Research Article

The Study of Relationship Between Risk Factors for Cervical Cancer and Knowledge and Attitude of Health Workers Toward Pap Smear in Isfahan and Its Comparison with Chaharmahal and Bakhtiari Province, Iran

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Abstract

Background: Cervical cancer is one of the most common cancers in the female reproductive system. Awareness of cervical cancer diagnosis, risk factors and screening can lead to rapid treatment and their well-being.

Methods: This cross-sectional study was conducted on 1900 female health workers in Isfahan province and 230 similar women in Chaharmahal and Bakhtiari province. A researcher-made questionnaire was used to collect data about knowledge and attitude. Numerical outcomes were analyzed using ANOVA and linear regression methods and categorical outcomes were applied to the chi-squared test. Data were analyzed at 5% significant level using SPSS 23.

Results: The result of linear regression showed that there was a significant difference in the mean score of knowledge about Pap smear in both provinces (P = 0.001). There was a significant relationship between the mean scores of knowledge about Pap smear in Isfahan province and marriage at an early age (P = 0.001), smoking (P = 0.005) and Chaharmahal and Bakhtiari province with cervical ulcer (P = 0.03). In addition, there was a significant difference in the mean score of attitude toward Pap smear between both provinces (P = 0.001) and there was a significant relationship between the mean scores attitude toward Pap smear in Isfahan province and marriage at an early age (P = 0.001), cervical ulcer (P = 0.002), and smoking (P = 0.001) and Chaharmahal and Bakhtiari province with genital infection (P = 0.012) increase the number of pregnancies (P = 0.002).

Conclusions: Considering the importance of knowledge and attitude of female health worker in both provinces, it is necessary to carry out educational programs especially in the provinces of Chaharmahal and Bakhtiari.

Keywords: Knowledge, Attitude, Risk Factors, Cervical Cancer, Pap Smear, Health Workers

1. Background

Cervical cancer is the third most commonly diagnosed cancer and the fourth leading cause of cancer death in women worldwide (1) and it causes heavy economic and social load on society. Cervical cancer is a significant public health problem which is rapidly increasing in low-income countries (2). Across the world, new cases and mortality of cervical cancer will be increased to 720415 and 394905 by 2025, respectively (3). The highest mortality rate of cervical cancer is in Southern Africa Sahra, Latin America, and Southern Asia. Totally, the mortality rate of this cancer in the developing countries is fourfold (80% - 85%) in comparison with industrial countries. Mortality from cervical can-

cer is considered as 50% of all women mortalities across the world (4).

In Iran, compared to other developing countries, cervical cancer is not among the top ten cases of cancer between women. According to the Cancer Registration System, the number of new cases of cervical cancer was 563 in 2009 and the age-standardized incidence rate of this malignancy was 2.17/100.000 in the same year. In Isfahan, the age-standardized incidence rate of cervical cancer was 2.47/100.000 in 2008 and the mortality rate was 1.7. In Chaharmahal and Bakhtiari, the age-standardized incidence rate was 0.26/100.000 (5).

Risk factors for cervical cancer include early sexual activity, multiple sex partners, smoking, human papillo-

mavirus (HPV) infection history, weak immune system, numerous pregnancies, sex disease history, being exposed to Diethylstilbestrol, low fruit consumption and poor hygiene condition (6-8).

Pap smear test is the best way to diagnosis and screening this cancer and is the most effective and cheapest used test of cervical cancer. Search for finding the pre-cancer changes in patients has been successful in reducing the incidence of cervical cancer and mortality up to 79% and 70%, respectively (9). Lack of regular screening is related to 2 to 6 fold increase in cervical cancer occurrence (10, 11). Primary strategies for preventing cervical cancer include reduce the risk factors, identify the vulnerable individuals or who are in initial disease stages and early diagnosis through cytological concentrated screening. Adequate awareness about the significance of Pap smear and cervical cancer and also have a positive attitude toward treatment of cancer in the initial stages allow the individuals to have correct performance about prevention and teaching it to the others.

According to a Brazilian study, among the women referring to health care units, 40.4% had enough knowledge, 28% had a good attitude, and 67.6% had a good performance about Pap smear testing (11).

In the other study among 1000 women aged between 15 to 60 years old in Bojnourd, 14.6% had very weak and 59.4% had weak knowledge toward the Pap smear test while most of the participant (87.3%) had a positive attitude toward the Pap smear test (12).

A study with the title 'women's knowledge and practice about Pap smear test and it's barriers in Jahrom city' was performed on 384 women aged 15 to 65 years in 2010. Based on the result only 12.4% of the participant had good knowledge about Pap smear test, 64.8% and 22.8% of them had moderate and poor knowledge in this regard, respectively (13).

According to another research which has performed on 1000 medical and paramedical female students and staffs in hospitals of Tabriz city, 10.3% of female had high knowledge, 52.9% had moderate knowledge, and 34.9% had low knowledge about cervical cancer (14).

Large body of research which was performed on cervical cancer knowledge in Iran, have been conducted on small statistical communities but the other parameters such as importance of cervical cancer study (as one of the most important indicators of health measurements in the target population of women), the importance of investigating the relationship between the risk factors of cervical cancer, and the knowledge and attitude in the field of Pap smear have less been considered.

2. Objectives

In the present study, unlike previous studies, the relationship between risk factors for cervical cancer and the knowledge and attitude of health staff about Pap smear was performed.

3. Methods

The present study is a descriptive-analytical and cross-sectional study; the statistical society includes all women employed in Isfahan and Chaharmahal and Bakhtiari Healthcare Centers. There were 230 participants in Chaharmahal and Bakhtiari. The sample size was calculated in 95% confidence level, 20% estimation error limit, and 0.4% incidence. In Isfahan, the sample volume was 1900 in error limit 0.018 and incidence 0.2. The sample size of each province was divided with regarding a portion of rural and urban female staff aged 20 to 65 years old. Then, the number of urban and rural clusters required for the study was determined based on rural and urban sample size and 20 individuals per cluster were studied.

Data gathering tool was a researcher-made questionnaire, which included three parts. First part included the demographic data such as age, marriage status, number of children, educational level, employment type, and job. The second part included 13 questions about knowledge classified that is divided in to two clusters: the first cluster was related to Pap smear test and its time (5 questions) and the second cluster was related to cervical cancer, signs, and risk factors (8 questions). Questions were as yes-no or multiple choices and each correct answer was given score 1 and non-answer or incorrect answer did not give any score. The third part contains 9 questions about attitude toward Pap smear based on the 5 option Likert scale-based attitude questions (completely agree, agree, neutral, disagree, and completely disagree) and for each question scores 1 to 5 were allocated. Attitude questions were about the cost-effectiveness of Pap smear test, the easiness of Pap smear in comparison to cervical cancer treatment, effectiveness of Pap smear test on early diagnosis of cervical cancer and the like. After the data gathering, 100 scores were computed in "knowledge and attitude" and scores which are ranged between 0 and 33.3 was considered as "low knowledge" and "negative attitude", 33.4 to 66.7 as "medium knowledge" and "neutral attitude", and 66.8 to 100 as "good knowledge" and "positive attitude". In the term of feasibility and stability of questionnaire, content and nominal validity were confirmed by experts and through a preliminary study and completion of the questionnaire, the stability of questions

was evaluated. Cronbach's alpha was 85 and 82% about knowledge and attitude questions, respectively.

Redundancy distribution tables and numerical descriptive indices including mean and standard deviation were used in order to describe the collected data and ratio and 95% confidence limit were used in order to obtain the qualitative findings. Variance analysis and chi-square were used for comparing the score of knowledge and attitude among the groups and comparing the percent among the various groups. Also, in order to determine the relationship between the mentioned depended and independent variables, linear regression was used. Data were analyzed by using software SPSS 23 at significance level 5%.

4. Results

The age mean ± standard deviation (SD) of subjects in Isfahan province was 34.6 ± 7.03 and 79% of participators were married. In Chahrmahal and Bakhtiari, age mean ± SD of the studied subjects was 35.2 ± 6.8 and 81% of participants were married (Table 1).

Results of this investigation showed that mean ± SD of subjects in term of Pap smear knowledge was 86.14 ± 8.8 where 14.6% had medium and 85.6% had good knowledge. In Chaharmahal and Bakhtiari, mean ± SD of subjects was 76.6 ± 16.5 that 32.6% had medium knowledge and 67.4% had good knowledge.

A significant statistical relationship was found between knowledge of Pap smear score between two provinces (P < 0.001). Awareness of Pap smear score in Isfahan province was higher than Chaharmahal and Bakhtiari. Then, Isfahan staff had more awareness than Chaharmahal and Bakhtiari staff.

Analysis by ANOVA test showed that there is a significant statistical relationship between knowledge of Pap smear score, variables marriage at a very young age, and smoking (P < 0.001). Maximum knowledge of Pap smear score was related to the risk of marriage at a very young age. Results in Chaharmahal and Bakhtiari showed that there is a significant relationship between knowledge of Pap smear score and marriage at a very young age (P < 0.005) and cervical ulcer (P < 0.001). Maximum knowledge of Pap smear score was related to the risk factor of marriage at a very young age (Table 2).

In term of mean ± SD of general awareness of cervical cancer in Isfahan, the mean score of subjects was 83.1 ± 14.2 of which 0.6% had low, 10.9% had medium, and 88.5% had good knowledge. In Chaharmahal and Bakhtiari, the mean ± SD of general knowledge of cervical cancer in the subjects was 79.2 ± 16.9 of which 1.3%, 16.5%, and 82.2% had low,

Table 1. Distribution of Some Demographic Characteristics of Studied Women[a]

Background Variables	Isfahan Province	Chaharmahal and Bakhtiari Province
Age category		
20 - 29	500 (26.3)	55 (24)
30 - 39	912 (48)	109 (47.5)
40 - 49	442 (23.3)	66 (28.5)
50 - 59	44 (3.2)	0
60 - 69	2 (0.1)	0
Mean ± SD	34.7 ± 63.4	35.17 ± 6.8
Marital status		
Single	358 (18.8)	38 (16.52)
Married	1507 (79.3)	187 (81.3)
Divorced	21 (1.1)	1 (0.44)
Widow	14 (0.7)	4 (1.74)
Education level		
Elementary	75 (4)	0
Guidance school	196 (10.4)	0
High school	47 (2.5)	14 (6.1)
Diploma	390 (20.7)	14 (6.1)
Higher	1176 (62.4)	202 (87.8)
Job		
Health care	619 (32.6)	13 (5.7)
Provider	437 (23)	30 (13)
Associate's degree	380 (20)	130 (56.5)
Expert	183 (9.6)	19 (8.3)
Doctor	210 (11.1)	24 (10.4)
Midwife	18 (0.9)	14 (6.1)
Others	53 (2.8)	0
Type of employment		
Official	1009 (53.1)	105 (45.4)
Contract	453 (23.8)	41 (17.9)
Plan	179 (9.4)	27 (11.8)
Corporate contract	20 (1.1)	32 (14)
Family Doctor Contract	153 (8.1)	19 (8.3)
Others	86 (4.5)	6 (2.6)
Family history of cancer		
Yes	83 (4.4)	13 (5.7)
No	1817 (95.6)	217 (94.3)

Abbreviation: SD, standard deviation.
[a]Values are expressed as No. (%).

Table 2. Comparison of the Mean Score of Knowledge and Attitude Toward Pap Smear in Term of Risk Factors

Independent Variable	Awareness				Attitude			
	Isfahan Province		Chaharmahal and Bakhtiari Province		Isfahan Province		Chaharmahal and Bakhtiari Province	
	Mean ± SD	P Value	Mean ± SD	P Value	Mean ± SD	P Value	Mean ± SD	P Value
Marriage at an early age	87.8 ± 14.2	0.001	78.6 ± 15.5	0.005	72.7 ± 14.2	0.001	47.4 ± 10.9	0.119
Genital infections	87.1 ± 14.6	0.284	77.3 ± 15.9	0.099	72 ± 14.4	0.062	47.6 ± 10.5	0.011
Cervical ulcer	86.9 ± 14.8	0.712	77.7 ± 15.8	0.001	72/3 ± 14.4	0.001	48.1 ± 10.5	0.739
Increase in the number of pregnancies	87.5 ± 14.4	0.081	76.7 ± 16.4	0.919	72.5 ± 14.9	0.017	46.7 ± 10.4	0.002
Smoking	87.8 ± 14.2	0.001	77.8 ± 15.9	0. 088	72.9 ± 14.3	0.001	47.8 ± 10.9	0.437

Abbreviation: SD, standard deviation.

medium and good knowledge, respectively.

Table 3 shows the mean knowledge of cervical cancer score in the term of some individual characteristics in Isfahan and Chaharmahal and Bakhtiari.

Statistical test on research findings in Isfahan province showed that there is a significant statistical relationship between the knowledge of cervical cancer and educational level (P < 0.003) and job (P < 0.002). Also, there is not any significant relationship between the knowledge of cervical cancer score and the number of children, age group and family history (P > 0.05).

In Chaharmahal and Bakhtiari, there was a significant statistical relationship between the knowledge of cervical cancer and age group (P < 0.001), but there was not any significant statistical relationship between the knowledge of cervical cancer score and job group, educational level, number of children and family history (P > 0.05) (Table 3).

Results of this investigation showed that mean ± SD score of subjects in attitude toward Pap smear in Isfahan was 71.5 ± 14.7, of which 3% had negative attitude, 39.15% had neutral attitude, and 60.6% had good attitude. In Chaharmahal and Bakhtiari, mean ± SD of subjects was obtained as 48 ± 10. Of which 6% had negative, 91.7% had neutral, and 2.3% had good attitude.

Mean score of attitude toward Pop smear had significant relationship between two provinces (P < 0.001). Mean score of attitude toward Pop smear was higher in Isfahan staff than in Chaharmahal and Bakhtiari, then Isfahan staff had higher attitude.

The mean scores of attitude in the field of Pap smear between the two provinces were statistically significant (P < 0.001) and in Isfahan staff, it was more than Chaharmahal and Bakhtiari province. Therefore, employees of Isfahan province had more attitudes.

Also, results of Isfahan province showed that there is a significant statistical relationship between attitude toward Pap smear and educational level (P < 0.008), job group (P < 0.014), age group (P < 0.018), and family history (P < 0.036). There was not any significant statistical re-

lationship between mean attitude to Pap smear score and number of children (P > 0.05).

Also, results in Chaharmahal and Bakhtiari showed that there is a significant relationship between mean attitude to Pap smear score and educational level (P < 0.001), age group (P < 0.03) and number of children (P < 0.017) (Table 4).

Results of linear regression test showed that there is a significant statistical relationship between knowledge of Pap smear in Isfahan and marriage at a very young age (P < 0.001) and smoking (P < 0.005), so when marriage at a very young age increases, knowledge of Pap smear also increases and when smoking increases, knowledge of Pap smear increases too. Also, in Chaharmahal and Bakhtiari, there is a significant relationship between knowledge of Pap smear score and cervical ulcer (P < 0.03), so that an increase the cervical ulcer increases the awareness of Pap smear. In Isfahan, there is a significant relationship between attitude toward Pop smear and marriage at a very young age (P < 0.001), cervical ulcer (P < 0.002), and smoking (P < 0.001); so that as marriage at a very young age, cervical ulcer, and smoking increase, attitude toward Pap smear significantly increases. Also, in Chaharmahal and Bakhtiari, there is a significant relationship between attitude toward Pap smear and genital system infections (P < 0.012) and increase in pregnancies (P < 0.002), so that as genital system infections and pregnancies increase, attitude toward Pap smear reduces (Tables 5 and 6).

Results of linear regression showed that there is a significant relationship between knowledge of Pap smear between two provinces (P < 0.001).

There is a significant relationship between attitude toward Pap smear between two provinces (P < 0.001).

According to the results, the most important reasons why people do not have to perform a Pap smear test in Isfahan is that there is no problem in the genital system, and there is no tendency for it and there is no care of oneself, respectively. In Chaharmahal and Bakhtiari, the most important reasons are no problem in genital system, no aware-

Table 3. The Mean Score of Cervical Cancer Knowledge in Term of Some Individual Characteristics in the Studied Staff in Isfahan and Chaharmahal and Bakhtiari Province

Individual Variables	Mean Score of General Awareness of Isfahan Province	P Value	Mean Score of General Awareness of Chaharmahal and Bakhtiari Province	P Value
Age group		0.23		0.001
20 - 29	82.13 ± 13.6		71.6 ± 20.6	
30 - 39	83.8 ± 14.4		83.4 ± 14.5	
40 - 49	82.9 ± 14.6		84.01 ± 14.6	
50 - 59	80.3 ± 15.5		0	
60 - 69	76.9 ± 10.9		0	
Total	83.1 ± 14.2		80.7 ± 16.9	
Job		0.002		0.121
Health care	82.6 ± 15.3		79.3 ± 15.2	
provider	83 ± 13.9		74.6 ± 18.6	
Associate's	81.6 ± 12.4		79.3 ± 17.8	
Expert	85.7 ± 10.4		85 ± 11.4	
Doctor	86.2 ± 11.9		83.9 ± 9.9	
Midwife	78.5 ± 17.7		73.6 ± 20.2	
Others	80.2 ± 15.9		0	
Total	83.1 ± 14.2		79.3 ± 16.9	
Level of education		0.003		0.568
Elementary	76.92 ± 19.04		0	
Guidance school	82.12 ± 14.9		0	
High school	79.4 ± 15.7		75.8 ± 19.5	
Diploma	83.5 ± 13.5		79.4 ± 16.1	
Higher	83.12 ± 14.12		79.7 ± 16.9	
Total	83.14 ± 12.12		79.3 ± 16.97	
Number of children		0.617		0.396
0	82.7 ± 13.7		77.1 ± 17.5	
1 - 2	83.3 ± 14.3		80.03 ± 16.9	
3 - 4	82.1 ± 15.5		82.1 ± 16.7	
≥ 5	84.6 ± 14.2		0	
Total	83.1 ± 14.2		7 9.5 ± 17.1	
Family history		0.523		0.075
Yes	84.1 ± 14.3		87.6 ± 15.9	
No	83 ± 14.1		78 ± 16.9	
Total	83.5 ± 15		82.5 ± 15	

ness of it and no request from doctor or midwife.

5. Discussion

The findings indicated that the knowledge level of women participating in the research was good. In Isfahan and Chaharmahal and Bakhtiari province, 88.5% and 82.2% of participants had a good knowledge level toward risk factors, signs and symptoms, and methods of prevention of cervical cancer, respectively. The greatest weakness of women's knowledge in this study was in the domain of proper time of cervical cancer screening.

Regarding the attitude and based on the result in Isfahan and Chaharmahal and Bakhtiari province 60.6% and

Table 4. Mean Score Attitude Toward the Prevention of Cervical Cancer in Term of Some Individual Characteristics of Case Study in Isfahan and Chaharmahal and Bakhtiari

Individual Variables	Mean Score of Isfahan Province	P Value	Mean Score of Chaharmahal Bakhtiari Province	P Value
Age group		0.018		0.03
20 - 29	73.3 ± 14.2		51.5 ± 9.6	
30 - 39	71 ± 14.5		46.6 ± 10.1	
40 - 49	70.9 ± 15.2		46.7 ± 11.6	
50 - 59	74.3 ± 16.1		0	
60 - 69	84.7 ± 10		0	
Total	71.2 ± 14.6		47.8 ± 10.6	
Job		0.014		0.85
Healthcare	70.9 ± 15.3		51.1 ± 13.3	
Provider	71.5 ± 14.3		48.1 ± 9.8	
Associate's	71.1 ± 14.4		47 ± 11	
Expert	71.3 ± 14.1		48.5 ± 11	
Doctor	75.2 ± 13.4		49.8 ± 9.9	
Midwife	68.9 ± 13.7		47.8 ± 7.7	
Others	69.8 ± 17.8		0	
Total	71.5 ± 14.7		48.1 ± 10.6	
Level of education		0.01		0.001
Elementary	69.2 ± 15.1		0	
Guidance school	68.3 ± 14.6		0	
High school	71.1 ± 14.2		50 ± 10.2	
Diploma	72.4 ± 15.8		48.2 ± 11.3	
Higher	71.9 ± 14.3		47.9 ± 10.7	
Total	71.5 ± 14.7		48.1 ± 10.6	
Number of children		0.06		0.017
0	72.4 ± 14.1		51.6 ± 10.3	
1 - 2	71.1 ± 14.9		46.8 ± 10.5	
3 - 4	71.1 ± 14.7		47.8 ± 11.2	
≥ 5	65.9 ± 17.1		0	
Total	71.5 ± 14.7		48.1 ± 10.7	
Family history		0.036		0.227
Yes	68.2 ± 14.7		44.7 ± 9.9	
No	71.6 ± 14.7		48.3 ± 10.7	
Total	69.5 ± 14		46 ± 10	

2.3% of participants had a positive attitude toward Pap smear, respectively.

Based on the results of the present study gained scores of knowledge about Pap smears with subjects in Isfahan and Chaharmahal and Bakhtiari province was 86.8 and 76.6, respectively. Therefore their knowledge was evaluated as "good" and it was not consistent with the results of studies conducted in Korea and Brazil (11, 15). The score obtained from the knowledge level in this study is greater than that obtained in Korea and Brazil.

The results of this study indicated that the subjects' knowledge about cervical cancer is in good condition. In Isfahan and Chaharmahal and Bakhtiari province, 88.5% and 82.2% of them had good knowledge. It did not consistent with the results of Asgarlou et al.'s study in Tabriz (14). Geremew et al. in a study in 2018 showed that about 30.3%

Table 5. Results of Multiple Linear Regression in Studying the Relationship Between the Mean Score of Knowledge About Pap Smear with Risk Factors

Independent Variable	Awareness[a]					
	Isfahan Province			Chaharmahal and Bakhtiari Province		
	The Regression Coefficient	Confidence Level	P Value	The Regression Coefficient	Confidence Level	P Value
Marriage at an early age	3.9	2.03 - 5.8	0.001	5	-0.42 - 10.5	0.07
Genital infections	0.73	-1.5 - 2.9	0.50	2.7	-5.5 - 10.9	0.5
Cervical ulcer	-1.2	-3.8 - 1.5	0.4	9.5	0.93 - 18.1	0.03
Increase in the number of pregnancies	0.13	-1.4 - 1.6	0.9	-3.4	-8.4 - 1.7	0.2
Smoking	5.2	0.74 - 4.2	0.01	1.1	-4.8 - 7.01	0.7

[a] Dependent variable: mean score of knowledge about Pap smear.

Table 6. Results of Multiple Linear Regression in Studying the Relationship Between the Mean Score Attitude Toward Pap Smear with Risk Factors

Independent Variable	Attitude[a]					
	Isfahan Province			Chaharmahal and Bakhtiari Province		
	The Regression Coefficient	Confidence Level	P Value	The Regression Coefficient	Confidence Level	P Value
Marriage at an early age	3.1	1.4 - 4.3	0.001	-1.2	-4.7 - 0.001	0.5
Genital infections	0.40	-2.1 - 2.01	0.97	-6.8	-4 - 1.5	0.01
Cervical ulcer	3.9	1.5 - 6.4	0.002	3.1	-2.4 - 8.5	0.3
Increase in the number of pregnancies	0.014	-1.4 - 1.4	0.98	-5.2	-8.4 - 1.9	0.002
Smoking	2.7	1.1 - 4.3	0.001	2.5	-1.4 - 6.3	0.2

[a] Dependent variable: mean score attitude toward Pap smear.

of people had knowledge about cervical cancer that did not consistent with the present study (16).

There was a statistically significant relationship between knowledge of cervical cancer and educational level in Isfahan province and that was consistent with Abedian and Dormohamadi's study (17) in Mashhad and Asgarlou et al.'s study in Tabriz (14). There was a significant relationship between educational level and knowledge about cervical cancer in their study, which is consistent with this study.

According to the results, the highest level of cervical cancer awareness is related to the level of education, which necessitates the promotion of education and specialized knowledge in people with lower educational level.

There was no significant relationship between the knowledge of cervical cancer in Isfahan province and the age of the subjects in this study, which is consistent with the study of Zareai in Jahrom (13). However, in Chaharmahal and Bakhtiari province, there was a significant statistical relationship between cervical cancer awareness and age group, which was consistent with Abediani and Dormohamadi's study in Mashhad (17).

Based on the findings of this study, health care providers had less information than doctors and midwives so there was a significant relationship between cervical cancer awareness and job in Isfahan province. In the study of Esmailpour et al. nurses had less information than midwives so there was a significant relationship between the levels of knowledge and job (18). That was consistent with Asgarlou et al.'s study in Tabriz (14). Health care providers and physicians had less information than doctors and midwives.

In the present study, most people had a positive attitude toward cervical cancer and Pap smear, which was probably resulted from their good awareness about this.

Results of the study showed that 60.6% had a positive attitude toward Pap smear test in Isfahan, this index was 80.5% in Asgarlou et al.'s study in Tabriz; it was inconsistent with the results of the present study (14).

There was a meaningful statistical relationship between the attitude toward Pap smear and educational level in the two provinces (P = 0.001), which is not consistent with the study of Abediani and Dormohamadi's in Mashhad (17). Based on the results of the present study, there was a significant correlation between the attitude toward Pap smear and age in two provinces (P = 0.018), which was con-

sistent with the study of Abediani and Dormohamadi's in Mashhad (17).

In the present study, there was a significant statistical relationship between awareness of cervical cancer and attitude toward Pap smear (P = 0.001), confirming that good knowledge leads to a positive attitude. In a study by Singh et al., despite the fact that nurses had a high awareness of screening for cervical cancer, they had a poor attitude (19).

One of the strengths of this study was the ability to generalize results to society due to the high sample size and proper sampling method. Among the limitations of this study, cross-sectional nature of the study that should be done longitudinally, as well as different periods of data collection can be said, so that data of Isfahan province was collected in 2013 and the data of Chaharmahal and Bakhtiari province were collected in 2017.

Given the fact that cancer is a manageable and preventable disease, the importance of trying to raise knowledge about it is irrefutable due to its widespread implications. In this study, in general, knowledge of risk factors, warning signs of cervical cancer, and knowledge of good diagnosis were evaluated as good. However, it was evaluated as moderate during Pap smear test. The variable that had the most impact on knowledge was the level of education and occupation. According to the results, the highest knowledge score was related to higher education level, the highest score of knowledge was related to the career categories of midwife and physician given that they are more contact with women's genital diseases than other jobs, implying the need to improve education and specialized information in the subjects with lower educational level. Therefore, it is recommended that all employees provide periodic and in-service training programs for cervical cancer and Pap smear.

Acknowledgments

Footnotes

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