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Factors Related to Regular Undergoing Pap-smear Test: Application of Theory of Planned Behavior

Farzad Jalilian (MSc)^a, Shohreh Emdadi (MSc)^{b*}

^a Department of Nursing, School of Basic Science, Islamic Azad University, Hamadan Branch, Hamadan, Iran

^b Department of Public Health, School of Public Health, Hamadan University of Medical Sciences, Hamadan, Iran

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* Correspondence

Shohreh Emdadi (MSc)

Tel: +98 811 8380398

Fax: +98 811 8380026

E-mail1: sh.emdadi@umsha.ac.ir

ABSTRACT

Background: Cervical cancer is the second most common cancer among women in the world and the most common cancer in developing countries. Pap smear is an effective tool that can prevent death due to cervical cancer. The aim of this study was to determine the factors related to doing regular Pap-smear test based on the theory of planned behavior.

Methods: In this cross-sectional study, conducted in Hamadan County, the west of Iran, during 2009, a total of 400 women's aged 20 to 70 years old, were randomly selected to participate voluntarily in the study. Participants filled out a self-administered questionnaire including the expanded theory of planned behavior components. Data were analyzed by SPSS version 13 using chi-square, *t*-test, and logistic regression statistical tests at 95% significant level.

Results: Almost 63.8% of the participants had already done Pap-smear test at least once. About 28.3% of volunteers had followed a regular Pap-smear program. There was a significant correlation ($P < 0.002$) between family history of cervical cancer and undergoing regular Pap-smear test. In addition, there was a significant correlation ($P < 0.001$) between age and undergoing regular Pap-smear test. The best predictor for regular Pap-smear testing was subjective norms with odds ratio estimate of 1.14 [95% CI: 1.04, 1.23].

Conclusion: Based on our findings, subjective norms may be one of the most effective factors among women for doing regular Pap-smear test.

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Introduction

Cervical cancer is the second most common cancer in women, with the estimated 500,000 new cases and 231,000 deaths annually worldwide¹. About 80% of cases occur in developing countries, where it is often the most common cancer among women². Early age at initiation of sexual activity, multiple sex partners or promiscuous male sexual partners, low education, no Pap-smear screening, disusing condoms, lack of access to healthcare, oral contraceptive use are among the major risk fac-

tors for the development of cervical cancer³⁻⁴. The goal of healthy people in 2010 was to decrease cervical cancer deaths to 2.0 per 100,000 women⁵. Almost 20% to 60% of all cervical cancer deaths could be avoided by improving screening programs⁶. "Protection against cervical cancer may involve repeated screening over a lifetime. Current guidelines indicate that all sexually active women and/or those who have reached 18 years of age should undergo an annual Pap-smear test; after a woman has three or more consecutive, negative examina-

tions, the Pap test may be performed less frequently at the discretion of her physician”⁷. A critical way to prevent cervical cancer is to have Pap tests to detect cervical cell changes. Cervical cancer is more common in women who do not have Pap test regularly. Half of women diagnosed with cervical cancer are between 35 to 50 years old. Secondary prevention, achieved through Pap smear testing, is the single most effective tool in reducing deaths due to cervical cancer⁸. High incidence of cervical cancer is associated with lack of cervical cancer screening or lack of regular cervical cancer screening and follow-ups of abnormalities worldwide⁹. Unfortunately, large proportion of women do not undergo Pap-smear test due to various reasons¹⁰. A number of barriers was reported by previous studies for cervical cancer screening such as pain, lack of convenient clinic times, lack of knowledge, unawareness where to go for cervical cancer screening, having embarrassment to participate in cervical cancer screening, partner’s resistance against woman’s participation in cervical cancer screening, and lack of female examiner⁸⁻¹².

The objective of this study was to determine factors related to undergoing a regular Pap-smear test among Iranian women based on the theory of planned behavior. The theories of planned behavior in numerous studies as a research theoretical framework were applied.

Methods

This cross-sectional study was conducted on 400 married women aged 20 to 70 years old referred to health centers in Hamadan County, the west of Iran, during 2009. The sample size was calculated at 95% significant level according to the results of a previous study¹³ and a sample of 400 was estimated.

To enroll the participants and collect data the following stages were done. First, different areas of the city were classified based on the division of the geographical region, next for each social class two health centers were randomly selected (a total of six health centers were selected). Then, subjects referred to the health centers for taking health care, were enrolled into this study voluntarily. Only the

subjects aged 20 to 70 years old who were married were eligible to participate in this study. Finally, the volunteers were given the self-questionnaire. This study was conducted with approval from Hamadan University of Medical Sciences’ institutional review board and informed consent was obtained from participants.

Theoretical Framework

The theory of planned behavior (TPB) was proposed by Icek Ajzen in 1985 (Figure 1). According to the TPB, the primary determinants of future behavior are one’s intention to perform the behavior and the subjective perception of having control over behavior (perceived behavioral control - PBC). In turn, intentions are predicted by three variables: (a) Attitudes are a person’s positive or negative evaluation of performing the focal behavior, (b) Subjective norms (SN) are a person’s perception of other people’s opinion regarding behavioral performance and (c) PBC refers to a person’s sense of control over performing the behavior under study. When PBC is a reflection of actual control over behavioral performance, it is expected that it will predict behavior directly¹⁴⁻¹⁵.

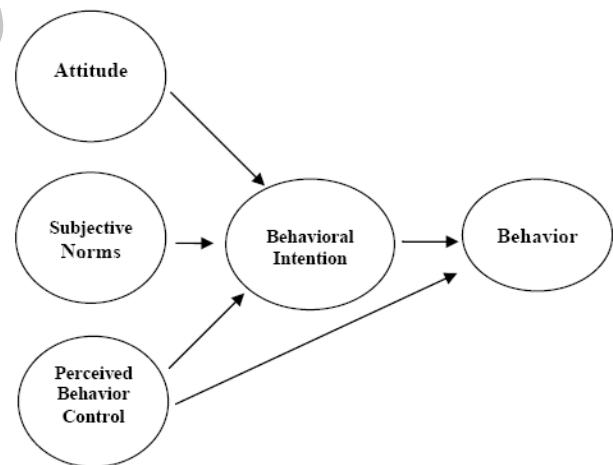


Figure 1: Design of theory of planned behavior

Prior to conducting the main project, a pilot study was carried out. Initially the relevant questionnaires were administered to 30 women who were similar to study population in order to estimate the duration of the study conduction and to evaluate the reliability of the questionnaire. Estimated reliability using alpha Cronbach coefficient for each TPB constructs questionnaire were as follows: attitude ($\alpha=0.70$); subjective norms ($\alpha=0.68$); perceived behavior

control ($\alpha=0.71$) and behavioral intention ($\alpha=0.88$).

The variables assessed in this study included: age, education level (Primary school/Secondary school/High school/ Academic), number of children, number of previous pregnancies, education (Housewife/ Working), menopause (*Yes/No*), family history of cervical cancer (*Yes/No*), and undergoing regular Pap-smear test (*Yes/No*).

TPB scale was designed based on a standard questionnaire¹⁶ and included 14 items under four constructs including (a) attitude; (b) subjective norms; (c) perceived behavioral control; (d) behavioral intention. Six items were designed to measure attitude toward undergoing a regular Pap smear. Four items were designed to measure subjective norms toward perform a regular Pap smear. Two items were designed to

perceived behavioral control toward perform a regular Pap smear. Two items were designed to evaluate intention toward perform a regular Pap smear. In order to facilitate participants' responses to the items, all items were standardized to a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Data were analyzed by SPSS version 13 using appropriate statistical tests including chi-square, *t*-test, and logistic regression at 95% significant level.

Results

The mean age of respondents was 32.3 years [95% CI: 31.3, 33.2], ranged from 20 to 70 years. More details of demographic characteristics of the participants are shown in Table 1.

Table 1: Distribution of the demographic characteristics among the participants

Variables	Number	Percent
Age group (year)		
20-29	183	45.8
30-39	120	30.0
40-49	71	17.8
50-70	26	6.5
Education level		
Primary school	92	23.0
Secondary school	145	36.2
High school	119	29.8
Academic	44	11.0
Occupation		
Housewife	360	90.0
Working	40	10.0
Positive family history of cervical cancer		
Yes	18	4.5
No	382	95.5

About 77.5% (310/400) of respondents knew what Pap smear was, whereas 22.5% (90/400) of subjects did not know. Almost 63.8% (256/400) of the participants had already undergone Pap-smear test at least once while 36.2% (146/400) of subjects had not. Accordingly, only 39.2% (157/400) of participants had undergone Pap-smear test more than once previously. Furthermore, only

28.3% (113/400) of participants reported had regular Pap-smear tests.

Table 2 shows the most important factors that persuaded the participants to take Pap-smear test. Accordingly, 69.0% (276/400) of participants have reported physicians' advice as the most effective factor that persuaded them to undergo a Pap-smear test.

The correlation between different components of theory of planned behavior is shown in Table 3. According to these results, there is a

mild to moderate correlation between different components of the theory.

Table 2: Factors that persuaded the participants to take Pap-smear test

Factor	Number	Percent
Friend	14	3.5
Health center staff	14	3.5
Physician	276	69.0
Partner	45	11.3
Radio and/or TV	42	10.5
No answer	9	2.2
Total	400	100.0

Table 3: Correlation between different components of theory of planned behavior

Component	Attitude	Subjective norms	Perceived behavioral control
Attitude	1.000		
Subjective norms	0.298	1.000	
Perceived behavioral control	0.375	0.471	1.000
Intention	0.308	0.564	0.553

Table 4: The correlation between different components of theory of planned behavior and undergoing regular Pap-smear test using logistic regression analysis

Variable	Odds Ratio	95.0% CI		P value
		Lower	Upper	
Perceived Behavioral Control	1.00	-	-	-
Behavioral Intention	1.23	1.059	1.436	0.007
Subjective Norm	1.14	1.044	1.234	0.003
Attitude	1.07	1.020	1.128	0.006

We found that older women reported taking more regular Pap-smear test than younger women ($P < 0.001$). In addition, there was a significant correlation between having family history of cervical cancer and undergoing regular Pap-smear test ($P = 0.002$). However, there was no significant difference between undergoing regular Pap smear and job, educational status, and menopause.

According to the logistic regression analysis, behavioral intention (BI) and subjective norms were the most influential predictors on doing regular Pap-smear test (Table 4).

Discussion

The aim of this study was to determine factors related to doing regular Pap-smear test among women aged 20 to 70 years old based

on the theory of planned behavior. The results of the present study indicated that behavioral intention and subjective norms were the most influential predictors on doing regular Pap-smear test.

According to the results, 63.8 % of the participants underwent Pap-smear test at least once. YU-CK et al¹⁷ and El-Hammasi¹⁸ reported that 80.5% and 445 of the subjects in their studies took Pap-smear test at least once respectively. Only 28.3% of the participants in this study had stated regular Pap-smear test Jalalvandi¹⁹ stated that 17.5% of women who referring to health centers in Arack County had taken Pap-smear test. YU-CK et al¹⁷ carried out a research on women aged 15 to 78 years old in London and reported that 71.5% of the participants had undergone regular Pap-smear tests. In

addition, Tung et al²⁰ reported that 46.3% of Vietnamese-American women had regular Pap-smear test. The comparison of the results of the present study and similar domestic studies with similar studies conducted abroad showed the discrepancy exists between the results and indicates that taking Pap-smear test is much lower among Iranian women compared to other countries. These results can be warning to health policy makers in Iran; and should be the focus of special attention.

According to our results, physicians' advice had an important role in persuading the women to take Pap-smear test. The results of similar to studies confirm these finding²¹⁻²² and highlight the effectiveness of the physicians' role in persuasion the women to take part in Pap-smear screening program.

The older women had taken regular Pap smear much more than younger ones. This result is similar to the results reported by other studies²¹⁻²⁴. Various reasons may be stated for this discrepancy. Younger women may imagine themselves at lower risk of cervical cancer. Lack of knowledge about Pap-smear program may be another reason.

Several studies have reported TPB variables' predictability to explain behavioral health screening such as cervical screening²⁵⁻²⁹. In this regard, Jennings-Dozier¹⁶ reported a significant relationship between attitude, perceived behavioral control and behavioral intention and taking Pap-smear test and according to their results subjective norms were not strong predictor for taking regular Pap-smear test. In addition Jennings-Dozier¹⁶ et al reported attitude and perceived behavioral control as important predictors for undergoing Pap-smear test. Other studies have reported attitude and perceived behavioral control as strong predictors for taking Pap-smear test^{24,25}. Our results showed that subjective norms were strong predictor for taking Pap-smear test among women. This result is not similar to the results reported by other studies. Our results show Iranian women to regular undergoing pap smear are influenced by other people (subjective norms) such as their husbands and doctors, so educational programs for doctors is necessary to encourage women to undergoing pap smear. It

seems that using methods of health education like health belief model can enhance women's knowledge of cervical cancer, change their health beliefs and improve their behaviors regarding screening programs like Pap test. For example, Shojaeizadeh et al³⁰ conducted a study on women aged 16 to 54 years old who had never done Pap test and showed that educational program improved the participants' knowledge of cervical cancer significantly, changed their attitudes and motivated them to do Pap test.

This study had a few limitations. First, data collection was based on self-reporting, which is usually prone to recall bias. Second, the internal consistency the questionnaire was relatively low ($\alpha=0.68$) for assessing subjective norms.

Conclusion

Our results showed that subjective norms were strong predictor for taking Pap-smear test. In addition, physicians' advice plays an important role to persuade women to take part in Pap-smear screening program.

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Conflict of interest statement

The authors declare that they have no conflict of interest.

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