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Determinants of Visual Inspection with Acetic Acid (IVA) Test Utilization based on Risk Factors Group

Aina Mabrukah[1a*], Ayun Sriatmi[1b], Rani Tiyas Budiyanti[1c]

[1] Faculty of Public Health, Universitas Diponegoro, Semarang, Central Java, Indonesia

[a] Email address: ainamabrukah@gmail.com
[b] Email address: ayunsriatmi@gmail.com
[c] Email address: ranitiyas89@gmail.com

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Abstract

The Visual Inspection with Acetic Acid (IVA) test aims to diagnose early so that it can speed up treatment, reduce morbidity and mortality in women due to cervical cancer. IVA test coverage in Magelang district has not reached the target, especially in the at-risk group. The study aims to see the difference in utilization of IVA services in groups of mothers who are divided into at-risk and non-risk groups. The method used was quantitative method that uses a comparative design. The study population was all mothers aged 30-50 years in Magelang district. Respondents of each group were 68 people determined by proportional sampling technique. Univariate analysis with frequency distribution table and bivariate analysis with Mann-Whitney test because the data was not normally distributed. There was no difference in the utilization of IVA services between the at-risk and non-risk groups (p=0.205). However, it was statistically proven that the at-risk group had a better level of knowledge, attitude, and lifestyle, and felt more vulnerable and needed an IVA test than the non-risk group. Meanwhile, the non-risk group had better perceptions of accessibility and health worker support than the risk group. Risk factor mapping at the Health Center level needs to be done to develop needs-based interventions to increase IVA coverage.

Keywords: Visual Inspection Test, Acetic Acid (IVA), Utilization, Risk Group.

Corresponding Author:

Aina Mabrukah
Faculty of Public Health, Universitas Diponegoro, Semarang, Central Java, Indonesia
Email: ainamabrukah@gmail.com

1. INTRODUCTION

Cervical cancer is the most common cancer in women after breast cancer, colorectal cancer, and lung cancer (Sung et al., 2021). Cervical cancer is caused by HPV (Human Papilloma Virus) virus infection. In normal cervical cells, changes occur to dysplasia (cell abnormalities) so that if not overcome it can develop into cancer (Nislawaty & Meidiana, 2018). HPV virus infection is experienced by 10-30% of women aged 30 years who are actively having sexual intercourse. Cancer of the cervix is considered a silent disease because it is generally detected at an advanced stage (Susilawati, Maryam & Surianti, 2021). Based on data from the Global Cancer Observatory (GLOBOCAN) in 2020, the incidence of cervical cancer by age in the world is 13.3 per 100,000 women and the death rate is 7.2 per 100,000 women. The WHO targets the elimination of cervical cancer incidence rate of 4 per 100,000 women (Singh et al., 2023).

Cancer Country Profile data shows that the 2018 cervical cancer incidence rate in Indonesia was 9.3% and the death incidence rate was 8.8% (WHO, 2020). Based on data from the Global Cancer Observatory (GLOBOCAN) in 2020, the incidence of cervical cancer in Indonesia was 24.4 per 100,000 women (Singh et al., 2023). The mortality rate due to cervical cancer is high due to late diagnosis (Chandrawati, 2016).

The Indonesian government issued Minister of Health Regulation No. 34 of 2015 which describes policies for breast cancer and cervical cancer control (Kementerian Kesehatan Republik Indonesia, 2015). Health Center plays a role in primary prevention activities in the form of health promotion and HPV vaccination, secondary prevention activities through early detection of cervical cancer with IVA, and case management efforts with appropriate treatment after the patient is diagnosed with cervical cancer. The key to the success of the cervical cancer prevention program lies in early detection activities. WHO data shows that more than 50% of women diagnosed with cancer have never had early detection. The purpose of early detection is to prevent the development of disease progressivity so as to reduce mortality and morbidity in women (Sagita & Rohmawati, 2020). The role of early detection of cervical cancer cannot be replaced by HPV vaccination, although along with the introduction of the HPV vaccine as primary prevention, early detection efforts also need to be strengthened (Dinh Thu et al., 2018).

Indonesia's 2021 health profile shows that the percentage of early detection of cervical cancer (IVA) and breast cancer is 6.83% (Kementerian Kesehatan Republik Indonesia, 2021). Until 2021, 2.8 million women have conducted early detection of cervical cancer by IVA and breast cancer. From the results of the IVA examination, 27,837 positive IVA cases were found in Indonesia with 3,894 suspected cases of cervical cancer. The Ministry of Health set a target of 50% (18.7 million) coverage of IVA services by 2019. Central Java occupies the eleventh position as the province with the lowest IVA coverage in Indonesia. Data from the Central Java Provincial Health Office shows that IVA coverage in 2018 was 1.92% and then decreased until 2021 by 0.6% (Kementerian Kesehatan Republik Indonesia, 2021).

Magelang district has lower IVA coverage than the average coverage in Central Java. Based on data from the Magelang District Health Office, the coverage of early detection of cervical cancer by IVA has experienced a downward trend from 2018 by 5% to 2021 by 0.1% (Kementerian Kesehatan Republik Indonesia, 2021). The data shows that IVA coverage in Magelang District has not reached the set target of 10%. Based on the results of interviews with 35 women of childbearing age, there were only 5 women or about 14.2% who had ever detected cervical cancer with IVA. This shows that most women have not utilized IVA services at the Health Center. The utilization of IVA services tends to be done by women of childbearing age who are symptomatic only. The low utilization of IVA services encourages Health Center to implement various strategies but has not been able to convince women of childbearing age to perform IVA. The low utilization of IVA services is one of the causes of the development of cervical cancer (Sagita & Rohmawati, 2020).

Public perception of a disease is related to the behavior of utilizing health services which affects whether or not a service is used. According to Andersen, health service utilization is influenced by predisposing factors (demographic factors such as age and gender, social factors such as education and employment, and health belief factors such as attitudes and knowledge), enabling factors (family resources and community resources), and need factors (individual assessment and clinical assessment) (Notoatmodjo, 2007). The increase in individual behavior in utilizing health services according to Rosenstock is influenced by perceptions of vulnerability, perceptions of severity, perceptions of benefits, perceptions of obstacles, and cues to act on a disease (Maseko, Huang & Lin, 2021).

At-risk groups have a greater chance of being diagnosed with cervical cancer at a late stage than non-risk groups. Research by Maharani et al., (2022) showed that mothers at risk of cervical cancer who were diagnosed at the final stage (stage III) were 78.3% while in non-risk mothers it was 59.6% (Maharani, Jumsa & Hapsari, 2022). IVA tests are important for at-risk mothers considering that late detection can increase the chance of death because the survival rate for patients with late-stage cervical cancer is only 17% (National Cancer Institute, 2023). The purpose of this study was to see the differences between at-risk and non-risk groups in Magelang district in the use of Visual Inspection with Acetic Acid (IVA) test.

2. RESEARCH METHOD

This research is a quantitative study that uses a comparative design. The study population consisted of the target population and reachable population. The target population of this study was all mothers aged 30-50 years in Magelang district. The reachable population was mothers aged 30-50 years in 4 health centers with a total of 33,559 people. The minimum sample was calculated using Lemeshow's formula, which is 68 people per group, resulting in a total sample of 136 people. Determination of the number of samples in each Health Center area was carried out by proportional sampling, namely Grabag I Health Center as many as 38 people, Secang I Health Center as many as 32 people, Borobudur Health Center as many as 36 people, and Mertoyudan I Health Center as many as 30 people.

The criteria for respondents in the at-risk group were women of childbearing age (30-50 years old), domiciled in the designated working area of the Health Center, married, had ≥ 3 of the 9 defined risk factors, willing to become respondents. While the criteria for respondents in the non-risk group are women of childbearing age (30-50 years), domiciled in the designated Health Center working area, married, have < 3 of the 9 risk factors set, willing to become respondents. The risk factors determined in the study were marrying at age ≤ 19 years, marrying > 1 time, having ≥ 3 children, using hormonal contraceptives > 5 years (birth control pills, birth control injections, or implants), smoking, having family members at home who smoke, having a history of STDs (Sexually Transmitted Diseases), having had a curette, and a family history of cancer.

The dependent variable was the utilization of IVA services and the independent variables were knowledge, attitude, perceived vulnerability, perceived accessibility, perceived health worker support, perceived availability of facilities and infrastructure, health insurance membership, need, and lifestyle. The research data were collected using a questionnaire instrument that was distributed directly offline. Before collecting data, the questionnaire was first tested for validity and reliability on 30 people outside the research sample so that the instrument was suitable and appropriate to measure the research variables. The data collection process was carried out by respondents filling out a questionnaire, and the researcher explained if the respondent did not understand the questionnaire questions that had previously been tested.

Univariate analysis to describe the research variables in the form of frequency distribution tables. Bivariate analysis to determine differences in research variables between groups of mothers at risk and not at risk using the Mann-Whitney test because the results of

the normality test with the Kolmogorov Smirnov test were not normally distributed. The Mann-Whitney test was conducted with a significance value of 0.05. The conclusion was drawn if the significance value <0.05 then there is a difference between groups. This research has been approved by the health research ethics committee of the Faculty of Public Health, Diponegoro University with number 218/EA/KEPK-FKM/2023.

3. RESULTS AND DISCUSSION

Table 1. Distribution of Respondent Characteristics (n=136)

Respondent Characteristics	Group			
	Risk		Non-Risk	
	n	%	n	%
Age				
30-40 years old	24	35.3	39	57.4
41-50 years old	44	64.7	29	42.6
Marriage Status				
Marry	68	100	68	100
Not Married	0	0	0	0
Education Level				
Not in school	0	0	0	0
Graduated from elementary school	22	32.4	12	17.6
Graduated from junior high school	20	29.4	16	23.5
Graduated from senior high school	21	30.9	26	38.2
Graduated from university (D3/S1/S2/S3)	5	7.4	14	20.6
Jobs				
Housewife	42	61.8	45	66.2
Civil Servant / Military / Police	0	0	1	1.5
Private Employee	3	4.4	5	7.4
Self-employed	4	5.9	3	4.4
Trader	10	14.7	6	8.8
Farmer/Fisherman	4	5.9	0	0
Labor	2	2.9	0	0
Teacher	3	4.4	8	11.8
HPV Vaccination				
Ever	0	0	0	0
Never	68	100	68	100

Table 1 shows that the majority of at-risk mothers have an age range of 41-50 years (64.7%) or age before menopause, while in non-risk mothers the majority are in the age range of 30-40 years (57.4%). Most at-risk mothers have the majority of education levels, namely graduating from elementary school (32.4%) and graduating from junior high school (29.4%). This study shows that all mothers at risk and not at risk have never done HPV vaccination (100%).

Table 2. Distribution of Respondents' Risk Factors (n= 136)

Risk Factors	Yes		No		Total
	n	%	n	%	n (%)
Married at age ≤ 19 years	37	27.2	99	72.8	136 (100)
Married > 1 time	3	2.2	133	97.8	
Having ≥ 3 children	62	45.6	74	54.4	

Using hormonal contraception > 5 years	82	60.3	54	39.7
Smoking	0	0	136	100
Having family members at home who smoking	107	78.7	29	21.3
Having a history of STDs	0	0	136	100
Ever had a curettage	25	18.4	111	81.6
Family history of cancer	6	4.4	130	95.6

Determination of risk and non-risk groups was carried out based on the risk factors owned by the mother. For mothers who have ≥ 3 of the 9 risk factors set, it is said to be an at-risk group. Whereas for mothers who have <3 risk factors, it is said to be a non-risk group. The overall frequency distribution of risk factors is shown in Table 2.

Table 2 shows that the risk factor that most respondents have is having family members at home who smoke (78.7%). The second most common risk factor for mothers is using hormonal contraceptives > 5 years (60.3%). The third risk factor that most mothers have is having ≥ 3 children (45.6%). In addition, it was also found that mothers who had risk factors were married at the age of ≤ 19 years (27.2%).

Table 3. Differences in determinants of utilization of IVA services between groups of at-risk mothers and groups of non-risk mothers in Magelang District

Variables	**Risk Mother Group**			**Non-Risk Mother Group**			**Sig.**
	n	**%**	**Average Score/ Proportion**	**n**	**%**	**Average Score/ Proportion**	
Utilization of IVA test							
Not utilizing	57	83.8	16.2%	51	75	25%	0.205
Utilized	11	16.2		17	25		
Knowledge							
Not so good	30	44.1	4.22	47	69.1	3.35	0.032*
Good	38	55.9		21	30.9		
Attitude							
Not so good	34	50	21.59	54	79.4	19.72	0.000*
Good	34	50		14	20.6		
Perception of vulnerability							
Vulnerable	56	82.4	22.74	33	48.5	21.09	0.000*
Not Vulnerable	12	17.6		35	51.5		
Accessibility							
Not so good	50	73.5	14.76	39	57.4	16.21	0.005*
Good	18	26.5		29	42.6		
Perception of health worker support							
Not supportive	46	67.6	15.65	39	57.4	18.93	0.027*
Support	22	32.4		29	42.6		
Perception of availability of facilities and infrastructure							
Not so good	54	79.4	24.28	59	86.8	23.88	0.189
Good	14	20.6		9	13.2		
Health insurance participation							
Non-participants	10	14.7	85.3	11	16.2	83.8	0.813
Participants	58	85.3		57	83.8		
Needs							
No need	28	41.2	22.75	38	55.9	20.46	0.003*
Need	40	58.8		30	44.1		

Lifestyle							
Not so good	38	55.9	22.00	54	79.4	20.91	0.002*
Good	30	44.1		14	20.6		

Notes: **significant (p-value <0.05)*
Variables of IVA service utilization and health insurance membership using proportion.

Table 3 shows that there is no difference in the utilization of IVA services in the at-risk mother group and the non-risk mother group (p=0.205). However, it was found that there were differences in knowledge (p=0.032), attitude (p=0.000), perceived vulnerability (p=0.000), accessibility (p=0.005), perceived support from health workers (p=0.027), needs (p=0.003), and lifestyle (p=0.002) between at-risk and non-risk mothers (p-value <0.05).

Cervical cancer can be affected by several risk factors, including smoking, hormonal contraception, and number of births. Based on research conducted at the Karolinska Institute Sweden, it is stated that substances in cigarettes such as nicotine enter the blood through cigarette smoke, allowing abnormal cell growth in the uterus (Susilawati, Maryam & Surianti, 2021). Hormonal contraceptives also play a role in increasing the risk of cervical cancer because the progestin and estrogen hormones contained in them work in target cells so that they can increase the potential for carcinogens. Both hormones can directly affect cervical cells (Amelia, 2022). The more childbirth a person has, the higher the risk of cervical cancer. The process of giving birth can cause trauma to the cervix as a bridge between the uterus and the vagina (Chandrawati, 2016). The risk factor of parity is also related to hormonal changes due to pregnancy, the occurrence of infection, and chronic irritation (Musfirah, 2018).

Women with the first age of marriage ≤ 20 years have a 3 times higher risk of developing cervical cancer because the cells of the cervix are immature so they are more vulnerable and sensitive to foreign substances such as sperm so that they can trigger the growth of abnormal cells that end in cancer cells (Amelia, 2022). Some mothers also have risk factors in the form of a history of curettage (18.4%). Induced abortion increases the risk of cervical cancer because the process of cleaning the remaining conception results in injury to the cervix (Wulandari, 2016).

With increasing age, the risk factors for cervical cancer also increase because it is influenced by the length of time exposure to carcinogens (Oktaviani et al., 2018). The most at-risk mothers have an education level below high school. Women with low education have a risk of cervical cancer, possibly due to low knowledge and application of health, especially personal hygiene (Purnami, Suarmini & Dewi, 2022). The majority of at-risk mothers are housewives who do a lot of activities at home to take care of household needs (61.8%). The mother's condition may rarely get information about health, especially cervical cancer, thus increasing the mother's risk of the disease. The work environment can affect the insights gained by women of childbearing age themselves (Purnami, Suarmini & Dewi, 2022). Based on the results of research by Kusumawati et al. (2016), it shows that both cervical cancer patients and non-sufferers have never done HPV vaccination because they do not know where to vaccinate and the reason for the high cost (Kusumawati, Nugrahaningtyas & Rahmawati, 2016).

The results showed that most at-risk and non-risk mothers did not utilize IVA services although the proportion in the at-risk mother group was greater. Ministry of Health Regulation No. 34 of 2015 on Breast Cancer and Uterine Cancer Management explains that women in the target group of 30-50 years need to do an IVA test every 3-5 years (Kementerian Kesehatan Republik Indonesia, 2015). This suggests that both at-risk and non-risk women should perform routine IVA tests. Individual awareness of the benefits of IVA testing can increase the behavior of conducting IVA tests (Kalia & Muhani, 2020). A low understanding of the importance of IVA testing among mothers can be caused by a lack of information regarding the benefits of

IVA testing, who should be examined, test procedures, test sites, and costs that need to be incurred (Wantini & Indrayani, 2019).

The results of the research showed that most mothers knew that they had risk factors but did not realize that the possession of these risk factors caused them to fall into the risk group. Based on research by Shankar et al. (2018) shows that most women are not aware of the risk factors for cervical cancer. The incidence of cancer is increasing, one of the main causes is unawareness (Shankar et al., 2018). Health Center can provide understanding to mothers about who is at risk and not at risk of cervical cancer and invite mothers to recognize their risk factors.

The level of knowledge in the at-risk mother group was better than the non-risk mother group. Better knowledge in some at-risk mothers is related to the definition and risk factors of cervical cancer. While the lower level of knowledge shown by the group of non-risk mothers showed ignorance of cervical cancer (causes, risk factors, and symptoms), the implementation of IVA test (examination procedures, frequency of examination, meaning of test results, and requirements for IVA tests), and follow-up of IVA (cryotherapy treatment and cryotherapy follow-up). Most non-risk mothers only know the meaning of the IVA test but do not know how the procedure and follow-up. In line with research by Aprilia et al. (2020) which shows that low maternal knowledge can be caused because respondents lack a thorough understanding of important matters, such as symptoms, risk factors, prevention, the importance of early detection, and detection methods for cervical cancer. This can occur due to respondents who are not maximized in obtaining information (Aprilia et al., 2020). Respondents who have low knowledge have never received an IVA test can be influenced by a lack of exposure to information either due to not receiving explanations from health workers or due to a lack of awareness to seek information about the importance of early detection of cervical cancer (Qura et al., 2019). Good knowledge can help mothers to take preventive measures or appropriate treatment measures if diagnosed with cervical cancer (Widayanti, Irawandi, & Qomaruddin, 2020).

Efforts to increase maternal knowledge are by disseminating information through counseling using audiovisual media and booklets. Based on research by Silalahi et al. (2018), it shows that there is a significant difference in the level of knowledge of respondents before and after being given health education using audiovisual media and booklets. Respondents who get information through audiovisuals and study booklets have a higher increase in knowledge because the booklets given can be taken home and studied again at home (Silalahi, Hakimi, & Lismidiati, 2018). Information for at-risk mothers emphasized the recognition of cervical cancer symptoms, the recommended frequency of early detection, and control of risk factors. The information aims to enable at-risk mothers to make efforts to control risk factors and increase awareness to conduct IVA tests based on their risk status. Meanwhile, the group of non-risk mothers emphasized the importance of IVA tests, recognition of risk factors, and efforts to prevent risk factors. Information dissemination using health promotion media can be carried out at Posbindu PTM (Non-Communicable Diseases) activities or online through official websites and social media to reach targets effectively and efficiently.

The at-risk mother group tended to have better attitudes than the non-risk mother group. Good attitudes in some at-risk mothers because they show a positive response to the implementation of IVA tests, including being able to maintain reproductive health, can prevent mothers from cervical cancer, and can save the mother's life. While unfavorable attitudes tend to be shown by most non-risk mothers due to feelings of not being at risk of cervical cancer, fear of knowing the results of the examination, and fear of the way of IVA examination. Mothers are not willing to do an IVA test can be caused by various factors, one of which is fear of being diagnosed with cervical cancer during the examination so that it tends to have many consequences including psychological effects (Widayanti, Irawandi, & Qomaruddin, 2020). Feelings of reluctance to do an IVA test can be motivated by feelings of embarrassment during the examination, fear of the reality of the test results, and fear of feeling pain during the

examination process (Sundari & Setiawati, 2018). The fear of cancer that develops in the community can cause reluctance to carry out early detection and distance themselves from information about cancer, causing the risk of being diagnosed at an advanced stage (Wantini & Indrayani, 2019). Information dissemination is needed about safe IVA procedures, differences in IVA test results, how to follow up if the results are positive to eliminate mothers' fear of the IVA test.

At-risk mothers felt more vulnerable than non-risk mothers. Most at-risk mothers feel vulnerable to cervical cancer because this disease can affect everyone, especially those at risk and the risk of death in the group is greater. Based on this, at-risk mothers need to be given information and understanding about efforts to control their risk factors by minimizing risky behavior towards cervical cancer. Although most at-risk mothers feel vulnerable, there are still some mothers who feel not vulnerable to cervical cancer because they have never changed sexual partners and have never experienced abnormal vaginal discharge. Some at-risk women also considered that if they had a family history of cervical cancer then they did not have the possibility of experiencing the same thing. Respondents who feel they are not vulnerable to cervical cancer can be caused by not engaging in behaviors that are at risk of triggering cervical cancer such as changing partners, the informant's belief in maintaining the hygiene of the female organs is an obstacle to the informant getting tested (Sahr & Kusumaningrum, 2018). The behavior of preventing and curing a disease depends on consideration and assessment of perceived vulnerability and perceived benefits so that a person will accept the recommended health action (Wantini & Indrayani, 2019).

The at-risk mother group felt more in need of IVA services than the non-risk mother group. At-risk mothers felt the need for IVA services because they considered that cervical cancer is a dangerous disease, difficult to cure, and can cause death. While most of the non-risk mothers felt that they did not need IVA services because they considered that cervical cancer treatment did not take a long time, the treatment cost was not expensive, and the treatment effect was not painful. Some non-risk women also stated that cervical cancer could not be prevented so they did not need an IVA test. The perceived need for health services can be influenced by an individual's assessment of perceived health conditions and fear of disease (Notoatmodjo, 2007). If the mother assesses that her health condition is not at risk of disease, it will not encourage the need for health services. High health needs can be caused by health problems or illness experienced. However, low health needs are caused by someone who has a disease but does not feel pain (disease but no illness) will not make decisions to act on their illness (Lestari, Roesdiyanto, & Ulfah, 2020).

The non-risk mother group has a perception of better accessibility than the at-risk mother group. This perception is related to the availability of transportation and the affordability of transportation costs to the Health Center, especially for non-risk mothers in Health Center working areas close to the city center. While some at-risk mothers in Health Center working areas far from the city center have a poor perception of accessibility due to distance and transportation costs. The location of health care facilities is a determinant of the level of participation in cervical cancer screening and treatment programs (Chidyaonga-Maseko, Chirwa, & Muula, 2015).

An effort to bring health service facilities closer to the target is by organizing mobile IVA tests. Health Center can modify their ambulances so that they can provide facilities and infrastructure for IVA services. Mobile IVA can be integrated with village activities, such as *merti desa* or other village celebrations. The tradition of *merti desa* celebration is a series of events to celebrate the harvest and planting period, such as village cleaning, cultural carnival, puppet show, and others that are attended by all levels of society. In addition to mobile IVA, Health Center can also conduct other activities, such as health education and health checks for the community. Integration of mobile IVA with village celebrations can increase IVA coverage

in Health Center working areas with rural characteristics. The cervical cancer screening coverage rate is much lower in areas with hard-to-reach health care facilities. However, areas with accessible health care facilities or through mobile campaign services (mobile health center cars) have much higher coverage rates (Chidyaonga-Maseko, Chirwa, & Muula, 2015).

Some at-risk women also had poor access to information as it was difficult to obtain information on service schedules and how to register for IVA testing. Most at-risk women also considered the cost of registering for an IVA test to be unaffordable. IVA services as part of the cervical cancer early detection program are included in the National Health Insurance financing scheme guaranteed by BPJS (An Nisaa, Suryoputro, & Kusumawati, 2019). Health Center can disseminate information regarding the test schedule, how to register for the test, and reaffirm that the cost of the IVA test is free for BPJS participants or paid with a clear nominal.

The non-risk mother group felt more supported by health workers than the at-risk mother group. In the group of non-risk mothers, health workers' support was perceived to be better related to providing information on IVA services. While in the at-risk group, most mothers felt that they did not receive information about the test schedule including the day and time, as well as the registration requirements for IVA tests. Some at-risk women also felt that they did not receive an explanation of how to perform the IVA test and the meaning of the results. In addition, most at-risk women were not reminded to do routine IVA tests, were not invited to do IVA tests, and were not reassured not to be afraid to do IVA tests by health workers. Support from health workers is important to encourage the behavior of utilizing IVA services. Providing information by health workers that is carried out intensely can encourage IVA testing behavior. The role and support of health workers is intended not only to provide material, but also to provide emotional support to encourage the mother's readiness to do the IVA test and the worst possibilities for her reproductive health (Umami, 2019).

The results showed that most mothers were not reminded to do the IVA test by health workers, so it is necessary to reminder the implementation of IVA through Whatsapp by mobilizing health cadres. Increased support from health workers can also be done by providing invitation letters for IVA tests that are prioritized for at-risk mothers. Research by Widowati et al. (2019) showed that Posyandu that used invitation media in promoting Posyandu Lansia had the highest visitation rate because the research subjects stated that they felt more valued so they chose to attend (Widowati, Nugraha, & Husoodo, 2019).

Increasing the support of health workers both from information support and motivation is supported by efforts to improve the communication skills of health workers. Training is needed for health workers and health cadres that focuses on improving public communication skills, interpersonal communication, and making health promotion media. Effective communication is a very important skill in health practice so that it becomes an absolute ability of health workers. The ease and efficiency of making props will make it easier for message recipients to understand the perceptions given (Lesmana, Astharianty, & Yoanita, 2020).

Most at-risk and non-risk mothers had unfavorable perceptions of the availability of facilities and infrastructure, but the proportion was greater in the non-risk mother group. These perceptions are related to the availability of special officers who provide information on registration for IVA tests and waiting chairs at the Health Center. Patient perceptions play a role in assessing the quality of health services so that it can affect satisfaction and the image of health services. One of the factors that influence satisfaction is physical evidence (tangibles), namely the availability of facilities and infrastructure that can be felt by consumers directly (Taekab, Suryawati, & Kusumastuti, 2019). The quantity of facilities and infrastructure at health care facilities affects patient comfort so that it indirectly becomes a benchmark for health services (St. Hateriah, Rahmayani, & Utami, 2018). Health Center can provide posters or banners that inform the flow of IVA services near the queue counter so that mothers can easily get information if they want to do an IVA test, and put a warning sign on each seat that is prioritized for patients.

Most at-risk and non-risk women were covered by health insurance, although the proportion of at-risk women was slightly higher than that of non-risk women. Health insurance participation among both at-risk and non-risk mothers indicates a high awareness of the importance of health insurance. At-risk mothers realize that having risk factors increases the chance of developing health problems. The results of research by Rismawati et al. (2017) explain that the perception of disease risk can encourage public health needs so that they act to participate in the BPJS Health program. A person who has a risk-averse attitude (risk averter) will try to avoid or reduce the risks that may occur to him (Rismawati, Lisnawaty, & Jufri, 2017). Need factors including perception and motivation can influence a person's decision to participate in National Health Insurance (Putri, Suryati, & Nandini, 2022).

Lifestyle in the at-risk mother group was better than the non-risk mother group. Most at-risk mothers had a good lifestyle related to not smoking, not consuming alcohol, and eating vegetables every day. While lifestyles that tend to be less good in some mothers are not at risk because they prefer fast food and do not consume at least 2 liters of water every day. Respondents have nutritional patterns at risk of cancer can be caused by often consuming foods that contain carcinogen compounds and never reading the composition of foods purchased whether they contain preservatives, dyes, and artificial sweeteners or not (Nguru, Aty, & Tahu, 2018). In relation to physical activity, some non-risk mothers drive to travel more often than walk. Low physical activity in respondents can be caused by being too tired with work, not having time to exercise, and also because of physical conditions that quickly feel tired. Lack of physical activity in daily activities increases the risk of cancer because calories in are not balanced with calories out. This can affect the growth and development of cells to become uncontrollable (Nguru, Aty, & Tahu, 2018). Non-risk mother groups need to be given an understanding to avoid a poor lifestyle to prevent the emergence of risk factors. Poor lifestyle habits can increase the risk factors for cervical cancer, so there is a need for each individual to adopt a healthy lifestyle.

The limitations of the study are the limitations of respondents to understand the questions in the questionnaire, the research topic that is not widely known by respondents, and the limitations of researchers in finding at-risk mothers who fit the research criteria.

4. CONCLUSION

There was no difference in the utilization of IVA services in the at-risk and non-risk groups. The at-risk group had a better level of knowledge, attitude, and lifestyle, and felt more vulnerable and needed an IVA test than the non-risk group. Meanwhile, the non-risk group had better perceptions of accessibility and health worker support. It is suggested that Health Center can conduct village-based risk factor mapping to develop interventions based on the needs of each group. Health Center also needs to invite mothers to recognize their risk factors so that they know their status as an at-risk or non-risk group. In terms of accessibility, Health Center can bring health care facilities closer to at-risk women through mobile IVA tests by providing invitation letters to conduct IVA tests. Mobile IVA can be integrated with village activities such as village celebrations to increase coverage.

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