Research Article

Acceptance and Satisfaction of Indonesian Women Undergoing Visual Inspection with Acetic Acid (VIA) Examination Using Digital Image and the Related Factors

Omo Abdul Madjid[1], Samuel Tobing[2], JJemmy Ariesandy Djauhari[1], Siti Rafiqah Fajri Harun[1]

[1]Department of Obstetrics and Gynecology
Faculty of Medicine Universitas Indonesia
Dr. Cipto Mangunkusumo General Hospital. Jakarta
[2]Department of Obstetrics and Gynecology
Ulin Hospital. Banjarmasin

Abstract

Objective: To determine the acceptance, satisfaction, and willingness to recommend of women undergoing VIA examination with and without digital image and their related factors.

Methods: This was an observational analytic study with cross sectional method. The subjects of this study were adult women undergoing VIA examination with or without digital image in Ulin Regional Hospital, Indonesia. Patients who did not fill the whole questionnaire were excluded from the study. Characteristics analyzed in the study were age, education, occupation, socioeconomic status, source of VIA information, and previous VIA experience. Outcomes analyzed in this study were acceptance, satisfaction, and willingness to recommend.

Results: There were 303 subjects who were included in the study (252 with digital image and 51 without digital image). There were no risk factors of lower acceptance, satisfaction, and willingness to recommend among women undergoing VIA examination. However, the cases of women with low acceptance and satisfaction are associated with lower information of the examination.

Conclusions: Digital IVA examination is a feasible alternative with acceptance, satisfaction, and recommendation rates that are the same as VIA examination without digital imaging.

Keywords: cervical cancer, digital image, Femicam®, visual inspection with acetic acid examination.

Correspondence author. Omo A.bdul Madjid. Department of Obstetrics and Gynecology. Faculty of Medicine Universitas Indonesia. Dr. Cipto Mangunkusumo General Hospital. Jakarta. Email; omoabdul.m@gmail.com

INTRODUCTION

Cervical cancer is the third most prevalent cause of cancer-associated death in women worldwide. Cervical cancer occurs in 1.4 million worldwide, while every year about 231,000 women die from cervical cancer. In addition, the incidence of cervical cancer in Jakarta is known to be 100 per 100,000 adult women.[1]

Cervical cancer is caused by the Human Papilloma Virus (HPV) with the two most common types of HPV, namely 16 and 18. Generally, signs of infection that appear are small pink spots around the genitals that feel itchy or hot like burning. Patients infected with HPV can develop into low-grade lesions, high-grade lesions to cervical cancer if early detection and treatment are not carried out.[2,3] The development required for high-grade lesions to cervical cancer is 10 to 20 years, but in some cases the lesions pre-cancer can develop into cancer within one or two years.[2] Women who experience cervical cancer often occur at the age of 30-40 years and over. The risk factors for a person being infected with HPV in the cervix are: sexual activity aged less than 20 years, frequent change of sexual partners, sexually transmitted infections, family history of cervical cancer, smoking, immunosuppression.[4]

Cervical cancer prevention efforts consist of primary, secondary, and tertiary prevention. Primary prevention is the act of preventing before being exposed to the HPV virus with health

education regarding healthy sexual behavior and HPV vaccination. Secondary prevention is carried out after exposure to the HPV virus by early detection through screening, diagnosis, and immediate therapy of pre-cancerous cervical lesions.[2] Enforcement of the right diagnosis in patients with cervical cancer is needed to determine the appropriate treatment for the tertiary prevention.[5]

Based on the data from the Indonesian Ministry of Health, the coverage of early detection has only reached around 7.6% of the target of 85%.[6] The low coverage of cervical cancer screening is caused by various factors, namely low knowledge due to lack of information regarding the dangers of cervical cancer and how to detect it, concerns about the positive results obtained from the results of screening examinations, as well as the cost of some screening for pre-cancerous cervical lesions which are relatively expensive.[6]

Screening for cervical pre-cancerous lesions can be done using various techniques such as pap smear test, HPV DNA test, and Acetic Acid Visual Inspection (VIA) test. Most hospitals provide facilities for HPV vaccination and Pap test, but only few have VIA facilities and colposcopy.[7] The Pap test is still difficult to attract much interest in developing countries, besides the price is still relatively expensive even though it looks simple in its implementation, it requires complex equipment to detect cervical cancer and patients do not get the results immediately after being examined so that some patients do not return to health facilities and lost the opportunity to get further therapy.[2]

The VIA test is an examination of pre-cancerous lesions using acetic acid, this test uses an easy technique, low cost, and has a high level of sensitivity. Due to the VIA high specificity (92.2%), the use of the VIA test can be an alternative for pre-cancerous lesion screening even in areas that have limited facilities and resources. It is very suitable to be used as cervical cancer screening in developing countries like Indonesia.[8] In carrying out the VIA test procedure, the basic results obtained are in the form of digital images. With currently available technology, the cervical images of women who take VIA tests can be recorded using electronic devices and the results can be explained immediately to women who have IVA tests.[9] The use of digital images of the patient's cervix during counseling after the IVA test examination, it is expected that the patient will have a better understanding of the condition of the cervix so that acceptance and satisfaction will lead to follow-up recommendations and a sense of satisfaction can lead to screening behavior in the surrounding community.

This study aims to compare the acceptance, satisfaction, and willingness to recommend of women undergoing VIA examination with and without digital image and their related factors.

METHODS

This is an observational cross-sectional study performed on women undergoing VIA examination with and without digital images in Ulin Regional Hospital, Indonesia, during the period of June to November 2022. Indonesia. The study population consisted of women who underwent visual inspection with acetic acid (VIA), both with or without the use of digital images, and who met the inclusion criteria while women who did not fill the whole questionnaire were excluded from the study.

The sampling in this study was conducted through simple random sampling, meaning potential subjects were randomized to either the digital image-enhanced VIA examination group or the standard VIA examination group at the time of subject recruitment. Sampling continued until the required sample size was achieved. The sampling will be conducted with a ratio of digital image-enhanced examinations to standard examination at a 3:1 ratio (3 with images: 1 without images).

The examination of VIA was done by a gynecology resident with supervision by an experienced gynecologist with more than 10 years of experience. The examination of VIA was done in accordance to the World Health Organization (WHO) guidelines for screening and treatment of precancerous lesions for cervical cancer prevention.[1] The VIA examination with digital image was done using FEMICAM Medical Camera® (Sarandi Karya Nugraha, Indonesia).[2]

This study used 5% error bound and 95% confidence interval limit, with power of the test considered to be 90%. Variables analyzed in this were age, education, occupation, socioeconomic status, source of VIA information, and previous VIA experience. Outcomes analyzed in this study were acceptance, satisfaction, and willingness to recommend. The acceptance, satisfaction, and willingness to recommend were evaluated using a self-filled questionnaire which had already validated in Indonesia (Appendix 1).

All human studies had been approved by the Research Ethics Committee of Faculty of Medicine, University of Indonesia. All patients who were included in this study had given the informed consent prior to the study. Collected data were then analyzed using SPSS for Macintosh ver. 20. Characteristics of subjects and the symptoms experienced were analyzed descriptively. Bivariate and multivariate analysis was done in order to determine the risk factors of lower acceptance, satisfaction, and willingness to recommend among subjects.

RESULTS

A total of 303 subjects were included in this study, 252 (83.1%) of whom underwent VIA examination with digital image and 51 (16.9%) underwent VIA examination without digital image. Baseline characteristics of subjects can be found in Table 1.

Table 1. Characteristics of Subjects

Characteristics	Frequency (N=30)
Examination Type	
with digital image	252 (83.1)
without digital image	51 (16.9)
Age (median, range)	42 (19-67)
Education	
undergraduate	243 (80.2)
high school	49 (16.2)
elementary	11 (3.6)
Occupation	
employee	154 (50.8)
housewife	149 (49.2)
Income Level (wages)	
> minimum	156 (51.5)
< minimum	147 (49.2))
Information Source	
electronic	85 (28.1)
printed	8 (2.6)
health officer	163 (53.8)
family	47 (15.5)
Previous VIA Experience	
yes	91 (31.4)
no	208 (68.6)
Previous VIA with digital image experience	
yes	236 (77.9)
no	67 (22.1)

Following the analysis of the baseline characteristics of subjects, the distribution of acceptance satisfaction, and willingness to recommend of VIA examination were measured. It is observed that there were only 1 subject with low rate of acceptance and 1 subject with low rate of satisfaction. The results can be found in Table 2.

Table 2. Distribution of Acceptance Satisfaction, and Willingness to Recommend of VIA Examination

Variable	Frequency (%)
Acceptance	
Yes	203 (99.7)
No	1(0.3)
Satisfaction	
Yes	302 (99.7)
No	1(0.3)
Willingness to recommend	
Yes	300 (99.0)
No	3 (1.0)

Following the distribution analysis, the subjects who have undergone VIA examination were analyzed further. The factors affecting acceptance, satisfaction, and willingness to recommend were analyzed and determined. The results can be found in Table 3 for acceptance and Table 4 for satisfaction. However, cross-tabulation table could not be made for willingness to recommend as all of the subjects who had undergone VIA examination had high rate of willingness.

Table 3. Factors Associated with Acceptance of VIA Examination

Characteristics	Acceptance (+)	Acceptance (-)	P-value
Examination Type			1.000
with digital image	73 (98.6)	1 (1.4)	
without digital image	21 (100)	0	
Age			0.262
<30	28 (100)	0	
30-40	41 (100)	0	
>40	25 (96.2)	1 (3.)	
Education			0.760
Undergraduate	32 (100)	0	
Senior high school	43 (97.7)	1 (2.3)	
Junior high school	14 (100)	0	
Elementary	5 (100)	0	
Occupation			0.421
Employee	39 (97.)	1(2.5)	
Housewife	55 (10)	0	
Income Level (wages)			0.432
> minimum	54 (100)	0	
< minimum	40 (97.6)	1 (2.4)	
Information source			
Electronic media	23 (95.8)	1 (4.2)	
Printed media	2 (100)	0	
Health officer	53 (100)	0	
Family	16 (100)	0	
Previous VIA with digital image experience			1.000
yes	13 (100)	0	
no	81 (98.8)	1 (1.2)	

Table 4. Factors Associated with Satisfaction of VIA Examination

Characteristics	Satisfaction (+)	Satisfaction (-)	P-value
Examination Type			1.000
with digital image	73 (98.6)	1 (1.4)	
without digital image	21 (100)	0	
Age			0.262
< 30	28 (100)	0	
30-40	41 (100)	0	
>40	25 (96.2)	1 (3.8)	
Education			0.119
Undergraduate	32 (100)	0	
Senior high school	44 (100)	0	
Junior high school	13 (92.9)	1 (7.1)	
Elementary	5 (100)	0	
Occupation			0.421
Employee	39 (97.5)	1(2.5)	
Information source			0.849
Electronic media	24 (100)	0	
Printed media	2 (100)	0	
Health officer	52 (98.1)	1(1.9)	
Family	16 (100)	0	
Previous VIA with digital image experience			1.000
Yes	13 (100)	0	
No	81 (98.8)	1(1.2)	
Housewife	55 (100)	0	
Income Level (wage)			1.00
> minimum	53 (98.1)	1(1.9)	
< minimum	41 (100)	0	

DISCUSSION

The VIA examination with digital image has similar acceptance, satisfaction, and willingness to recommend to examination without digital image. Visual inspection examination using acetic acid with digital imagery / digital cervicography (VIA-DC) has begun to be developed around the world with various brands to increase the accuracy of this examination in detecting cervical precancerous lesions.[9–12] One of the tools that has been developed in Indonesia and has been clinically tested is Femicam®.[13] Previous studies have shown that VIA examination with digital images has a higher level of sensitivity and specificity than ordinary VIA examinations.[14]

In this study, it was found that only 1 study subject had poor acceptance or poor satisfaction with the VIA examination, while it was found that all research subjects were willing to recommend the VIA examination. These results indicate that in general the level of acceptance, satisfaction, and willingness to recommend subjects is very high. The results in this study were similar to previous research which showed a high level of satisfaction and acceptance, especially for VIA examination participants who were educated using leaflet media and audiovisual media.[15] In another study conducted in Morocco in 2015, it was also stated that a similar acceptance rate (99%) of VIA examinations without digital images, even in populations with very low awareness of cervical cancer.[16] This is thought to be closely related to the perception of participants that VIA examination can save lives if done properly.[16]

Age is directly related to participation rates and VIA examination expectations.[17,18] Older age is directly related to higher participation rates but concerns about the use of technology are higher than younger test participants.[19] Previous shows that older participants tend to require more intensive communication and a longer time in accepting technology, one of which is VIA examination technology with digital images.[20]

it was found that subjects who had a low level of acceptance, satisfaction level, and desire to recommend tended to have a low-medium level of education. After further investigation, it was discovered that this was related to the subject's ignorance of the benefits of image analysis technology compared to the risks involved in taking pictures during an VIA examination.

The results in this study were similar to research conducted in Bogor, which showed that education level directly influenced perceptions of VIA examinations and other cervical cancer examinations.[21] This was also shown in previous studies which showed that the level of education related to the level of knowledge about cervical cancer, examinations in the framework of early detection of cervical cancer, the dangers posed, and examination methods.[12,21,22]

Based on the analysis conducted, it is known that in general the poor level of acceptance, satisfaction, and desire to recommend is associated with a lack of knowledge and participants' perceptions of the VIA examination conducted, both with digital images and without digital images. Therefore, one of the things that is considered the most important in carrying out VIA examinations is education and counselling.[3] These results are like research which showed that participants underwent VIA examinations with digital images and received counseling and education before and after the action will have a higher level of satisfaction.[12]

CONCLUSION

It is concluded in this study that the VIA examination with digital image has similar acceptance, satisfaction, and willingness to recommend to examination without digital image. Education and informed consent play an essential role to maximize the acceptance and satisfaction of VIA examination. Further research is needed to examine the results by including more data from various different hospitals in order to gain further insight into the acceptance, satisfaction, and willingness to recommend digital VIA examinations.

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CONFLICT of INTERESTS

Authors declared no conflict of interest regarding this article.

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