

Midwives as the Primary Care Providers: Knowledge, Attitude, Practice, and Skill of Early Detection of Cervical Cancer Using Visual Inspection with Acetic Acid

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Abstract

Background: Cervical cancer is the third most common malignancy in women globally. It is also the leading cause of death for women in Indonesia. When detected at an early precancerous stage, cervical cancer is largely preventable. Early detection with Visual Inspection with Acetic Acid (VIA) is an acceptable, affordable, and safe alternative method in developing countries. Midwives, as primary health care providers, can perform VIA at various health center levels. This study evaluated the knowledge, attitude, practice, and skill of cervical cancer screening with VIA among midwives in Denpasar. **Methods:** A cross-sectional study was conducted among 70 midwives at Public Health Centers in Denpasar, Bali, Indonesia, from July-August 2022. The data were collected using a structured knowledge, attitude, and practice questionnaire. An obstetrician-gynecologist assessed the skills with a standardized checklist. Data were analyzed using univariate, bivariate, and multivariate analysis on SPSS version 26. A level of $p < 0.05$ was considered significant with a prevalence ratio (PR) and 95% confidence interval (CI). **Results:** Out of all midwives, 42 (60.0%) were knowledgeable, 42 (60.0%) had a favorable attitude, 36 (51.4%) had good practice of VIA, and 54 (77.1%) had competent skills. Knowledge (PR=5.00, 95%CI=1.76-14.16), attitude (PR=2.92, 95%CI=1.08-7.89), and skill (PR=11.90, 95%CI=2.44-57.84) were associated with the practice of VIA. Age group and work experience were strongly associated with the training and skill of VIA. **Conclusion:** Most midwives in Denpasar were knowledgeable, had a favorable attitude, good practice, and competent skills to perform cervical cancer screening using VIA.

Keywords: Midwife- cervical cancer- early detection- visual inspection with acetic acid- VIA

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Introduction

Cervical cancer ranks third as the most common malignancy in women globally, with an estimated 569.847 new cases and 311.365 deaths yearly (Bray et al., 2018). It is also the leading cause of death for women in Indonesia. There are approximately 15.000 new cases of cervical cancer every year in Indonesia, with an annual mortality rate of about 7.500, and the number continues to increase each year (Rasjidi, 2014). The prevalence of cervical cancer in Bali also varies every year. Since 2018, there have been 174 patients diagnosed with cervical cancer, and even then, they come from those who have had previous complaints (Dinas Kesehatan Provinsi Bali, 2021).

When detected at an early precancerous stage, cervical cancer is largely preventable. One safe, affordable, and widely accepted early detection method in Indonesia is Visual Inspection with Acetic Acid (IVA). VIA is performed by administering acetic acid at a concentration of 3-5% on the surface of the cervix to evaluate the appearance of thickened white plaque (more commonly

known as acetowhite epithelium). Primary medical personnel (doctors, midwives, and nurses) can perform VIA at various levels of health services. Screening with VIA in women aged 35-40 can reduce the lifetime risk of invasive cervical cancer by up to 65% (Azene, 2021; Taye, Mihret and Muche, 2021).

However, implementing VIA practice in Indonesia still needs to meet expectations. The target coverage for early cervical cancer detection with WHO VIA is 80%. Meanwhile, the number of women in Indonesia who had a VIA test in 2017 amounted to 2.2 million people (about 5%) of the total target population of 34 million women (Kementerian Kesehatan RI, 2018). The situation is similar in Bali, where VIA practice only reaches 3.9% of women of childbearing age. While in Denpasar City, the VIA procedure each year decreased to only 2,5% in 2021 (Dinas Kesehatan Provinsi Bali, 2021).

As primary health care providers, Midwives have an essential role in maternal, child, and family planning health services in Public Health Centers. Midwives at the Denpasar City Public Health Centers have conducted

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counseling efforts about the VIA test, but there is no schedule for routine VIA tests. Some also lack the courage to perform a VIA examination independently because some have never attended the training (Panjaitan, 2018).

Several studies have shown that the implementation of IVA tests carried out by midwives can be influenced by several things, such as knowledge, attitudes, behavior, skills, and work experience (Tchounga et al., 2014a; Cham B, 2018). Midwives provide precise and accurate information in the community, especially for women. Better midwifery performance leads to improved community behavior, especially early detection of cervical cancer with the IVA method. This study aimed to evaluate the knowledge, attitude, practice, and skill of cervical cancer screening using VIA among midwives in Denpasar City, Bali, Indonesia.

Materials and Methods

A cross-sectional analytic observational study was conducted in July-August 2022 at 4 Public Health Centers in Denpasar City, Bali, Indonesia. We used a consecutive non-random sampling method. The respondents were all midwives who met the inclusion criteria: midwives in Denpasar City, Bali, Indonesia, willing to participate in this study. Seventy midwives met the requirements and were selected as samples for this study. The variables of this study: 1) the dependent variable is: the midwife's behavior in IVA practice; 2) independent variables are: the knowledge, attitudes, and skills of midwives; and 3) external variables include midwife characteristics: age, education, and work experience. The data were collected using a structured questionnaire for knowledge, attitude, and practice that has been tested for validity and reliability. The knowledge questionnaire consists of 20 questions covering definitions, benefits, implementation procedures, and interpretation of IVA results. Meanwhile, attitude measurement is assessed using a Likert Scale, and behavior is estimated based on the respondent's answers. An obstetrics and gynecology specialist evaluated the skills of the midwives in performing IVA using a standardized checklist.

General characteristics of the midwives were recorded, such as age, education status, work experience, knowledge, attitude, practice, and skills. We divided the level of knowledge into two categories: good (>80%) and poor (<80%). Attitudes are grouped into two categories, good (>71) and poor (<71), based on the median score. Skills is grouped into two categories; competent and incompetent. Data were analyzed using univariate, bivariate, and multivariate analysis on the Statistical Package for Social Sciences (SPSS) version 26. We classified the data based on category, frequency, and percentage. Chi-square statistical test and logistic regression were used with a significance level of $p < 0.05$, with a prevalence ratio (PR) and 95% Confidence Interval (CI).

This study has obtained ethics approval from The Ethics Committee, Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia, with reference number 2223/UN14.2.2.VII.14/LT/2022.

Results

The mean age of midwives was $34.66 + 9.21$ years old, with more than half aged 30-40. Nearly 80% of midwives have a Diploma 3 level of education. Most respondents have less than ten years of work experience (60.0%), with an average length of service of $11.11 + 8.14$ years. Of all the midwives, 42 (60.0%) had good knowledge, 42 (60.0%) had a good attitude, 36 (51.4%) had good IVA behavior, and 54 (77.1%) had competent skills. The characteristics of the respondents are shown in Table 1.

Table 2 shows the bivariate analysis of the characteristics of midwives' practice in the early detection of cervical cancer using the IVA method. Most of the age group > 40 years had good practice (88.9%). There is a significant relationship between age and midwife practice. Most midwives with work experience <10 years have poor behavior (76.2%).

Table 3 describes the relationship between midwives' knowledge, attitudes, and skills in early detection behavior using IVA. The results of this study indicate that midwives with good knowledge are associated with good behavior (66.7%, $p < 0.05$). The table also shows that a good understanding of midwives is five times more likely to support the practice of early detection of cervical cancer screening using IVA, compared to midwives with less knowledge. Knowledge can influence a person naturally and as a basis for making rational and effective decisions in accepting behavior that will produce positive and negative perceptions. The higher the midwives' knowledge about VIA in cervical cancer screening, the better the implementation.

Based on Table 3, as many as 61.9% of midwives

Table 1. Characteristics of Midwives Based on Age, Education Level, Work Experience, Level of Knowledge, Attitude, Practice, and Skills Regarding IVA

Variables	Category	Frequency (n=70)	Percentage
Age	mean + SD	34.66 + 9.21	
	< 30 years old	16	22.9
	30 - 40 years old	36	51.4
	> 40 years old	18	25.7
Education Level	3-year Diploma	54	77.1
	4-year Diploma/ bachelor's degree	14	20
	Master's degree	2	2.9
Work Experience	mean + SD	11.11 + 8.14	
	< 10 years	42	60
	10 - 20 years	16	22.9
	> 20 years	12	17.1
Knowledge	Good	42	60
	Poor	28	40
Attitude	Good	42	60
	Poor	28	40
Practice	Good	36	51.4
	Poor	34	48.6
Skills	Competent	54	77.1
	Incompetent	16	22.9

Table 2. Chi-Square Analysis between Characteristics of Midwives on the Practice of Early Detection of Cervical Cancer Using IVA

Variables		Practice		Total	p
		Good n (%)	Poorn (%)	n (%)	
Age	< 30 years old	4 (25.0)	12 (75.0)	16 (100)	.000*
	30 - 40 years old	16 (44.4)	20 (55.6)	36 (100)	
	> 40 years old	16 (88.9)	2 (11.1)	18 (100)	
Education Level	3-year Diploma	30 (55.6)	24 (44.4)	54 (100)	0.075
	4-year Diploma/ bachelor's degree	4 (28.6)	10 (71.4)	14 (100)	
	Master's degree	2 (100)	0 (0.0)	2 (100)	
Work Experience	< 10 years	10 (23.8)	32 (76.2)	42 (100)	0.000*
	10 - 20 years	16 (100)	0 (0.0)	16 (100)	
	> 20 years	10 (83.3)	2 (16.7)	12 (100)	

*Statistically significant at p<0.05

Table 3. Multivariate Analysis between Knowledge, Attitudes, and Skills of Midwives on the Practice of Early Detection Behavior Using IVA

Variables		Practice		Total	p	PR (95% CI)
		Good n (%)	Poor n (%)	n (%)		
Knowledge	Good	28 (66.7)	14 (33.3)	42 (100)	0.002	5.00 (1.76-14.16)
	Poor	8 (28.6)	20 (71.4)	28 (100)		
Attitude	Good	26 (61.9)	16 (38.1)	42 (100)	0.032	2.92 (1.08-7.89)
	Poor	10 (35.7)	18 (64.3)	28 (100)		
Skills	Competent	34 (63.0)	20 (37.0)	54 (100)	0	11.90 (2.44-57.84)
	Incompetent	2 (12.5)	14 (87.5)	16 (100)		

* Statistically significant at p<0.05

with a good attitude have good behavior in implementing IVA. The bivariate analysis also showed a relationship between midwives' attitudes towards behavior with $p>0.05$. Midwives' skills in implementing IVA also have an essential role. Based on the PR with 95% CI, midwives competent in IVA test skills are almost twelve times more likely to carry out behaviors supporting screening practices for early detection of cervical cancer using IVA. Table 3 shows that midwives less competent in carrying out IVA also have unsupportive behavior (87.5%). Based on chi-square analysis, the relationship between the skills and behavior of midwives was statistically significant ($p<0.05$).

Discussion

Knowledge results from human senses or someone knowing something through their senses. It can influence someone naturally and as a basis for making rational and effective decisions in accepting new behaviors that will produce positive and negative perceptions. The higher the midwife's knowledge level about Visual Inspection with Acetic Acid (VIA) techniques in cervical cancer screening, the better the implementation (Notoatmodjo, 2012). The results of this study indicate that midwives with good knowledge are associated with good behavior (66.7%, $p<0.05$). We also found that a good understanding of midwives is five times more likely to support the practice of early detection of cervical cancer screening

using IVA, compared to midwives with less knowledge. This study aligns with research conducted by Tchounga in Abidjan Côte d'Ivoire, who found that more than 90.0% of midwives knew cervical cancer was preventable. Screening was identified as a preventive method by 71.1% of the respondents (Tchounga et al., 2014).

The relationship between age and midwife practice is significant, indicating that older midwives tend to have better practices in the early detection of cervical cancer using the IVA method. Our research shows that midwives aged > 40 years had the highest percentage of good practice in the early detection of cervical cancer (88.9%), which is statistically significant ($p<0.05$). On the other hand, midwives under 30 had the lowest percentage of good practice (25.0%) and the highest rate of poor training (75.0%). This finding suggests that experience and accumulated knowledge over time may positively influence midwives' ability to conduct early detection for cervical cancer. Older midwives might have encountered more cases and received more training or exposure to advancements in cervical cancer screening methods, leading to better practice outcomes (Lubis, 2013).

In our study, the rate of good practice among midwives with a Master's degree was 100%, whereas the rate among those with a 3-year Diploma was the lowest (55.6%). The association between education level and midwife practice is not, however, statistically significant at the conventional significance level ($p<0.05$), according to the p-value ($p=0.075$). This indicates that there is a potential that the

differences found are not associated.

The statistically significant relationship between work experience and midwife practice indicates that as midwives gain more experience in their profession, their ability to conduct early detection of cervical cancer using the IVA method improves. The data reveal a significant relationship between work experience and midwife practice ($p < 0.05$). Midwives with work experience of less than 10 years had the highest percentage of poor training (76.2%), while those with 10-20 years of experience had a 100% rate of good practice. Midwives with over 20 years of experience also had a high percentage of good practice (83.3%). The results of this study go in line with research on the evaluation of the quality of the VIA screening examination by Siamiarti in Kediri City, which stated that the length of work > 10 years correlated to higher experience in performing the examination, performance level and compliance with procedures compared to those who had worked less than 10 years. (Sismiarti, 2011).

Our research is in line with Sari et al. in 2022. Showed the associations between the service period ($p = 0.005$), knowledge ($p = 0.0001$), and attitude ($p = 0.005$) with the performance of midwives in the early detection of cervical cancer using the VIA method. The research results show no connection Between education and a relationship between training status and knowledge of midwives in detecting early cancer cervix using the VIA method in Banjarmasin City. Training is one step that becomes a consideration in increasing the performance of midwives in detecting cervical cancer (Sari, Lestari and Mulawardhana, 2022). Research by Mardiana et al. revealed that years of service correlated with the behavior of midwives in conducting IVA screening (Mardiana, Dasuki and Pradjatmo, 2015).

Midwives competent in performing IVA tests show a significantly higher rate of early detection behavior (63.0%, $n=34$) than those deemed incompetent (12.5%, $n=2$). This association is highly significant ($p < 0.001$), indicating that the level of skills possessed by midwives strongly influences their practice of early detection using IVA.

The study's results emphasize the crucial role of knowledge, attitudes, and skills in influencing midwives' behavior regarding early detection of cervical cancer using IVA. Midwives with good knowledge, positive attitudes, and competent skills are likelier to conduct IVA screening, contributing to better implementation of early detection programs. Consequently, interventions to improve midwives' knowledge through professional training programs and address any knowledge gaps can significantly positively impact cervical cancer screening rates and early detection efforts (Mardiana, Dasuki and Pradjatmo, 2015).

Attitudes can be positive and can be negative. In being positive, the tendency for action is to approach, like, expect certain objects. In a negative attitude, one tends to stay away from, avoid, hate and dislike certain things. Several factors can influence the respondent's attitude (personal experience, the influence of other people, cultural influence, mass media, educational institutions, and emotional aspects), which has been followed.

Ease of access to good information must be provided through seminars and training for midwives in all health facilities to increase the proportion of midwives with adequate knowledge and attitudes about cervical cancer screening (Mohammadi et al., 2019). Midwives with good knowledge and positive attitudes showed better performance detecting cervical cancer early using the IVA method than midwives with a negative attitude. Hence, more training is required to change the negative attitude of midwives toward the IVA program (Mardiana, Dasuki and Pradjatmo, 2015).

In conclusion, Most of the midwives in Denpasar City are knowledgeable and have good attitudes, good practices, and competent skills in conducting cervical cancer screening using IVA. It is necessary to work regular training for midwives in all types of health facilities to increase the proportion of midwives who have good knowledge, attitudes, and behavior and are competent in cervical cancer screening.

Author Contribution Statement

All authors contributed equally to this research from the conceptual framework, data gathering, and analysis until the final report's interpretation of the results.

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Ethical Clearance

This study has obtained ethics approval from The Ethics Committee, Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia, with reference number 2223/UN14.2.2.VII.14/LT/2022.

Conflict Of Interest

The authors declare that there is no competing interest regarding the publication of this article.

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