



Knowledge, attitude, practice, and self-efficacy of women regarding cervical cancer screening

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Objective

Iran has a low incidence of cervical cancer (CC). The country is introducing an organized screening system, including human papillomavirus screening. Studies show a high dropout rate among eligible women in continuing testing.

Methods

This descriptive-analytic study was part of the first phase of a clinical trial conducted on a random sample of 400 women aged 18–49 in Andimeshk City, Khuzestan Province, in 2020. The data collection tool consisted of a man-made questionnaire that included domains of demographic characteristics, knowledge, attitude, practice, and self-efficacy in the Pap smear test. The data were analyzed with Stata-16 using linear and logistic regression models.

Results

The mean knowledge, attitude, and self-efficacy scores were 6.80 ± 2.33 , 34.99 ± 4.32 , and 28.67 ± 7.34 , respectively. In the multiple models, every unit increase in the knowledge or attitude scores raised the mean self-efficacy score by 1.04 and 0.48, respectively ($P < 0.001$). Every unit increase in the knowledge and self-efficacy scores increased the chance of performing Pap smear 1.61 and 1.41 times, respectively ($P < 0.001$).

Conclusion

Given the association of women's knowledge and self-efficacy with practice in performing the Pap smear, it seems that an effective program promoting women's health behavior regarding CC screening would include applied education to raise community awareness and improve women's attitudes, self-efficacy, and practice.

Keywords: Knowledge; Attitude; Self efficacy; Papanicolaou test

Introduction

Cervical cancer (CC) is the 4th most common cancer among women globally. In 2018 alone, 570,000 new cases occurred, of which 7.5% led to cancer-related deaths. Annually, over 311,000 deaths due to CC occur globally, 85% of which take place in less developed communities [1]. In terms of health priority, Iran's CC epidemiology, both through the pathology-based cancer registry (ASR 2.2 per 100,000) [2] and population-based registries (6 per 100,000 in 2012) [2,3], demonstrates a low incidence but a high mortality rate (54%) [2]. According to a World Health Organization (WHO) report, in 2018 breast cancer was the leading cause of cancer in Asia and the Middle Eastern region, followed by CC [4]. Based on the literature, the incidence of this type of cancer is 4.5 per

100,000 in Iran [5]. Every year, 1 of 123 women becomes afflicted with CC, and 9 of every 100,000 women die of it [6].

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According to estimates by the WHO, by 2030, CC will cause 474,000 deaths among women annually, and 95% of these deaths will occur in low- and middle-income countries [7].

CC screening (the Pap smear test) detects precancerous lesions at various stages to enable treatment. CC also develops relatively early and is one of the 3 most common cancers in most countries among women under 45 years, mainly from reproductive age [8]. Access to these preventive services is limited in developing countries, and CC is often not detected until its late stages [9]. Based on the literature, 60% of CC-related deaths are preventable through Pap smear testing [10].

The current status of CC screening in Iran. By 2016, the Islamic Republic of Iran had implemented an opportunistic testing strategy (excluding cytology and testing) for CC screening (CCS) every 3 to 5 years for all women between 30 and 65 years of age, integrated into primary health care services [11]. At the end of 2016, Iran launched a specific health intervention package to combat non-communicable disease [12]. According to the updated national CCS protocol, all women between the ages of 30 and 59 are eligible for early diagnosis checkups, including history-taking and a general examination/observation every 5 years. General tests will be applied to women after 50 years, but the tests will be voluntary [13,14].

All women who have had at least 1 instance of sexual intercourse are at risk of CC. This disease progresses slowly, and its early detection through Pap smear can prevent severe complications [15]. Nevertheless, past studies have indicated that in Iran, women do not take the Pap smear very seriously [16,17]. According to the literature, knowledge, attitude, and self-efficacy possibly affect women's practice toward Pap smear testing, and human behavior is influenced by various personal, cultural, and social factors. In other words, previous studies have shown that improvements in educational status not only significantly increase the knowledge of Pap smear test, but are also related to women's attitude and self-efficacy regarding the Pap smear test [18,19]. In addition, with strengthened positive attitude and increasing self-efficacy, the intention to perform Pap smear tests in women increases [20,21]. Thus, this study was conducted to determine the status of knowledge, attitude, practice, and self-efficacy and the probable mutual relationship between these factors in the women attending Andimeshk City's Comprehensive Health Centers and Health Bases in 2019.

Materials and methods

1. Study design and inclusion criteria

This descriptive-analytic study was conducted to determine the status of knowledge, attitude, practice, and self-efficacy related to Pap smear in Iranian women. It was part of the first phase of the clinical trial entitled "Design, Implementation, and Evaluation of the Impact of the Educational Program on Cervical Cancer Screening (Pap smears)." The study setting included the Comprehensive Health Centers and Health Bases in Andimeshk City, Khuzestan Province. The study was conducted in 2019, and sampling continued for the 2 weeks of Feb 4–19, 2020.

2. Participants

The participants of this study were 18–49-year-old women attending Comprehensive Health Centers and Health Bases under the coverage of those centers in Andimeshk City. Those who met the inclusion criteria were selected through stratified random sampling. First, a list of Andimeshk health centers and bases and the populations covered by them was obtained from the Human Resources Unit of the city's health network. There were 5 comprehensive health centers and 11 health bases. For the purposes of sampling, each center or base was considered as a stratum and the sample size was determined from each stratum by the proportion of the female population covered by that stratum. To randomize the samples, they were selected from those receiving health services from all health workers employed at the health centers. The health workers were trained to complete the questionnaire and obtain their consent. They were then told to perform sampling for 2 continuous weeks and to select the second person they visited after 9:30 am. This was done to collect normal samples, as those who visit health centers immediately after opening hours are usually people who are sensitive to their health, while those who visit in the late hours have socio-economic difficulties.

The inclusion criteria were as follows: married women aged 18–49 years (married at least once, regardless of their current marital status), Andimeshk residents, a basic level of literacy, having given written informed consent to participate in the study. The exclusion criteria were CC or other sexually transmitted diseases and unwillingness to participate in the study.

3. Variables

The variables collected in this study were classified into 2 groups: the main variables and the modifiers (baseline characteristics). There were 4 main variables, namely, knowledge, attitude, self-efficacy, and practice regarding performing the Pap smear, in this study.

In terms of the operational definition of these 4 key components of our study, knowledge refers to participants' knowledge and understanding of CC screening, which will be measured by answering scale questions related to this concept. Attitude includes women's beliefs about CC screening, which will be measured by answering scale questions related to this concept. Self-efficacy includes the participant's understanding and confidence in their ability to perform CC screening, which will be measured by answering scale questions related to this concept. Finally, practice with respect to the intention of the participant to participate in CC screening is to be measured based on the answers to the scale questions related to this concept. The modifiers included educational status, age, occupation, current marital status, age at first sexual intercourse, economic status, husband's occupation, and history of performing the Pap smear test.

4. Data collection tools

The assessment tool was a man-made questionnaire for Pap smear screening comprising 5 sections. The first section consisted of demographic questions (Table 1). The knowledge domain had 13 questions with 3-item responses (correct, incorrect, don't know), such that correct answers received a score of 1, incorrect and don't know a score of 0. The attitude domain contained 12 questions scored on a 5-point Likert-type scale (completely uncertain, somewhat uncertain, no idea, somewhat certain, and completely certain). In the attitude and self-efficacy domains, the questions garnered scores between 1 and 5 depending on the responses. The practice domain comprised 4 yes/no questions scored 1 or 0 respectively.

The self-efficacy domain of this questionnaire is based on the questionnaire used by Fernández et al. [22] among Mexican-American women in 2009 (Supplementary Data 1), which was translated from English into Persian and its validity and reliability examined. To this end, we obtained permission from its creators, and after obtaining the guideline, forward-backward translation was performed. Two experts from the health domain separately translated the scales into

Persian. After an accurate review and cultural adaptation, minor modifications were made to the questionnaire. The 2 translated versions were then compared with each other, and the translated items were adjusted to match their English counterparts. The final version was then back-translated into English to compare and adapt it to the original version.

Eventually, the completed questionnaire (with 5 domains: demographic, knowledge, attitude, practice, and self-efficacy) was quantitatively and qualitatively examined for content validity. The scales were presented to 12 relevant specialists in CC screening, and their final opinions were obtained through an online expert panel meeting. Upon collecting their opinions, necessary changes were applied. We used a content validity ratio (CVR) and index to quantitatively examine content validity. To calculate the CVR we asked the experts to choose one of the following options with regard to the items of each scale: necessary, not necessary but useful, or not necessary. Cronbach's alpha coefficient was used

Table 1. Baseline characteristics of the subjects under study

Variables		Value
Age (mean±SD)		32.97±5.98
Marital status	Married	380 (95.0)
	Divorced	20 (5.0)
Educational status	Primary school	37 (9.3)
	Middle school	111 (27.7)
	High school	132 (33.0)
	Academic	120 (30.0)
Occupation	Homemaker	358 (89.5)
	Employee	40 (10.0)
	Freelance	2 (0.5.0)
Husband's occupation	Employee	116 (29.0)
	Freelance	269 (67.2)
	Unemployed	15 (3.8)
Economic status	Expenditure less than income	132 (33.0)
	Expenditure exceeding income	119 (29.7)
	Expenditure equal to income	149 (37.3)
History of performing the Pap smear	Yes	229 (58.6)
	No	162 (41.4)

Values are presented as number (%).
SD, standard deviation.

to evaluate internal consistency, and had the values of 0.81, 0.79, 0.85, and 0.91 for the knowledge, attitude, self-efficacy, and practice domains, respectively.

5. Sample size and data collection and completion

After the women attending Andimeshk City's health centers were briefed on the study topic and goals, and considering the inclusion and exclusion criteria, they were invited to participate in the study. Those inclined to take part were requested to give written informed consent. Given the findings of Ghaoomi et al. [23] and using the following formula, $\alpha=0.05$, $\beta=0.2$, and $d=0.05$, a target sample size of 307 was calculated. Taking into account the possibility of 10% sample loss, we adopted an estimated sample size of 337. Eventu-

ally, to increase the accuracy of the study, a final sample size of 400 was considered.

$$n = \frac{(Z_{1-\frac{\alpha}{2}})^2 (P(1 - P))}{d^2}$$

6. Statistical analysis

STATA-16 software was used to analyze the collected data. Descriptive statistical measures such as mean, standard deviation, and relative frequency percentage were used. Simple and multiple linear regression models were applied to examine the factors influencing knowledge, attitude, and self-efficacy, while simple and multiple logistic regression models were applied to examine the factors influencing practice. For

Table 2. The association between baseline characteristics and knowledge score regarding the Pap smear test in women attending Andimeshk's comprehensive health centers in 2019

Baseline characteristics		Crude ^{a)} model		Adjusted ^{b)} model	
		B ^{c)} (95% CI)	P-value	B ^{c)} (95% CI)	P-value
Age	Reference	5.02 (3.75, 6.29)	<0.001	Intercept ^{d)}	
	Increase per unit	0.054 (0.015, 0.091)	0.006	-0.007 (-0.031, 0.017)	0.556
Age at first sexual intercourse	Reference	9.09 (7.97, 10.20)	<0.001	Intercept ^{d)}	
	Increase per unit	-0.04 (-0.099, 0.001)	0.06	-0.01 (-0.047, 0.027)	0.52
History of performing the Pap smear	No (reference)	5.61 (5.28, 5.94)	<0.001	Intercept ^{d)}	
	Yes	2.03 (1.60, 2.46)	<0.001	2.22 (1.84, 2.60)	<0.001
Being married	Married (reference)	6.57 (6.36, 6.79)	<0.001	Intercept ^{d)}	
	Divorced	4.42 (3.46, 5.38)	<0.001	5.64 (5.01, 6.27)	<0.001
Educational status	Primary school (reference)	3.02 (2.39, 3.66)	<0.001	Intercept ^{d)}	
	Middle school	3.74 (3.01, 4.47)	<0.001	3.52 (2.70, 4.33)	<0.001
	High school	4.73 (4.01, 5.44)	<0.001	4.67 (4.02, 5.32)	<0.001
Husband's occupation	Academic	3.89 (3.17, 4.62)	<0.001	3.11 (2.50, 3.72)	<0.001
	Unemployed (reference)	4 (2.87, 5.12)	<0.001	Intercept ^{d)}	
	Freelance	2.55 (1.40, 3.73)	<0.001	3.48 (2.56, 4.40)	<0.001
Economic status	Employee	3.72 (2.53, 4.91)	<0.001	2.52 (1.52, 3.52)	<0.001
	Expenditure exceeding income (reference)	5.93 (5.52, 6.34)	<0.001	Intercept ^{d)}	
	Expenditure equal to income	1.33 (0.78, 1.88)	<0.001	0.78 (0.31, 1.25)	0.001
	Expenditure less than income	1.11 (0.54, 1.67)	<0.001	1.76 (1.31, 2.22)	<0.001

CI, confidence interval.

^{a)}Simple linear regression; ^{b)}Multiple linear regression; ^{c)}Regression coefficient; ^{d)}When all variables in the adjusted model were equal to zero (B=4.21; 95% CI, 3.26, 5.17; and P<0.001).

the sake of the interpretability of the intercepts (α), continuous variables such as age were total-centered in the model. Qualitative variables were entered into the regression models as 2-dimensional or multi-dimensional variables to make the regression coefficients positive and interpretable. Those variables significant at a *P*-value of 0.05 in the simple regression models were entered into the multiple regression models. The level of error was considered to be 0.05 for all statistical analyses.

7. Limitations

Like any other study, this study had certain strengths and

weaknesses. The relatively low response rate can be explained by the fact that data collection coincided with the coronavirus disease 2019 pandemic in Iran. Accordingly, we tried to complete the questionnaires over the phone.

Results

In this study, 400 women meeting the inclusion criteria with a mean age of 32.96 ± 5.99 years were studied. In terms of background characteristics, most participants were married, had high school education, were homemakers, had moder-

Table 3. The association between baseline characteristics and attitude scores regarding the Pap smear test in women attending An-dimeshk's comprehensive health centers in 2019

Baseline characteristics		Crude ^{a)} model		Adjusted ^{b)} model	
		B ^{c)} (95% CI)	P-value	B ^{c)} (95% CI)	P-value
Age	Reference	41.26 (38.96, 43.55)	<0.001	Intercept ^{d)}	
	Increase per unit	-0.19 (-0.25, -0.12)	<0.001	-0.23 (-0.30, -0.167)	<0.001
Age at first sexual intercourse	Reference	42.14 (40.07, 44.20)	<0.001	Intercept ^{d)}	
	Increase per unit	-0.072 (-0.16, 0.02)	0.069	-0.04 (-0.148, 0.05)	0.5
History of performing the Pap smear	No (reference)	34.82 (34.14, 35.49)	<0.001	Intercept ^{d)}	
	Yes	0.25 (-0.65, 1.15)	0.585	0.83 (-0.57, 2.25)	0.225
Being married	Married (reference)	34.54 (34.13, 34.94)	<0.001	Intercept ^{d)}	
	Divorced	8.45 (6.69, 10.21)	<0.001	10.90 (8.04, 13.77)	<0.001
Educational status	Primary school (reference)	34.64 (33.27, 36.02)	<0.001	Intercept ^{d)}	
	Middle school	1.79 (0.15, 3.42)	0.032	-0.79 (-3.49, 1.91)	0.565
	High school	0.16 (-1.38, 1.72)	0.831	-1.92 (-4.44, 0.58)	0.133
	Academic	0.47 (-1.10, 2.04)	0.555	3.29 (1.19, 5.40)	0.002
Husband's occupation	Unemployed (reference)	34 (31.80, 36.19)	<0.001	Intercept ^{d)}	
	Freelance	1.21 (-1.04, 3.47)	0.601	3.53 (0.71, 6.34)	0.014
	Employee	0.62 (-1.71, 2.95)	0.291	2.53 (0.38, 5.45)	<0.001
Economic status	Expenditure exceeding income (reference)	35.79 (34.95, 36.62)	<0.001	Intercept ^{d)}	
	Expenditure equal to income	-0.46 (-1.55, 0.62)	0.404	-1.38 (-2.70, -0.05)	0.041
	Expenditure less than income	-1.81 (-2.93, -0.69)	0.002	-1.25 (-2.62, 0.10)	0.071
Knowledge score	Reference	31.55 (30.15, 32.95)	<0.001	Intercept ^{d)}	
	Increase per unit	0.49 (0.29, 0.68)	<0.001	0.28 (0.05, 0.52)	0.032

CI, confidence interval.

^{a)}Simple linear regression; ^{b)}Multiple linear regression; ^{c)}Regression coefficient; ^{d)}When all variables in the adjusted model were equal to zero (B=40.52; 95% CI, 37.39, 43.64; and P<0.001).

ate economic status (expenditure equal to income) and had a history of performing the Pap smear (Table 1).

The mean (\pm standard deviation) scores of knowledge, attitude, and self-efficacy were 6.80 ± 2.33 , 34.99 ± 4.32 , and 28.67 ± 7.34 , respectively. Simple and multiple analyses showed that being divorced, having a higher educational status, husband's occupation, having a history of performing the Pap smear test, and an average or good economic status had statistically significant associations with higher knowledge scores (Table 2). The simple analysis indicated that an increase in age, being divorced, educational status, good economic status, and a higher knowledge score were statisti-

cally associated with the attitude score, while the multiple analysis showed that economic status was not significantly associated with the attitude score (Table 3).

Regarding the factors that influence self-efficacy, after adjustment for age, marital status, educational status, history of performing the Pap smear test, husband's occupation, and economic status, the simple and multiple analyses indicated that increases in the knowledge and attitude scores were significantly associated with the self-efficacy score (Table 4).

Upon examining the relationship between knowledge, attitude, and self-efficacy scores and the intention to perform the Pap smear test, the adjusted model showed that for

Table 4. The association between baseline characteristics and self-efficacy score regarding the Pap smear test in women attending Animeshk's comprehensive health centers in 2019

Variables		Crude ^{a)} model		Adjusted ^{b,c)} model	
		B ^{d)} (95% CI)	P-value	B ^{d)} (95% CI)	P-value
Knowledge score	Reference	18.89 (16.66, 21.12)	<0.001	Intercept ^{e)}	
	Increase per unit	1.39 (1.09, 1.70)	<0.001	1.54 (1.22, 1.85)	<0.001
Attitude score	Reference	7.55 (2.76, 12.34)	0.002	Intercept ^{e)}	
	Increase per unit	1.03 (0.89, 1.17)	<0.001	0.48 (0.37, 0.58)	<0.001
Age	Reference	35.25 (31.26, 39.24)	<0.001	Intercept ^{e)}	
	Increase per unit	-0.19 (-0.31, -0.08)	0.001	-0.07 (-0.14, -0.003)	0.039
Age at first sexual intercourse	Reference	45.36 (42.06, 48.66)	<0.001	Intercept ^{e)}	
	Increase per unit	-0.13 (-0.28, 0.01)	0.061	-0.03 (-0.153, 0.09)	0.63
History of performing the Pap smear	No (reference)	26.5 (25.38, 27.61)	<0.001	Intercept ^{e)}	
	Yes	3.88 (2.40, 5.36)	<0.001	-1.82 (-3.21, -0.43)	<0.001
Being married	Married (reference)	28.04 (27.33, 28.75)	<0.001	Intercept ^{e)}	
	Divorced	11.95 (8.86, 15.05)	<0.001	6.04 (3.31, 8.77)	<0.001
Educational status	Primary school (reference)	32.63 (31.07, 34.19)	<0.001	Intercept ^{e)}	
	Increase per level	2.10 (1.36, 2.84)	<0.001	4.33 (3.73, 4.93)	<0.001 ^{d)}
Husband's occupation	Unemployed (reference)	21 (17.47, 24.52)	<0.001	Intercept ^{e)}	
	Freelance	9.27 (5.64, 8.96)	<0.001	11.60 (9.37, 13.83)	<0.001
	Employee	5.21 (1.46, 8.96)	0.007	6.57 (4.21, 8.95)	<0.001
Economic status	Expenditure exceeding income (reference)	28.04 (26.60, 29.47)	<0.001	Intercept ^{e)}	
	Expenditure equal to income	2.17 (0.32, 4.02)	0.021	5.83 (4.67, 6.99)	<0.001
	Expenditure less than income	-0.63 (-2.53, 1.25)	0.508	1.77 (0.71, 2.83)	0.001

CI, confidence interval.

^{a)}Simple linear regression; ^{b)}Multiple linear regression; ^{c)}Trend P-value; ^{d)}Regression coefficient; ^{e)}When all variables in the adjusted model were equal to zero (B=-0.43; 95% CI, -5.82, 4.95; P=0.875).

every unit increase in knowledge, attitude, and self-efficacy scores, the chance of performing the Pap smear test increased by 1.61, 1.02, and 1.41, respectively. The increased chance related to the associations between increased knowledge and self-efficacy scores and the intention to perform the Pap smear test was statistically significant (Table 5).

Discussion

We found that an increase in the level of knowledge and attitude among women regarding the Pap smear test raises their self-efficacy. The first and foremost step in health education is to educate individuals so as to create awareness and bring about behavior change, as it is the association between knowledge and behavior that changes attitudes by inculcating knowledge that might lead to behavior change. According to the results of the simple analysis, for every unit increase in the knowledge score, the chance of performing the Pap smear test increased by 1.07 times, though this association was not statistically significant ($P=0.212$). On the other hand, for every unit increase in the attitude and self-efficacy scores, the chances of performing the Pap smear test increased by 1.21 and 1.30 times, both of which were statistically significant ($P<0.001$). Upon adjusting for the effect of each of these factors, the results indicated that for every unit increase in knowledge and self-efficacy scores, the chances of performing the Pap smear test increased by 1.61 and 1.41 times, which increases were statistically significant ($P<0.001$), while no significant association was observed between an increased attitude score and the chance of performing the test ($P=0.736$). These findings are consistent with those of other studies [18,20,24]. Nevertheless, in Mings and Soto Mas [25] study, in which the target population was homeless women,

no significant association was observed between knowledge and attitude with performing the Pap smear test, a finding that is inconsistent with ours. This inconsistency may be attributed to the differences in target populations between the 2 studies.

Based on our results, upon adjusting for the effects of other influential factors, for every unit increase in the knowledge score, the self-efficacy score increased by 1.54. Moreover, after adjusting for other influential factors, for every unit increase in the attitude score, the self-efficacy score increased by 0.48, which was statistically significant ($P<0.001$). Several studies [26-28] have shown that educational interventions aimed at raising awareness and attitude sustainably increase the level of self-efficacy, which is consistent with our findings. Bossard and Song [19] observed that the level of awareness was not significantly associated with individuals' self-efficacy on performing the Pap smear, a finding inconsistent with ours. This inconsistency may be attributed to their population under study, which consisted of immigrant women who had volunteered to participate in the study. Usually, those who volunteer in research studies have different levels of knowledge, attitude, and self-efficacy from the general population (selection bias; volunteer bias).

In this study, a rise in educational status was not only significantly associated with an increase in knowledge of the Pap smear test ($P<0.001$), but was also associated with the attitude and self-efficacy of women toward the Pap smear, such that the mean attitude score of individuals with academic education was 3.29 higher than those with primary education. For every increase in educational grade, the mean self-efficacy score increased by 4.33 scores, which was statistically significant ($P<0.001$). Morowati-sharifabad et al. [29] indicated that individuals with bachelor's and higher degrees were 2.58 times more likely than those with high school

Table 5. The association between knowledge, attitude, and self-efficacy scores on the intention to perform the Pap smear test in women attending Andimeshk's comprehensive health centers in 2019

Variables	Crude ^{a)} model		Adjusted ^{b)} model	
	OR (95% CI)	P-value	OR (95% CI)	P-value
Knowledge	1.07 (0.95, 1.20)	0.212	1.61 (1.44, 1.77)	<0.001
Attitude	1.21 (1.12, 1.31)	<0.001	1.02 (0.90, 1.14)	0.736
Self-efficacy	1.30 (1.21, 1.39)	<0.001	1.41 (1.28, 1.56)	<0.001

OR, odds ratio; CI, confidence interval.

^{a)}Simple logistic regression; ^{b)}Multiple logistic regression.

education or less to perform the Pap smear test. This finding is consistent with our findings on the effect of higher educational status on self-efficacy in performing the Pap smear test [29]. Tilahun et al. [24] also achieved results similar to ours. Some other studies [30,31] have reported no significant association between educational status and knowledge and practice in the Pap smear test in individuals. Although we did not confirm their findings, this difference may be due to the lack of adjustment of the effect of other variables in the aforementioned studies.

In conclusion, there is a positive relationship between knowledge, attitude, self-efficacy, and women's practice with regard to performing the Pap smear test, which is a widely accepted common test for the early detection and screening of CC. This study was part of the first phase of a clinical trial aimed at determining the current educational status and needs assessment of knowledge, attitude, self-efficacy, and practice regarding CC screening among women attending comprehensive health centers. Thus, it seems that an effective educational plan to promote women's health behavior toward CC screening would be to offer sufficient applied education to raise community awareness, which in turn would improve women's attitude and self-efficacy, eventually increasing their practice of the Pap smear test. This requires the development of organized educational programs based on theories of behavior change. Although the use of modern training techniques to promote CC prevention and Pap smear testing is recommended, the identification of socio-cultural and economic factors, as well as policies and laws affecting women's behavioral intent to receive Pap smear tests is a priority before deciding any program training or making a training method choice. Further population-based studies aimed at determining the factors influencing community health behavior can guide health education planners and policymakers in planning appropriate health education programs.

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Conflict of interest

No potential conflict of interest relevant to this article was reported.

Ethical approval

This article is part of a thesis approved by Tarbiat Modares University's Faculty of Medicine registered under ethical code No. IR.MODARES.REC.1398.200.

Patient consent

In this study, informed consent was received from all the participants.

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Supplementary material

Supplementary Data 1 associated with this article can be found online at <https://doi.org/10.5468/ogs.20236>.

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