



Survey the Effect of Educational Program Based on Precaution Adoption Process Model on Screening Cervical Cancer Behaviors among Rural Women, Mixed Method Development

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Authors' contributions

This work was carried out in collaboration among all authors. Authors HB, BE and AB designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript.

Authors SSMM and AB managed the analyses of the study. Authors AB and NB managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Background and Objectives: Cervical cancer is considered as a preventable cancer in women. Pap smear test is an effective screening program for diagnosing cervical cancer, but for some reasons its use is low. The purpose of this study was to determine the factors affecting the women's participation in the Pap smear test based on precaution adoption process model and

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effect of educational program based on model on doing the Pap test with a Mixed Method approach.

Materials and Methods: This study was a Mixed Method approach. Thirty women voluntarily participated in this study in sarvabad city of Iran. The sampling began purposefully and continued until saturation. Semi-structured interviews were the primary method of data collection. Data were analyzed using qualitative content analysis and continuous comparisons. Quantitative study was conducted implementing a quasi-experimental method. Participants were divided into two groups as experimental and control groups using Precaution Adoption Process Model (PAPM) among 180 rural females in Sarvabad. In treating the experimental group, the methods of lecturing with question and answer, playing videos, specialized consulting and pamphlet were used. The questionnaire including a demographic characteristic and variables that affecting the stages of the Precaution Adoption Process Model (PAPM). Data analysis was performed using the Mann-Whitney, chi-square and descriptive statistical methods. $P < 0.05$ was considered as the significance level.

Results: In qualitative study Model-based themes included, awareness, perceived susceptibility, perceived severity, social norms. Women's awareness about cervical cancer and Pap smear test is not enough, but, they perceived the severity of the disease. In quantitative study in comparison of the means of the scores of psychological variables affecting the decision process in Pap smear test, there was a significant relationship between the experimental and control groups based on Mann-Whitney test and control groups based on variables, perceived susceptibility, awareness and social norms. But the perceived severity was not statistically significant.

Conclusion: Findings of this study will help health managers and health planners to plan and train ways to facilitate the participation of women in the Pap smear test.

Keywords: Screening; cervical cancer; precaution adoption process; mix method study.

1. INTRODUCTION

Cervical cancer is the fourth cancer in women worldwide, with 530,000 new cases that were detected in 2012. About 84% of the new cases were identified in women in less developed regions. Every year, more than 270,000 women die from cervical cancer; more than 85% of these deaths occur in low and middle-income countries [1]. In developed countries, the incidence and the mortality rates of cervical cancer have dramatically declined because of proper access to high-quality cervical cancer screening programs [1,2].

Comprehensive Pap smear screening-based programs have not been properly implemented in most developing countries because, in most of these developing countries where Pap smear screening is available, it often is accessible to only a small proportion of women through private health care providers, or it is offered primarily to young women through maternal or child health clinics or family planning clinics where the population being screened generally is not at high risk [3]. Thus, these approaches have been little effect on mortality and morbidity rates in developing countries compared to developed countries that has long implemented Pap smear screening programs [4]. In Iran; incidence rate of

cervical cancer is very low. However, the mortality rate of cervical cancer is about 44% because patients with cervical cancer are often diagnosed in advanced stages [5]. Sarvabad is a city in Kurdistan province of Iran, located near Iraq and in terms of Medical facilities; it is considered as the most disadvantaged cities in Kurdistan province. Considering the lack of diagnostic medical facilities, lack of education, ignoring the principles of prevention, and sometimes unhealthy lifestyle non-communicable diseases such as cancer has increased in the previous years. After breast cancer, cervical cancer is the second most common cancer among women in this city. The incidence rate of cervical cancer in 2005 was 11.5% at 100,000. This rate had a threefold increase over in the last five years. The Pap smear coverage is 5.5%, which suggests less efficient screening [6]. The aim of the models in health education is increasing awareness, changing people's attitudes and helping them to change their behavior. From these models, the stage of change theory is one of the most important theoretical frameworks that have been shown to be useful in assessing an individual's readiness to act on a health behavior. This theory acknowledges that people are different in their readiness to accept new behaviors. People who follow new behaviors go through a series of

steps of readiness to change in this study. The precaution adoption process model was used as a framework which is a health education and health promotion model that may affect psychological variables such as awareness, perceived severity, perceived sensitivity, perceived benefits, perceived barriers, perceived self-efficacy, and social norms. The PAM attempts to explain how a person makes his decision and how he makes this decision a practice. Adoption of a new precaution or cessation of a risky behavior requires deliberate steps unlikely to occur outside of conscious awareness. The PAM uses these types of actions [7].

The purpose of this study was to explore the factors influencing PAM model structure and explaining how a person comes to stage of precaution adoption process model and how many percent of the participants will be able to enter the stage of the model's operation.

2. MATERIALS AND METHODS

This study was a Mixed Method approach. It was performed during June to December 2015 among Thirty married women aged 20-60 at the rural health centers in Sarvabad city in Kurdistan province, Iran. After obtaining permission from health authorities in Sarvabad, participants who were eligible for the study were randomly selected from rural household cases. A Qualitative Approach Using Directed Content Analysis Method. Qualitative content analysis is a method that systematically analyzes texts. In analyzing qualitative content, the goal is to classify data from interviews, observation protocols and recorded videos [8].

In this study, four constructs of consciousness, sensitivity and perceived severity and perceived social norms have been considered among the seven stages of model structures. Precaution adoption process model in behavior of cervical cancer screening is used to extract the codes. Research units were selected purposefully based on maximum variability among rural women of Sarvabad. Targeted sampling began and continued up to data saturation. At first, collected information in this study was using semi-structured interviews with open questions. Because of the flexibility and depth, these types of interviews are appropriate in qualitative research [9]. Total of 30 women who passed the inclusion criteria were interviewed. The inclusion criteria were: having 20 years of age and being

married for at least 3 years or more. Exclusion criteria were: Women who did not have the above criteria and had dementia, schizophrenia, amniotic fluid, and depression. Duration of interviews varied from 21 minutes to 40 minutes.

Interviews continued to saturate information. Initially, interviews started with open questions generally based on the theoretical framework of the model. The researchers tried to minimize interference in the interview process. All interviews were recorded and transcribed verbatim immediately for analysis. Considering that in qualitative research, the researcher should be immersed in the information [10], so the researcher listened to the interviews on several occasions and reviewed their typed text over and over. In this study, various methods have been used to validate data analysis, such as prolonged engagement, Immersion Research, member check, and the peer debriefing. At the beginning of the interview participants were informed about the purpose of the research, interviews, ensuring the confidentiality of information and their right to participate or withdraw from the study. Then informed consent was obtained from the participants. In this study, in the quantitative method, the participants were 180 people according to the following relationship: $N = 50 + 10K$. Ninety subjects were assigned in the control group and 90 subjects in the experimental group. Being Marriage, having between ages of 20 to 60, the non-performing of the Pap smear test, and three years after their marriage and they are interested in cooperation with the research team, were considered as the criteria of entering the study. Also, the lack of continuous attendance at the educational sessions or during the completion of the post-test, questionnaire was considered as exclusion criteria. The data collection tool was a self-report questionnaire. The information was reported by the participants themselves. The supposed questionnaire consisted of two parts: the first part included six questions in the participants' demographic information, age, type of contraception and the presence of a person among the family members with cervical cancer and so on. The second part included questions about psychological variables influential in decision making and passing the model steps. This included, 20 questions extracted the qualitative study performed by the researcher. Its content validity was approved by 10 experts in this field. After eliminating two questions about perceived barriers and benefits, reliability was reported using the Cranach's

Alpha influential (0.75). For educate women in the experimental group, lecture method, face to face education, question and answer training, telephone counseling, educational videos that have been used for cervical cancer and pamphlets. Data analysis was done using SPSS Version 20, performing chi-square, Mann-Whitney, and many tests. The significance level of the test was considered. $P = 0.05$.

3. RESULTS

In this study, most of female participants were illiterate (60.6%). Considering the similarity of demographic variables in the control and experimental groups, in the baseline state (before intervention) there was no significant difference based on statistical tests (Table 1).

In the qualitative section of 30 interviews, 400 initial codes were extracted and carefully evaluated, and the 45 code was extracted, which reduced to 20 codes; in the next step, by examining the main codes of 10 subcategories and the 8 main categories.

Women in this study had limited and insufficient of awareness on cervical cancer, they did not have enough knowledge about the causes of the disease and how to prevent and test Pap smear. Given perceived susceptibility, most women have less aware of the risks of cervical cancer. In the perceived severity of the disease, most women have known cervical cancer as a fatal disease without treatment. In the context of perceived social norms in this section, women are more likely to express their approval or disapproval to those relatives whom opinions are important and influential (Table 2).

According to the results obtained in this study in the quantitative, regarding the effect of training

on the psychological variables influencing passing from the model, the results showed that in comparing the mean scores of the two groups of experimental and control, there was a significant relationship based on Mann-Whitney test for awareness variables $P\text{-value} = 0.000$, perceived susceptibility $P\text{-value} = 0.004$, perceived benefits $P\text{-value} = 0.000$, perceived barriers $P\text{-value} = 0.002$, perceived self-efficacy $P\text{-value} = 0.001$, and perceived social norms $P\text{-value} = 0.006$. However, in perceived severity, $P\text{-value} = 0.39$, that is to say, there was not a significant relationship (Table 3).

4. DISCUSSION

In this study, a combination research method with a sequential exploratory approach was selected as an appropriate research method. The present study is a first mix method study that has been performed using the PAPM model for the Pap smear test.

In this study, a combination research method with a sequential exploratory approach was selected as an appropriate research method. The present study is a first mix method study that has been performed using the PAPM model for the Pap smear test.

According to the findings of this study, participants' awareness of the cervical cancer and Pap smear was inadequate. This finding was aligned with Lee's findings on Korean American women [11,12] and Wang's findings in Malaysia. However, this is not consistent with Study with study conducted by Karimi et al. [13]. In the present study, most women do not have proper information about the cervical cancer prevention method. These results are also confirmed in studies by Khojaste and Mobaraki [14,15].

Table 1. Comparison of the similarity of the demographic variables in the intervention and control (before the intervention)

Variable	Variable level	Frequency of intervention group	Frequency of control group	P value
Literacy	illiterate	51	58	0.47
	Elementary	22	15	
	Junior	9	12	
	diploma	8	5	
marital status	Married	83	87	0.42
	Divorced or widowed	7	3	
Age (mean \pm standard deviation)		38.35 \pm 10.93	39.47 \pm 11.15	0.49
Body mass index (BMI) (mean \pm SD)		27.69 \pm 5.11	28.78 \pm 4.70	0.13
Number of children (mean \pm SD)		3.11 \pm 2.01	3.37 \pm 2.18	0.39

Table 2. The codification process with qualitative content analysis approach was extracted from the comments of the participants in 30 interviews

Theme	Main category	Sub category	Main code
Awareness	Lack of awareness of cervical cancer	Scarring	Scarring of cervix Malignant gland with scar
		Individual factors	washed their underwear not on time keep animals at home
	Lack of awareness of disease transmission	Environmental factors	Cold and humidity infection
		Hormonal factors	High femininity hormone Intercourse with menstruation Use pill and IUD to prevent pregnancy
Perceived susceptibility	Wrong Cultural beliefs	Healthy	strong and did not think about the diseases Healthy uterus
		Fear	Fear of being infected due to the commonality of the disease Fear of being infected due to the use of ampoules and pills
	Genetically	Heredity	Hereditary background Hereditary transmission of the disease
	Wrong Religious beliefs	Righteousness and magnitude	The fate of human is in the hands of the god Cancer is the result of a worldly retribution
Perceived severity	Incurable disease	Being dangerous	it cannot be treated It has no survival
	Hysterectomy is synonymous with family breakdown	disintegrate the family	woman loses the ability to have children, husband Causing a woman to divorce
	Financial load	No cost effectiveness	Financial problems and debts Spend a lot and without result
	Physical load	Disability	Hysterectomy, Sterility, hair loss, Menstruation
Perceived Social norm	Positive social support	support	Excite family members by doing experiments
	Negative social support	Not supporting	Disagreement with family members by doing experiments

Table 3. Relationship between psychological variables the average scores affecting model Stages in the intervention group and the control group after training based on the Mann-Whitney test

Psychological variables influencing the model	Control group			Intervention group			P-value
	Number	Mean	Standard deviation (SD)	Number	Mean	Standard deviation (SD)	
Awareness	82	1.2962	2.5	82	5.4634	4.3	.000
perceived susceptibility	82	4.8223	2.9	82	6.6707	2.4	.004
Perceived severity	82	4.2436	1.0	82	4.5854	.96	.39
perceived norms	82	.0385	1.9	82	.9683	1.6	.006

In this study, the lack of recognition cervical cancer was described as one of the reasons for not doing the test, which was in accordance with the results of the McFarland study [16].

Knowledge and awareness of risk factors can encourage women to perform screening and behaviors and test Pap smear. This study has been emphasized by Abotchie [17]. In this study, the Awareness of participants after education in the intervention group significantly increased by the P-value = 0.00; this is in agreement with the studies by Karimi in 2007 and Rahmati in 2001 that represents all the importance of education and its impact on increasing awareness [18,19].

Most of the participants in this study were less susceptible to in contracting the disease and did not see themselves at risk. Their reasons were being healthy, without having a family history of illness and believing in a good fate. The results of the study by Busler and colleagues showed that there is a meaningful relationship between low perceived sensitivity and low participation of women in the Pap smear test. In their study, women's reasons for their unwillingness to participate in the Pap smear test were painless and lack of disease symptoms [20]. In the present study, it was found that education has led to an increase in the mean of perceived susceptibility in the undereducated women, which is consistent with the study by Yakhforoshiha 2008 [21]. Also, there was a significant difference between perceived susceptibility before and after intervention, which agrees with the study by Daryani in 2014 [22].

In this study, the perceived severity of participants was high and most participants described cervical cancer as a life threatening disease. This result was according to Abotchie study in Ghanaian women [17]. In the McFarland's et al study, 57% of the subjects said cervical cancer was incurable and 50% believed that the diagnosing was equivalent to death and 37% believed its diagnosing was equivalent to hysterectomy [16]. In this study, the severity of perceived trained and no significant difference was observed in the control group p-value =0.39, a similar result was indicated by Vivo in 2006 [23]. But this study was not consistent with the study of Yakhorvashhet and his colleagues in the same field [21]. To decrease fear and anxiety of participation in the screening program, these misconceptions in the Pap smear counseling program should be considered.

According to the perceived social norms of women, our study showed that many comments from family members, especially comments

made by the partners, were important. In fact, family is the first and most important source of support [24]. Positive feedback from close friends can play an important role on the health and performance of individuals and can be effective in reducing stress and increasing satisfaction in life [25]. The perceived social norms of participants after training in the intervention group were significantly increased by the p-value = 0.006 towards the control group. In the study by Emely on increasing the rate of absorption of the fruits based PAMP model the results of the study emphasized the importance of social norms in practice and one of the factors influencing the practice [26].

The limitation of this study includes a lack of motivation for participants. Therefore, it is suggested that future researchers will also be considered stimulating resources, and, due to the lack of time and busy medical centers, informed and motivated staff in each center is used for training and consulting prevalent cancer [26].

5. CONCLUSION

Findings could help health policy makers to find the right area and purpose to facilitate the participation of women in the Pap smear test and use of educational models, such as a Precaution Adoption Process Model (PAPM) that most people are associated with the process of decision-making in higher education will be beneficial. Moreover, in the preparation, development and implementation of training programs, factors like increased perceived susceptibility, and awareness should be dealt with and some facilities should be provided to facilitate or resolve the barriers of doing the Pap smear test as much as possible.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

It is 15652 numbers ethics committee in Yazd University.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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