International Journal of Health Science (IJHS)

E-ISSN: 2827-9603
P-ISSN: 2827-9603

Research Article

Determinants of Cervical Cancer Risk Factors with Prevention Efforts in Women of Childbearing Age in Samapuin Village, Sumbawa Regency

Evi Gustia Kesuma [1], Yunita Lestari [2], and Has'ad Rahman Attamimi [3]

[1] STIKes Griya Husada Sumbawa Email : gustiakesuma88@gmail.com

[2] STIKes Griya Husada Sumbawa Email : yunitamudsand92@gmail.com

[3] STIKes Griya Husada Sumbawa Email : has.ad.rahman31121992@gmail.com

* Corresponding Author : Evi Gustia Kesuma

Abstract: Cervical cancer remains one of the leading causes of cancer-related deaths among women, particularly in developing countries, where access to prevention and treatment options may be limited. Early detection and prevention are crucial, especially for women of reproductive age (WRA), who are considered a high-risk group for the disease. This study aims to analyze the relationship between various risk factors and preventive measures, such as Visual Inspection with Acetic Acid (VIA) tests and HPV vaccination, in Samapuin Village, Sumbawa Regency. A quantitative analytic study with a cross-sectional design was conducted, involving 109 respondents selected through total sampling. Data analysis was performed using univariate, bivariate (Chi-square test), and multivariate analysis through multiple logistic regression with the backward method. The findings indicate that certain factors, such as age at first marriage, exposure to cigarette smoke, and history of hormonal contraceptive use, were significantly associated with cervical cancer prevention efforts ($p < 0.05$). However, age at menarche and parity did not show significant associations. Among the factors, age at first marriage emerged as the most dominant factor influencing preventive behavior. Women who married at an older age were more likely to engage in preventive actions such as regular screening and vaccination. These results underscore the importance of addressing modifiable risk factors through targeted education and public health interventions. In conclusion, cervical cancer prevention efforts can be significantly influenced by behavioral changes related to modifiable risk factors. Public health strategies should focus on raising awareness, improving access to screening, and encouraging HPV vaccination. The active involvement of health workers is crucial in enhancing education and facilitating access to these preventive measures, ultimately reducing the burden of cervical cancer in communities.

Keywords: Cervical cancer, HPV vaccine, VIA test, prevention, women of reproductive age.

Received: May 30, 2025;
Revised: June 30, 2025;
Accepted: July 28, 2025;
Published: July 30, 2025
Curr. Ver.: July 30, 2025

1. Introduction

Cancer is one of the leading causes of death worldwide, including cervical cancer, which is the leading cause of death, especially in developing countries. Cervical cancer is caused by infection with the Human Papillomavirus (HPV), which stimulates changes in the behavior of cervical epithelial cells (Prawirohardjo, 2019). Human

Papillomavirus (HPV) is a common virus transmitted through sexual contact. There are more than 100 types of HPV, but only a few, such as HPV types 16 and 18, carry a high risk of causing cervical cancer. Early detection through Pap smear tests and HPV vaccination are effective preventative measures. However, many women are still unaware of the importance of early detection and prevention, resulting in cervical cancer cases often being discovered at an advanced stage (Ministry of Health, 2023). Unfortunately , the level of awareness and participation woman to action prevention the Still classified as low , especially in rural areas with access information and services limited health .

A number of study previously , such as study by Wulandari et al. (2021), shows that low knowledge , factors culture , and access to service health is obstacle main in effort prevention cancer cervix among woman age fertile (WUS). Another study by Hartati and Suwandi (2019) also showed that use hormonal contraception in term long , marriage age early , and behavior sexual risky participate increase possibility occurrence cancer cervix . However Thus , most of study focusing on urban areas or regions with intensive health program interventions . Not many studies that are specific dig factor risk and behavior prevention cancer cervix in WUS in the Kelurahan area Samapuin Sumbawa District , West Nusa Tenggara, which has characteristics sociodemographic and cultural alone .

Local data gaps and lack of study deep about factor risk specific as well as behavior prevention in the sub-district Samapuin become gap important that is necessary bridged . Condition This show urgency For done research that can describe in a way comprehensive How knowledge , attitudes and behavior of WUS towards cancer cervix , as well as contributing factors to risk occurrence disease this . Without existence proper understanding about context local , efforts promotive and preventive measures carried out by the government or institution health often less effective and not appropriate target . Therefore that , study This become important For provide proof empirical in development of intervention strategies based on need public .

Study This aim For analyze factor associated risks with incident cancer cervix and evaluate effort prevention that has been or Not yet done by women age fertile in the sub-district Samapuin . In a way special , research This will identify connection between variables like age married , age of menarche, history of hormonal contraceptive use , exposure to cigarette smoke and number of parity with action prevention like IVA Test and HPV vaccination . It is hoped that results study This can give input valuable for service health local and stakeholders policy other in develop educational programs as well as service better health effective and contextual .

2. Preliminaries or Related Work or Literature Review

Cervical cancer is a type of cancer that affects the cervix, the lower part of the uterus that connects to the vagina. The main cause of cervical cancer is infection with the Human Papillomavirus (HPV), especially oncogenic types 16 and 18. This virus is transmitted through sexual contact, and most infections resolve on their own, but in some women it can progress to cancer if left untreated.

1 Cervical cancer develops slowly, starting from precancerous lesions that can be detected through screening tests such as a Pap smear or a VIA test (Visual Inspection with Acetic Acid) (Ministry of Health of the Republic of Indonesia, 2020).

Cancer is the abnormal growth of body tissue cells that can become malignant. These cells can grow further and spread to other parts of the body, causing death. Body cells undergo mutations (changes) and begin to grow and divide more rapidly and uncontrollably than normal cells (Herniyatun et al., 2024). Cervical cancer is a disease caused by the abnormal growth and division of epithelial cells in the lower part of the uterus. Cancer cells will continue to grow and penetrate the tissue and spread to the surrounding tissue, namely the vagina (Syukuriyah & Alfiyanti, 2023).

Cervical cancer is a cancer that occurs in the female reproductive organs, namely the cervix, which is the entrance to the uterus located between the uterus and the vaginal canal (Setianingsih et al., 2022). Cervical cancer is cancer that occurs in the cells of the cervix. The cervix is the lower, narrow end of the uterus. The cervix connects the uterus to the vagina (birth canal). Cervical cancer usually develops slowly over time. Before cancer cells appear in the cervix, cervical cells undergo changes called dysplasia, where abnormal cells begin to appear in the cervical tissue. Over time, if these abnormal cells are not destroyed or removed, they can become cancerous and begin to grow and spread deeper into the cervix and surrounding areas (Kundarti et al., 2024).

Cervical cancer is a malignant tumor of the cervix that can be divided into two histological types, adenocarcinoma (AC) and squamous cell carcinoma (SCC) (1). SCC is more common and has an incidence rate of 70% (2). AC originates from the glandular cells that line the cervical canal (endocervix), while SCC originates from the squamous cells that line the outer part of the cervix that opens to the ectocervix. The area where the squamous cells and the thin, flat glandular cells are located is called the transformation zone, and most tumors originate in this zone. (Hull et al, 2020).

Risk factors for cervical cancer include young age at first sexual intercourse, multiple sexual partners, other sexually transmitted infections, smoking, and long-term use of hormonal contraceptives. Furthermore, a weakened immune system, such as in people with HIV/AIDS, also increases the risk of cervical cancer. Primary prevention efforts include the HPV vaccination, which has been shown to be effective in preventing infection with the HPV types that cause cervical cancer. Secondary prevention involves early detection of precancerous lesions through regular screening (*American Cancer Society,* 2022).

3. Proposed Method

Study This use approach quantitative analytic with cross-sectional design aimed at For identify factors related determinants with risk cancer cervix as well as study its relevance with effort prevention by women age fertile (WUS) in the sub-district Samapuin , Sumbawa Regency . This design chosen For allows measurement connection between variables in a way simultaneous in One time without intervention direct . Research implemented during May to June 2025 , with focus on collecting primary data from respondents who meet the requirements criteria inclusion .

Population in study This is all over woman aged 20–49 years who live in the sub-district Samapuin . Determination sample done with stratified random sampling technique , based on RT/RW area division . Number sample determined use Slovin's formula with level 5% error , so 109 respondents were obtained . Data is collected through questionnaire structured that has been tested validity and reliability , including demographic data , age married , age of menarche, history of hormonal contraceptive use , exposure to cigarette smoke and number of parity with action prevention like IVA Test and HPV vaccination .

Data analysis was performed through three stage . First , analysis univariate used For describe distribution frequency of each variable . Analysis bivariate using the Chi-square statistical test to see meaning connection between variables independent and dependent . The results of the analysis considered meaningful when obtained $p < 0.05$. Analysis multivariate done with objective For see variables the most dominant independent the relationship with variables dependent with use Multiple Logistic Regression with Backward method.

4. Results and Discussion

A. Research Result

Univariate Analysis

Table 1. Frequency Distribution of Dependent and Independent Variables

No	Risk Factors		f	%
1.	Age Marry	1. <20 Years	86	78.9
		2. >20 Years	23	21.1
2.	Age of Menarche	1. <15 Years	43	39.4
		2. >15 Years	66	60.6
3.	Usage History Hormonal Contraception	1. Yes	97	89
		2. No	12	11
4.	Exposure to Cigarette Smoke	1. Yes	98	90
		2. No	11	10
5.	Amount Parity	1. Nulliparous	8	7.3
		2. <3	33	30.3
		3. ≥3	68	62.4

Table 1 shows that of the 109 respondents of Women of Childbearing Age (WUS), the risk factors for cervical cancer were mostly those who were married <20 years, namely 78.9%, menarche age >15 years, 60.6%, had a history of using hormonal contraceptives, 89% were exposed to cigarette smoke, Yes, 90%, and had a parity of >3, namely 62.4%.

Bivariate Analysis

Table 2. Relationship between Several Risk Factors and Prevention Efforts

RISK FACTORS	CERVICAL CANCER PREVENTION EFFORTS				*P-VALUE*
	IVA TEST		HPV VACCINE		
	f	%	f	%	
Age Marry					0.000
<20 Years	62	72	24	28	
>20 Years	20	87	3	13	
Age of Menarche					0.222
<15 Years	38	88.4	5	11.6	
>15 Years	51	77.3	15	22.7	
Usage History Hormonal Contraception					0.000
Yes	79	81.4	18	18.6	
No	9	75	3	25	
Exposure to Cigarette Smoke					0.000
Yes	86	87.7	12	12.3	
No	10	90.9	1	9.1	
Amount Parity					0.485
Nulliparous	8	100	0	0	
<3	26	78.8	7	21.2	
≥3	57	83.8	11	16.2	

Table 2 shows that there is a significant relationship between age of marriage, history of hormonal contraceptive use, and exposure to cigarette smoke with cervical cancer prevention efforts with a p value of <0.05, but there is no relationship between age of menarche and number of parities with a p value of >0.05.

Multivariate Analysis

Table 3. Final Multivariate Analysis Model

Risk Factors	B	SE	Wald	p-value	OR (95% CI)
Age Married (<20 years)	1.65	0.58	8.10	0.004	5.20 (1.65–16.39)
Age of Menarche (<15 years)	0.38	0.53	0.51	0.475	1.46 (0.52–4.07)
Contraception (Yes)	0.74	0.64	1.34	0.247	2.10 (0.60–7.39)
Exposed to Cigarette Smoke (Yes)	1.10	0.51	4.63	0.031	3.00 (1.11–8.12)
Parity ≥3	0.45	0.56	0.64	0.423	1.57 (0.52–4.70)

Based on Table 3, it can be concluded that of all the independent variables studied, the variables that are the most dominant risk factors for cervical cancer are age at marriage and exposure to cigarette smoke with P<0.05.

B. Discussion

Cancer cervix is one of the disease deadly in women and still become problem health society in Indonesia. Prevention through detection early detection and HPV vaccination are very important For lower number incidents and deaths consequence cancer cervical (WHO, 2023). Research This aim identify connection between factor risks and efforts prevention cancer cervix in women age fertile (WUS) in the sub-district Samapuin , Sumbawa Regency . Research results show that age Marry own significant relationship with effort prevention cancer cervix (p = 0.000). Women who are married above 20 years old tend more Lots do IVA test (87%) compared with those who marry under age 20 years (72%). This is consistent with theory that age moment Marry correlated with maturity thinking and decision making more decisions wise related health reproduction (Ministry of Health , 2021). Women are advised For married above 20 years old because in the range age the system reproduction has develop in a way more optimal, good in a way physiological and psychologically . In terms of biologically , female reproductive organs include uterus , ovaries, and cervix reach maturity functional around 20 years old . Married and pregnant before age This can increase risk complications pregnancy , such as birth premature , baby heavy born low , up to preeclampsia . In addition , the cervix at this age teenager Still in stage transformation active , so that more prone to to HPV infection that can trigger cancer cervix later day (WHO, 2023).

In this aspect HPV vaccination , age marriage also has an effect . Only 13% of married women over 20 years old who have not yet had children do vaccination , compared with 28% of those who are married before 20 years old . This shows that group age Marry more mature tend more proactive in effort preventive to cancer cervix (Kusmiran , 2020). Usage history hormonal contraception also shows significant relationship with action prevention (p = 0.000). As many as 81.4% of women use it hormonal contraception does IVA test . Use hormonal contraception is one of the method family planning a lot used by women age fertile Because its effectiveness in prevent pregnancy . However , a number of study has show that use hormonal contraception , especially in term long , can increase risk occurrence cancer cervix . The hormonal contraceptive in question covers birth control pills , hormonal injections , and implants containing estrogen and/ or hormones progesterone which affects cycle menstruation and function Female reproduction (WHO, 2021). Hormones synthetic can cause changes in cells epithelium the cervix that makes it more prone to to Human Papillomavirus (HPV) infection , the cause main cancer cervix . In addition , the use of hormonal contraception can lower thickness mucus cervix so that makes it easier for viruses to enter and defend in network cervix . Risk cancer cervix tends to increase in women who use hormonal contraception more than five years , especially If No accompanied by with detection early like IVA test or Pap smear (American Cancer Society, 2022).

Exposure to cigarette smoke is also a problem significant factors in action prevention cancer cervix (p = 0.000). As many as 87.7% of respondents exposed to cigarette smoke do IVA test . This can interpreted as form awareness will risk addition

from exposure carcinogens , so that push individual For do detection early (Yulianti, 2020). In this case HPV vaccination , only 12.3% of respondents who were exposed to cigarette smoke did vaccination . This figure Enough low and shows the need improvement education about HPV vaccine , especially in groups that have factor risk environment like exposure to cigarette smoke (Hartati, 2022). Age of menarche does not show significant relationship with action prevention cancer cervix ($p = 0.222$). Both groups experienced menarche under aged 15 years (88.4 %) or above 15 years old (77.3%) showed sufficient participation tall in IVA test . This indicates that age of menarche not yet become consideration main in push action prevention (Wahyuningsih, 2019). Similar things are also seen in matter HPV vaccination . Respondents with menarche below 15 years old only 11.6% did vaccination , while the above 15 years old as much as 22.7%. This shows Not yet There is sufficient awareness will connection between age puberty early with risk HPV infection (Fitriani, 2021). The number of parity also does not show connection meaningful in a way statistics to action prevention cancer cervix ($p = 0.485$). Although the group nulliparous own level 100% participation in IVA test , the number is very small (only 8 people) so that No Enough For show significance statistics . Group with ≥3 children also have level participation high (83.8%) but No different Far from group others (Sumbawa Health Office , 2022).

Research result This give description important for intervention health society . Education about risk Marry young , impact cigarettes , and benefits detection early as well as vaccination need reinforced , especially for group age fertile . Officer health , cadres integrated health posts and information media local can involved in convey messages prevention cancer more cervical appropriate targets and sustainability (Hidayati , 2022).

5. Comparison

Women of reproductive age who marry at a young age (<20 years) tend to have a lower level of cervical cancer prevention efforts compared to those who marry at a more mature age. This is likely due to limited knowledge, emotional preparedness, and restricted access to health information at a younger age. Meanwhile, women of reproductive age who marry at ≥20 years are more likely to undergo early detection measures such as VIA (visual inspection with acetic acid) or Pap smear tests, as they tend to have a greater awareness of reproductive health risks.

When compared based on age at menarche and the use of hormonal contraception, women of reproductive age who experience early menarche (≤12 years) and use long-term hormonal contraceptives have a higher risk of cervical cancer. However, not all of them engage in preventive efforts. This contrasts with women of reproductive age who do not use hormonal contraception or who experience menarche after age 12, as they are generally more active in participating in health counseling and screenings. This difference indicates that even when risk factors are present, not all women of reproductive age automatically adopt preventive behaviors.

In terms of exposure to cigarette smoke and parity (number of childbirths), women of reproductive age who are frequently exposed to cigarette smoke and have more than three children tend to have a higher risk of cervical cancer, but their participation in prevention efforts remains low. On the other hand, women who are not exposed to cigarette smoke and have low parity are more proactive in undergoing early screenings and participating in reproductive health programs. This comparison suggests that the presence of risk factors does not always correspond with increased awareness or preventive action, indicating the need for more intensive and personalized approaches in public health education and interventions.

6. Conclusions

Based on the research results, it can be concluded that there is a significant relationship between age at marriage, exposure to cigarette smoke, and history of hormonal contraceptive use with cervical cancer prevention efforts in women of childbearing age with a p value <0.05. These three factors influence an individual's tendency to undertake preventive measures such as VIA testing and HPV vaccination. In contrast, the variables of age at menarche and number of parities did not show a significant relationship in this study. Age at marriage is the most dominant factor influencing prevention efforts, where women who marry over the age of 20 tend to be more aware and active in taking preventive measures against cervical cancer. The results of this study underscore the importance of education about the ideal age at marriage and reproductive health promotion to increase awareness and behavior in cervical cancer prevention in the community.

Suggestions for cervical cancer prevention include focusing on improving reproductive health education, particularly on the importance of marriage at a more mature age (over 20), the dangers of cigarette smoke exposure, and long-term use of hormonal contraception. Integrated outreach programs at integrated health posts (posyandu), community health centers (puskesmas), and schools need to be promoted to raise awareness among women of childbearing age about the importance of early cervical cancer detection through VIA testing and HPV vaccination. Furthermore, health workers are expected to provide routine counseling to hormonal contraception users to better understand the risks and motivate them to undergo regular check-ups as a preventative measure.

7. THANK-YOU NOTE

The author would like to express his deepest gratitude to the Head of the Institute for Research and Community Service (LPPM) and the Chairperson of the Griya Husada Sumbawa Health College for all forms of support, both moral and material, provided during the implementation of this research. The assistance, guidance, and facilities provided were crucial to the smooth running and successful completion of this research. May all forms of contributions given become ongoing charity and bring progress to the institution in the development of science, particularly in the field of public health.

References

1. World Health Organization. (2023). *Cervical cancer fact sheet*. https://www.who.int
2. Ministry of Health of the Republic of Indonesia. (2021). *Guidelines for management of cervical cancer*. Ministry of Health.
3. Ministry of Health of the Republic of Indonesia. (2020). *Technical guidelines for IVA examination*. Ministry of Health of the Republic of Indonesia.
4. World Health Organization. (2023). *Adolescent pregnancy*. https://www.who.int
5. National Population and Family Planning Agency (BKKBN). (2020). *Reproductive health guide for adolescents*. BKKBN.
6. Kusmiran, E. (2020). *Women's reproductive health*. Salemba Medika.
7. American Cancer Society. (2022). *Risk factors for cervical cancer*. https://www.cancer.org
8. Oktaviani, T., et al. (2021). Level of knowledge about HPV vaccination. *Journal of Health Promotion*.
9. Yulianti, L. (2020). Exposure to cigarette smoke as a risk factor for cervical cancer. *Journal of Reproductive Health*.
10. Hartati, N. (2022). Implementation constraints of HPV vaccine at community health centers. *Journal of Indonesian Nursing*.
11. Wahyuningsih, S. (2019). *Risk factors for cervical cancer*. Unair Press.
12. Fitriani, A. (2021). Early menarche and its relationship with cancer risk. *Journal of Nutrition and Health*.
13. Sumbawa Health Office. (2022). *Sumbawa Regency health profile*.
14. Puspitasari, R. (2023). Analysis of multivariate methods in women's health studies. *Indonesian Public Health Media*.
15. Hidayati, D. (2022). The role of education in cervical cancer prevention. *Journal of Health Promotion*.