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Psychosocial Factors are Associated with Participation in Cervical Cancer Screening Programs: A Structural Equations Model

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ABSTRACT

The purpose of this study to explore the relationship between trigger, threat appraisal, perceived examination with motivation and behavior of screening cervical cancer. This study used case control design. The sample amount is 410 respondents that were divided into 205 cases and 205 controls. Sampling was done by using multi stage random sampling method. Data collection was done by giving questionnaires that had been tested for its validity and reliability. Data analysis was done by using Partial Least Square Structural Equation Modeling. Trigger directly or indirectly influence the motivation (path coefficient=0.55). Trigger had a direct effect on threat appraisal (path coefficient=0.17). Trigger had a direct effect on perceived examination (path coefficient=0.21). Motivation had a direct effect on participation of women in screening of cervical cancer (path coefficient=0.26). Perceived examination had a direct and indirect effect on the implementation of screening of cervical cancer (path coefficient=0.11). Threat appraisal had a direct and indirect effect on the implementation of screening of cervical cancer (path coefficient=0.20). To increase the participation of women in the implementation of screening of cervical cancer required appropriate trigger. The appropriate trigger will increase threat appraisal, perceived examination and motivation, so that women are encouraged to immediately carry out screening of cervical cancer.
KEYWORDS: Trigger, Threat Appraisal, Perceived Examination, Motivation, PLS-SEM

INTRODUCTION

Cervical cancer is one of the major reproductive health issues and causes of death in women in the world, especially in developing countries such as Indonesia [1], [2]. Screening of cervical cancer and immediate treatment are proven effective in reducing the morbidity and mortality of cervical cancer [3]. WHO states, cervical cancer is ranked among the most common types of cancers that cause death to women in the world currently.

Based on data of Globocan, International Agency for Research on Cancer (IARC) is known prevalence of cervical cancer in the world reached 16 per 100,000 women[4]. In the data, more than 80% of patients come from developing countries such as South Asia, Southeast Asia, Sub Saharan Africa, Central America and South America [5]. According to WHO in 2010 there are 500,000 cases of cervical cancer in the world and Indonesia is the second country whose most cervical cancer cases after China [6].

In Indonesia, cervical cancer is ranked second in terms of cancer number of woman patients but as a cause of death is still ranked first. Indonesia has a population of 227,345,000 and most women aged 15 years and above are at risk of cervical cancer that is equal to 79.14 million. It is estimated that every year 13,762 women are diagnosed with cervical cancer and 7493 die from the disease [7].

In Indonesia cervical cancer is almost 70% found in advanced stage conditions [8]. The majority of women that are diagnosed with cervical cancer do not get screening tests or do not follow up after abnormal results are found. Regular screening tests is the biggest factor causing cervical cancer for someone [8]. The IVA method is particularly suitable in developing countries such as Indonesia because of its easy or simple technique, cheap or low cost and high sensitivity, fast and accurate enough to find abnormalities at the stage of cell abnormality (dysplasia) or before pre cancer. The coverage of screening of cervical cancer with IVA method in Indonesia is still low in amount of 2.45%, thus requiring a stronger effort to achieve the target that is screening of 50% of women aged 30-50 years for 5 years [9]. Based on preliminary studies are conducted at the Health Office of Kediri is also known that there is still low implementation of screening of cervical cancer with IVA method in Kediri City in 2014 that is less than 1% of the target Health Department of Kediri, which set for 10%.

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Research which is conducted by [10], mentions that the factors, which affect the screening visit of cervical cancer are women who have done previous screening, history of Sexually Transmitted Infections, users of contraceptives and use of condoms, marital status, notsmoking and already giving birth. In addition, the possibility of visiting because of the growing older. Women who are disobedient for cervical cancer screening are also affected by physical examinations, health care workers, test procedures, low knowledge of risks. Women who brave to screening are affected by afraid feeling of cancer, good relationships with health workers, adequate knowledge, understand the risks and the importance of routine examination [11]. The majority cases of cervical cancer occur in women in developing countries, so screening methods should be effective in detecting precancerous changes and may be performed in environments with limited resources Regular cervical cancer screening can prevent most cervical cancers [8].

As one of the efforts to evaluate women's behavior in the implementation of screening of cervical cancer with IVA method is by using the theory of Health Belief Model (HBM) and Fogg Behavior model (FBM). In HBM mentioned that the behavior of individuals to perform certain health measures to prevent the disease such as influence by perceived threats about a disease, the benefits and losses are felt due to certain actions and cues to action [12]. While in the Fogg Behavior Model is assumed that human behavior occurs due to three factors namely: motivation, ability and trigger. FBM also affirms that the person who wants to do target behavior if she has: 1) sufficient motivation, 2) sufficient ability to conduct behavior, and 3) effective trigger or is triggered to do the behavior [13].

However, until still few data in Indonesia about pathway analysis related factors that affect the implementation of screening of cervical cancer IVA method. By the implementation of screening of routine cervical cancer will be able to reduce the burden of disease in women due to cervical cancer. So it is important to understand the interrelationship between factors that influence the behavior of screening of cervical cancer in women. In this study apply HBM and FBM to know the interrelationship between factors that influence the behavior of screening of cervical cancer IVA method.

Aim

The purpose of this study was to explore the relationship between trigger variables, threat appraisal, perceived examination with motivation and behavior of screening of cervical cancer IVA method. Up to now in Indonesia there is no research that assesses the structural relationship between trigger, threat appraisal, perceived examination with motivation and behavior of screening of cervical cancer IVA method. Based on the existing literature, hypothesized motivation to influence the screening of cervical cancer IVA method directly, while trigger, threat appraisal, perceived examination influence directly or indirectly through motivation on the implementation of screening of cervical cancer IVA method. Trigger is hypothesized to influence motivation directly or indirectly. Threat appraisal and perceived examination hypothesized directly influence motivation. Figure 1 illustrates the relationship between the screening of cervical cancer IVA method with motivation, trigger, threat appraisal and perceived examination.

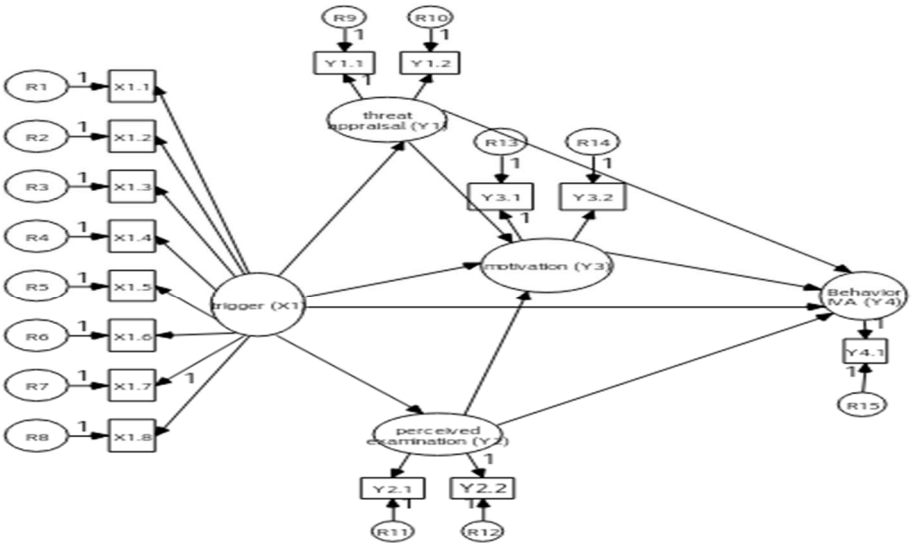

Figure 1. Framework Analysis

METHODS

Design

This study used case control design.

Sample

There were two populations in this research, there were: 1) Population case was all women who are married and had not pregnant and had done screening of cervical cancer with IVA method in all Health Centers in Kediri, 2016; 2) Control population was all women who were married and were not pregnant and had never done screening of cervical cancer with IVA method in all Health Centers in Kediri, 2016. The samples in this study were: 1) Case group that some women who had been married, had not pregnant and had performed screening of cervical cancer with IVA method; 2) Control group that was some women who had married, had not pregnant but had not done screening of cervical cancer with IVA method. Sample calculation was based on calculation of rule of the thumb got equal to 410 respondents were divided between 205 case and 205 control. Sampling was done with Multi-stage random sampling method with multilevel sampling.

Data Collection

Retrieval Data Instruments were done by using questionnaires that had been tested for validity and reliability. Data collection on the implementation of screening of cervical cancer with IVA method either by using a questionnaire researchers or using secondary data from the book record of the implementation of screening of cervical cancer in secretariat of Indonesian Midwife Association (IBI) in Kediri, this was to obtain the data achievement results of screening of cervical cancer with IVA method. Validity test of the research questionnaire had been conducted at Health Center working area in Kediri City with the number of respondents 32 people. Based on the result of the validity test of the research instrument, it was found that all the indicators in this questionnaire were considered to be able to measure the variables in this study, because the probability value of all questions <0.05 and the reliability test results against the research instrument was obtained that the questionnaire had fulfilled the reliability requirement, in general the stability of this questionnaire was good and able to measure what was wanted because Cronbach's Alpha value> 0.7. Before obtaining research data had also conducted a test of ethics at Airlangga University Surabaya Indonesia. Before being asked to complete the questionnaire, all respondents were given informed consent and approval letter to the respondent.

Data analysis

The Statistical Package for the Social Science (SPSS) version is 20 was used for descriptive and inferential analysis. Categorical variables were presented as frequency (n) and percentages (%). For factor analysis, a good factor analytical model must have several properties. The factor loading ideally >0.7 but not less than 0.5 is acceptable. The preferred Average variance extracted (AVE) is >50%, but may be less if some factor loading are <0.7. For reliability test used criteria with > 0.7 composite value. The Smart PLS3 Software was used for the structural equation modeling. The path coefficient were calculated between variable and the significance level was set as $p<0.05$.

RESULTS

Trigger on the implementation of screening of cervical cancer IVA method was explained by eight indicators of physical complaints, Information from television, Recommendations from doctors, Recommendations from midwives, Recommendations from friends, saw women affected by cervical cancer, saw friends who had cancer, read the book. Based on the results of research, then it is known various trigger factors in the behavior of screening of cervical cancer of IVA method, almost all respondents both case and control related trigger physical condition, women will be triggered to immediately perform the examination of screening of cervical cancer of IVA method if experiencing severe physical conditions namely 99.0% and 100.0%. Trigger in the form of information from television about cervical cancer received by most respondent case received trigger Information from television in high category namely 51.2%, while at control mostly low by 72.2%. The majority of respondents in both cases and control received trigger recommendations from doctors in the low category of 54.6% and 73.2%. Most of the respondents in the case received a recommendation trigger from midwives in low category of 55.1, while in the control group almost all of them were low at 76.1%. Most case respondents received trigger in the form of suggestion from friends in high category namely 51.7%, while in control group most of respondent received trigger from friend in low category namely 70.2%. Most of the respondents both case and control received a trigger from knowing women suffering from cervical cancer in the low category of 61.5% and 71.7%. Most of the respondents in the case received a trigger by knowing a friend who suffered from neck cancer in the low category of 67.8%, while the control was almost entirely low at 76.1%. Most respondents both case and control received trigger from reading book in low category namely 63.9% and 75.6%.

Threat Appraisal was explained by 2 indicators namely perceived susceptibility and perceived severity / seriousness. Threat Appraisal most respondents both case and control related perceived susceptibility felt less risk namely 51.7% and 70.2%. Perceived severity both case and control mostly felt cervical cancer as a very dangerous disease namely 68.3% and 49.8%.

Perceived examination was explained by 2 indicators: perceived benefit and perceived barrier. Perceived examination, almost all respondents both case and control related perceived benefit felt IVA examination very useful namely 97.6% and 86.8. Perceived barriers both case and control almost all felt little obstacles in the IVA examination namely 88.8% and 89.3%.

Motivational factors were explained by 2 indicators: intrinsic motivation and extrinsic motivation. Motivation in IVA examination, most of the respondents in case group related to intrinsic motivation had very high motivation namely. 56.1%, while in control group almost all had high motivation namely 77.6%. Extrinsic motivation both case and control mostly had high motivation namely 52.7% and 68.4%.

To assess the relationship between the implementation of screening of cervical cancer of IVA method with motivation, trigger, threat appraisal and perceived examination as illustrated in Figure 1, structural equation modeling analysis was performed using Smart PLS software.

The results of smart PLS analysis as shown in table 1, it can be seen that is still one trigger indicator namely the physical condition of loading factor value of 0.05 (less than 0.5). Thus one such indicator must be modified. AVE value for each variable above 0.5 then it can be said that loading factor is acceptable. Then Test Reliability was done by measuring composite reliability. A variable has good reliability if the value of composite reliability> 0.7 (Ghozali, 2014). Value of composite reliability of each variable is above 0.7. This shows that all the variables in the estimated model are reliable.

Table 1. Loading Factor Value, *AVE Value* and *Composite Reliability*

Variable	Indicator	Loading factor	AVE	Composite Variable
Trigger	Physical Condition	0,05	0,48	0,86
	Information from Television	0,78		
	Recommendation from Doctor	0,78		
	Recommendation from Midwife	0,81		
	Friends suggestion	0,47		
	Have ever watched the women who suffer from cervical cancer	0,77		
	Have ever watched his/her friends who suffer from cervical cancer	0,75		
	From reading book/leaflet	0,75		
Threat Appraisal	Perceived susceptibility	0,66	0,61	0,75
	Perceived severity	0,88		
Perceived Examination	Perceived benefit	0,82	0,49	0,65
	Perceived barriers	0,55		
Motivation	Intrinsic Motivation	0,92	0,55	0,69
	Extrinsic Motivation	0,52		

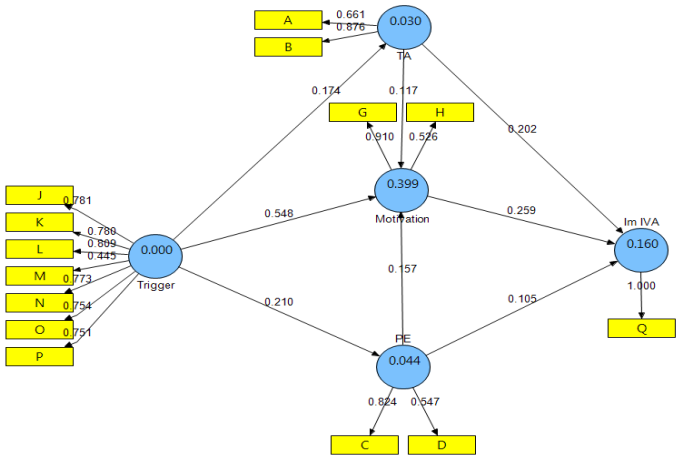

Figure 2. Final Model Analysis

Notes for Figure 2:
A: Perceived susceptibility
B: Perceived severity
C: Perceived benefit
D: Perceived barriers
G: Intrinsic motivation
H: Extrinsic motivation
I : Physical Condition
J: Information from television
K: Recommendations from doctors
L: Recommendations from midwifes
M: Advice from friends
N: Have seen cervical cancer patients
O: Have seen cancer patient
P: Reading books or leaflets
Q: Implementation of IVA

The result of smart PLS analysis shows in Figure 2. Trigger have positive and significant effect to motivation either directly or indirectly. It can be seen from the coefficient of positive sign of 0,548 with the value of statistic T equal to 13.95 which is bigger than T table value (1.96). Trigger also has a positive and significant effect on threat appraisal directly. It can be seen from the coefficient of the path marked positive by 0.174 with a T statistic value of 3.47 which is greater than the value of T table (1.96). Trigger also has a positive and significant effect on perceived examination directly. This can be seen from the coefficient of the path marked positive by 0.210 with a T statistical value of 4.76 which is greater than the value of T table (1.96). Motivation has a positive and significant effect on the implementation of IVA examination directly. This can be seen from the coefficient of the path marked positive by 0.259 with a statistical value of T of 4.90 greater than the value of T table (1.96), Perceived examination have a positive and significant effect on the implementation of screening of cervical cancer of IVA method directly and indirectly. This can be seen from the coefficient of the path marked positive by 0.105 with a statistical value of T of 2.205 which is greater than the value of T table (1.96). Threat appraisal also have a positive and significant effect on the implementation of screening of cervical cancer of IVA method directly and indirectly. This can be seen from the coefficient of the path marked positive by 0.202 with a statistical value of T of 3.79 which is greater than the value of T table (1.96). While the trigger had a indirect effect on the implementation of screening of cervical cancer of IVA method through motivation. Based on R-Square evaluation, it can be concluded that motivation variable is explained by trigger and threat appraisal and perceived examination is 40% and the remaining 60% is explained by other variables. While the behavioral variable of screening of cervical cancer of IVA method is 16% explained by threat appraisal, motivation and perceived examination while the rest 84% is explained by other variable. Details are shown in the table 2.

Table 2. Direct and Indirect Effects

Outcome	Direct effect	Indirect effect	Total effect	R Square
Implementation of screening of cervical cancer				**0,16**
Motivation -> Implementation of screening of cervical cancer	0,259		0,259	
Perceived examination-> Implementation of screening of cervical cancer	0,105	0,157	0,262	
Threat appraisal ❼ Implementation of screening of cervical cancer	0,202	0,117	0,319	
Motivation				0,40
Trigger -> Motivation	0,548		0,548	
Perceived examination ❼ Motivation	0,157		0,157	
Threath appraisal ❼ Motivation	0,117		0,117	
Threat Appraisal				0,03
Trigger -> Threath appraisal	0,174		0,174	
Perceived Examination				0,05
Trigger -> perceived examination	0,210		0,210	

Based on the table 2, it is known that the dominant motivation variable is influenced by trigger variable compared to threat appraisal and perceived examination. It can be seen from the trigger point variable coefficient

value (0,548) is greater than the threat coefficient of threat appraisal (0,117) and coefficient of perceived examination path (0,157). Then threat appraisal variable most influential on the implementation of screening of cervical cancer of IVA method compared with variable motivation and perceived examination. It is shown by considering the total effect value of threat appraisal variable (0.319) is greater than threat appraisal and perceived examination.

Based on table 2. it can be seen that the dominant motivation variable is influenced by trigger variable compared threat appraisal and perceived examination. It can be seen from the trigger point variable coefficient value (0,548) is greater than the threat coefficient of threat appraisal (0,117) and coefficient of perceived examination (0,157). Then threat appraisal variable most influential on the implementation of screening of cervical cancer IVA method compared with variable motivation and perceived examination. It is shown by considering the total effect value of threat appraisal variable (0.319) greater than threat appraisal and perceived examination.

DISCUSSION

In outer analysis model, the results show that there is one trigger indicator, which is the physical condition of loading factor value of 0.05 (less than 0.5). Thus one such indicator must be discarded.

According to [14] one source of triggers is the physiological condition of humans in the form of discomfort or tension sense. When the tension is strong enough, it will motivate humans to act due to fulfill their needs. Previous human experience and current physical condition will greatly affect the behavior to be taken. While research is conducted by [15], mentions that medical triggers have greater or more effective power in losing weight than other triggers. Medical triggers can be advice from doctors or stories of patients who have been sick from being overweight. Medical triggers will cause health threats and increase motivation in patients to lose or control weight.

Based on the results of this study, trigger variable consists of seven indicators, there are information from television, recommendations from doctors, recommendations from midwifes, advice from friends, have seen cervical cancer patients, have seen cancer patients, reading books or leaflets. While the physical condition indicator is not qualified as the compiler trigger variable, this is not in accordance with the trigger theory in [14], but in accordance with the results of [15] where the most dominant trigger is the recommendation of health workers, primary recommendation come from midwife then from the doctor. Physical condition in this research is not a trigger, that is caused by the respondents in this study are all people who are still not affected by cervical cancer. While cervical cancer stage one or stage pre-cancerous lesions do not show any kind of complaints or signs and symptoms.

The results of the research also show a positive and significant influence between the trigger variable toward the motivation variable which is marked by the positive path coefficient 0.54 and t value 13,95. Based on Figure 2 it is known that intrinsic motivation and extrinsic motivation are indicators that are able to arrange the motivation variable with loading factor value 0,910 and 0,526 (> 0,5) and t-statistic value 41,003 and 6,645. Based on the research from [15], medical triggers can increase the perceived health threats resulting from obesity, thereby increasing the motivation to lose weight.

The results of the research also show the positive and significant influence between the trigger variable to the perceived examination variable which is marked by the positive value of path coefficient 0,210 and t value 4,755. Based on Figure 2. It is known that perceived benefits and perceived barriers are indicators that are able to develop perceived examination variables with loading factor values of 0.624 and 0.547 (> 0.5) and t-statistics of 8.592 and 3.363. Based on the research [16] is mentioned that the trigger in the form of recommendations from doctors and recommendation from the family are proved to influence the use of influenza vaccine by parents in children. Triggers prove effective in reducing perceived obstacles or minimizing parental awareness about the negative effects of vaccine delivery and may increase perceived benefits about the effectiveness of influenza vaccine delivery in infants, thus increasing external motivation to use influenza vaccine.

The results also show a positive and significant correlation between threat appraisal variable toward behavioral variable of screening of cervical cancer with IVA method that are marked by positive value of path coefficient 0,202 and t value 3,785. Perceived susceptibility refers to a subjective assessment of the risks to health problems. [17] study suggests that susceptibility is related to adherence to antihypertensive drugs. Each individual has a different way of taking action for healing or prevention that is aimed to perceive health problems. The perceived convenience severity refers to subjective assessment of the severity of health problems and their potential consequences. HBM proposes that individuals who feel their serious health problems are more likely to behave to prevent problems or reduce severity.

Based on the results of interviews of women who have not conducted screening of cervical cancer with IVA method state the obstacles that cause them not to do IVA examination largely is caused by shame and fear. The embarrassment is caused by the examination of IVA must open the most vital areas of women, while the fear is caused by fear of seeing medical devices that are used, which will cause great pain. According to the researcher, this feeling

of fear and shame occurs because of the low understanding of women about the benefits of IVA examination, so that perceived barrier is higher than perceived benefit so that the consciousness results

The results also show a positive and significant correlation between perceived examination variable toward behavioral variable of screening of cervical cancer with IVA method that is marked by positive value of path coefficient 0,105 and t value 2,205. Based on research [18] is mentioned that perceived benefit and perceived barrier have direct effect in using condom for sex worker in China. So the results of this study are in accordance with previous research. [19] also mention the less time an athlete has can also be a barrier to exercise success.

Based on interviews with some women who have not conducted IVA examination, they are afraid to carry out IVA examination because they are afraid of the methods and tools that are used to perform IVA examination. In addition they also do not understand about the benefits of IVA examination. Career woman also called that becoming the obstacle is the lack of spare time to perform IVA examination. Based on the results of this study it is advisable for health workers who provide health education about IVA examination so that women become triggered to immediately carry out IVA examination is recommended not to show the medical devices that will be used, but more emphasis on the superiority of IVA examination when it is compared with other methods. The advantages of IVA examination are cheap, easy, fast and the results can be seen directly. Screening of cervical cancer with IVA method can also be combined with pap smear examination. It is also explained where women can perform IVA examination because actually for Midwife Self Practice the IVA service can be given at any time according to mother's leisure time.

The results also show a positive and significant correlation between motivation variable toward behavioral variable of screening of cervical cancer with IVA method that is marked by path coefficient in having positive value 0,259 and t value 4,903. This is in accordance with the [13] mentions that human behavior occurs due to three factors, there are: motivation, ability and trigger. FBM also affirms that individual wants to do target behavior if he has enough motivation, sufficient ability to engage in behaviors and triggers that are effective or triggered to engage in behavior. Study [19] mention that the psychological and motivational aspects are also the factors that determine the success of an athlete's exercise during pregnancy and after pregnancy.

The results of research also show, there is indirect relationship between variable of trigger toward behavioral variable screening of cervical cancer with IVA method that is through motivation variable. Study [20] suggests that cues to action or triggers are associated with adherence to taking antihypertensive drugs. Reading about disease information, knowing about services, and consulting with others about illness can trigger a person against compliance. Triggers are needed to encourage individual involvement in health behaviors.

CONCLUSION

The study results indicate that the dominant motivation variable is influenced by trigger variable compared to threat appraisal and perceived examination. Then the most influential motivation variable on the implementation of screening of cervical cancer IVA method compared to the variables of threat appraisal and perceived examination. This finding also confirmed previous research that health trigger of workers is an effective trigger on influencing the healthy behavior. Based on our findings, we can recommend for the Department of Health to improve the motivation of women in the implementation of screening of cervical cancer IVA method in conducting health promotion should be based on the appropriate trigger. Research on the same topic in the future is more emphasized on improving women's motivation, threat appraisal and perceived examination so that women want to carry out screening of cervical cancer IVA method with the ultimate goal of reducing the incidence of cervical cancer.

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