



Predictors of Behavioral Intention for Pap Smear Testing Based on the Theory of Protection Motivation in Women

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ABSTRACT

Aims One of the cancers that threaten women's health is cervical cancer. This study aimed to investigate the predictors of the behavioral intention of Pap smear testing based on the theory of protective motivation in women.

Instrument & Methods This is an analytical cross-sectional study. Participants in this study were 300 women referring to public clinics in one of the selected hospitals in Tehran. In this study, a reliable and valid questionnaire based on protection motivation theory was used to collect information. Data were analyzed using SPSS software version 19 as well as a correlation test and stepwise regression.

Findings The findings revealed that the correlation coefficients of perceived sensitivity ($r=0.47$), perceived intensity ($r=0.53$), fear ($r=0.46$), response costs ($r=0.54$), response efficiency ($r=0.2$), self-efficacy ($r=0.53$), and behavioral intent were significant at a confidence level of 0.99 and in a positive direction. The ability of behavioral intention prediction for response costs (26.2%), self-efficacy (11.6%), fear (1.8%), and perceived sensitivity (3.2%) was recorded, these variables can predict about 42.8% of changes in behavioral intention for Pap smear testing.

Conclusion The behavioral intent of having a pap smear testing can be predicted based on the theory of protective motivation in women. Therefore, designing educational programs within the framework of this theory is recommended to improve Pap smear testing.

Keywords Protective Factors; Intention; Pap Smear; Uterine Cervical Neoplasms

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Introduction

Today, some cancers have been identified in both men and women, and there are many diagnostic tests and examinations to detect cancers in the early stages. One of these life-threatening cancers in women is cervical cancer, which is the most common cancer of the female genital tract and is currently the eighth leading cause of cancer death in developed countries [1]. According to statistical and epidemiological studies, after cardiovascular disease and accidents, cancer is the third leading cause of death [2]. Based on reports presented by the World Health Organization, 25% of women die from malignant tumors, of which 18% are due to cervical cancer [3]. Nearly one million women develop advanced cervical cancer each year, of which more than 50% die. Statistics show that cervical carcinoma ranks eighth in cancer deaths, killing more than 4,500 people annually in the United States [4].

Cervical cancer is one of the few cancers that can be easily diagnosed in the pre-malignant stage. A pap smear is used as a screening test for cervical diseases [5]. Pap smear for cervical cancer screening has reduced the incidence of cervical cancer mortality due to increased detection of pre-invasive disease in the early stages [6, 7]. Moreover, 20 to 60% of all women enter the diagnostic program after their first marriage, and a pap smear is performed once a year during a general health examination. The diagnostic program is performed every three years if three consecutive pap smears are negative. Annual testing will continue until the end of life [8]. Various studies have shown that a pap smear can effectively reduce the incidence and mortality of cervical cancer by up to 90% [4]. Therefore, a pap smear test in married women is considered a health behavior and a health promotion behavior [2]. Studies show that the percentage of married women who have had this test at least once varies from 20 to 80% [4, 9].

According to these studies, the percentage of married women who perform this test in Iran is low. One of the theories that has been used to examine the factors affecting motivation and ultimately individual behavior is the theory of protection motivation. This theory was developed by Rogers in 1975 to explain the effects of fear of health hazards (such as disease) on health attitudes and behaviors, and that the induction of fear has an important effect on behavior choices. In this model, it is assumed that the acceptance of the recommended health behavior (protective behavior) against health risk is a direct action of the individual's attitude to protect himself [10]. Rogers argued that fear affects the motivation to protect (or the intent of the protective behavior against health risk) through five constructs. Finally, protective motivation leads to the induction of health behavior. These five constructs are self-

efficacy, response efficiency, perceived vulnerability, perceived severity, and response cost [11]. Studies on this theory have shown that this theory is very important in predicting cancer-preventing behaviors [12].

Regarding the importance of this topic, this study aimed to apply the theory of protective motivation for investigating the factors associated with pap smears as a protective behavior against cervical cancer in women referred to public clinics.

Instrument and Methods

This descriptive-analytical study was performed on 300 women referring to selected clinics of one of the selected hospitals in Tehran in 2019. The sample size of 300 is sufficient for a regression study. Inclusion criteria included women who intended to have a pap smear and had informed consent. Convenience sampling was used for people who were referred to the clinic. It should be noted that 5 to 15 samples have been suggested for each predictor variable (Independent) in regression studies [13]. Also Green suggested rule-of-thumb formula as the $N \geq 50 + 8m$ for the multiple correlation and $N \geq 104 + m$ for the partial correlation, m is the number of predictors [14].

The study tool was a questionnaire based on the protection motivation model. A reliable and valid questionnaire was used as provided by Hassani *et al.* [15] on the protection motivation theory for measuring factors influencing women's intention to first pap test practice. The questionnaire has 26 questions. Questions 1 to 3 (because I do not have a history of any particular problem in my genitals, I am not likely to get cervical cancer) are related to the structure of perceived vulnerability, which has a minimum of 3 and a maximum of 15 points in total. Questions 4 to 7 (Cervical cancer imposes a heavy financial burden on me and my family, my whole life changes if I get cervical cancer) are related to the structure of perceived severity and have a score of 4 to 20. Questions 8 to 10 (I am afraid of pain during the pap smear) are related to the fear structure and are given 3 to 15 points. Questions 11 and 12 (pap smear is inconvenient) are related to the structure of response costs and have a minimum of 2 points and a maximum of 10 points. Questions 13 to 16 (pap smear is effective in preventing cervical cancer) are related to the efficiency of the answer and consisted of 4 to 20 points. Questions 17 to 23 (I do a pap smear even if it costs a lot, I do a pap smear even if it is painful) follow the self-efficacy structure and have a score of 7 to 35. Questions 24 to 26 are related to the intent of the behavior and consist of 3 to 15 points. A 5 - point Likert-type scale questionnaire was used with a minimum score of 26 and the maximum total score of 130. The second part of the questionnaire is background information consisting of age, period of marriage, number of

children, occupation, education of spouse, occupation of a spouse, number of pap smears performed in the past, number of marriages, family income level, education, history of receiving pap smear training and history underlying diseases. The questionnaire was distributed among the people by the researcher and they were asked to fill the questionnaire if they were willing to cooperate.

To analyze the data, first, the descriptive indices of the variables including, mean and standard deviation were reported. The Kolmogorov-Smirnov test was used to check the normality of data. Pearson correlation was used to examine the correlation between variables. Stepwise regression was used to examine the predictive factors of intention to perform a pap smear based on protection motivation theory. The analysis was performed with SPSS software version 19. The P value less than 0.05 was considered to be statistically significant.

Findings

A total of 300 people were included in the study who were examined in terms of age. The age of 12 (n=4%) respondents were between 21 to 25 years, followed by age between 26 to 30 years (n=45; 14.25%), age between 31 to 35 years (55; 18.33%), age between 36 and 40 years (n=60; 20%), age between 41 to 45 years (n=46; 15.33%), age between 46 to 50 years (n=311; 10.33%), age between 51 to 55 years (171 people; 6%), age between 56 and 60 years old (n=13; 4.3 %), age between 61 and 65 years old (n=14; 4.8%) and over 66 years old (n=7; 2.66%). Based on education, 30 (10%) of the respondents were illiterate, followed by elementary (n=33; 11%), middle school (n=32; 10.66%), diploma (n=70; 23%), associate degree (n=60; 20%), bachelor's degree (n=45; 15%) and master's degree or higher (n=30; 10%). The frequency distribution of satisfaction with the economic situation of the participants was examined; 15% of participants were completely satisfied with their economic situation, followed by satisfied (18%), moderate level (35%), dissatisfied (22%), and completely dissatisfied (10%). Out of 300 patients, 249 (83%) had a history of pap smear and 51 (17%) had no history of a pap smear. Furthermore, 146 people (48.66%) had a history of pap smear training and 154 people (51.33%) did not have this history. Moreover, 194 patients (64.66%) had a history of the underlying disease and 106 patients (35.33%) had no history of underlying disease.

The results of the Kolmogorov-Smirnov test showed that the significance level of all variables was more than 0.05 and normality was established.

Table 1 presents the average score of the components of the protection motivation model. According to the mean scores, the constructs of

motivation theory, and self-efficacy with an average of 22.7 ± 4.1 had the highest score among the structures.

Table 1) Mean of research variables

Items	Mean±SD
Perceived sensitivity	11.06±2.50
Severely perceived	13.68±3.06
Fear	9.82±2.12
Response costs	6.49±1.55
Response efficiency	13.09±2.84
Efficacy	22.78±4.11
Intention to behave	9.85±1.86

As seen in Table 2, the correlation coefficients of perceived sensitivity, perceived intensity, fear, response costs, response efficiency, self-efficacy, and behavioral intent were positively significant ($p < 0.01$).

Table 2) Correlation matrix of research variables

Variables	7	6	5	4	3	2	1
1-Perceived sensitivity	0.47	0.61	0.25	0.54	0.66	0.70	1
2-Severely perceived	0.53	0.65	0.20	0.53	0.65	1	
3-Fear	0.46	0.70	0.31	0.58	1		
4-Response costs	0.54	0.60	0.26	1			
5-Response efficiency	0.20	0.42	1				
6-Efficacy	0.53	1					
7-Intention to behave	1						

Stepwise regression was used for modeling. To predict the behavioral intent of pap smear testing in women, the costs of response in the first step, self-efficacy in the second step, fear in the third step, and perceived sensitivity in the fourth step were entered into the equation based on protection motivation theory. These four variables maintained their significance in four steps. But the perceived intensity and the response efficiency did not enter the equation. The ability of behavioral intention prediction for response costs, 26.2% ($\Delta R^2 = 0.26$, $F = 52.51$, $p < 0.05$), self-efficacy, 11.6% ($\Delta R^2 = 0.11$, $F = 44.62$, $p < 0.05$), fear, 1.8% ($\Delta R^2 = 0.018$, $F = 31.83$, $p < 0.05$) and perceived sensitivity, 3.2% ($\Delta R^2 = 0.032$, $F = 27.10$, $p < 0.05$) was recorded, these variables are able to predict about 42.8% of changes in behavioral intention for performing pap smear.

After examining the T-coefficients, it was found that response costs, self-efficacy, perceived fear, and sensitivity have a positive and significant effect on the behavioral intention of the pap smear test in women ($p < 0.05$).

Discussion

The aim of this study was to investigate the predictive factors of behavioral intention in pap smear testing based on the theory of protective motivation in women. Our results showed that response costs predict 26.2% of behavioral intention changes, followed by self-efficacy (11.6%), fear (1.8%), and perceived sensitivity (3.2%). Together, these variables were able to predict about 42.8% of

changes in behavioral intention for pap smear testing.

In this study, there was a significant relationship between pap smear testing and protection motivation (intention in pap smear testing). The mean score of protective motivation in people with a history of pap smear was higher than those who had not performed the test at all. This result is consistent with studies by Floyd in 2000, Cox in 2004, and Milne in 2002 [16-18]. In the present study, approximately 67% of the subjects had a pap smear at least once, which was consistent with Khezeli [19] and Khojasteh [20]. Cheek also reported that 75% of Vietnamese women had at least one pap smear [21]. Another study by Yu and Rymer showed that 80.5% of people had had a pap smear at least once [8], so it seems that pap smear testing among women in our society is less than in other communities.

In the present study, there was a significant relationship between performing pap smears in women and self-efficacy.

The mean self-efficacy score was higher in people who had a pap smear at least once than those who did not. This result was consistent with the research of Karimy *et al.* [22]. Furthermore, various studies have shown that self-efficacy is one of the most important factors in performing health behaviors, especially pap smears [16, 23]. Reducing barriers to healthy behavior is one of the ways that can increase people's self-efficacy for performing healthy behavior. Therefore, this point should be considered in the promotion programs of the pap smear test. As a matter of fact, a person's greater belief in protecting themselves from health risks (cervical cancer) leads to more protective behavior (pap smear test). Self-efficacy is one of the most important factors in performing adaptive and healthy behaviors, especially pap smear tests [24]. In this study, there was a statistically significant relationship between response efficiency and pap smear testing. In other studies, based on protection motivation theory, the relationship between response efficiency and health behavior was reported, which was consistent with studies [16, 18, 25]. Therefore, educational programs for pap smear tests can be effective in the early diagnosis of cervical cancer.

The results of the present study show that there is a statistically significant relationship between the intention of pap smear test behavior in women and protection motivation. The intention and behavior of the pap smear test can be predicted through protective motivation constructs (perceived sensitivity, self-efficacy, response costs, and fear). This result was also seen in the study [26]. Protective motivation is synonymous with behavioral intent and triggers or perpetuates adaptive or protective behavior. Therefore, consistent behavior of pap smear testing is more seen in people with higher protection motivation.

Based on the results of this study, the pap smear test had a statistically significant relationship with perceived costs, and the mean score of perceived costs in people with no history of testing was higher than those who performed a pap smear at least once. Based on the results presented here, the pap smear test had a statistically significant relationship with perceived costs, and the mean score of perceived costs in people with no history of testing was higher than those who had a pap smear test at least once. Given that people have to pay for a pap smear, this can be one of the barriers to doing the test that low-income people may be more aware of. This result has also been reported in the study of Agurto *et al.* [27].

Most studies have reported a significant relationship between the constructs of protection motivation theory and the intention of pap smear behavior, therefore, designing a training program within this theory is required to start and continue pap smear testing.

Conclusion

The behavioral intent of having a pap smear test can be predicted based on the theory of protective motivation in women. The intention of pap smear testing has a statistically significant relationship with the structures of protection motivation theory. Therefore, designing educational programs within the framework of this theory is recommended to improve pap smear testing.

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Conflicts of Interests: We declare that we have no conflicts of interest.

Authors' Contribution: Asadi ZS (First Author), Methodologist/Main Researcher (30%); Abdi N (Second Author), Introduction Writer/Discussion Writer (20%); Miri SAH (Third Author), Introduction Writer/Discussion Writer (20%); Safari A (Forth Author), Assistant Researcher (30%)

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