Research Article

The Health Belief Model and Cervical Cancer Examination Behavior of Women

Santy Irene Putri[1], Asruria Sani Fajriah[2*], Siti Asiyah[3], and Agusta Dian Ellina[4]

[1]Midwifery Study Program, University of Tribhuwana Tunggadewi Malang, Indonesia
[2]Midwifery Study Program, Institute of Health Science STRADA, Indonesia
[3]Health Promotion Study Program, Health Polytechnic Ministry of Malang, Indonesia
[4]Master of Nursing Study Program, Institute of Health Science STRADA, Indonesia

ORCID
Asruria Sani Fajriah: https://orcid.org/0000-0002-6253-6965

Abstract. In many nations, cervical cancer is the second highest cause of mortality for women. Screening for cervical cancer using visual inspection with acetic acid (IVA) is relatively safe and inexpensive, and the results are immediate. This study aimed to determine the relationship between perceived severity, susceptibility, barriers and benefits, and cues to action with IVA examination behavior of women of childbearing age. This was an observational study with a cross-sectional design. This study was conducted in Karangbesuki Village, Malang City. The sample size was 130 women of childbearing age who were selected by simple random sampling. The data were collected using a questionnaire and analyzed using multiple linear regression. All of the measured variables had a significant relationship with IVA examination behavior, namely perceived severity (b = 0.81; 95% CI = 0.24 to 1.39; p = 0.006), perceived susceptibility (b = 0.32; 95% CI = 0.02 to 0.61; p = 0.035), perceived barriers (b = 0.34; 95% CI = 0.03 to 0.66; p = 0.032), perceived benefits (b = 0.70; 95% CI = 0.08 to 1.33; p = 0.028), and cues to action (b = 0.26; 95% CI = 0.05 to 0.48; p = 0.016).

Keywords: health belief model, visual inspection of acetic acid, behavior, examination

Corresponding Author: Asruria Sani Fajriah; email: sanifajriah@gmail.com

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1. Introduction

Cervical cancer is the second most frequent malignancy in women around the world [1]. An estimated 550,700 new cases and 286,823 deaths from cervical cancer. More than 85 percent of cervical cancer incidences and 88 percent of deaths occur in developing countries, where women typically encounter barriers to cervical cancer screening and treatment due to limited access [2]. Although cases of advanced cervical cancer are very rare in developed countries, most cases in some countries are detected late (stage 3 or 4) due to lack of effective screening programs [3].

The high incidence of cervical cancer in Indonesia is attributed to married women's lack of understanding of the need of the Pap smear / IVA test from a young age. The implementation of the VIA examination is still experiencing problems due to lack of knowledge and feelings of fear [4, 5, 6]. In order to increase survival and reduce cervical

cancer morbidity, current efforts are aimed at detecting the disease early [7, 8, 9]. The lack of adequate screening programs aimed at early diagnosis and management of cervical cancer, particularly in the precancerous phase of the lesion, is the main explanation for the high incidence in poor nations. Because of the high cost, the extensive training required of laboratory staff, and the competition between healthcare facilities, cytology-based screening is problematic in low-resource countries. Furthermore, due to a paucity of pathologists and cytology technicians, bulk screening using Pap smears is not possible [10].

Although medical science has developed rapidly, until now cancer is a disease whose cause is not known with certainty. Indeed, there are many influencing factors such as smoking / exposure to secondhand smoke, alcohol consumption, exposure to ultraviolet light on the skin, obesity and an unhealthy diet, as well as lack of physical activity, and infections associated with cancer [11] 12]. According to experts, the disease that became a terrible scourge is estimated to be able to prevent up to 40% of cancers, by reducing the risk factors for the occurrence of these cancers. To achieve this, it is necessary to increase public awareness to prevent these risk factors and increase appropriate prevention and control programs. One of the policies that have been taken by the government is the cancer control program, especially the early detection of uterine and breast cancer using the IVA (Visual Inspection with Acetic Acid) method [4].

The carcinogenic subtypes of HPV (Human Papilloma Virus), particularly subtypes 16 and 18, are known to cause cervical cancer. Sexual activity at a young age, smoking, having intercourse with several partners, low socioeconomic, having many children, use of birth control pills (with negative or positive HPV), sexually transmitted infections, and decreased immunity are all risk factors for cervical cancer [13, 14]. Visual inspection with acetic acid (IVA) is a simple and inexpensive screening technique with intermediate sensitivity and specificity for early cervical lesions that can be supplemented with easy therapeutic treatments. Officers can be trained as health professionals or nurses who perform testing with quick findings. IVA can be performed in many low-resource areas where it is difficult to perform an examination using a high-quality cytology program [15].

Screening with IVA is relatively safe, inexpensive, well-accepted, and the results are immediately known, thus allowing rapid referral for confirmation. In addition, IVA also requires a very low level of infrastructure and because of its simplicity, it can be carried out by a wide range of personnel. Therefore, it is an attractive alternative for cytologic examination in low-resource countries. Currently, analysis has been collected showing that IVA has good performance results [16].

It is critical to research the risk factors for cervical cancer in women, as well as the emotional, cognitive, and environmental aspects that impact women's decisions to engage in screening programs, when approaching screening. To anticipate future actions, the Health Belief Model (HBM) focuses on a person's health-related behavior. The HBM has been tried, translated, and applied to research on women in several cultures [17].

Based on study conducted by Duran (2014) from interviews conducted with respondents based on the theory of health belief models why women do not show positive health behaviors. As can be seen from the interviews, it is clear that there is a need for detailed campaign information about cervical cancer. It can be seen from the information provided after the interview that women are aware of the need for early diagnosis, and do not need to worry about the tests that will be done. Such educational programs should be conducted face-to-face by health workers and not through the media. The results show that face-to-face education programs will be more effective [18].

The results of studies on cervical cancer screening among women who were screened were found to be quite low. The risk factors for having multiple sexual partners as well as having sexual intercourse at an early age were associated with positive results on the VIA examination. Thus, concerted efforts should be made to increase the accessibility of screening services and raise awareness about cervical cancer screening [19, 20].

The general reason given by women not to undergo screening is feeling healthy because symptoms are not present and followed by emotional barriers such as fear of the test procedure that is considered painful and shame to do VIA examination. According to a study, a woman's age, history of many sexual partners and sexually transmitted illnesses, HIV seropositivity, education, perceived vulnerability, and perceived barrier to cervical cancer screening are all major predictors of cervical cancer screening services [21]. Cervical cancer screening has reduced the prevalence of the disease in developed countries, but it is still the top cause of cancer death among women [22]. Based on that explanation, researchers are interested in conducting a study that aims to determine the relationship between perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action with the behavior of the VIA examination of women of childbearing age.

2. Methods and Equipment

2.1. Methods

This study was an observational analytic with cross-sectional approach. The study was carried out in Karangbesuki Village, Malang City, East Java in April 2021. The sampling technique used was simple random sampling because the sampling members of the population was carried out randomly without regard to the existing strata in the population. The inclusion criteria in this study were women aged 15-49 years. The population in this study were all women in Karangbesuki Village whose unknown number. The number of samples taken in this study using the Lemeshow formula because the total population was unknown. Through this formula, the minimum number of samples taken by researchers were 100 people. During the study, researchers obtained a total sample 130 women of childbearing age.

2.2. Equipment

The data collection instrument used in this study was a health belief model questionnaire consisting of several points, namely perceived susceptibility, perceived severity, perceived benefit, perceived barriers, and cues to action which was compiled based on a literature review as a source and was tested using Cronbach's alpha with SPSS. After the data was collected, the researchers conducted a normality test using the Kolmogorov Smirnov test with SPSS. The data that has passed the normality test are then analyzed using multiple linear regression with SPSS.

3. Result

3.1. Characteristics of Respondents

Based on the data presented in Table 1, information was obtained that most of the respondents in this study were >35 years old (50%). The education of the respondents who dominate in this study is diploma, as many as 45 respondents (34.7%) with the majority of work being housewives by 48 respondents (36.9%). The monthly income earned by respondents is mostly <UMR, which is 78 respondents (60%).

Table 1: Characteristics of Respondents

Characteristics	Criteria	n	%
Age (years)	< 20 20 - 35 > 35	1 64 65	0.8 49.2 50
Education level	Elementary School Junior High School Senior High School Diploma S1 S2 S3	5 15 35 45 25 4 1	3.8 11.5 26.9 34.7 19.2 3.1 0.8
Occupation Income	Housewife Private sector employs Self-employed Government employees < Minimum Wages ≥ Minimum Wages	48 25 26 31 78 52	36.9 19.2 20 23.8 60 40

3.2. Multivariate Analysis

The multivariate analysis aims to find the relationship between perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action with IVA examination behavior of women childbearing age.

Based on the data presented in Table 2, it can be seen that the regression coefficient for the perceived severity variable is positive, which means that if the perceived seriousness is higher, the IVA examination behavior will increase. The b value of 0.81 indicates that if the perceived severity value can be increased by one unit, the IVA examination behavior will increase by 0.81 meaning that there is a positive relationship between perceived severity and IVA examination behavior and is statistically significant

The regression coefficient for the perceived susceptibility variable is positive, which means that if the perceived susceptibility increases by one unit, it will increase the behavior of the VIA examination by 0.32. This shows that there is a relationship between perceived susceptibility and the behavior of the VIA examination and is statistically significant.

The regression coefficient for perceived barriers is positive, which means that the higher the perceived barriers, the higher the VIA examination behavior. The b value of 0.34 indicates that if the perceived barriers value can be increased by one unit, the IVA examination behavior will increase by 0.34 meaning that there is a positive relationship between perceived barriers and IVA examination behavior and is statistically significant.

The regression coefficient for the perceived benefit variable is positive, which means that the better the perceived benefits, the higher the VIA examination behavior. The b value of 0.70 indicates that if the perceived benefit value can be increased by one unit, the IVA examination behavior will increase by 0.70, meaning that there is a positive

Table 2: Multivariate analysis of the relationship between perceived severity, perceived susceptibility, perceived barriers, perceived benefits, and cues to action with IVA examination behavior

Variable	b	95% CI		p
		Lower Bound	Upper Bound	
Perceived severity	0.81	0.24	1.39	0.006
Perceived susceptibility	0.32	0.02	0.61	0.035
Perceived barriers	0.34	0.03	0.66	0.032
Perceived benefit	0.70	0.08	1.33	0.028
Cues to action	0.26	0.05	0.48	0.016
n observation	130			
R square	47%			

relationship between the perceived benefit and the IVA examination behavior and is statistically significant.

The regression coefficient for the cues to action variable is positive, which means that the higher the cues to action, the higher the VIA examination behavior. The b value of 0.26 indicates that if the value of cues to action can be increased by one unit, then the behavior of the VIA examination will increase by 0.26 meaning that there is a positive relationship between cues to action and the behavior of the IVA examination and is statistically significant.

4. Discussion

Cervical cancer is the most common cancer in the world, both in high and middle income countries [23]. Based on the results of study obtained in the field, there are several factors related to the behavior of VIA examinations in women of childbearing age, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action. Previous study has shown that individuals who believe they have risk factors for cervical cancer and a perceived susceptibility to a disease are more likely to take preventive action in the hope that there will be no adverse effects after exposure to the disease [24]. Perceived susceptibility is an important behavioral construct to consider when trying to understand participation in cervical cancer screening. Perceived susceptibility refers to ”a person’s beliefs about the possibility of developing a disease or condition” [25].

Women’s perception of (perceived severity) disease severity is positively correlated with women’s awareness of the benefits of cervical cancer screening [26]. The results of the study that women perceive cervical cancer as very risky personally is a moderate

predictor of cervical cancer screening. Therefore, it is important for policy makers and program managers to consider increasing the perception of women as an integral component of programs that aim to increase uptake of cervical cancer screening [27].

Several studies examining the factors associated with cervical cancer screening in women have reported that demographic characteristics (eg, age, education level, marital status) and other factors, such as perceived benefits and barriers to screening behavior. Women who are in the pre-contemplation stage mostly feel more barriers to getting screened due to not knowing where to go for examinations and lack of support from their partners [28].

A review of previous study on cervical cancer screening stated that psycho-social, cultural or cognitive factors such as beliefs, attitudes, self-efficacy, social influence, and perceived barriers were dominant in relation to cervical cancer screening in Asia [29]. Lack of belief in the benefits of screening, low perception of cervical cancer risk, and confidence in one's ability to detect health changes once symptoms develop are the most common reasons why women are not willing to be screened [30]. Barriers to carrying out cervical cancer screening include fear, expense, transportation, and feelings of shame. According to a study, a lack of information, dread of screening tests, a need for more time with healthcare providers, and fear of test findings are all factors that prevent women from getting screened. Other research undertaken in numerous poor countries also discovered barriers to cervical cancer screening. Based on this fact, a solution is needed to overcome internal and health system barriers with the aim of increasing the uptake of cervical cancer screening. A variety of approaches including improving communication between health workers and patients and eliminating misunderstandings and fears about screening should be undertaken. In addition, the health system must make screening more accessible and always available [31].

Most women report cues to action from their environment, also because of the stigma that exists on cervical cancer in society and discrimination against women [32, 33]. Two different types of cues are external cues and internal cues. Due to cultural factors, external cues in the form of interpersonal and public communication are limited when it comes to cervical cancer. Every woman emphasizes the need of health communication and education on cervical cancer screening. The majority of women stated that talking about sexual organs, such as cervical cancer and screening, was stigmatized by cultural and societal standards. Internal cues are self-deprioritization and socially imposed misinterpretations. There are factors that influence the general direction of signaling to start cervical cancer screening. For most women, private cervical cancer screening

is not a top priority in health care. Many women stated that family and home were the most important societal values and criticized concerns for personal health. Limited understanding of cervical cancer symptoms leads to misinterpretation of the absence of visible symptoms, and neglecting routine examinations and screening as follow-up efforts [34].

There are several things that women can do to prevent cervical cancer, including adopting a healthy lifestyle by consuming adequate and nutritious food, always maintaining a healthy body and environmental sanitation, avoiding cleaning the genitals with dirty water, stop smoking, avoid having sex at an early age, be loyal with partner, do a Pap smear at least once every 2 years, especially for those who have actively had sex, HPV vaccination, increase the consumption of vegetable foods that contain quite a lot of beta carotene, and consumption of vitamins C and E [35] 36].

Screening socialization must be consistently carried out, one of which is to find out risk factors that must be avoided, so that through cervical cancer prevention socialization women can find out healthy behaviors that must be done. The purpose of cervical cancer screening however cannot be limited to a diagnosis. Screening which is then used to determine the diagnosis of the disease can provide benefits for early detection so that there is likely to be hope for a cure, it may also be difficult to diagnose when the disease has signs or symptoms. This is the reason why not all cervical cancer screening socializations have the same effectiveness extension [37]. Cues to Action boosts the health belief model's explanatory power and should be addressed when developing culturally relevant cervical cancer screening programs [38].

5. Conclusion

The results of this study indicate that VIA examination behavior in women of childbearing age has a positive correlation with perceived severity, perceived susceptibility, perceived barriers, perceived benefits, and cues to action. Health workers must become advocates to increase knowledge about cervical cancer and its prevention.

Providing education is an important first step in preventing cervical cancer. Providing clear information regarding appropriate actions for cervical cancer screening can increase awareness of women of childbearing age. It is very important for women to reduce the risk and prevent the development of precancerous, and it needs to be detected in order to get treatment immediately before it becomes cancer.

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