# RESEARCH ARTICLE

# Effects of Group Counseling Based on Health Belief Model on Cervical Cancer Screening Beliefs and Performance of Rural Women in Kaboudrahang, Iran

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## Abstract

**Objective:** Pap smear test is an appropriate screening method for early diagnosis of cervical cancer and reduction of mortality. This study targeted effects of group counseling based on the Health Belief Model on cervical cancer screening practices of Iranian rural women. **Method:** This quasi-experimental study was conducted on 80 rural women under coverage of the health care centers in rural areas in the city of Kabudrahang, Iran, in 2015. The data collection tool was a researcher-made questionnaire covering demographic information, Health Belief Model (HBM) constructs and screening performance. Data were collected using a multi-stage sampling method. Group counseling was conducted based on the Health Belief Model and the GATHER steps in three sessions for the intervention group. Counseling included an introduction to cervical cancer, disease symptoms, warning signs and prevention approaches. Pap smear testing in both intervention and control groups was evaluated two months after the group counseling. **Results:** Before the intervention, there was no significant difference between both groups in the HBM constructs and performance. After the intervention, a significant difference was seen in the perceived susceptibility (P<0.001), severity (P=006), benefits (P=012), barriers (P<0.001), and self-efficacy (P=002). Two months after the intervention, 17 patients (42.5%) in the intervention group, and 4 patients (10%) in the control group had undergone a Pap smear test (P<0.001). **Conclusion:** Design and implementation of counseling programs based on the HBM can modify the beliefs of rural women regarding cervical cancer screening and increase their performance.

**Keywords:** Cervical cancer- Pap smear- Health belief- Counseling- Rural- women

## Introduction

Cervical cancer is the second common cancer among women after the breast cancer (Asonganyi et al., 2013), and also the second cause of cancer death among women throughout the world (Chesun et al., 2012). Annually almost 530000 new cases of cervical cancer are reported and more than half of them lose their lives. It is estimated that more than 87% of this cancer is seen in the developing countries (Onsori et al, 2013). The highest mortality rate of this cancer is in the developing countries with 10-35 deaths per 1000,000 people, compared to the developed countries with 2-4 deaths per 1000,000 people (Arbyn et al., 2011) . The difference is due to the regular performing of Papanicolaou test (Pap smear) in the developed countries. The recent estimates show 947 new cases of cervical cancer diagnosed in Iran, and 370 patients died because of this cancer per (Tahmasebi et al., 2016).

Distribution of cervical cancer had two age peaks of 35-39 and 60-64 years, and the average age of patients is 52 years at the age of diagnosis. The cervical cancer has no symptoms in the early stages. The most common complaint is abnormal vaginal bleeding between two menstrual periods, after sexual intercourse, and douching. Other symptomes are foul-smelling secretions, and bloody thinners discharge and pain (Gibbs et al., 2008).

The cervical cancer is one of the few cancers that can be easily diagnosed 10 to 15 years before the invasive malignancy (Khodakarami et al., 2013). Due to the long-term situation before the invasion, the cervical cancer is regarded as a preventable cancer, and with the early diagnosis and treatment, the invasive cervical cancers can be prevented (Ghahramaninasab et al., 2011). There are numerous methods so far provided for early diagnosis of cervical cancer and secondary prevention. The cervical cytology (Pap smear) is approved as the most effective and affordable technique for cervical cancer screening. Increase in diagnosis of the cases at the pre-invasive and early stages of cervical cancer led to the decrease in incidence and mortality rate of cervical cancer in the

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communities with active screening programs (Abedian and Darmohamadi, 2015; Gibbs et al., 2008; Kasmaei et al., 2014).

Based on the studies , almost a half of the diagnosed cases of cervical cancer are in the women who have never been screened, so most of the countries with organized screening programs were able to control the cancer properly (Aminisani et al., 2012; Bell et al., 2013). The American College of Obstetricians and Gynecologists (ACOG) suggested the Pap smear for women at the age of 21 years old, or 3 years after the beginning of vaginal sexual activity. The screening interval is once a year, and after the age of 30, in case of three consecutive tests are normal, it is suggested once for every 2-3 years (Gacia, et al., 2012) .

In Iran, the Pap smear test is conducted in the health system since 1991, and the rate of undergoing Pap smear test is 32.5% of eligible women (Karimy et al., 2012; Namdar, Bigizadeh and Naghizadeh, 2012). However, According to the policies of Department of Women and the Elderly in Iran, cancer screening tests are public health priorities for all the eligible women aged between 20-60 years (Namdar et al., 2012; Pirzadeh and Mazaheri, 2012).

The women's beliefs and cognitive factors are significantly associated with their screening behaviors. On the other hand, the Health Belief Model with women's perceived components is used widely to assess the health beliefs on the screening behaviors (Glanz et al., 2008).

The Health Belief Model noted the fact that how the personal beliefs and perceptions in fear from the health problems and assessment of benefits and barriers to the preventive behaviors lead to the adoption of that behavior. Based on the health belief model, to adopt preventive measures, the person should see the risk of the problem, and then understand the depth of the physical and psychological complications, and in case of the positive evaluation of the benefits and the lack of serious barriers, the preventive behavior will be adopted (SHojaeezadeh, 2012). The group counseling provides an opportunity so the members can achieve the perception and understanding to overcome the barriers to their freedom, and also experience the above process with awareness and full participation (Haghighi et al., 2013).

The rural population, due to the traditional practices such as frequent early marriage, less education, and insufficient health awareness requires more training for the cervical cancer screening (Elamurugan et al., 2016).

In a study in the rural areas in India, the cognitive barriers such as low awareness of the cervical cancer symptoms, lack of information for the screening tests and risk factors of the cancer, were the most important obstacles of the rural women for preventive testing (Tripathi et al., 2014) . Kasmaee in a study in the rural areas of Guilan, Iran showed that the family history of Pap smear, constructs of perceived severity and benefits were the most important predictions for refusing the Pap smear among the rural women (Kasmaei et al., 2014).

The city of Kabudrahang is located in the Hamadan province in West of Iran with 126 villages. According to the last census in 2016, the population of the city is 127266 people, 80% of which is the rural population and 20% is the urban population. Since, the purpose of health education and promotion in the villages is to cause the motivation for the individual or group action in dealing with common health problems, increasing the awareness for public participation in the programs, and helping the people to learn the problem-solving skills, and development of teamwork by forming the councils and health committees could be appropriate measures. Therefore, the health workers as the rural health agents should use any opportunity for education of people (Abbaszadeh Bozi, 2010). The health workers and midwives, due to their various health care, educational, counseling, and supportive roles, have great opportunities in preventing and improving the family health with important role in the intervention of women's health (Jamshidimanesh et al., 2013) .

Considering the importance of Pap smear test in the early diagnosis of cervical cancer, the preventive interventions, especially in the rural areas, seem to be essential. This study is conducted with a purpose to determine the effect of group counseling based on the Health Belief Model on beliefs and performance of cervical cancer screening among rural women in Kabudrahang, Iran.

## Material and Methods

This was a quasi-experimental study on 80 (40 women in the intervention group and 40 women in control group) married women under coverage of health care centers in city of Kabudrahang from December, 2015 to May, 2016. A multi-stage sampling was used. So that among 15 rural health centers in Kabudrahang, two rural health centers were randomly selected. Then in each of the health centers, two health houses were randomly chosen and allocated into control and intervention groups. Thus, four villages were selected and examined (two villages in intervention group, and two villages in control group). Then, in each village, according to the list of rural households, 20 qualified women were randomly selected for sampling. The inclusion criteria were being married, aged between 18 to 60 years old, living in the village at least in 2 recent years, no hysterectomy, no history of cervical cancer. The exclusion criteria were the lack of desire to continue the study and moving from the village to another place during the study. Informed consent forms were completed by women in two groups before the study.

According to previous study (Pirzadeh and Mazaheri, 2012), the sample size was determined at 5% risk level and 90% test power of the required sample size at the number of 31 patients in each group. Considering the possibility of sample loss, the number of 40 patients was estimated in each group: Data collection tool was based on the questionnaire of Kasmaei et al., (2014), which was developed after measuring the validity and reliability of the final questionnaire. The questionnaire was divided into three parts, the first part of which included the questions on the demographic data (17questions), the second part was related to the women's health beliefs including the constructs of the perceived susceptibility (6 questions), perceived severity (4 questions), perceived benefits (5

questions), perceived barriers (10 questions), perceived self-efficacy (5 questions), Cues to action (2 questions), and the third part contains the performance questions. Thus, the history of Pap smear test, regularity and the purpose in future are examined.

Health beliefs were assessed by the 5-item Likert scale (1 strongly disagree to 5 very agree). So the score range of each question in the perceived susceptibility, severity, benefits, barriers and self-efficacy was between 1 to 5. For the barriers, the reversed scoring was used. For the performance, the proper behavior in the prevention of cervical cancer was given 1 and the wrong behavior was given a zero.

For measuring the validity of the questionnaire, the content validity was used, so that the questionnaire was given to 10 members of the Faculty of Midwifery and Health Education for modifications, so the validity was approved. For measuring the reliability, the questionnaire was given to 20 rural women with similar demographic characteristics to the population, so they were asked to complete the questionnaire, these women were not included. Cronbach's alpha showed the acceptable reliability of 0.72 in the questionnaire for cervical cancer screening based on the health belief model. Cronbach's alpha value was 0.72 for perceived susceptibility, 0.74 for perceived benefits, 0.78 for perceived barriers, 0.74 for perceived self-efficacy, and 0.72 for the perceived severity. Before the intervention, the women in both test and control groups were completed the questionnaire.

The intervention was done in the intervention group as group counseling based on the Health Belief Model and GATHER counseling steps. The counseling meeting was held during three 45-60 min sessions with interval of one week and capacity of 10 people per session, using the group counseling method with posters and pamphlets in the health houses of villages in the intervention group. The first meeting included greeting to establish a verbal communication with women and asking open-ended questions on the subject of counseling, and then an introduction to the cervical cancer and the symptoms. The second session included an introduction to the risk factors, certain conditions and high-risk groups, to increase the susceptibility and perceived severity. The third session included the group counseling in preventing the cervical cancer, Pap smear, Pap smear test method, benefits of Pap smear test, in order to reduce the perceived barriers and increase the perceived benefits in the Pap smear test. One month after counseling, the members of the group were contacted and Pap smear test was reminded. Two months after the end of counseling sessions, both groups were invited for follow-up, and the post-test questionnaire was completed. During this period, the control group only received the routine cares. Both groups were examined and compared before the intervention, and two months after the end of intervention. For moral issues and non-deprivation of the control group from the benefits of research, after the end of intervention and follow-up, all the contents related to the cervical cancer screening were taught to the women in control group and educational pamphlets were given to them. After the data collection, the data were analyzed using SPSS 22 software and chi-square test, ANCOVA, independent t-test, and paired t-test. The significance level was set at 0.05.

## Results

Before the implementation of a training program, both groups were examined in terms of demographic

Table1. Comparison of Subjects in Two Groups Based on Demographic Variables
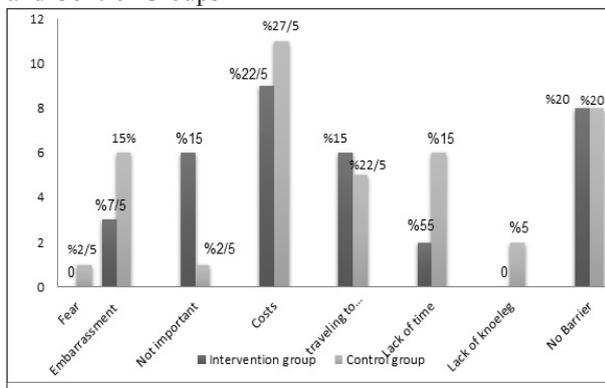
| Variables | Control group n (%) | Intervention group n (%) | Statistic (df) | P value |
|---|---|---|---|---|
| Average age | 34.05 (9.052) | 30.33 (8.559) | t=1.891 (78) | 0.062 |
| Age groups | | | | |
| 15-25 | 13 (16.3) | 6 (7.5) | $X^2 = 4.361$ (3) | 0.056 |
| 26-35 | 18 (22.5) | 20 (25) | | |
| 36-45 | 6 (7.5) | 7 (8.8) | | |
| >46 | 3 (3.8) | 7 (8.8) | | |
| Women's education levels | | | | |
| Illiterate | 5 (12.5) | 7 (17.5) | $X^2 =0.783$ (2) | 0.676 |
| Elementary | 2 (30) | 9 (22.5) | | |
| Secondary and higher | 23 (28.7) | 24 (30) | | |
| Spouse' education level | | | | |
| Illiterate | 1 (2.7) | 3 (7.5) | $X^2 =0.905$ (3) | 0.636 |
| Elementary | 12 (32.4) | 12 (30) | | |
| Secondary and higher | 24 (31.2) | 25 (32.5) | | |
| Women's occupation | | | | |
| Housewife | 40 (100) | 39 (7.5) | Fisher exact test =0.113 (1) | 0.314 |
| Employed | 0 (0) | 1 (2.5) | | |
| Spouse' occupation | | | | |
| Employee | 4 (10.8) | 1 (2.5) | $X^2 =0.271$ (4) | 0.225 |
| Farmer | 2 (5.4) | 5 (12.5) | | |
| Worker | 22 (28.6) | 11 (29.7) | | |
| Self-employed | 19 (51.4) | 18 (45) | | |
| Unemployed | 1 (2.7) | 5 (12.5) | | |
| Gravidity | | | | |
| 0 | 5 (12.5) | 2 (5%) | $X^2 =0.196$ (3) | 0.216 |
| 1 | 13 (32.5) | 7 (17.5) | | |
| 2 | 11 (27.5) | 17 (42.5) | | |
| 3 | 4 (10) | 8 (20) | | |
| >4 | 7 (17.5) | 6 (15) | | |
| Parity | | | | |
| 1 | 3 (7.5) | 2 (5) | $X^2 =5.782$ (4) | 0.381 |
| 2 | 12 (30) | 6 (15) | | |
| 3 | 12 (30) | 15 (37.5) | | |
| >4 | 13 (32.5) | 17 (42.5) | | |
| Pap smear test | | | | |
| Yes | 28 (70) | 33 (82.5) | $X^2 =1.726$ (1) | 0.189 |
| No | 12 (30) | 7 (17.5) | | |

Table 2. Comparison of Health Belief Model Constructs between and within Two Groups before and after Intervention

| Health Belief Model constructs | Group | Before | | After | | Paired T test | | Independent T test | |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD | t | P-value | t | P-value* |
| Perceived susceptibility | Intervention | 18.67 | 3.74 | 22.42 | 3.62 | 5.96 | <0.001 | 5.528 | <0.001 |
| | Control | 18.72 | 3.63 | 17.97 | 3.57 | 1.391 | 0.172 | | |
| Perceived severity | Intervention | 16.07 | 1.6 | 17.05 | 1.6 | 2.523 | 0.016 | 2.823 | 0.008 |
| | Control | 15.77 | 2.13 | 15.82 | 1.86 | 0.154 | 0.878 | | |
| Perceived benefits | Intervention | 22.05 | 2.38 | 23.65 | 1.87 | 3.063 | 0.004 | 2.567 | 0.013 |
| | Control | 21.87 | 2.36 | 22.45 | 2.28 | 1.847 | 0.073 | | |
| Perceived barriers | Intervention | 23.57 | 5.71 | 19.32 | 4.66 | 4.536 | <0.001 | 3.883 | <0.001 |
| | Control | 24.3 | 5.98 | 23.92 | 5.86 | 0.44 | 0.662 | | |
| Perceived self-efficacy | Intervention | 16.6 | 3.9 | 20.2 | 3.61 | 5.979 | <0.001 | 3.277 | <0.001 |
| | Control | 16.92 | 4.25 | 17.15 | 4.64 | 0.365 | 0.717 | | |

* ANCOVA test results

Figure 1. Barriers to Pap Smear Test in the Intervention and Control Groups



Table 3. Comparison of Pap Smear Performance before and after the Intervention in Two Groups

| Pap smear test | Intervention group | Control group | Total | X² statistic | P-value |
|---|---|---|---|---|---|
| | n(%) | n(%) | n(%) | (df) | |
| Before | | | | | |
| Regular | 10(16.4) | 9(14.8) | 19(31.1) | 10.9 (1) | 0<0.001 |
| Irregular | 23(37.7) | 19(31.1) | 42(68.9) | | |
| Total | 33(54.1) | 28(45.9) | 61(100) | | |
| After | | | | | |
| Regular | 37(92.5) | 16(40) | 37(92.5) | 24.6(1) | 0<0.001 |
| Irregular | 3(7.5) | 24(60) | 3(7.5) | | |
| Total | 40(100) | 40(100) | 40(100) | | |

variables, and no significant difference was seen between the age, average length of marriage, education, spouse's education, occupation, spouse's occupation, gravidity, and parity (Table 1).

In order to compare the mean scores of Health Belief Model constructs before and after the intervention in both groups, and the results have been shown in Table 2. After the intervention, the mean score of perceived susceptibility in intervention group and control group was reduced (P<0.001). The mean score of perceived severity in intervention and control groups were also increased, despite the increase in the both groups, the increased mean score in the intervention group was higher (P=008). The mean score of perceived benefits in both groups were increased, but the increase was higher in intervention group. The mean score of perceived barriers were reduced in two groups, but the decrease was significantly higher in the intervention group (P<0.001). The mean score of self-efficacy in intervention and control groups were increased, but the increase was significantly higher in the intervention group (P<0.001).

In the performance of Pap smear test before the intervention 16.4% in intervention group and 14.8% in control group had the history of regular Pap smear test. The performance of women before the intervention was not significant in two groups (P=0.877), but after the intervention, the difference was significant (P<0.001). (Table 3).

After the intervention, 92.5% in the intervention group and 40% in the control group had intended to have the Pap smear test. So the difference between both groups was statistically significant (P<0.001).

Since, there were significant difference between two groups in terms of perceived severity and perceived barriers before the intervention, in order to determine the difference in base line of these scores and considering the role of confounder, the statistical ANCOVA test was used.

Regarding, the internal and external practice guide constructs, before the intervention of intervention group and control group, 80% and 55% of the women s had chosen the health center workers as the external practice guide, respectively. After the intervention in intervention group, 67% of patients had chosen the health center workers and 12% chosen the pamphlets. After the intervention in control group, 55% of patients had chosen the health center workers as the external practice guide, representing the important role of health workers in participation of rural women in the screening programs. Before the intervention in both groups, 45% of patients had selected the yellow or bloody vaginal discharge and vaginal odor as the internal practice guide. After the intervention in intervention group, 27.5% had selected bleeding after intercourse, and in the control group, 50% had reported the yellow or bloody vaginal discharge and vaginal odor as the internal practice guide. The barriers to Pap smear test in the rural women included the fear,

embarrassment, lack of knowledge, costs, traveling to city, and lack of time (Figure 1).

## Discussion

Finding of the present study showed the significant increase in the mean scores of Health Belief Model constructs and Pap smear performance after the invention. It reveals the importance of change beliefs on prevention of cervical cancer in rural women. Efficiency of interventions based on HBM on cancer screening behaviors such as pap smear, breast self-examination and mammography have been reported in previous researches (Parsa and Kandiah, 2005; Parsa et al., 2008; 2009; 2011; Shobeiri et al., 2016) .

The construct of the perceived susceptibility in this study showed that the susceptibility of the person toward the health problem associated with the belief in being at risk, even in the absence of symptoms, would lead to participation in the screening programs such as cervical cancer screening. Before the intervention, the mean scores of the perceived susceptibility were moderate and two groups had no significant difference (Pirzadeh and Mazaheri, 2012). After the intervention, the mean perceived susceptibility were increased in two groups, but the increase was significantly higher in the intervention group. The significant difference between two groups after study, showed the effect of group counseling. So that the women in intervention group have seen themselves more at the risk of cervical cancer compared to women in control group. Similarly, Pirzadeh (Pirzadeh and Mazaheri, 2012), Shojaeizadeh (Shojaeizadeh et al., 2011) and Hazavehei ( Hazavehei et al., 2007), found  the increased perceived susceptibility after intervention.  The similarity could be due to the use of Health Belief Model and duration of the intervention. However, Tahmasebi et al., (2016) , and Park et al., (2005), revealed no effect on the perceived susceptibility after the educational intervention  that these results could be due to the short time of intervention and number of training sessions.

The perception of women on severity of disease were increased in both groups after the intervention, but the increase in intervention group was significantly higher than control group. As same Rakhshani et al., (2013), Pirzadeh and Mazaheri, (2012), Karimi et al., (2009), Shojaeizadeh et al., (2011) were reported, increase in the perceived severity after intervention, but according to Park et al., (2005) , Tahmasebi et al., (2016) , the educational intervention had no effect on perceived severity that can be due to the short intervention duration, so more time was required to change this belief.

The perceived benefits of women before the study were favorable in both groups, representing the awareness of women on the benefits of cervical cancer screening. According to Tahmasebi et al., (2016), and Pirzadeh and Mazaheri, (2012), the women had also high awareness on the benefits of Pap smear test. After intervention, a significant increase was seen in awareness on benefits of Pap smear test.

The group counseling in this study significantly reduced the barriers of pap smear in intervention group. In the control group, the barriers were also reduced but it was not significant. Rakhshani et al., (2013), Tahmasebi et al., (2016), Pirzadeh and Mazaheri, (2012), Park et al., (2005), and Shojaeizadeh et al., (2011), are also in agreement with the results.

Bandura and Adams consider the self-efficacy as the most important assumption of behavioral changes (Sajadi Hazaveh and Shamsi, (2011); Taghdisi and Nejadsadeghi, (2011) . The perceived self-efficacy in both groups showed no significant difference before the study, but it was increased after the study. The increase in self-efficacy was significantly higher in the intervention group compare to the control group . Results of  Karimi et al., (2009), study showed the increased self-efficacy was also seen in the intervention group.

In this research, the most important external practice guide for choosing the Pap smear test were the health workers, which is consistent with Tabeshian and Firozeh, (2009) and Karimi et al., (2009) studies . Thus, the health workers have a critical effect on participation of the rural women in the screening programs. Regarding the performance before the intervention, despite performing the Pap smear test in some women in both groups, the majority of women had irregular Pap smear test. Thus, increasing the awareness of women on regularity of Pap smear test is essential in the rural areas.

After the intervention, 17 patients from intervention group and 4 patients from the control group had done Pap smear test (p<0.05). Similarly, Tahmasebi et al., (2016), Pirzadeh and Mazaheri, (2012), Karimi et al., (2009), reported the higher percentage of women in the intervention group have had Pap smear test after the intervention. The increased Pap smear performance after the group counseling in this study was inconsistent with finding of Tabeshian and Firozeh, (2009). The contradiction can be attributed to effectiveness of Health Belief Model and group counseling in the present study. The most important barriers to Pap smear test in this study for the rural women were the lack of laboratory facilities and traveling to city for testing.

The results of this study showed that the group counseling based on the Health Belief Model leads to the increased health belief and participation of rural women in cervical cancer screening. It is recommended that health professionals have counseling sessions for rural women about screening programs. The barriers to Pap smear test such as the costs and traveling are also considered by the health authorities to take appropriate approaches in order to overcome barriers of cervical cancer screening in rural women.

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