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The effect of educational intervention based on the health belief model on knowledge, attitude, and function of women about Pap smear test at Iranian health centers: A randomized controlled clinical trial

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Abstract:

BACKGROUND AND OBJECTIVE: This study aimed to examine the effect of educational intervention using the health belief model on knowledge, attitude, and function of women about Pap test at health centers.

METHODOLOGY: This randomized controlled clinical trial was conducted on 120 women who were allocated into two groups (intervention = 60 and control = 60). The sampling method was a multistage cluster. The training was provided in two sessions for 90 min. Data gathering tool was a 4-part researcher-made questionnaire including demographic characteristics, knowledge, health belief model structures, and function. Women were evaluated and completed the questionnaire in two stages (before and 2 months after training). Data were analyzed by Kolmogorov–Smirnov, Wilcoxon, linear regression, Mann–Whitney U-test, Fisher, Chi-square, and marginal homogeneity tests.

RESULTS: At baseline, there was no significant difference between the groups regarding the mean of knowledge and the structures of health belief model scores. The average scores of participants in terms of health belief model structures were increased significantly after the training sessions. Furthermore, the comparison of the performance of Pap smear before training showed that in the intervention group (23.3%) and in the control group (31.7%), there was no significant difference in terms of the history of performing the Pap smear test ($P = 0.414$). However, a significant difference ($P = 0.001$) was observed after training in the intervention group (31.7%) and in the control group (3.3%).

CONCLUSION: Educational intervention using the health belief model is effective in increasing knowledge, attitude, and function of women in terms of providing useful and required education.

Keywords:

Attitude, health belief model, knowledge, Pap smear, performance

Introduction

Cancer is caused by abnormal growth and proliferation of cells in the body, which results in a large group of diseases.^[1] Among these diseases, cervical invasive cancer (known as cervical cancer) is the

fourth most common cancer in the world.^[2-4] According to the evaluations of the WHO, this cancer will be responsible for the deaths of about 474,000 women a year by 2030, and 95% of these deaths will occur in low- and middle-income countries.^[5] According

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to the report of Cancer Registry in Iran in 2013, after breast cancer, cervical cancer is the most common and the fifth deadly cancer among Iranian women.^[6] Cervical cancer is known to be a preventable cancer, due to its long preinvasive period, the availability of the screening program, and the effective treatment of primary lesions. Pap smear test is an effective screening method to examine the changes in the cervix cells before turning into cancerous cells.^[7-9] Therefore, Pap smear is probably the most comprehensive, most suitable, and most available tool for preventing cervical cancer that has been known so far.^[1,10-15]

Choosing an appropriate model for health education is the first step in the planning process for any health education program. The proper pattern can lead the program in the correct path and show the right direction to follow.^[9,14,16,17] One of the educational models mentioned in the health education is the health belief model.^[13-15,17,18] This model has a comprehensive role more in preventing diseases, and it is based on motivating individuals and their function. In general, the HBM emphasizes on how the person's perception can motivate him/her and causes a change in their behavior.^[12,13,15,19-22] Based on this model and in order to adopt preventive interventions, individuals should first understand the risk of cancer (perceived susceptibility), then the importance of this risk, and its numerous complications from the physical, mental, social, and economic dimensions (perceived severity); they should receive the positive symptoms from their surroundings or environment (practical guide) and believe in the usefulness and applicability of the cervical cancer prevention program (perceived benefits) and find the preventive factors less costly than the benefits (perceived barriers) to ultimately lead to cervical cancer prevention function.^[1,9,15,18,19,23] For example, Fouda and Elkazeh^[24] in their study examining the effect of an educational intervention based on the health belief model on women's knowledge and perception regarding cervical cancer reported that this intervention increased the perceived susceptibility, improved awareness, and performance. However, Park *et al.*^[25] examining the effect of a cognition-emotion focused program to increase public participation in Pap smear screening showed that the result of this study was not significant. Furthermore, Rakhshani *et al.*^[26] in their study examining the effect of educational intervention based on the health belief model on Pap smear test among women reported that educational intervention based on the health belief model increased the perceived severity and perceived benefit. However, the results of Tahmasebi *et al.*^[27] showed that educational intervention based on the health belief model on perceived severity and perceived benefit was not significant. According to the inconsistencies in past studies and since performing the Pap smear test in

developing countries depends on different factors such as lack of knowledge about the risk of cervical cancer, the embarrassment of testing, and the lack of easy access to test, the present study aimed to determine the effect of educational intervention based on health belief model on knowledge, attitude, and function of women about Pap smear test at Iranian health centers.

Methodology

The present study, a randomized controlled clinical trial, was conducted in 2014 on the statistical population of women covered by health centers of Iran. The sample size in this study was determined based on the results of the study of Rakhshani^[6] and using the formula

$$n = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta} \right)^2 (\delta_1^2 + \delta_2^2)}{(\mu_1 - \mu_2)^2} \text{ with the significance level}$$

of 95% and the statistical power of 90%. Since *P* value was reported differently for each structure of the health belief model, the maximum sample size was estimated as 60 participants in each group (intervention and control). The inclusion criteria include women with the age range of 21–65 years, no history of uterine surgeries, and hysterectomy; the exclusion criteria were their unwillingness to participate in the study.

The sampling method was a multistage cluster. In the first stage, 18 health centers in Amol city were divided into four geographical areas (north, south, east, and west), and they were analyzed in terms of assimilation the social, cultural, and economic factors (level of education, occupational status, income, etc.). Eventually, four health centers were selected in one region, which was assimilated according to records. In the second stage, two centers were selected from four centers based on random numbers table, among which the intervention group was selected from one center and the control group was selected from the other. Then, in the next stage, 120 participants were randomly selected based on the list of women under the coverage of that center and divided into two groups: intervention (60) and control (60).

The data collection tool was a researcher-made questionnaire, which was designed in four parts based on the research topic and health belief model. The first part consists of 21 demographic questions; the second part consists of 23 questions about the knowledge of cervical cancer and Pap smear test; the third part consists of 34 questions about the structures of the health belief model (4 questions perceived susceptibility, 6 questions perceived severity questions, 6 questions perceived benefits, 11 questions perceived barriers, 7 perceived self-efficacy questions, and 3 questions practical guide

in external dimension); the fourth part included one question about the functioning of Pap smear. The content validity method was used to measure the validity of the questionnaire. The questionnaire was prepared based on the health belief model and according to valid scientific sources and then distributed to five professionals in health and educational science. After making necessary corrections, its validity has been confirmed. Two methods were used to determine the reliability of the questionnaire. The reliability of the knowledge-related questionnaire was determined using test-retest method ($r = 80\%$). The reliability of perceived susceptibility, severity, benefits, barriers, self-efficacy, and all structures was 87%, 86%, 86%, 94%, 96%, and 94%, respectively, based on Cronbach's alpha.

Using the pretest data, the training program was held in two sessions, each 90-min of practical presentation, movie, lecture, and question-answer for the intervention group. The first session was about the cervical cancer, its prevention methods, and how to perform a Pap smear test; the second session was about the women's attitude, knowledge, and function in terms of the Pap smear test. Two months after the training sessions, the posttest was completed using a questionnaire in both groups (intervention and control).

The data were analyzed using software SPSS version 22 (by IBM Company, NY, USA) and Kolmogorov-Smirnov, Wilcoxon, linear regression, Mann-Whitney U-test, Fisher, Chi-square, and marginal homogeneity tests. The significance level in the present study was considered to be $P < 0.05$.

This research was approved in Tehran University of Medical Sciences with the code of ethics of: IR.TUMS.SPH.REC.1395.940. The ethical considerations of this study include obtaining written informed consent from women, the confidentiality of the collected information, and the willingness of participants to stop their cooperation. Furthermore, to consider the benefits of the study for the control group, the pamphlets and educational booklets were provided to them after completing and collecting the latest posttest questionnaire.

Results

The mean age of women in the intervention group was 36.42 ± 8.35 and 37.02 ± 10.15 in the control group, which had no statistically significant difference in the two groups. The highest level of education belonged to the group below the high school diploma both in the intervention group (35%) and in the control group (46.7%), and there was no significant difference between the two groups ($P = 0.159$). Most of the

participants in the study were housewives (85% of the intervention group and 93.3% of the control group), and there was no significant difference between the two groups based on Fisher test results ($P = 23.29$). Furthermore, 91.7% were married in both groups, and there was no significant difference between the two groups in terms of marital status. Most of the participants had a moderate income (73.3% in the intervention group and 70% in the control group), and according to the Fisher test ($P = 0.405$), there was no significant difference between the two groups. In terms of Pap smear test, 23.3% in the intervention group and 31.7% in the control group had it before, and no significant difference was found between the two groups ($P = 0.4144$).

The results of the Mann-Whitney test showed that there was no significant difference between the mean score of knowledge, perceived susceptibility, severity, benefits, barriers, and self-efficacy in the intervention and control groups before the intervention, but after the intervention, there was a significant difference between the structures of health belief model in both intervention and control groups [Table 1].

In this study, perceived susceptibility in the intervention and control groups was 66.17% and 64.83% before and after training, which was increased to 79.33% and 69.08% after training. Furthermore, the perceived severity in the intervention and control groups before and after training was 68.1% and 67.61%, which was increased to 89.88% and 69.89% after training. Self-efficacy in intervention and control groups was 68.95% and 48.42% before and after training, which increased to 87.19% and 73.33% after training. In terms of perceived benefits, the most important benefits of performing the Pap smear test in both intervention and control groups included the self-care, good feeling after the test, life-saving, timely test, and early diagnosis of cervical cancer. Furthermore, perceived barriers for Pap smear test in both intervention and control groups were mostly related to some misconceptions about sexual problems, fear of performing the test, and high duration of test time.

The comparison of the frequency of information resources indicates that the most used resources in the intervention and control groups were the physician before training, and after training, the most used resource in the control group was a health center and in the control group was still the physician [Table 2].

The comparison of performing Pap smear showed that before training, 14 cases (23.3%) in the intervention group and 19 cases (31.7%) of the control group had a history of the Pap smear test, which was not significantly different ($P = 0.414$). After training, 19 cases (31.7%) in the intervention group and 2 cases (3.3%) in the control

Table 1: Effect of education on health belief structures before and after intervention in both groups (Mann-Whitney U method)

| Variables | Before intervention | | | | After intervention | | | |
|--------------------------|---------------------|------------|----------------|--------|--------------------|-----------|----------------|--------|
| | intervention | Control | Mann-Whitney U | | Intervention | Control | Mann-Whitney U | |
| | | | P | Z | | | P | Z |
| Knowledge | 27.11±4.5 | 27.45±3.97 | 0.386 | -0.867 | 37.11±5.37 | 27.11±4.5 | 0.001 | -8.064 |
| Perceived susceptibility | 13.23±2.80 | 12.96±3.06 | 0.415 | -0.815 | 15.86±2.62 | 27.11±4.5 | 0.001 | -4.397 |
| Perceived severity | 20.44±2.80 | 20.51±4.90 | 0.775 | -0.285 | 24.86±4.1 | 27.11±4.5 | 0.001 | -2.173 |
| Perceived benefits | 20.71±4.04 | 26.76±3.01 | 0.008 | -0.289 | 23.05±4.80 | 27.11±4.5 | 0.001 | -4.574 |
| Perceived barriers | 33.78±6.85 | 36.30±5.87 | 0.056 | -0.910 | 43.15±7.26 | 27.11±4.5 | 0.001 | -4.820 |
| Self-efficacy | 24.13±4.68 | 25.36±6.46 | 0.328 | -0.979 | 30.51±4.56 | 27.11±4.5 | 0.001 | -4.873 |

Table 2: Comparison of frequency of information resources in intervention and control groups

| Resources | Before intervention | | After intervention | |
|---------------------------------|---------------------|----------------|---------------------|----------------|
| | Intervention, n (%) | Control, n (%) | Intervention, n (%) | Control, n (%) |
| Newspaper, magazine, and poster | 2 (1.6) | 0 | 1 (1.7) | 1 (1.7) |
| TV and radio | 6 (4.9) | 2 (3.3) | 1 (1.7) | 3 (5) |
| Neighbors, family, and friends | 4 (3.3) | 3 (5) | 0 | 4 (6.7) |
| Medical physician | 12 (9.8) | 9 (15) | 4 (6.7) | 8 (13.3) |
| Health center officials | 5 (4.1) | 4 (6.7) | 54 (90) | 3 (5) |
| Other cases | 0 | 0 | 0 | 1 (1.7) |

group performed the Pap smear test, which was a significant difference ($P = 0.001$) [Table 3].

Discussion

The results of this study showed that the mean level of knowledge in the case group after the intervention increased from 27.11% to 37.11%, which is consistent with the results of Tasci-Duran *et al.*,^[28] Reis *et al.*,^[21] and Keshavarzian and Barzegari^[29] Furthermore, the perceived susceptibility was increased from 66.17% to 79.33%, which is consistent with the results of Fouda and Elkazeh^[24] and Vasheghani *et al.*^[23] However, the results of this study are not consistent with the study of Park *et al.*,^[25] in which the perceived susceptibility was not significant in both of intervention and control groups after training, which can be due to the limited time of intervention to change attitudes.

In the present study, the mean of perceived severity in the intervention group was 20.44% before the intervention, which increased to 36.8% after training. The severity of the perception of cancer and its consequences before and after training indicates the impact of education. This result was consistent with the results of other studies such as Peter *et al.*,^[30] Rakhshani,^[6] and Yakhforoushha *et al.*^[31] However, it was not consistent with the study of Tahmasebi *et al.*^[27] In their study, training had no significant effect on perceived severity, which could be due to the limited number of training sessions. Based on the health belief model, perceived severity is an individual's assessment of disease outcomes. Hence, if a person considers the disease seriously and understands its consequences, it will lead to proper and preventive behavior^[27]

Table 3: Comparison of performing Pap smear in both groups before and after intervention

| Group | Intervention | | Control | | Fisher |
|---------------------|--------------|-----------|-----------|-----------|--------|
| | Yes (%) | No (%) | Yes (%) | No (%) | |
| Before intervention | 14 (23.3) | 46 (76.7) | 19 (31.7) | 41 (68.3) | 0.414 |
| After intervention | 19 (31.17) | 30 (68.3) | 2 (3.3) | 58 (96.7) | 0.001 |

Perceived benefits mean believing in the benefits of proposed methods to reduce the risk, severity of disease, and disadvantages caused by a behavior. In this study, the mean perceived benefit in intervention and control groups was not significantly different before training. However, after training, the perceived benefit in the intervention group was increased from 20.71% to 23.16%, which is consistent with the results of Yakhforoushha *et al.*,^[31] Rakhshani,^[6] and Hazavehei *et al.*^[32] However, this result was not consistent with the study of Tahmasabi *et al.*,^[27] which may be due to the high perception of women participating in the study from the benefits of the Pap test before to intervention.

Perceived barriers mean negative perceptions that are potential and an obstacle for performing proper behavior. In this study, the mean perceived barrier in the intervention group was 33.88%, which was increased to 43.13% after training. The perceived barriers in this study were mostly related to some misconceptions about sexual problems, fear of performing the test, high duration of test time, and embarrassment of testing, which was consistent with the studies of Rafael *et al.*^[33] and Akbari *et al.*^[34] In these two studies, the fear of performing the Pap smear test and the embarrassment were mentioned as the most important perceived barriers.

A functional guide acts as accelerating forces that trigger a person to take an action. In this study, the most important resource of information in the intervention group was the staff at health centers before and after training. In the study of Lee *et al.*,^[35] the importance of the role of doctors as a practical guide was also mentioned. It is also similar to Rezaeian *et al.*'s study of those who stated that the educational intervention increased the perceived benefits and reduced the perceived barriers in the intervention group compared to the control group.^[36]

Self-efficacy is the assurance of one's ability to prevent a behavior. In this study, the rate of self-efficacy in the intervention group before training was 24.13%, and it was increased to 51.5% after training, which is consistent with the results of Karimy *et al.*^[17] Furthermore, the study of Simbar *et al.* showed that training programs can also improve the structure of perceived self-efficacy.^[37]

One of the strengths of this study is that regarding the location of the study area (countryside) and since some of the participants were far away from the class location and health centers, a number of training classes were held in cultural settings such as mosques closer to their homes, which resulted in the very satisfaction of women participating in the study. The homogenization and random allocation of the samples could be mentioned as the strengths of the present study.

The limitation of this study was the lack of follow-up, so it is recommended for future studies to follow-up the samples to perform the next test in order to evaluate the continuity of desired behavior.

Conclusion

The results of this study indicate that education using the health belief model by promoting the level of self-efficacy, susceptibility, severity, and perceived benefits, as well as reducing perceived barriers, can promote the knowledge and function of research samples in terms of doing Pap smear test. So, it is recommended to held educational classes in health centers using the health belief model for women.

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Conflicts of interest

There are no conflicts of interest.

References

1. Pirzadeh A, Mazaheri MA. The effect of education on Women's practice based on the health belief model about Pap smear test. *Int J Prev Med* 2012;3:585-90.
2. Sharifi M, Mohammadi Z, Makvandi Z, Rostami P, Moradi A. Assessment of cervical cancer screening and its barriers in 18-50 year old women referring to Asad Abad comprehensive health centers. *Pajouhan Sci J* 2018;16:1-9.
3. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin* 2018;68:394-424.
4. Bao H, Zhang L, Wang L, Zhang M, Zhao Z, Fang L. Significant variations in the cervical cancer screening rate in China by individual-level and geographical measures of socioeconomic status: A multilevel model analysis of a nationally representative survey dataset. *Cancer Med* 2018;7:2089-100.
5. World Health Organization. Human Papillomavirus and Cervical Cancer. Fact Sheet. World Health Organization; 14 Nov 2016. Available from: [https://www.who.int/news-room/fact-sheets/detail/human-papillomavirus-\(hpv\)-and-cervical-cancer](https://www.who.int/news-room/fact-sheets/detail/human-papillomavirus-(hpv)-and-cervical-cancer). [Last accessed 2016 Jan 24].
6. Rakhshani F, Jalilian F, Mirzaei Alavijeh M, Zinat Motlagh F, Aghaei A, Ahmadi-Jouibari T. Pap smear test among Women: An Educational Intervention Based on Health Belief Model. *J Birjand Univ Med Sci* 2013;20:136-43.
7. Acharya Pandey R, Karmacharya E. Cervical cancer screening behavior and associated factors among women of Ugrachandi Nala, Kavre, Nepal. *Eur J Med Res* 2017;22:32.
8. Logan L, McIlpatrick S. Exploring women's knowledge experiences and perceptions of cervical cancer screening in an area of social deprivation European. *J Cancer Care* 2011;20:720-8.
9. Khiyali Z, Asadi R, Ghasemi A, Khani Jeihooni A. The effect of educational intervention base on Health Belief Model on performing Pap smears in women of Fasa City. *Iran J Health Educ Health Promot* 2017;5:304-10.
10. Trieu S, Modeste N, Marshak H, Males M, Bratton S. Factors associated with the decision to Obtain an HIV Test among Chinese/Chinese American Community College Women in Northern California. *Califor J Health Promot* 2010;6:111-27.
11. Taghdisi MH, NejadSadeghi E. Evaluation of pregnant women in the field of urinary tract infection according to the components of health belief model. *J Jahrom Univ Med Sci* 2010;8:36-42.
12. Bebis H, Reis N, Yavan T, Bayrak D, Unal A, Bodur S. Effect of health education about cervical cancer and Papanicolaou testing on the behavior, knowledge, and beliefs of Turkish women. *Int J Gynecol Cancer* 2012;22:1407-12.
13. Yanikkerem E, Selçuk A, Esmeray N. Women's attitude and beliefs about cervical cancer and Pap smear test by using the health belief model. *Int J Cancer Clin Res* 2018;5:102-11.
14. Ahmed SR, Esa AS, MohamedEl-zayat OS. Health belief model-based educational program about cervical cancer prevention on women knowledge and beliefs. *Egypt Nurs J* 2018;15:39.
15. Lee YS, Roh S, Jun JS, Goins RT, McKinley CE. Cervical cancer screening behaviors among American Indian women: Cervical cancer literacy and health belief model. *J Ethnic Cultural Diversity Soc Work* 2020;17:1-17.
16. Namdar A, Bigzadeh S, Naghizadeh MM. Measuring health belief model components in adopting preventive behaviors of cervical cancer. *J Fasa Univ Med Sci* 2012;2:34-44.

17. Karimy M, Gallali M, Niknami S, Aminshokravi F, Tavafian S. The effect of health education program based on Health Belief Model on the performance of Pap smear test among women referring to health care centers in Zarandieh. *J Jahrom Univ Med Sci* 2012;10:53-5.
18. Shojaeizadeh D, Hashemi SZ, Moeini B, Poorolajal J. The effect of educational program on increasing cervical cancer screening behavior among women in Hamadan, Iran: Applying Health Belief Model. *J Res Health Sci* 2011;11:20-5.
19. Guvenc G, Akyuz A, Açikel CH. Health belief model scale for cervical cancer and Pap Smear Test: Psychometric testing. *J Adv Nurs* 2011;67:428-37.
20. Shobeiri F, Javad MT, Parsa P, Roshanaei G. Effects of Group Training Based on the Health Belief Model on Knowledge and Behavior Regarding the Pap Smear Test in Iranian Women: A Quasi-Experimental Study. *Asian Pac J Cancer Prev* 2016;17:2871-6.
21. Reis N, Bebis H, Kose S, Sis A, Engin R, Yavan T. Knowledge, behavior and beliefs related to cervical cancer and screening among Turkish women. *Asian Pac J Cancer Prev* 2012;13:1463-70.
22. Laranjeira CA. Portuguese women's knowledge and health beliefs about cervical cancer and its screening. *Soc Work Public Health* 2013;28:150-7.
23. Vasheghani F, Majlesi F, Mahmoudi M, Shojaeezadeh D. Effect of educational intervention based on Health Belief Model on knowledge and attitude about Pap smear test among female secondary school teachers in district 11 of Tehran. *J Schl Public Health Institute Public Health Res* 2012;10:39-46.
24. Fouda LM, Elkazeh E. The impact of an educational intervention on women's knowledge and perception regarding cervical cancer and human papillomavirus vaccines in Tanta city: Applying health belief model. *Life Sci J* 2013;10:997-1005.
25. Park S, Chang S, Chung C. Effects of a cognition-emotion focused program to increase public participation in Papanicolaou smear screening. *Public Health Nurs* 2005;22:289-98.
26. Rakhshani F, Jalilian F, Mirzaei Alavijeh M, Zinat Motlagh F, Aghaei A, Ahmadi-Jouibari T. Pap smear test among women: An educational intervention based on health belief model. *J Birjand Univ Med Sci* 2013;20:136-43.
27. Tahmasebi R, Hosseini F, Noroozi A. The effect of education based on the health belief model on women's practice about Pap smear test. *J Hayat* 2016;21:80-92.
28. Tasci-Duran E, Koc S, Korkmaz M. Turkish social attitudes towards to cancer prevention: A health belief model study. *Asian Pac J Cancer Prev* 2014;15:7935-40.
29. Keshavarzian K, Barzegari Z. The Knowledge of Herisian female about the cervical cancer and Pap smear in. *Med J Tabriz Uni Med Sci Health Ser* 2014;36:70-3.
30. Abotchie PN, Shokar NK. Cervical cancer screening among college students in Ghana: Knowledge and health beliefs. *Int J Gynecol Cancer* 2009;19:412-6.
31. Yakhforoushha A, Solhi M, Ebadiaza F. The effect of health education via health belief model on knowledge and attitude of healthy voluntaries about Pap smear in Urban centers Ghazvin. *J Nurs Midwifery* 2010;18:24-31.
32. Hazavehei SM, Rahmati M, Hasanzade A. Effect of educational program based on health belief model on the practice of women about Pap smear. *J Health Care Health Educ Suppl* 2014; 3(8): 585-590
33. Rafael Rde M, Moura AT. Barriers to implementation of cervical cancer screening: A household survey in the coverage area of the Family Health Program in Nova Iguaçu, Rio de Janeiro State, Brazil. *Cad Saude Publica* 2010;26:1045-50.
34. Akbari F, Shakibazadeh E, Pourreza A, Tavafian S. Barriers and Facilitating Factors for Cervical Cancer Screening: A Qualitative Study from Iran. *Iran J Cancer Prevent* 2011;3:178-84.
35. Lee MC. Knowledge, barriers, and motivators related to cervical cancer screening among Korean-American women. A focus group approach. *Cancer Nurs* 2000;23:168-75.
36. Rezaeian M, Sharifirad GH, Mostafavi F, Moodi M, Abbasi M. The effects of breast cancer educational intervention on knowledge and health beliefs of women 40 years and older, Isfahan. *Iran J Educ Health Promot* 2014;3:78-37.
37. Simbar M, Ghazanfarpour M, Abdolalian S. Effects of training based on the health belief model on Iranian women's performance about cervical screening: A systematic review and meta-analysis. *J Educ Health Promot* 2020;179:648-19.