

## RESEARCH ARTICLE

# Relationships between Self-Efficacy and Pap Smear Screening in Iranian Women

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### Abstract

Cervical cancer is the fourth common cancer among women worldwide. Pap smear screening has resulted in decreasing incidence of cervical cancer in developed countries but low uptake of Pap smear screening among women in developing countries is still a public health challenge. The aim of this cross-sectional study was to assess the relationship between self-efficacy and timely uptake of Pap smear among Iranian women. A total of 580 married women referred to primary health care centers covered administratively by Shahid Beheshti University of Medical Sciences in Tehran were administered a questionnaire by trained staff. Data were analyzed with SPSS (version 16) software, using univariate and multivariate logistic regression. The mean age for participants was 33.1±8.8 years. There was a significant association between self-efficacy and Pap smear screening ( $P<0.01$ ). There was also a positive correlation between duration of marriage and husband's education with Pap smear uptake ( $P<0.01$ ). In univariate analysis, there was a significant association between Pap smear uptake and level of self-efficacy (OR = 15.3 for intermediate and OR=7.4 for good level), duration of marriage (OR = 5.7 for 5-14 years and OR=10.4 for more than 15), age (OR =2.7 for 27-34 years and OR=7.4 for more than 35 years) and husband education level (OR=2.3 for more than 12 years of education). In multivariate analysis, significant associations persisted between Pap smear uptake and self-efficacy (OR = 23.8; 95% CI: 8.7, 65.5), duration of marriage (OR = 5.9; 95% CI: 2.8, 12.2), age (OR = 3.9; 95% CI: 1.2, 12.9) and husband's education (OR = 2.5; 95% CI: 2.0, 10.3). Efforts are needed to increase women's knowledge about cervical cancer and improve their self-efficacy and perceptions of the Pap smear screening in order to reduce cervical cancer incidence and mortality rates.

**Keywords:** Self-efficacy - pap smear – screening - cervical cancer - Iran

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### Introduction

Cancer is a leading cause of death and accounted for 7.6 million deaths (around 13% of all deaths) in 2008. Cervical cancer is the fourth most common cancer in the women of the world and allocated 7.9% of all cancers in women. Also, it is considered as the third leading cause of cancer death among women in the world (Bray et al., 2013). Cervical cancer incidence in Iran is lower than some of the other countries so that, according to the report of the National Center for Cancer Registry of Iran in year 2010, its incidence reached to 1.62 in 100,000 and its rank is eleventh in the total Iranian women's cancers (Ministry of Health and Medical Education Deputy of Health and treatment center for disease control and prevention cancer Office, 2009). High-quality screening with cytology (Pap testing) has markedly reduced mortality from squamous cell cervical cancer, which comprises 80–90% of cervical

cancers (Gustafsson et al., 1997). Studies revealed that due to lack of a national screening program for cervical precancerous lesions, some of women voluntarily undergo screening at intervals less than the standard and in some areas, 85% of women have not been examined even once.

Most of the patients with cervical cancer detected in advanced-stages and then, although it is a preventable disease with low incidence rate (2.61 per hundred thousand) but 42 percent of them are dying. Cervical cancer risk factors are including: An early age at the time of the first sexual intercourse (less than 16 years), multiple sexual partners, smoking, ethnicity, high parity (number of births), low social and economic status, and use contraceptive. Many of these factors are associated with the sexual activity and exposure to sexually transmitted diseases (Novak and Berek, 2007). Cervical cancer is one of the major causes of death in women with about 454,000 new cases and 200,000 deaths in 2010 worldwide (Forouzanfar et al.,

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2011). Each year, almost a million women have developed cervical cancer and more than 50% of them lose their lives. Cervical cancer have sixth cancers mortality rate and in the United States are leads to 4,500 deaths per year (Reis et al., 2012). Since the introduction of cervical cytology in the United States in the mid-20th century, cervical cancer, once the most frequent cause of cancer deaths in women, now ranks 14th for cancer deaths. This reduction in mortality through screening is due to 1) an increase in detection of invasive cancer at early stages, where the five-year survival rate is approximately 91 percent 7 and 2) detection and treatment of pre-invasive lesions, which reduces the overall incidence of invasive cancer. In 2012, an estimated 12,170 cases of invasive cervical cancer will be diagnosed, and an estimated 4,220 women will die (Siegel et al., 2012).

Cervical cancer is one of the few cancers that can easily be detected at prior malignancy stage. The Pap smear test is among the tests that are used to screen for cervical diseases (Siegel et al., 2012). Cervical cancer screening with Pap smears, due to the increased detection of invasive disease in the early stages of invasion, has reduced cervical cancer mortality (Wright Jr et al., 2002; Solomon et al., 2007). Various studies indicated that doing Pap smear for cervical cancer can effectively reduced the prevalence and mortality rate of disease up to 90 % (Forouzanfar et al., 2011). Therefore, doing a Pap smear in married women is considered as a health behavior and health promotion. Improving the quality of patients care and treatment through his participation in the care programs, with improves the patient's physical status, reduces mortality, morbidity and disability. Also, the costs are reduced. One of the ways to improve the people empowerment is self-efficacy strength. Self-efficacy is the person confidence and trust to own ability, so that the person will be able to take care of his or her health in favorable manner (Barnason et al., 2003).

Accordingly, individuals who have higher levels of self-efficacy, more actively participate in own care plan (Morowatisharifabad and Tonekaboni, 2009). It seems that improve the self-care behaviors in screening of cervical cancer in women can improved the quality of life and lead to reduce its mortality. Considering the importance of the issue, this study was designed to investigate the relationship between cervical cancer screening of women and self-efficacy.

## Materials and Methods

This study is an Analytic Cross-Sectional study in order to determine the relationship between the self-efficacy with cervical cancer screening in women referring to health care centers covered by Shahid Beheshti University of Tehran that carried out in the year 2012. The study population consists of married women who receive health care services, counselling, gynecologic or vaccination of their children had referred to the urban health care centers of Shahid Beheshti University. The criterion for the sample selection in this study was marriage and referred to the clinic for receiving one of the mentioned services. If they tended to participate in the study, the subjects were

Table 1. The Mean of Age, Self-Efficacy Score and Duration of Marriage Regarding Doing Pap Smear

Variable	Pop Smear		P Value
	Yes Mean(SD)	No Mean(SD)	
Age	34.2 (8.5)	29.2 (8.9)	P <0.01
Self-efficacy score	58.7 (14.5)	42.6 (15.3)	P <0.01
Duration of marriage (year)	11.9 (8.5)	6.6 (8.6)	P <0.01

interviewed in the appropriate environment by the woman interviewers who were staff of the health care centers and trained. The sample size was calculated 442 persons, considering the error 0.1 and power 0.9.

Among 80 clinics in Tehran that covered by Shahid Beheshti University, 20 clinics selected randomly and according to the population covered by each clinic, the samples from each clinic were enrolled in this study. The subjects were interviewed with successive method and under similar circumstances. The study objectives were explained before the interview and then, if they desired to participate in the study, a questionnaire was completed without mentioning the name.

The researcher made questionnaire was used for data collection. This questionnaire consisted of four sections, each of sections includes the following: Part I: demographic characteristics, Part II: Participants' knowledge about cervical cancer and screening Part III: their performance and Part IV: self-efficacy and their ability in the field of cervical cancer screening. The questionnaire was given to the 10 experts and their revision ideas were applied to determine the validity of the questionnaire. Also, the test-retest method with obtained reliability coefficient 0.85 was used to determine the reliability of questionnaire. In self-efficacy questions, the maximum score was 90 which were considered as an excellent performance, grades 18-34, 35-59 and 60-90 were considered as a weak, moderate and good self-efficacy, respectively. Doing a Pap smear in the past three years was reviewed in all subjects. The data were analysed using SPSS ver.20 (SPSS Inc., Chicago, IL, USA) for windows. Independent samples t test and chi-square test were used to investigate the association between doing Pap smear and other variables. Multivariate logistic regression (backward method) was used to assess the effects of self-efficacy and related factors in attempt to doing Pap smear screening in women. All variables with p-values less than 0.20 were included in this model. A P value less than 0.05 was considered significant.

## Results

A number of 442 participants were enrolled in this study. The mean age of participants was 33.1±8.8 years. The mean age at marriage was 22.2 ± 4.4 years and the average length of marriage was 10.7± 8.8 years. Of 442 eligible women that had participated in this study, 430 (97.3%) persons once and 11 (2.2%) persons had married more than once. Also, the participants were in the age group 18- 26 years, 27- 34 years and more than 35 years was 102 (42.5 %) persons, 171 (38.7%) persons and 153

Table2. Distribution of Self-Efficacy and Related Factors Regarding Doing Pap Smear

Variables	Pap smear		Without Pap smear		Total	P value
	N	%	N	%		
<b>Age group</b>						
18.0-26.0	54.0	17.4	46.0	46.0	100.0	P<0.01
27.0-34.0	126.0	40.5	39.0	39.0	165.0	
35.0 and above	131.0	42.1	15.0	15.0	146.0	
Total	311.0	100.0	100.0	100.0	411.0	
<b>Self-efficacy</b>						
Weak	99.0	30.8	9.0	8.5	108.0	P<0.01
Intermediate	176.0	54.8	33.0	31.3	209.0	
Well	46.0	14.3	64.0	60.4	110.0	
Total	321.0	100.0	106.0	100.0	427.0	
<b>Duration of marriage</b>						
1.0-4.0 years	56.0	17.9	57.0	60.0	113.0	P<0.01
5.0-14.0 year	164.0	52.6	29.0	30.5	193.0	
More than 15.0	92.0	29.5	9.0	9.5	101.0	
Total	312.0	100	95.0	100.0	407.0	
<b>Distance from health center</b>						
Less than 20.0 minutes	217.0	68.5	65.0	61.9	282.0	0.43
20.0-30.0 minutes	43.0	13.6	19.0	18.1	62.0	
30.0-60.0 minutes	44.0	13.9	14.0	13.3	58.0	
More than 60.0 minutes	13.0	4.1	7.0	6.7	20.0	
Total	317.0	100.0	105.0	100.0	422.0	
<b>Female education</b>						
Under diploma	74.0	23.2	28.0	26.9	102.0	0.6
Diploma	120.0	37.6	34.0	32.7	154.0	
Upper diploma	125.0	39.2	42.0	40.4	167.0	
Total	319.0	100.0	104.0	100.0	423.0	
<b>Husband education</b>						
Under diploma	72.0	22.5	37.0	35.9	109.0	<0.01
Diploma	105.0	32.8	35.0	34.0	140.0	
Upper diploma	143.0	44.7	31.0	30.1	174.0	
Total	320.0	100.0	103.0	100.0	423.0	
<b>Number of marriage</b>						
Once	315.0	98.1	100.0	95.2	415.0	0.1
>1.0	6.0	1.9	5.0	4.8	11.0	
Total	321.0	100.0	105.0	100.0	426.0	

(34.6%) persons, respectively. In terms of education, 104 (23.5%) of participants were under diploma, 161 (36.4%) diploma and 173 (39.1%) were upper diploma.. Of all participants, 334 (75.7%) were housewives and the rest employed. Husbands of 177 (40.0%) of the participants had higher education and 148 (33.5%) diploma and 113 (25.6%) were under diploma. Their husbands in 43.3 percent of cases were self-employed, 36.3% was employee and 20.4% was workers. Also, 191 (43.3%) of participants have one child, 151 (34.2%) have two children, 77 (17.6%) have three children or more and 21 (4.9%) were without children.

Of all subjects, 365 (82.8%) know a Pap smear as a way for early detection of cervical cancer, but only 284 (64.3%) of them know that Pap smear is a test for detecting cervical cancer and realize that this is also a test

for detection of infection and inflammation.

In the past three years only 321 (72.6%) of eligible persons attempted to do Pap smears and about 106 (24%) of women, despite going to health care centers in the past three years not have a Pap smear. Assessing the prevalence of self-efficacy in women has been determined with 18 questions that its response amplitude is 1-5.

In terms of self-efficacy, 112 (25.3%) weak, 218 (49.3%) moderate and 112 (25.3%) had good self-efficacy. The results of independent samples t test show that mean of total self-efficacy score, duration of marriage and age were significantly different between woman who doing Pap smear screening (P<0.01) (Table1).

Chi-square test results showed that there was a significant relationship between the self-efficacy and doing Pap smears (P<0.01). In women with weak self-efficacy,

Table 3. Multivariate Logistic Regression for Assessing Effects of Self-Efficacy and Related Factors in Attempt to Doing Pap

Variables	OR* (95% CI) Model 1a	OR (95% CI) Model 2 b	OR (95% CI) Model 3c	OR (95% CI) Model 4 d
Duration of marriage				
1.0-4 .0years	Reference	Reference	Reference	Reference
5.0-14.0 year	5.8 (3.4 – 9.9)	5.5 (3.1 – 9.8)	5.7 (2.8 – 11.8)	5.9 (2.8 – 12.2)
More than 15	10.4 (4.8 – 22.7)	8.6 (2.8 – 26.4)	5.5 (1.5 – 19.7)	6.2 (1.7 – 23.1)
Age				
18.0-26.0	Reference	Reference	Reference	Reference
27.0-34.0	2.7 (1.6 – 4.7)	2.7 (1.6 – 4.7)	0.9 (0.5 – 2.0)	1.1 (0.5 – 2.2)
More than 35	7.4 (3.9 – 14.4)	7.4 (3.8 – 14.4)	3.8 (1.2 – 12.5)	3.9 (1.2 – 12.9)
Self-efficacy				
Weak	Reference	Reference	Reference	Reference
Good	7.4 (4.4 – 12.6)	9.2 (5.1 – 16.6)	11.9 (5.9 – 24.3)	11.5 (5.6 – 23.6)
Distance from health center				
Less than 20.0 minutes	1.7 (0.7 – 4.7)	2.3 (0.8 – 6.9)	-	-
20.0-30.0minutes	1.2 (0.4 – 3.5)	1.2 (0.4 – 3.9)	-	-
30.0-60.0 minutes	7.4 (0.6 – 5.1)	1.8 (0.5 – 5.9)	-	-
More than 60.0 minutes	Reference	Reference	-	-
Female education				
Under diploma	Reference	Reference	-	-
Diploma	1.3 (0.7 – 2.4)	1.5 (0.8 – 2.8)	-	-
Upper diploma	1.1 (0.6 – 1.9)	1.2 (0.7 – 2.3)	-	-
Husband education				
Under diploma	Reference	Reference	Reference	Reference
Diploma	1.5 (0.9 – 2.7)	1.9 (1.1 – 3.4)	2.7 (1.3 – 5.8)	2.4 (1.1 – 5.3)
Upper diploma	2.4 (1.4 – 4.1)	2.5 (1.4 – 4.6)	4.7 (2.1 – 10.5)	4.5 (2.0 – 10.3)
Number of marriage				
once	2.6 (0.8 – 8.8)	2.3 (0.6 – 9.0)	1.2 (0.1 – 11.9)	-
>1.0	Reference	Reference	Reference	-

\* OR, Odds Ratio; <sup>a</sup>Crude Odds Ratio; <sup>b</sup>Adjusted Odds Ratio for age; <sup>c</sup>Adjusted Odds Ratio (all variables with p-value < 0.2 entered the model such as sex, region, family history of hepatitis and history of blood transfusion, surgery, tattooing, unsterile puncture, icterus and other types of hepatitis); <sup>d</sup>Multivariable backward logistic regression model.

attempt to doing the Pap smear is low, so that only 99 (30.8%) of them have Pap smear in the last three years. In women with intermediate and good self-efficacy 275 (69.1%) subjects take action to doing the Pap smear. Also, there was a significant relationship between age ( $P < 0.01$ ), duration of marriage ( $P < 0.01$ ) and husband education ( $P < 0.01$ ) with having a Pap smear test (Table 2).

Attempt to do Pap smears in women with duration of marriage 1 to 4 years was 56 (17.9%) and in women with duration of marriage between 5 to 14 years was 164 (52.6%).

Logistic regression analysis was used to calculate the odds ratios for self-efficacy and related factors (Tables 3). In univariate logistic regression (Model 1), there was a significant association between level of self-efficacy (OR = 15.3 for intermediate and OR=7.4 for good level), duration of marriage (OR = 5.7 for 5-14 years and OR=10.4 for more than 15), age (OR =2.7 for 27-34 year and OR=7.4 for more than 35 years), level of husband education (OR=2.3 for upper diploma) with doing Pap smear screening.

In multivariable logistic regression, after adjustment for age (Model 2), there was a significant association

between level of self-efficacy (OR = 17.1 for intermediate and OR=9.2 for good level), duration of marriage (OR = 5.5 for 5-14 years and OR=8.6 for more than 15), level of husband education (OR=1.8 for diploma and OR=2.5 for upper diploma) with doing Pap smear screening.

In Model 3, all variables with p-values less than 0.2 were included in the model. There was a significant association between level of self-efficacy (OR = 24.4 for intermediate and OR=11.9 for good level), duration of marriage (OR = 5.7 for 5-14 years and OR=5.5 for more than 15), age (OR =0.9 for 27-34 year and OR=3.8 for more than 35 year), level of husband education (OR=2.7 for diploma and OR=4.7 for upper diploma) with doing Pap smear screening.

Finally, in the backward method of multivariable logistic regression (Model 4), we found a significant association between level of self-efficacy (OR = 23.8 for intermediate and OR=11.5 for good level), duration of marriage (OR = 5.8 for 5-14 years and OR=6.2 for more than 15), age (OR =1.04 for 27-34 year and OR=3.9 for more than 35 years), level of husband education (OR=2.4 for diploma and OR=4.5 for upper diploma) with doing Pap smear screening (Table 3).

## Discussion

In the current study with examining between women's self-efficacy levels with doing Pap smears, we found that in women with weak self-efficacy attempt to get Pap smear was less so that only 30/8 percent of them in the past three years have Pap smears and this amount for women with moderate and good self-efficacy was 69/1%. Significant association was observed between people self-efficacy and doing Pap smear ( $P < 0.01$ ). In univariate logistic regression, we found a significant association between level of self-efficacy (OR = 15.3 for intermediate and OR=7.4 for good level) with doing Pap smear screening. In multivariable logistic regression, after adjustment for age, there was a significant association between level of self-efficacy (OR = 17.1 for intermediate and OR=9.2 for good level) with doing Pap smear screening. Also, after adjustment for all variables with with p-values less than 0.2 in model 3, women who have intermediate and good self-efficacy were 24.4 and 11.9 times more likely to do Pap smears than those who have weak self-efficacy, respectively. The result of present study is consistent with the study conducted by Jette R. Hogenmiller et al about self-efficacy scale for pap smear screening. This study results revealed that Self-efficacy and other factors such as decisional balance, illicit drug usage, and age predicted 28% of the variance in stages of change (precontemplation, contemplation, preparation, action, and maintenance) for Pap smear screening participation (Hogenmiller et al., 2007). Also in cancer patients, cancer self-efficacy was significantly related to sickness-related behavior in the areas of ambulation, mobility and body care, alertness, eating, work, sleep, and rest (Beckham et al., 1997). Self-efficacy has proven to be a powerful predictor of disease prevention and detection behaviors (Schwarzer and Fuchs, 1996). The study conducted on rural women revealed that self-efficacy was significantly correlated with rural women's performance of Breast and Cervical Cancer detection practices (Parrott, 2001). Also, the study of papanicolaou screening in Taiwan show that specific perceived barriers and feelings of self-efficacy play important roles in moving Taiwanese women through the TTM stages of change for adopting Pap screening practice (Tung et al., 2010) that is consistent with our results. In survey that entitiled "factors Related to Poor Practice of Pap Smear Screening among Secondary School Teachers in Malaysia identified that for attitudes and beliefs factors, perceived barriers and poor self-efficacy were significantly more likely to be found in women who never had Pap smear (Abdullah et al., 2011). Also there was a strong correlation between knowledge and self-efficacy with doing Pop smear screening in China (Jia et al., 2013). In the all mentioned cases is shown that if the person have faith in his ability, be able to have more appropriate performance to keep their health that is including attempt to doing Pap smear.

Our results show that there is a significant relationship between age of women with doing Pap smears, it means that the women at ages 35 years and older have much attempt to doing Pap smear. Perhaps this case occurred because these people are further attended in health care

centers and therefore further training increases their awareness about cervical cancer. In contrast, the young women think they are in the lower risk for cancer. On the other hand the survey on breast and cervix screening among multiethnic women by attention on the role of age showed that elderly women ( $\geq 65$  years) were significantly less likely to have ever had (OR = 0.8, 95% CI 0.6–0.9) and to have recently had (OR = 0.7, 95% CI 0.6–0.8) Pap smears than younger women, controlling for the other variables (Mandelblatt et al., 1999).

The result of study with the title "The causes of not doing Pap smear" showed that 55.1 percent of women who have been tested regularly 36 years old and most women who were not tested until now have been often aged 25 years or less (Park and Park, 2010). Results of other study that demonstrated that older people are doing routinely Pap smears more than young which was in according to our study (Jalilian and Emdadi, 2011). About the Relationship between duration of marriage and doing Pap smear, women who were married 5-14 years ago have done more Pap smears (52.6%) And women with marriage duration 1-4 years, has less do this (17.9%) and this Relationship was significant statistically ( $P < 0.01$ ). Investigating the relationship between women occupation and amount of doing Pap smears revealed that 65.3% of housewives have Pap smear And this rate in women workers was lower than of all. Chi-square test revealed significant relationship between the types of women jobs with having Pap smears ( $P < 0.01$ ). The Jalilian research didn't show any significant association between person jobs and getting routine Pap smear (Jalilian and Emdadi, 2011). Research in Kerman found significant correlation between doing Pap smears and women jobs (Soltanahmadi et al., 2010). In study about the socio-economic determinants of Pap smear screening among married women in Peninsular Malaysia, all the variables that were included in the model; ethnicity, age, educational level, and occupation appear to be significantly associated with the practice of Pap smear screening. Women who were employed as craft and plant workers were 0.3 times less likely to have had a Pap smear screening than those currently not working (Aziz et al., 2013). Considering that most of the people referred to health care centers are housewives it seems there are more likely that the major women that have Pap smear also is to be in this group. Inaccessibility of health care for women employees always is a system concern, especially in the afternoon evening's centers don't deliver services.

The study results showed that women's knowledge about the cervical cancer predisposing factors and its early sign is not suitable. Efforts are needed to increase women's knowledge about cervical cancer and improve their self-efficacy and perceptions of the Pop smear screening process for early detection to reduce cervical cancer incidence and mortality rates.

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