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Program of Visual Inspection with Acetic Acid for Women of Childbearing Age Based on Healthcare Service Accessibility

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Abstract

According to Globocan data, in 2022, cervical cancer caused 348,874 deaths among women, and cases of cervical cancer in Indonesia increased to 36,633 people. WHO recommends early detection through the VIA (Visual Inspection with Acetic Acid) examination. However, the VIA examination coverage in Kampar Regency in 2023 was low, at only 1.2%. This study aims to analyze the Acetic Acid Visual Inspection (VIA) program for women of reproductive age (WRA) based on healthcare service accessibility in Kampar Regency, Riau Province, in 2024. This research uses a cross-sectional method, and the results show that information about VIA services is lacking, the acceptance of VIA services is low, service hours are not always available, and community empowerment in supporting VIA services is insufficient. The factors that most influence the participation of women of reproductive age in the VIA examination, based on healthcare service accessibility, are service acceptance (p=0.008 and exp(B)= 19.342) and community empowerment (p=0.017 and exp(B) = 8.272). Variables such as service location distance, knowledge, attitude, transportation ease, and environmental support did not significantly affect the situation. It is recommended that service acceptance be improved through promotion, education, and service socialization, as well as strengthened community empowerment by involving local health workers, the Family Welfare Movement (PKK), and related cross-sector stakeholders in an integrated manner.

Introduction

Cervical cancer originates from the outer surface layer of the cervix (epithelium) and is generally caused by the Human papillomavirus (HPV), accounting for 99.7% of cases. According to data from the Global Burden of Cancer Study (Globocan), in 2022, cervical cancer ranked eighth among all cancers globally, with 662,301 cases, and was the ninth leading cause of death, with 348,874 deaths in 2022 (Globocan, 2022). Cervical cancer is diagnosed in 70% of cases at an advanced stage, where treatment is less effective. Consequently, 50% of women diagnosed with cervical cancer die. If this issue is not effectively addressed, the incidence of cervical cancer may rise, resulting in significant social and economic burdens, affecting women's quality of life, and leading to an increased risk of death If this issue is not effectively addressed, the incidence of cervical cancer could increase, imposing significant social and economic burdens, affecting women's quality of life, and leading to a higher risk of death. (the Ministry of Health of Indonesia, n.d.)

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WHO recommends early cervical cancer screening methods for developing countries like Indonesia, namely visual inspection with acetic acid (VIA) (Kementerian Kesehatan, 2015). This method is recommended by the government to be conducted in primary healthcare centers and has proven effective in detecting cancerous and precancerous lesions, especially in countries with limited resources. A study conducted by Denny L. and colleagues on 2,754 women of reproductive age who underwent VIA screening found that 0.8% were diagnosed with cervical cancer. In contrast, 3.5% and 3.7% had high-grade and low-grade precancerous lesions, respectively, histologically. The VIA test has a sensitivity of 70% and a specificity of 79%, making it an effective screening tool in clinical practice (Dwipoyono, 2009).

Many areas in Indonesia, particularly those in rural or remote regions, face challenges accessing healthcare services, including VIA services. There is a lack of understanding among women of reproductive age about the importance of early cervical cancer detection and the benefits of VIA screening. Another issue is the shortage of trained healthcare workers to perform this procedure, resulting in low demand or participation among women undergoing the examination (World Health Organization, 2014). It is hoped that with VIA screening, the number of cervical cancer cases and deaths will decrease. Cervical cancer is often found in nearly 70% of cases at an advanced stage (beyond stage IIB). This phenomenon is due to the low rate of screening implementation, currently less than 5%, whereas the ideal screening rate should reach 80% (Samadi, 2010). In essence, early-stage cervical cancer can be detected through cytology examination using the VIA method. Nearly half of cervical cancer patients have not undergone VIA screening (Yatim. F, 2005). Based on data on new cases and deaths due to cervical cancer, the Case Fatality Rate (CFR) was 5.88% in 2016, 10.36% in 2017, 17.30% in 2018, and 17.37% in 2019 (RSUD Arifin Achmad Provinsi Riau, 2020)

In 2021, 105 women were treated for cervical cancer at RSUD Arifin Ahmad, which underscores Riau Province's commitment to reducing cervical cancer mortality. A total of 1,278 women in Riau have been diagnosed with the disease (PPID Provinsi Riau, 2021). Kampar Regency, a large area with 21 sub-districts and 31 healthcare centers, reported a target population of 124,094 women aged 30 to 50 in 2022. However, only 1,186 women underwent VIA screening, meaning only 1% had the test (Dinas Kesehatan Kabupaten Kampar, 2023)

Healthcare accessibility is defined as identifying health needs, seeking healthcare services, reaching, obtaining, or using healthcare services, and truly needing those services. Levesque and colleagues described several dimensions, including proximity, acceptability, availability and accommodation, affordability, and appropriateness (Laksono et al., 2016).

Methods

The research method used is a cross-sectional method, a type of observational study that analyzes data from variables collected at a specific point across a predetermined sample population (Notoatmojo, 2018). The research location is within the working area of the Kampar District Health Office, and the study population consists of women of reproductive age aged 30 to 50 years. The sample was determined by the Lameshow formula, resulting in 102 participants. The sampling technique employed is multistage sampling, where sampling is conducted in stages based on geographical levels, specifically within the working area of the community health center.

Data collection is performed by distributing questionnaires to respondents who have visited the health center. Respondent data is obtained through interviews and by having them fill out the provided questionnaires (Sugiyono, 2013). The variables studied include the provision of VIA information, acceptance of VIA services, availability of VIA services, distance to service locations, knowledge, attitudes, ease of transportation, surrounding support, and community empowerment. The research instrument consists of a questionnaire comprising a series of written questions or statements designed to gather information from respondents regarding the

researched topic. The questionnaire used in this study will undergo a validation and reliability process due to the differing characteristics of the respondents compared to previous studies. Data analysis will be conducted using univariate, bivariate, and multivariate methods to explore the correlations between several independent variables and the dependent variable..

Result and Discussion

Univariate Analysis

The characteristics of the respondent include age, education level, occupation, and number of parities. The frequency distribution can be seen in the table below.

Table 1. Frequency Distribution of Respondent Characteristics

Characteristics	Tapung HC		Salo HC		Sum	
	f	%	f	%	f	%
Age						
30-40 years old	37	60,7	26	63,4	63	62
41-50 years old	24	39,3	15	36,6	39	38
Education level						
High	32	52,4	16	39	48	47
Low	29	47,6	25	61	54	53
Occupation						
Civil servant	7	11,4	4	9,6	11	10,8
Teacher	10	16,3	5	12,2	15	14,7
Contract worker	2	3,2	1	2,4	3	2,9
Housewife	29	47,5	22	53,2	51	50
Pharmacist	1	1,6	0	0	1	0,9
Private employee	2	3,2	0	0	2	1,9
Self-employed	10	16,3	9	22	19	18,6
Number of parities						
Low parity (<2 chidren)	26	43	18	44	44	43
High parity (≥2 children)	35	57	23	56	58	57

Based on the table above, it can be seen that the majority of respondents in this study are women aged 30 to 40 years (62%), with low education levels (53%), high parity (57%), and a portion working as housewives.

Table 2. Frequency Distribution Of Respondents Based On Factors Affecting The Participation Of Women Of Reproductive Age (WRA) In VIA Examinations At The Community Health Centers In The Working Area Of The Kampar District Health Office

Variable	Frequency (n=102)	%
Independent variable		
Provision of VIA information		
Less	64	62,7
Good	38	37,3
Acceptance of VIA services.		
Less	71	69,6
Good	31	30,4
VIA time service		
Not available	77	75,5
Available	25	24,5
Distance to service location		

Far	71	69,6
Near	31	30,4
Knowledge.		
Less	51	50
Good	51	50
Attitude.		
Negative	21	20.6
Positive	81	79,4
Transportation accessibility		
Difficult	29	28,4
Easy	73	71,6
Surrounding support		
Not supportive	29	28,4
Supportive	73	71,6
Community empowerment.		
Less	73	71,6
Good	29	28,4
Dependent variable		
Participation of women of reproductive age (WRA) in VIA examinations		
Not conducting VIA exam.	92	90,2
Conducting VIA exam	10	9,8
Amount	**102**	**100**

Table 2 shows that out of 102 respondents, 62.7% reported receiving insufficient information, 69.6% reported low acceptance of services, 75.5% indicated that service time was not available, 69.6% stated that the distance to the service location was far, 79.4% had a positive attitude towards the examination, 71.6% found transportation easy, 71.6% received supportive surrounding support, 71.6% indicated insufficient community empowerment, and 50% had good knowledge. Furthermore, among the 102 respondents of reproductive age, 90.2% did not undergo VIA examinations. According to the research conducted in two health centers, most did not undergo VIA examinations (90.2%). This finding is consistent with research by Handayani (Handayani, 2017)and Arisca (Arisca et al., 2019), which also indicated a low participation rate in VIA examinations among women. Regular examinations for cervical cancer can prevent most cases of cervical cancer. The VIA examination can be considered an alternative for screening cervical lesions because it has advantages such as adequate sensitivity and specificity, a procedure that does not cause trauma, and is simple and quick. This examination can be performed by trained midwives. The low participation of Women of Reproductive Age (WRA) in this examination is caused by various barriers that hinder them from utilizing the available services.

Bivariate Analysis

The bivariate analysis describes the relationship between independent variables (information provision, service acceptance, service time, distance to service location, knowledge, attitude, aase of transportation, surrounding support, and community empowerment) and WRA participation in VIA examinations. The results of the bivariate analysis can be seen in the table below.

Table 3. Analysis of the Relationship Between Influencing Factors and Participation of Women of Reproductive Age (WRA) in VIA Examinations

Variable	Participation of women of reproductive age (WRA) in VIA examinations						*P Value*	*OR (95% C.I)*
	Not conduct VIA exam		Conduct VIA exam		Sum			
	f	%	F	%	f	%		
Provision of VIA information								
Less	62	96,6	2	3,1	64	100	0,005*	8,267 (1,653-41,341
Good	30	78,9	8	21,1	38	100		
Acceptance of VIA services								
Less	70	98,6	1	1,4	71	100	0,000*	28,636 (3,435-238,764)
Good	22	71	9	29	31	100		
VIA time service								
Not available	75	97,4	2	2,6	77	100	0,000*	17,647 (3,435-90,655)
Available	17	68	8	32	25	100		
Distance to service location								
Far	65	91,5	6	8,5	71	100	0,487	1,605 (0,419-6,144)
Near	27	87,1	4	12,9	31	100		
Knowledge								
Less	49	96,1	2	3,9	51	100	0,092	4,558 (0,918-22,638)
Good	43	84,3	8	15,7	51	100		
Attitude								
Negative	19	90,5	2	9,5	21	100	1,000	1,041 (0,204-5,312)
Positive	73	90,1	8	9,9	81	100		
Transportation accessibility								
Difficult	28	96,6	1	3,4	29	100	0,274	3,938 (0,476-21,581)
Easy	64	87,7	9	12,3	73	100		
Surrounding support								
Not supportive	28	96,6	1	3,4	29	100	0,274	3,938 (0,476-32,581)
Supportive	64	87,7	9	12,3	73	100		
Community empowerment								
Less	71	97,3	2	2,7	73	100	0,001*	13,524 (2,665-68,623)
Good	21	72,4	8	27,6	29	100		

Table 3 shows that several variables have a significant relationship with the participation of women of childbearing age (WRA) in VIA screening, namely information dissemination, service acceptance, service timing, and community empowerment.

Provision of VIA Information

The study shows that most respondents lacked information about the VIA test, reaching 62.7%. This finding aligns with the study by Handayani (Handayani, 2017) in Penyak Village, Koba District, Central Bangka Regency, which recorded a poor information access rate of 53.1%. Similar findings were reported in other studies conducted by Puspitasari (Puspitasari, 2020) in Surabaya and Ida and colleagues (Ida et al., 2022) at Minasa Upa Health Center Makassar, both indicating a lack of information exposure regarding early cervical cancer detection using the VIA method. However, this differs from a study by Nordianti and colleagues, which found that most respondents at Kota Semarang Health Center received adequate VIA information, at 60.4% (Nordianti & Wahyono, 2018). Respondents who did not receive sufficient information on early cervical cancer detection using VIA had an 8.267 times higher risk of not undergoing

the VIA screening than those who had adequate information access. In the Tapung and Salo Health Centers, education, socialization, and promotion of VIA services were rarely conducted. As a result, WRA needed more information to access the services. Most respondents also admitted that they lacked information about VIA, whether through health centers, health workers, cadres, print media, electronic media, or social media. This lack of information leads to low participation in the screening.

If WRA are provided with information and understanding about the risks of cervical cancer through media, it could influence their attitudes and tendency to undergo early cervical cancer screening. This finding aligns with Puspitasari's study, which showed a correlation between VIA information dissemination and an Exp (B) value of 3.748. Another significant result was found in Handayani's study with a p-value of 0.001. Simanjuntak's research also demonstrated that VIA information is associated with increased participation in VIA screening (Simanjuntak et al., 2021).

The more information available, the greater the knowledge gained about health issues. Effective communication between health workers and community members is crucial in increasing early cervical cancer screening behavior. Women tend to undergo early cervical cancer screening after they receive or discover information about the importance of the screening. The internet is seen as a critical source of information for seeking and sharing knowledge on this issue. Some communities did not access VIA services at health centers, possibly due to a lack of awareness that the services are available there. The quality and clarity of the information can influence an individual's decision to utilize the services. Therefore, the Health Office and health centers are expected to enhance their efforts in educating, promoting, and socializing the available VIA services. These efforts can leverage technology and innovation to target potential users more effectively.

Acceptance of VIA Services

The study shows that of 102 respondents, 69.6% reported inadequate VIA service acceptance at health facilities. This result aligns with Puspitasari's study in Surabaya in 2018 (Puspitasari, 2020), which found low VIA service acceptance among WRA. This finding is consistent with Cicik Swi Antika's (Antika, 2016) study, which also reported poor VIA service acceptance, leading to underutilization of VIA services at health centers. Chi-square test data analysis showed a relationship between VIA service acceptance and WRA participation in VIA screening (p-value = 0.000). Respondents with good VIA service acceptance were 28.636 times more likely to undergo VIA screening. This study demonstrates a significant relationship between VIA service acceptance and WRA participation, similar to Puspitasari's findings with an Exp (B) value of 2.429 and Antika et al.'s (2016) study with a p-value of 0.040 and an Exp (B) value of 0.179. Mulyadi's (2013) study also indicated that communities skeptical of the capabilities of health center staff tend to choose non-health center facilities for healthcare (Mulyadi, 2013).

The suboptimal introduction of VIA screening services and inadequate information dissemination leads to low acceptance of VIA services among WRA. This low participation is closely related to how WRA receives, processes, and implements the information they receive about these services. Service acceptance refers to the confidence in the services provided by healthcare facilities, whether they benefit and help the target group solve their problems. One factor influencing service acceptance is trust in the healthcare workers providing VIA services, which motivates the community to use the services at health centers. In addition to promoting services, one solution to increase public trust, particularly among WRA, is forming a trained VIA team that consistently provides services regularly. This team comprises one doctor and one midwife, coordinated by the program manager.

VIA Time Service

Chi-square test data analysis showed a relationship between VIA service timing and WRA participation in VIA screening (p-value = 0.000). Respondents who answered that VIA services were unavailable had a 17.647 times higher risk of not undergoing VIA screening. The study found that respondents perceived that VIA services were unavailable at health centers, preventing WRA from accessing the services. This finding was partly due to a lack of information or socialization to the community.

According to Levesque's concept of service accessibility, service timing refers to the time customers need to obtain the services and their perception of the speed and ease of obtaining them (Levesque et al., 2013). A study in Camden, London, showed that one factor hindering women from early cervical cancer detection was technical issues, such as difficulty making appointments with service providers (Abdullahi et al., 2009). One step that health centers can take regarding service timing is to schedule regular and consistent VIA screenings inside and outside the building. Regular scheduling helps WRA choose a convenient time to access services, facilitating access and increasing participation in VIA screening.

Community Empowerment

The study shows that 71.6% of the 102 respondents reported inadequate community empowerment. This finding is consistent with studies by Siregar, Fitriani (Fitriani et al., 2021) and (Nordianti & Wahyono, 2018), which indicated that most respondents reported a lack of support from the community, including health cadres and the PKK, in VIA screening. This finding contrasts with Evaharnilawati et al. (2023) study, which reported good community empowerment for VIA screening (Evaharnilawati et al., 2023).

Chi-square test data analysis showed a significant relationship between community empowerment and WRA participation in VIA screening (p-value = 0.001). Respondents with poor community empowerment had a 13.524 times higher risk of not undergoing VIA screening.

This result aligns with Nordianti et al.'s (2018) study, which found a relationship between the role of health cadres and VIA screening visits (p-value = 0.000). Respondents with active health cadres were 4.98 times more aware of VIA visits than those with less active cadres.

The two health centers studied indicated that some cadres and PKK members needed to understand the VIA screening fully. They had never been involved in VIA screening and were less exposed to information about it. Due to this lack of knowledge, cadres could not provide the necessary support for VIA services. This finding aligns with Tarigan's study (Tarigan, 2015), which showed a significant relationship between the role of health cadres and VIA screening (p-value = 0.014).

As part of the community tasked with assisting health center workers in health education, health cadres are 9.057 times less likely to avoid VIA screening if they receive adequate support. As role models for health behaviors, health cadres play a vital role in influencing WRA to undergo VIA screening (Deska, 2017; Lestari et al., 2016). One proposed solution for empowering the community is training cadres and PKK members about VIA services and strategies to inspire WRA to use the services actively.

Multivariate Analysis

Multivariate analysis examines the relationship between multiple independent variables and one dependent variable. The multivariate analysis used in this study is logistic regression, with variables having a p-value <0.25 in the bivariate analysis included in the multivariate analysis. The results of the bivariate selection with p-values <0.25 can be seen in the table below:

Table 4. Bivariate Selection Results

Variable	P value	Information
Provision of VIA information	0,005	Candidate
Acceptance of VIA services:	0,000	Candidate
VIA time service	0,000	Candidate
Knowledge	0,092	Candidate
Community empowerment	0,001	Candidate

From the table above, the results of the bivariate selection show that the variables of information provision, service acceptance, service timing, knowledge, and community empowerment have a p-value < 0.25 and thus are included in the multivariate model. From the multivariate test results, the variables of VIA information provision, VIA service timing, and knowledge are not significant with a p-value > 0.05 and, therefore, are excluded from the logistic regression analysis model. The final results of the logistic regression analysis can be seen in the table below:

Table 5. Final Stage Multivariate Analysis

Variable	B	Sig	Exp(B)	95% CI	
				Lower	Upper
Acceptance of VIA services	2.962	0,008	19.342	2.203	169.813
Community Empowerment:	2.113	0.017	8.272	1.468	46.615

Based on the results of the multivariate logistic regression analysis, it was found that the variables of VIA service acceptance and community empowerment are related to the participation of women of childbearing age (WRA) in VIA screening, (p value < 0.05), specifically VIA service acceptance (0.008) and community empowerment (0.017). From the statistical multivariate test results, VIA service acceptance was identified as the most influential variable or the main factor affecting WRA participation in VIA screening.

The main factor of WRA participation in VIA screening:

From the bivariate analysis selection, candidate variables for logistic regression testing were obtained, including VIA information provision, VIA screening implementation, VIA service timing, knowledge, and community empowerment. These variables meet the requirements to be considered for multivariate analysis as they have a p-value < 0.25. After completing the steps in the multivariate analysis test, it was found that the variable most influencing WRA participation in VIA screening was VIA service acceptance with a p-value of 0.008 (p-value < 0.05) and an Exp (B) value of 19.342. This means that respondents with poor VIA service acceptance are 19 times more likely not to undergo VIA screening compared to respondents with good VIA service acceptance. Based on the logistic regression analysis results, it can be seen that VIA service acceptance is the primary or most influential factor affecting WRA participation in screening at health centers in Kampar Regency, Riau Province, in 2023.

To improve VIA services and make them more acceptable to the community, particularly WRA, the government needs to optimize access to VIA service information. Through the Health Office and health centers, the government can provide clear and accurate information about VIA services from various sources, including print and electronic media, as well as healthcare workers. Healthcare workers can establish a regular schedule for formal outreach (such as awareness campaigns) and informal gatherings (such as women's social gatherings or religious study groups) to increase information access for those who rarely or have never visited health centers. This approach aims to enhance the quality of health promotion and education materials about cervical cancer, its potential dangers (including the risk of death), and the importance of early detection, particularly through the VIA method. The materials will

be delivered via brochures, leaflets, and engaging audiovisual media to ensure better understanding. Additionally, technology and social media platforms such as WhatsApp, Facebook, and video content will be used to spread information. This information will make it easier for women of childbearing age (WRA) to access VIA services, increasing the coverage of screenings and ultimately reducing the incidence of cervical cancer.

In addition to service promotion, one way to increase public trust, especially among WRA, is by forming a specialized, trained team for VIA screening. This team will consist of a doctor and a midwife who will provide services regularly and according to schedule. The program manager will coordinate the team, and the presence of trained VIA personnel at the health centers is expected to streamline the overall VIA screening activities.

Conclusion

More than half of the respondents received insufficient VIA information, there is low acceptance of VIA services, the VIA service timing is not available at health centers, the distance to the VIA service locations is far, and half have good knowledge of VIA. The respondents have a positive attitude towards VIA screening, transportation to health facilities is easy, support from the community is available for VIA services, and community empowerment still needs to be improved. More than half of the respondents do not undergo VIA screening. There are significant relationship between VIA information provision, VIA service acceptance, VIA service timing and community empowerment and WRA participation in VIA screening. Service acceptance and community empowerment are the most influential factors in WRA participation in VIA screening.

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