women's decisions to access preventive health services, including cervical cancer screening. In addition to sociodemographic characteristics, exposure to health information related to cervical cancer and Pap smear examinations was also considered an important independent variable, as access to accurate health information can shape awareness, knowledge, and perceptions regarding the importance of early detection.

The dependent variable in this study was the utilization of Pap smear services among women of reproductive age. This variable reflects whether respondents had ever accessed or utilized Pap smear examination services as part of cervical cancer screening. By examining the relationship between the independent variables and Pap smear utilization, this study aimed to identify the factors that influence women's decisions to undergo cervical cancer screening.

Data Processing and Data Analysis

Data processing and analysis were conducted using Statistical Package for Social Sciences (SPSS) version 26. The data processing procedure consisted of several stages. First, the researcher performed data editing to examine the completeness, clarity, and consistency of questionnaire responses. After verifying that all questionnaires met the required criteria, the data were entered into the statistical software. Before entering the data into SPSS, the researcher defined and adjusted each variable in the Variable View menu according to the characteristics of the research variables. Data from the questionnaires were initially organized using Microsoft Excel and subsequently transferred to the Data View in SPSS for further analysis.

After the data entry process was completed, the researcher conducted a data verification process to ensure that no errors occurred during data entry. This step was important to ensure the accuracy and reliability of the data prior to analysis. The data analysis consisted of two stages:

1. Univariate analysis, which was used to describe the characteristics of respondents and the distribution of each variable in the study.
2. Bivariate analysis, which was conducted using the Chi-square test to determine the association between independent variables (sociodemographic factors and health information) and the dependent variable (Pap smear utilization).

The Chi-square test was selected because it is appropriate for analyzing the relationship between categorical variables.

Ethical Considerations

This study adhered to ethical principles in research involving human participants. Prior to data collection, respondents were informed about the purpose, procedures, and benefits of the study. Participation was entirely voluntary, and respondents had the right to withdraw from the study at any time without any consequences. All participants were required to sign an informed consent form before participating in the study. The researcher ensured that all collected data remained confidential and anonymous, and the information obtained was used solely for research purposes.

4. Results And Discussion

Univariate Analysis

This study employed univariate analysis to describe the characteristics of each variable related to sociodemographic factors and health information in relation to the utilization of Pap smear services in Pulau Harapan Village. The following section presents the results of the univariate analysis concerning sociodemographic factors and health information among women of reproductive age in Pulau Harapan Village.

Frequency Distribution of Sociodemographic Factors among Women of Reproductive Age in Pulau Harapan Village

Table 1 presents the frequency distribution of respondents' sociodemographic characteristics, including age, marital status, education level, occupation, and monthly income.

Table 1. Frequency Distribution of Sociodemographic Factors among Women of Reproductive Age (WRA) in Pulau Harapan Village

Sociodemographic Factors	n = 150	%
Age		
< 20 years	4	2.7
20–29 years	46	30.7

30–39 years	50	33.3
40–49 years	42	28
≥ 50 years	8	5.3
Marital Status		
Unmarried	26	17.3
Married	116	77.3
Widow	8	5.3
Education Level		
Low	46	30.7
High	104	69.3
Occupation		
Unemployed / Housewife	103	68.7
Informal Worker	30	20
Formal Worker	17	11.3
Monthly Income		
< 3,000,000 IDR	128	85.3
≥ 3,000,000 IDR	22	14.7

Based on Table 1, the distribution of sociodemographic characteristics indicates that among the 150 respondents, the largest age group was 30–39 years, comprising 50 respondents (33.3%), while the smallest proportion was found among respondents aged below 20 years, with 4 respondents (2.7%). The majority of respondents were married (77.3%), whereas the smallest proportion consisted of widowed respondents (5.3%).

In terms of education level, most respondents had higher education (69.3%), while 30.7% had lower educational attainment. Regarding employment status, the majority of respondents were not employed or housewives (68.7%), while only 11.3% worked in the formal sector. In terms of income level, most respondents had a monthly income of less than IDR 3,000,000 (85.3%), while 14.7% reported a monthly income of IDR 3,000,000 or more.

Frequency Distribution of Health Information Factors among Women of Reproductive Age in Pulau Harapan Village

Table 2 presents the frequency distribution of health information factors among respondents, including access to healthcare facilities and sources of health information.

Table 2. Frequency Distribution of Health Information Factors among Women of Reproductive Age (WRA) in Pulau Harapan Village

Health Information Factors	n = 150	%
Access to Health Facilities		
Difficult / Very Difficult	29	19.3
Easy / Very Easy	121	80.7
Sources of Health Information		
Health Professionals	109	72.7
Social Media	11	7.3
Television / Radio	12	8
Internet	9	6
Family / Friends	5	3.3
Posters / Brochures	4	2.7

Based on Table 2, among the total 150 respondents, the majority reported that access to healthcare facilities was easy or very easy, accounting for 121 respondents (80.7%), while 29 respondents (19.3%) reported experiencing difficult or very difficult access to healthcare facilities. Regarding sources of health information, most respondents reported receiving information from healthcare professionals (72.7%), while the least frequently mentioned source of information was posters or brochures (2.7%).

Frequency Distribution of Pap Smear Utilization among Women of Reproductive Age in Pulau Harapan Village

Table 3 presents the frequency distribution of Pap smear utilization among respondents based on whether they had ever undergone the examination.

Table 3. Frequency Distribution of Pap Smear Utilization among Women of Reproductive Age (WRA) in Pulau Harapan Village

Utilization of Pap Smear Services	n = 150	%
Have you ever undergone a Pap smear examination?		
Never	90	60
Ever	60	40

Based on Table 3, among the 150 respondents, the majority had never utilized Pap smear services, accounting for 90 respondents (60.0%), while 60 respondents (40.0%) had previously undergone a Pap smear examination. Table 4 presents the distribution of reasons among respondents who had never undergone a Pap smear examination.

Table 4. Frequency Distribution of Reasons for Not Undergoing Pap Smear Examination among Women of Reproductive Age

Reasons for Not Undergoing Pap Smear	n = 90	%
Lack of knowledge about Pap smear and where it is available	40	44.4
Fear of pain	19	21.1
Feeling embarrassed or uncomfortable	19	21.1
Lack of time	7	7.8
Cost considered expensive	2	2.2
Do not feel it is necessary	3	3.3

Based on Table 4, among the 90 respondents who had never undergone a Pap smear examination, the most common reason was lack of knowledge about Pap smear and where the service is available, reported by 40 respondents (44.4%). Meanwhile, the least frequently mentioned reason was the perception that the cost of the examination was expensive, reported by 2 respondents (2.2%). Table 5 presents the frequency distribution of the last Pap smear examination time, the location of the examination, and the party recommending the examination among respondents who had undergone a Pap smear.

Table 5. Frequency Distribution of Last Examination Time, Examination Location, and Recommending Party among Respondents Who Had Undergone Pap Smear Examination

Pap Smear Utilization	n = 60	%
When was the last time you had a Pap smear examination?		
< 1 year ago	17	28.3
1–3 years ago	14	23.3
> 3 years ago	15	25
Do not remember	14	23.3
Location of Last Pap Smear Examination		
Community Health Center (including mass screening programs)	46	76.7

Hospital	5	8.3
Clinic	9	15
Who recommended the Pap smear examination?		
Health professionals	38	63.3
Family / Friends	6	10
Social media education	8	13.3
Personal initiative	8	13.3

Based on Table 5, among the 60 respondents who had undergone a Pap smear examination, the largest proportion reported having their last examination within the past year (28.3%). The smallest proportions were observed among respondents who had undergone the examination 1–3 years ago and those who could not recall the exact time, each accounting for 23.3%. In terms of examination location, the majority of respondents underwent Pap smear screening at community health centers (Puskesmas), including mass screening programs (76.7%), while the smallest proportion underwent the examination in hospitals (8.3%). Regarding recommendations for undergoing Pap smear examinations, most respondents reported receiving recommendations from health professionals (63.3%), while family or friends (10.0%) were the least common source of recommendation.

Bivariate Analysis

The data analysis in this study employed the Chi-square test to examine the relationship between the independent variables and the dependent variable. The presence of an association between variables was determined based on the p-value. If the p-value was greater than 0.05 ($p > 0.05$), it indicated that there was no significant relationship between the independent and dependent variables. Conversely, if the p-value was less than 0.05 ($p < 0.05$), it indicated that there was a statistically significant relationship between the variables.

Relationship between Sociodemographic Factors and the Utilization of Pap Smear Services among Women of Reproductive Age in Pulau Harapan Village

Table 6 presents the results of the bivariate analysis examining the relationship between respondents' sociodemographic factors, including age, marital status, education level, occupation, and monthly income, and the utilization of Pap smear services.

Table 6. Relationship between Sociodemographic Factors and Pap Smear Utilization among Women of Reproductive Age in Pulau Harapan Village

Independent Variable	Category	Pap Smear Utilization				Total (%)	P-Value
		Never n	Never %	Ever n	Ever %		
Age	< 20 years	4	100	0	0	100	0.000
	20–29 years	38	82.6	8	17.4	100	
	30–39 years	23	46	27	54	100	
	40–49 years	20	47.6	22	52.4	100	
	≥ 50 years	5	62.5	3	37.5	100	
Marital Status	Unmarried	24	92.3	2	7.7	100	0.000
	Married	62	53.4	54	46.6	100	
	Widow	4	50	4	50	100	
Education Level	Low	27	58.7	19	41.3	100	0.971
	High	63	60.6	41	39.4	100	
Occupation	Unemployed / Housewife	67	65	36	35	100	0.171

	Informal Worker	15	50	15	50	100	
	Formal Worker	8	47.1	9	52.9	100	
Monthly Income	< 3,000,000 IDR	78	60.9	50	39.1	100	0.742
	≥ 3,000,000 IDR	12	54.5	10	45.5	100	

Based on Table 6, the results of the bivariate analysis indicate that several sociodemographic factors are associated with the utilization of Pap smear services among women of reproductive age in Pulau Harapan Village. Based on age, all respondents aged below 20 years (100%) had never utilized Pap smear services. Similarly, in the 20–29 year age group, the majority of respondents had also never undergone the examination (82.6%). In contrast, in the 30–39 year and 40–49 year age groups, more than half of the respondents had utilized Pap smear services (54.0% and 52.4%, respectively). Among respondents aged 50 years and above, the majority had again never undergone the examination (62.5%). The statistical test results showed a p-value of 0.000 ($p < 0.05$), indicating a significant relationship between age and Pap smear utilization.

Based on marital status, most respondents who were unmarried had never undergone a Pap smear examination (92.3%). Similarly, among respondents who were married, more than half had never undergone the examination (53.4%). Among widowed respondents, the proportion of those who had undergone and those who had never undergone Pap smear examination was relatively balanced (50% each). The statistical analysis yielded a p-value of 0.000 ($p < 0.05$), indicating a significant relationship between marital status and Pap smear utilization. In terms of education level, the majority of respondents with both low education (58.7%) and higher education (60.6%) had never undergone a Pap smear examination. The statistical analysis showed a p-value of 0.971 ($p > 0.05$), indicating that there was no significant relationship between education level and Pap smear utilization.

Based on occupation, most respondents who were unemployed or housewives had never undergone a Pap smear examination (65.0%). Among respondents working in the informal sector, the proportions of those who had undergone and those who had never undergone the examination were relatively equal (50% each). Meanwhile, among formal sector workers, a slightly higher proportion had undergone Pap smear examinations (52.9%). However, the statistical test produced a p-value of 0.171 ($p > 0.05$), indicating that the relationship between occupation and Pap smear utilization was not statistically significant. Based on monthly income, the majority of respondents with both monthly income below IDR 3,000,000 (60.9%) and monthly income of IDR 3,000,000 or more (54.5%) had never undergone Pap smear examinations. The statistical analysis yielded a p-value of 0.742 ($p > 0.05$), indicating that there was no significant relationship between income level and Pap smear utilization.

Relationship Between Health Information Factors and the Utilization of Pap Smear Services Among Women of Reproductive Age in Pulau Harapan Village

Table 7 presents the results of the bivariate analysis examining the relationship between respondents' health information factors, including access to health facilities and sources of health information, and the utilization of Pap smear services among women of reproductive age in Pulau Harapan Village.

Table 7. Relationship Between Health Information Factors and Pap Smear Utilization Among Women of Reproductive Age in Pulau Harapan Village

Independent Variable	Category	Pap Smear Utilization				Total (%)	P-Value	P-Value
		Never n	Never %	Ever n	Ever %			
Access to Health Facilities	Difficult / Very Difficult	17	58.6	12	41.4	29	100	1.000

	Easy / Very Easy	73	60.3	48	39.7	121	100	
Source of Health Information	Health Professionals	65	59.6	44	40.4	109	100	0.040
	Social Media	9	81.8	2	18.2	11	100	
	Television / Radio	5	41.7	7	58.3	12	100	
	Internet	3	33.3	6	66.7	9	100	
	Family / Friends	4	80	1	20	5	100	
	Posters / Brochures	4	100	0	0	4	100	

Based on Table 7, the results of the bivariate analysis examining the relationship between health information factors and Pap smear utilization among women of reproductive age in Pulau Harapan Village indicate that the majority of respondents, both those who reported difficult or very difficult access to health facilities (58.6%) and those who reported easy or very easy access (60.3%), had never utilized Pap smear services. The statistical test produced a p-value of 1.000 ($p > 0.05$), indicating that there was no significant relationship between access to health facilities and Pap smear utilization.

In contrast, the variable sources of health information showed a significant relationship with Pap smear utilization (p-value = 0.040; $p < 0.05$). Respondents who obtained health information through television/radio (58.3%) and the internet (66.7%) were more likely to have utilized Pap smear services. Conversely, respondents who received information from health professionals (59.6%), social media (81.8%), family or friends (80.0%), and posters or brochures (100%) were predominantly those who had never utilized Pap smear services.

Discussion

Sociodemographic Characteristics of Women of Reproductive Age in Pulau Harapan Village

The results of this study indicate that the largest proportion of respondents was in the 30–39 year age group, accounting for 33.3% of the total participants. Most respondents were married (77.3%), had higher educational attainment (69.3%), were not formally employed or worked as housewives (68.7%), and had a monthly income below IDR 3,000,000 (85.3%).

The age distribution shows that most respondents were within the active reproductive age range, particularly between 30 and 39 years. At this stage of life, the risk of developing precancerous cervical lesions due to persistent Human Papillomavirus (HPV) infection tends to increase. The World Health Organization recommends cervical cancer screening primarily for women aged 30–49 years, as early detection within this age group has been shown to be highly effective in preventing disease progression. Clinically, cervical cancer develops gradually over many years, allowing early detection through routine screening. Epidemiological data also indicate that cervical cancer incidence tends to increase among women aged 30–39 years and 60–69 years, highlighting the importance of screening during productive ages before the disease progresses to advanced stages.

The majority of respondents were married, which epidemiologically relates to sexual activity as the main risk factor for HPV infection. Women who are sexually active are generally advised to undergo routine cervical cancer screening. Pap smear examination is a cytological screening method used to detect precancerous and cancerous changes in cervical cells, enabling early identification and treatment before the disease progresses.

From an educational perspective, most respondents had relatively high educational backgrounds. In theory, higher educational attainment is associated with improved ability to access, understand, and process health

information. Individuals with higher levels of education often demonstrate stronger analytical capacity and broader access to information resources. However, educational attainment does not always directly translate into preventive health behaviors. Without adequate health education, accessible screening programs, and strong internal motivation, individuals may still fail to utilize preventive services such as Pap smear examinations.

In terms of employment status, the majority of respondents were housewives. This condition may influence both economic independence and decision-making autonomy regarding healthcare utilization. According to health behavior theory, one determinant of healthy behavior is the availability of resources, including financial capacity and access to healthcare facilities. Individuals who have their own income may have greater flexibility in meeting health-related needs, including transportation costs and preventive health examinations.

Consistent with this finding, most respondents reported relatively low monthly income levels. Economic limitations may act as barriers to preventive health service utilization, even when government programs provide relatively affordable or free screening services. Financial constraints often lead households to prioritize essential daily needs rather than preventive healthcare services. Overall, the sociodemographic profile of respondents suggests that although most participants were within the age group at risk for cervical cancer and had relatively adequate educational backgrounds, economic limitations may still influence their health behavior, particularly in relation to the utilization of Pap smear screening services.

Health Information Factors among Women of Reproductive Age in Pulau Harapan Village

The findings of this study indicate that the majority of women of reproductive age in Pulau Harapan Village reported easy access to healthcare facilities (80.7%), while the main source of health information was healthcare professionals (72.7%).

These findings suggest that, structurally, most respondents have relatively good access to healthcare services in terms of distance, travel time, and facility availability. Adequate accessibility should theoretically support the utilization of preventive health services, including cervical cancer screening. According to Lawrence Green's health behavior model, health behavior is influenced by three main factors: predisposing factors (knowledge, attitudes, and beliefs), enabling factors (availability of facilities and healthcare access), and reinforcing factors (support from healthcare providers and social environment). Access to healthcare facilities functions as an enabling factor that may facilitate or hinder preventive health behaviors.

The dominance of healthcare professionals as the primary source of health information indicates that healthcare workers remain highly trusted in delivering health messages. Information provided directly by healthcare professionals is generally perceived as more credible and reliable than other sources. In addition, face-to-face education allows individuals to clarify misunderstandings and obtain more comprehensive explanations, which can improve health literacy and encourage positive attitudes toward preventive health behaviors.

Utilization of Pap Smear Services among Women of Reproductive Age in Pulau Harapan Village

Despite relatively good access to health facilities, the results show that 60% of respondents had never undergone a Pap smear examination. Among those who had never utilized Pap smear services, the most frequently reported reason was lack of knowledge about Pap smear and where the service is available (44.4%).

This finding suggests that the utilization of Pap smear services in Pulau Harapan Village remains relatively low. The lack of knowledge regarding the benefits and availability of Pap smear examinations represents a significant barrier to cervical cancer screening. From a theoretical perspective, knowledge is considered a

predisposing factor influencing health behavior. When individuals lack adequate understanding of the benefits, procedures, and service locations, the likelihood of engaging in preventive health actions becomes lower. Routine Pap smear screening is widely recognized as one of the most effective strategies for preventing cervical cancer progression because precancerous changes can be detected and treated early. According to the World Health Organization, regular cervical cancer screening significantly reduces both incidence and mortality rates associated with the disease.

Nevertheless, positive patterns were also observed among respondents who had utilized Pap smear services. Most respondents who had undergone the examination reported that their most recent screening occurred within the past year, indicating some level of awareness regarding periodic screening recommendations. Furthermore, the majority of examinations were conducted at community health centers (Puskesmas), highlighting the important role of primary healthcare facilities in implementing cervical cancer screening programs, particularly through community-based screening initiatives.

Healthcare professionals also played a significant role in encouraging women to undergo Pap smear examinations. Most respondents reported that they received recommendations from healthcare providers. Direct advice from healthcare professionals can strengthen risk perception, increase motivation, and reduce uncertainty about screening procedures. This finding aligns with the concept of reinforcing factors in health behavior theory, where encouragement and guidance from healthcare providers can motivate individuals to adopt preventive health practices.

Overall, although healthcare access and professional support are relatively adequate, the low level of Pap smear utilization indicates that improvements in health literacy and targeted information dissemination remain necessary. Strengthening community-based education programs and increasing public awareness about cervical cancer screening are essential strategies to improve early detection coverage among women of reproductive age in Pulau Harapan Village.

Relationship Between Sociodemographic Factors and Pap Smear Utilization

The results of the bivariate analysis show that age and marital status were significantly associated with Pap smear utilization. Age was significantly related to Pap smear screening behavior ($p < 0.05$). This finding is consistent with previous studies suggesting that cervical cancer risk increases with age due to the gradual progression of carcinogenesis. HPV infection may take 10–20 years to develop into cervical cancer, making women aged 30 years and older more vulnerable to the development of precancerous lesions. Furthermore, older women tend to have greater awareness of health risks and are therefore more likely to participate in preventive screening programs.

Marital status also showed a significant relationship with Pap smear utilization. Married women were more likely to undergo Pap smear examinations than unmarried women. Epidemiologically, marital status is closely associated with sexual activity, which is the primary risk factor for HPV infection. Women who begin sexual activity earlier and rarely undergo screening may face higher risks of cervical lesions.

In contrast, education level, occupation, and monthly income were not significantly associated with Pap smear utilization. Higher educational attainment does not necessarily translate into preventive health behavior without adequate motivation, awareness, and perceived susceptibility to disease. Similarly, employment status may influence access to information and time availability, but it does not necessarily determine screening behavior. Regarding income, the presence of national health insurance programs may reduce financial barriers, making economic status less influential in determining screening utilization.

Relationship Between Health Information Factors and Pap Smear Utilization

Among health information variables, sources of health information were significantly associated with Pap smear utilization, whereas access to healthcare facilities was not. Women who obtained information from credible sources, particularly healthcare professionals, tended to demonstrate greater awareness of cervical cancer screening.

Healthcare professionals play an important role in providing preventive health education and increasing awareness about HPV infection and cervical cancer screening. According to the World Health Organization, effective communication between healthcare providers and patients is a key factor in improving participation in cervical cancer screening programs. Reliable information sources can shape risk perception, increase awareness of screening benefits, and encourage positive attitudes toward preventive healthcare.

However, access to healthcare facilities did not show a significant relationship with Pap smear utilization. This finding indicates that physical access alone does not guarantee the use of preventive services. Based on Lawrence Green's behavioral theory, enabling factors such as access to facilities must be accompanied by predisposing factors such as knowledge, beliefs, and risk perception. Even when services are available and easily accessible, individuals with low perceived risk or negative attitudes toward screening may still choose not to utilize these services.

5. Conclusion

This study demonstrates that the utilization of Pap smear services among women of reproductive age in Pulau Harapan Village remains suboptimal, as most respondents had never undergone screening. The main barrier was not cost, but limited practical knowledge regarding Pap smear examinations and where such services could be accessed. The findings further indicate that Pap smear utilization was significantly associated with age and marital status, suggesting that reproductive life stage and personal experience with maternal and reproductive health services play an important role in shaping screening behavior. Women who were older and married were more likely to utilize Pap smear services, reflecting stronger perceived susceptibility and greater interaction with healthcare providers. In contrast, education level, occupation, and monthly income were not significantly related to screening utilization, indicating that structural advantages alone are insufficient to encourage preventive behavior without personal awareness, social support, and active recommendation from health professionals. Among women who had undergone Pap smear examination, most had done so within the last year, mainly at community health centers, often through mass screening activities. Overall, these findings highlight the importance of contextual health education, community-based service delivery, and the proactive role of healthcare professionals in improving cervical cancer screening coverage in island communities.

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