ORIGINAL ARTICLE

Correlation Between Knowledge and Motivation Toward Visual Inspection With Acetic Acid Test Among Women in Bengkulu City, Indonesia

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ABSTRACT

Introduction: Cervical cancer is the fourth most prevalent cancer among women globally. According to the WHO, there were approximately 660,000 new cases and 350,000 deaths in 2022, with the highest mortality rates occurring in low- and middle-income countries Increasing women's motivation to undergo early detection through the Visual Inspection with Acetic Acid (IVA) test is a key strategy for preventing cervical cancer. Methods: This study employed an analytical survey method using a cross-sectional design. The sample consisted of 40 women aged 30 to 50 years from Bengkulu City, selected through stratified random sampling. Results: The results showed that 50% of participants had low knowledge, 37.5% had sufficient knowledge, and 12.5% had good knowledge about early detection of cervical cancer through IVA. In addition, 67.5% of participants had low motivation, while 32.5% had high motivation to undergo IVA examination. 87.5% had not undergone IVA examination, 12.5% underwent IVA. The results of statistical analysis showed a significant relationship between motivation and early detection behavior (p = 0.015), as well as between knowledge and early detection behavior (p = 0.000). Conclusion: Knowledge and motivation are important to encourage early detection of cervical cancer through IVA examination. Increasing knowledge through information dissemination, women's motivation to undergo IVA examination will increase, which contributes to faster detection and treatment of cervical cancer, which ultimately helps reduce mortality rates.
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INTRODUCTION

Cervical cancer ranks as the fourth most common cancer in women globally, with approximately 662,301 new cases and 348,874 deaths reported worldwide (1). In Indonesia, it is the second most common cancer among women, with an estimated 36,633 cases and a death rate of 19.1% of total cancer-related fatalities. The high mortality rate is primarily due to late-stage diagnoses (2). Early detection through screening, such as the Visual Inspection with Acetic Acid (IVA) test, is crucial for timely treatment and can significantly reduce both mortality rates and the incidence of early-stage cancer (3). Cervical cancer is preventable through a healthy lifestyle, and one-third of all cases can be cured if symptoms are detected early through IVA screening (4). IVA is a practical and effective early detection method for cervical cancer, with a relatively high sensitivity. The World Health Organization (WHO) advocates for screening as an essential strategy for treating cervical cancer. Women diagnosed at an early stage have a survival rate of 60% to 90% (5) In Indonesia, cervical cancer detection efforts are guided by the Ministry of Health Regulation No. 34 of 2015, which emphasizes the importance of early detection through the IVA screening program (6). The low screening rates among women, particularly in low- and middle-income countries, pose a significant challenge in the timely detection and treatment of cervical cancer. According to a 2021 oncology report, only 5% of women in low-income countries undergo cervical cancer screening (7). In Indonesia, the high incidence of cervical cancer is partly due to the limited reach of screening programs. In 2021, only 6.83% of women aged 30-50 were screened using the IVA method. By 2023, cervical cancer screening coverage is expected to increase slightly, reaching just 7.02%, still far from the target of 70% (8). The low level of awareness about cancer among the Indonesian population, particularly women, has contributed to the

poor rates of early cancer detection among women (4). Another key factor influencing early detection behavior for cervical cancer is the individual's knowledge about the disease (8). Women with higher knowledge and motivation are more likely to take proactive steps, such as undergoing the IVA test (9). The results of research in Denpasar Bali show that only a small number of women carry out VIA tests regularly every three years. The low level of knowledge of women regarding cervical cancer prevention will determine the efforts they make to prevent cervical cancer early through early detection of cervical cancer with VIA examinations (10).

Women's limited knowledge regarding early cervical cancer prevention through VIA screening may stem from inadequate access to health information and services, financial constraints, personal challenges such as fear, embarrassment, and mistrust of the healthcare system. Furthermore, low educational attainment and prevailing societal stigma exacerbate these knowledge gaps, impeding women's ability to comprehend the associated risks, the advantages of screening, and the procedural aspects of the examination (11)

The results of research in Dhaka, Bangladesh in 2021, there is an important factor in determining early detection of cervical cancer is knowledge, women exposed to information have higher awareness to carry out IVA tests or other types of tests to detect the risk of cervical cancer, this shows the important role of patient educationWomen who have a lot of knowledge about IVA tests and cervical cancer have a higher chance of having an IVA test, IVA tests are underutilized because of low privacy during the examination, not knowing that IVA examinations are for cervical cancer, fear of costs (12) In Indonesia, limited knowledge regarding early cervical cancer prevention through VIA screening is influenced by multiple factors, including restricted access to health information and services (13) cultural barriers such as stigma and shame, low levels of education, insufficient family and community support, and a widespread underestimation of the disease's risks (14).

MATERIALS AND METHODS

This research adopted an analytical survey design with a cross-sectional approach. It aimed to examine the relationship between independent and dependent variables by collecting and analyzing data from study participants. The study population consisted of individuals to whom the findings would be applicable. The population in this study were women aged 30-50 years in Bengkulu City who were at risk of cervical cancer with an average of 68 people per month. The sample calculation used the Slovin formula with a tolerance of 10% error rate. The sample size was 40 people taken using random sampling techniques. Primary data on knowledge, motivation, and IVA screening were collected using questionnaires. The data were processed and analyzed using computer software, with both univariate and bivariate analyses conducted using the chi-square test.

Ethical clearance

The research ethics committee at the University of Dehasen of Bengkulu, Indonesia's Faculty of Health Science, approved this study, and it has the ethical clearance number 0032/D-KEPK/FD/IX/2023.

RESULTS

The individual item analysis from the health knowledge questionnaire is detailed in Table I. While 100.0% (n = 40) of the respondents could correctly define cervical cancer, 65.0% (n = 26) were unaware of its underlying causes. A high percentage of women recognized the typical signs and symptoms (85.0%, n = 34) and understood preventive actions (90.0%, n = 36). However, critical gaps were identified regarding screening and early detection: 35.0% (n = 14) did not know how to detect cervical cancer early, 25.0% (n = 10) failed to recognize the IVA test as an early detection method, and 62.5% (n = 25) were unsure of the appropriate timing to undergo the test. Furthermore, 55.0% (n = 22) were unaware of simple, easy, and affordable diagnostic options, 75.0% (n = 30) did not know the general advantages of an IVA examination, and 90.0% (n = 36) were entirely unaware of its clinical benefits.

As shown in Table I, individual items measuring motivation levels highlighted varying perspectives. The strongest motivating factor was screening affordability and convenience, with 75.0% (n = 30) of respondents agreeing or strongly agreeing that they desired to take the IVA test because it is cheap and widely available at health facilities. Additionally, 67.5% (n = 27) of the women expressed agreement or strong agreement regarding their intention to proactively request information from healthcare workers and subsequently undergo screening. In contrast, items related to professional compliance showed more hesitation, with 60.0% (n = 24) remaining neutral, ashamed, or fearful about following direct health worker recommendations to take the test.

Table II displays the participation rates for Visual Inspection with Acetic Acid (IVA) testing alongside the bivariate analysis of associated factors among the 40 respondents. Overall, a substantial majority of the women (87.5%, n = 35) underwent the IVA test, while only 12.5% (n = 5) did not participate. Statistical analysis revealed a highly significant relationship between health knowledge levels and participation in IVA screening ($p < 0.001$). Based on the raw data distribution, all respondents categorized with "Not enough" knowledge (100.0%, n = 20) and "Enough" knowledge (100.0%, n = 15) successfully completed the

Table I: Health Knowledge and Motivation Assessment about Cervical Cancer and IVA Examination (N = 40)

Domain	Questionnaire item	Correct answer n (%) /	Wrong answer n (%) /
Health knowledge	What is the definition of cervical cancer?	40 (100.0)	0 (0.0)
Health knowledge	What causes cervical cancer?	14 (35.0)	26 (65.0)
Health knowledge	What are the typical signs and symptoms of cervical cancer?	34 (85.0)	6 (15.0)
Health knowledge	How to prevent cervical cancer?	36 (90.0)	4 (10.0)
Health knowledge	How to find out early cervical cancer?	26 (65.0)	14 (35.0)
Health knowledge	IVA test is one of the early detection methods of what cancer?	30 (75.0)	10 (25.0)
Health knowledge	When is the best time to do an IVA test?	15 (37.5)	25 (62.5)
Health knowledge	What is one way to detect cervical cancer (cervix) in a simple, easy and cheap way?	18 (45.0)	22 (55.0)
Health knowledge	Advantages of IVA examination (Visual Inspection)?	10 (25.0)	30 (75.0)
Health knowledge	What are the benefits of doing an IVA examination?	4 (10.0)	36 (90.0)

Domain	Questionnaire item	Disagree f	Neutral f	Agree f	Strongly agree f
Motivation	I have to ask a health worker or look for information about the IVA examination; after getting the information, I want to do the IVA test	1	11	23	4
Motivation	I will still do the IVA examination even though I have no complaints	5	16	16	3
Motivation	I did the IVA test because the results were accurate.	0	17	20	3
Motivation	I will follow the advice of health workers to do an IVA examination and will not be afraid or ashamed to do it	3	21	9	7
Motivation	I want to do an IVA examination because it is cheap and available at all health service facilities.	0	10	27	3
Motivation	I did an IVA examination to detect cervical cancer early and prepare for early treatment.	2	16	20	2
Motivation	I carried out the IVA examination of my own accord and not merely because of encouragement from others.	2	14	22	1
Motivation	I am interested in carrying out one of the early detection efforts for cervical cancer using the IVA method.	4	17	18	1
Motivation	I still check the IVA, even though I am busy and find it difficult to divide my time.	2	14	22	2
Motivation	I do routine IVA checks every 3 years	4	11	17	8

Note. IVA = Visual Inspection with Acetic Acid. For health knowledge items, columns 3 and 4 show correct and wrong answers. For motivation items, columns 3 to 6 show Likert-scale response frequencies: disagree, neutral, agree, and strongly agree.

Table II: Relationship between Knowledge Level, Motivation Level, and IVA Examination among Women in Bengkulu City

Variable/ Category	Underwent IVA Test: Yes (n = 35)	Underwent IVA Test: No (n = 5)	Total Sample (N = 40)	p-value
Overall participation	35 (87.5%)	5 (12.5%)	40 (100.0%)	-
Knowledge level				
Not enough	20 (100.0%)	0 (0.0%)	20 (100.0%)	<0.001
Enough	15 (100.0%)	0 (0.0%)	15 (100.0%)	
Good	0 (0.0%)	5 (100.0%)	5 (100.0%)	
Motivation level				
Low	26 (96.3%)	1 (3.7%)	27 (100.0%)	0.015
High	9 (69.2%)	4 (30.8%)	13 (100.0%)	

Note. IVA = Visual Inspection with Acetic Acid. p-value of 0.000 was reported as p < 0.001 for manuscript presentation.

IVA examination. Conversely, all respondents classified with "Good" knowledge (100.0%, n = 5) did not undergo the testing procedure. A significant relationship was also demonstrated between motivation levels and the likelihood of undergoing an IVA examination (p = 0.015). Among the sample, 96.3% (n = 26) of women with low motivation levels underwent the test, whereas 69.2% (n = 9) of women with high motivation levels participated in the screening.

DISCUSSION

The findings of this study suggest a significant relationship between women's motivation and their willingness to undergo IVA screening for early cervical cancer detection. The data revealed that 67.5% of women had low motivation to participate in the examination. This was further supported by the finding that 87.5% of women did not engage in early cervical cancer detection through IVA or other methods. Women with low motivation to prevent cervical cancer were less likely to take steps towards early detection. A similar study in Malaysia found that women were generally not motivated to pursue early cervical cancer detection due to fears about the process and potential results. Many believed that those diagnosed with cervical cancer have no chance of survival, highlighting the need for healthcare professionals to address and correct these misconceptions about cancer (15).

The results of the study showed that 65% of women were motivated to take the IVA test because the price was cheap and affordable, this was reinforced by the results of the 2023 study on Patients, Practice, and Price Transparency, affordable health check-up costs will be a consideration for people to use these health services(16). The low and affordable cost of the IVA test can be one way to increase women's motivation in screening, this is supported by research results in the city of Padang, there is a relationship between maternal motivation and early detection of cervical cancer through the IVA method. The results of this study are also supported by the results of research in Deli Tua which concluded that

there was a relationship between the level of knowledge and motivation of WUS in IVA examinations (17). Lack of knowledge, husband's support, and concerns about side effects and costs are some of the barriers to early screening for cervical cancer using the IVA test method (18). Spousal support constitutes a pivotal determinant in promoting women's engagement in Visual Inspection with Acetic Acid (VIA) screening for the early detection and prevention of cervical cancer (19). Empirical evidence demonstrates a statistically significant positive association between husbands' involvement and women's participation in screening. Specifically, when husbands provide informational guidance, accompany their spouses, and extend emotional reassurance, they contribute to alleviating fear and enhancing adherence to screening initiatives. These findings underscore the importance of integrating family, particularly spousal, involvement within health education and community outreach interventions (20).

In an effort to increase women's motivation to carry out early detection of cervical cancer, the government needs to provide easy and affordable screening services at all health service facilities (21). The low number of women of childbearing age who undergo IVA tests as an initial screening for cervical cancer is due to limited knowledge, so this needs to be increased again through health promotion (22). The results of a study conducted in the city of Palu in 2024, there was a decrease in the number of women of childbearing age who underwent IVA tests, in 2021 70%, in 2022 only 10%, in 2023 as much as 20%, this happened due to various things including lack of access to information, family support and the role of health workers, fear of positive results and not feeling symptoms so they tend to ignore efforts to detect cervical cancer early (23). Many women already know about cervical cancer, the dangers of cancer, but many have not yet been screened. Women are motivated to be screened because of the fear of cancer causing death (24). Knowledge, family, the role of those closest to you, and society are some of the factors that influence women's motivation to undergo IVA screening (25).

The study results indicated a significant relationship between motivation and women's efforts to conduct early cervical cancer detection. The average knowledge of respondents about cervical cancer and early detection via IVA screening was found to be low, with 50% of women having insufficient knowledge. This is reflected in the fact that 87.5% of women did not make efforts to detect cervical cancer early. Knowledge positively influences behavior, meaning that women with greater awareness of cervical cancer are more likely to engage in early detection practices. These findings are supported by a 2024 study in Nepal, which found that exposure to information about cervical cancer was positively correlated with increased efforts for early detection. To improve cervical cancer screening practices, it is essential to provide more information, education, and communication to enhance women's knowledge about the disease (26). The results of a study in Kenya on women with HIV at risk of cervical cancer, women who undergo IVA tests should be accompanied, given information and explanations from health workers to increase knowledge through a digital system that is in great demand and in line with current developments. (27). Public awareness of cervical cancer and screening leads to reduced utilization of health services for cancer detection. Other studies have shown that, in general, knowledge plays a key role in influencing screening behaviors. For example, 35.3% of participants in the control group were unaware of the importance of cancer screening (28).

A related study conducted in South Eastern Nigeria found that 420 women (97.2%) had not undergone cervical cancer screening. Knowledge of cervical cancer among women in Owerri City was still very limited, with most women having only heard of the disease but lacking a deeper understanding. This lack of knowledge was further compounded by low levels of education (29). The study also found that the more a woman knows about cervical cancer, the more likely she is to undergo the IVA test. Women with limited knowledge about cervical cancer are less inclined to pursue early detection efforts. However, the study also revealed that some women, despite having good knowledge, still refrained from the IVA test due to fear of the procedure and concerns about receiving positive results. The findings of this study are consistent with previous research conducted in Nepal in 2024, which revealed a very weak positive correlation ($r = 0.078$) between knowledge of cervical cancer and participation in screening. Similarly, a 2021 study in Ethiopia found that while knowledge about cervical cancer screening had an effect on the use of screening services among women aged 30-65, the overall participation remained low. This highlights the importance of health education programs in enhancing women's knowledge and encouraging greater involvement in cervical cancer screening (30). Additionally, research conducted in Padang city showed a significant relationship between women's knowledge and their compliance with early cervical cancer detection, with a p-value of 0.000 (31). A literature review on ethnic minority groups in Mainland China found that these groups had low levels of knowledge regarding cancer screening and primary prevention, leading to inadequate early detection efforts for cervical cancer, with screening rates below 40% (32).

A 2024 study examining factors influencing IVA screening behavior revealed a significant relationship between knowledge and the willingness of women of childbearing age (WUS) to undergo IVA examinations (33). Similarly, a 2021 qualitative study found that increasing public knowledge about early cervical cancer detection through information dissemination

from various sources and media led to a greater desire among the public to utilize screening services (34). A national survey conducted in Canada on factors affecting women's willingness to participate in cervical cancer screening indicated that women with lower levels of knowledge were less likely to engage in screening, conversely, women with a higher level of knowledge about cervical cancer prevention and treatment were more likely to participate in IVA screenings, which are simple, affordable, and effective methods for early cervical cancer detection (35). Enhancing knowledge of early cervical cancer prevention through Visual Inspection with Acetic Acid (VIA) screening requires a multifaceted communication strategy that integrates interpersonal approaches (involving trusted healthcare providers, peers, and family members), mass media outlets (such as radio, television, and social media), and digital platforms (including WhatsApp and internet-based resources) to convey culturally appropriate and persuasive messages (36). These communication channels should deliver clear information regarding the significance and benefits of VIA screening and be systematically incorporated into health education and counseling initiatives (37).

CONCLUSION

Delayed treatment is a significant factor contributing to the high mortality rate among women with cervical cancer. However, this can be prevented by identifying the risk of cervical cancer early through IVA screening, which is an easy, affordable, and cost-effective method that can be conducted at basic healthcare facilities. Despite being a simple and inexpensive procedure, many women still do not undergo cervical cancer screening. This reluctance is due to factors such as lack of awareness, insufficient information, and fear of the screening process and its results. The limited understanding of cervical cancer and early detection methods contributes to the low motivation among women to participate in IVA screening. Therefore, it is essential for healthcare providers to educate the community about cervical cancer and the importance of screening. Additionally, women need to be motivated and supported to visit healthcare facilities for IVA testing. One effective strategy to encourage early detection is to raise awareness about the dangers of cervical cancer and the available screening methods, including IVA, and to make screening services more accessible.

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