



## **The Effect of Training Based on Precaution Adoption Process Model (PAPM) on Rural Females' Participation in Pap smear**

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. Author AB performed the experiments and drafted the manuscript. Author MHB designed the study and supervised the experiments. Authors SSMM and BE did the discussion on the results and edited the manuscript. Author MA managed the statistics analysis. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Background:** Decision making for adopting a health behavior is a process involving passing through different stages.

**Objectives:** This study was conducted to determine the decision-making stages based on Precaution Adoption Process Model (PAPM) in Pap test in rural women.

**Methods:** This study was conducted implementing a quasi-experimental method. The participants were divided into two groups as experimental and control groups using the 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

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pamphlet were used. The data gathering tool included a questionnaire consisting a demographic variables and variables affecting the stages of PAPM. Data analysis was performed using the Mann-Whitney, chi-square and descriptive statistical methods.

**Results:** The results showed that 45% of the participants found their way to the sixth stage, i.e., practice stage (doing Pap smear). 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, perceived benefits, perceived barriers, perceived self-efficacy and awareness. But the perceived severity was not statistically significant. Chance of entering the sixth stage in the intervention group was 2.5 times higher than the control group.

**Conclusions:** Females for Pap smear at the same stage of the decision were not on the same basis. Thus, educational interventions should be done at each stage.

*Keywords: Cervical cancer; decision making; Pap test; precaution adoption process.*

## 1. INTRODUCTION

Recently In the world, cervical cancer is the second most common cancer among women. Approximately the 500000 new cases are found annually and killing 274000 people [1]. In developing countries, cervical cancer is the highest incidence and mortality, because in these countries cancer prevention and control programs are insufficient. Almost the 80% of cervical cancers have decreased with implementing effective prevention programs and effective treatment in the developed countries [2].

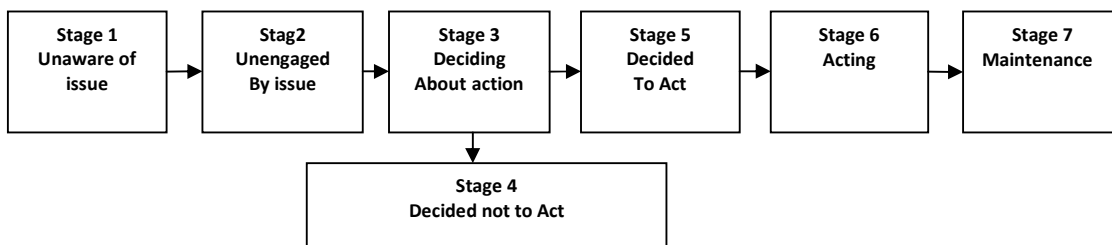
Pap smear test is a diagnostic test for cervical cancer in women and is considered as a health behavior and health promotion [3]. Despite the widespread and availability use of the Pap test, subgroups of high-risk women (including low income and less educated women) are screened rarely [4]. In the developing countries Pap smears coverage is roughly 19%, whereas within the developed countries is 63% [5]. The aim of models in health education is to modify people's attitude, increase awareness and help to change their incorrect behavior [6].

In this study, the PAPM model was used as the framework which is a model of health education

and health promotion. In turn, it may affect psychological variables such as: awareness, perceived severity, perceived susceptibility, perceived barriers, perceived benefits, perceived self-efficacy and social norms [6].

The Precaution Adoption Process Model tries to explain how a person comes to decisions to take action and how she or he translates that decision to action. Adoption of a new precaution or stop of a risky behavior needs the deliberate stages unlikely to occur outside of conscious awareness. The PAMM used to these types of actions. The PAMM a stage-based model that identifies phases along the route to protective health action guided the study aims and hypotheses (Fig. 1), [6].

Sarvabad is located in Kurdistan province of Iran and it is the most disadvantaged cities in Kurdistan province in terms of Medical facilities. In this city, cervical cancer is the second most common cancer among women after the breast cancer. The incidence rate is estimated at 11.5 % in a year. Over the past five years, this rate had a threefold increased. The rate of doing screening test is 5.5%, Which shows less efficient [7].



**Fig.1. The stage-based model of Precaution Adoption Process Model (PAPM) [6]**

## 1.1 Objectives

The aim of this study is to evaluate and explaining the effect of training based on the Precaution Adoption Process Model on women's to do preventive behavior against cervical cancer.

## 2. METHODS

The study was a quasi-experimental Interventional study. It was conducted during June to December 2015 among 20 to 60-year-old married women in rural health centers of the Sarvabad city in the province of Kurdistan, Iran. After getting the legal permission from the health affairs authorities of Sarvabad city, the participants who were eligible for the study were randomly selected from the files of the rural households. For the sample selection volume, the size of the required sample was estimated as 180 samples according to the following relationship:

$$N = 50 + 10K$$

Where, K is the number of depended variable [8].

Ninety subjects were assigned to the control group and 90 subjects in the experimental group. The experimental group was trained, but the control group was not training. The Being married, having age between 20 and 60, the lack of doing a Pap smear test and that it is 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, lack of continuous attendance in educational sessions or during completing the post-test questionnaire was considered as exclusion criteria. All the participants were explained about the research procedure, being confident of the data and the aim of conducting the research. It must be pointed that all subjects entered the study with their willingness. Diagnostic evaluation of females, according to the qualitative study was conducted by the research team, based on precaution adoption process, where all factors affecting the Pap smear-based psychological variables influencing the model using the interview were performed three months after the intervention, again the necessary information from the two groups were collected and analyzed [9].

Following pretest, the training program was determined according to the placement of the

individuals in each stage of the model. For example, for the people who were in the unawareness or unengaged stages (stages I and II), two training sessions, a lecturing session and a question and answer session, were held by the midwife. The people who were at on-deciding to take action stage (stage III) had an individual face to face training session with an emphasis on risk perception, susceptibility and severity of the perceived risk, efficacy of committing behavior and the interests of doing that behavior. Individuals who were in the stage of deciding not to take action (stage iv), in addition to receiving a training pamphlet followed by its explanation, watched a film on the problems made by cancer and its difficulties. Clients who were at the deciding-to-do-the action stage (stage v) had a telephone consultation session on the how-to-do the operation and its benefits.

The data gathering tool was the self-report questionnaire. The information was collected from the participants by means of self-reporting. The supposed questionnaire consisted of two parts: the first part included six questions in the participants' demographic information that evaluates information on the participants' education background, age, type of contraceptive and the existence of a person among family members with cervical cancer and etc. The second part included questions related to psychological variables influence in decision-making and passing the model stages. It contained 32 questions extracted from the qualitative study conducted by the researcher. Its content validity was confirmed by 10 experts in the field. After eliminating two questions on perceived barriers and benefits, the reliability was reported as 0.75 using Cronbach's alpha method.

The questionnaire was adjusted with a tertiary options scale from 1 Disagree to 3 Agree. Twenty participants who had never heard about Pap test (first stage) didn't complete pre-test questionnaire. Data analysis was done by means of SPSS, version 20, performing chi-square, Mann-Whitney, OR, t-test and frequency tests. The significance level of the test was considered  $p \leq 0.05$ .

Written informed consent was obtained from all participants in the project. Moreover, the information extracted from the encoded questionnaires was kept confidential.

### 3. RESULTS

The majority of the females in this study were either illiterate (60.6%) or was at primary school level (20.6%). The age average of the participants was 38.9±11/3 and 94.4% of them were married. Most of them (97.8%) reported the absence cervical cancer in their family history. In terms of placement of individuals in each stage of decision-making in the pre-test, 20 out of 180 participants had never heard the name of the Pap Smear test (first stage); Sixty-six participants have heard about the Pap Smear test, but they had never thought about it (second stage); thirty five participants had heard the test name and thought about it, but they were in the stage of deciding if to do or not to do it (third stage); five participants have decided not to do the experiment (fourth stage) fifty four participants have decided to do the experiment (fifth stage).

The placement results of every individual at each stage of the decision-making model are summarized in Table 1.

After training tailored to each group according to their placement at each stage of the model, the results showed that 10 subjects in stage II, 14 subjects in stage III, 9 subjects in Stage IV, 66 subjects stage V, and 81 subjects were in stage VI that is an experimental stage (Table 2).

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-value = 0.000, perceived

susceptibility p-value = 0.004, perceived benefits p-value= 0.000, perceived barriers p-value= 0.002, perceived self-efficacy p-value= 0.001, and perceived social norms p-value = 0.006. However, in perceived severity, p-value = 0.39, that is to say, there was not a significant relationship (Table 3).

In this study, 81 participants (45%) out of the total 180 participants did the Pap test while the rest 99 (55%) did not. Fifty eight participants (64.5%) in the experimental group did the Pap test, whereas 23 participants (25.5%) in the control group did Pap test. In general, the results showed that the intervention made Pap test chance of occurrence as 2.5 times more as control group: OR = 2.5. Chi-square test results in determining the relationship between the supposed intervention and doing the test was also significant; p-value = 0.000 and Chi2 = 27.4972.

### 4. DISCUSSION

The present study is the first of its kind that examines doing a Pap smear based on the Precaution Adoption Process Model (PAPM). This study was carried out among 180 volunteer rural females in two groups of experimental and control.

In the present study, six stages of the seven stages of the model were examined and the trainings have been designed and implemented according to the placement of participants in either of the model's stages which by itself approves the comprehensiveness of the study whilst in previous studies, only one or few stages of the model have been examined [10,11].

**Table 1. Placement of individuals in each stage of the model in experimental and control groups before training**

Control groups	First stage	Second stage	Third stage	Fourth stage	Fifth stage
	12	28	18	3	29
Experimental groups	First stage	Second stage	Third stage	Fourth stage	Fifth stage
	8	38	17	2	25

**Table 2. Placement of individuals in each stage of the model in experimental and control groups after training**

Control groups	Second stage	Third stage	Fourth stage	Fifth stage	Sixth stage
	6	14	9	28	33
Experimental groups	Second stage	Third stage	Fourth stage	Fifth stage	Sixth stage
	4	0	0	28	58

**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	78	1.2962	2.5	82	5.4634	4.3	.000
perceived susceptibility	78	4.8223	2.9	82	6.6707	2.4	.004
perceived severity	78	4.2436	1.0	82	4.5854	.96	.39
perceived benefits	78	3.1280	1.2	82	5.6829	.87	.000
perceived barriers	78	2.5256	1.7	82	1.2561	1.3	.002
perceived self-efficacy	78	1.3333	1.5	82	2.3415	1.1	.001
perceived social norms	78	.0385	1.9	82	.9683	1.6	.006

In this study, 45% of the participants found their way to the sixth stage, i.e., Practice stage (doing Pap smear), whereas in a study conducted by Delara and colleagues (2012) under the title of "teaching relaxation techniques before the PMS" based on Precaution Adoption Process Model (PAPM) among the 120 high school female students at Sabzevar city's high schools, none of the participants didn't enter the sixth stage [12].

In the present study, it was found that education has led to an increase in the mean of perceived susceptibility in the undereducated females, which accords with the study by Yakhforoshiha conducted in (2008), [13].

By definition, a subjective belief about the extent of the injury severity, which can result in disease or a harmful condition caused by a particular behavior occur [6]. 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 (2006) [14]. But the study did not match to Yakhforoshiha and colleagues in the same field [13].

Perceived benefits playing a decisive role in making behavior changes created especially health behaviors [15]. In this study, intervention, increased average benefits from the intervention group compared to the control group in the experiment.

In a study entitled the effects of psychological centralized programs of participation increase of Korean females in doing the Pap smear test, it was claimed that the intervention group, who was under the influence of education, had a higher score in perceived benefits about doing the Pap smear test [16].

In this study, education was a decrease in perceived barriers to testing in the training group. Sharifirad and Karimi had in their studies as reducing barriers to health-related behaviors after the education programs, as have [17 and 18].

In this study, the intervention group self efficacy-perceived had a higher score than the control group after the intervention. There was a significant statistical difference P-VALUE = 0.010. Numerous studies have shown that self-efficacy is one of the crucial factors in health behaviors, including Pap smear [19-21]. One of the ways that can be efficacy individuals to improve health behavior is reduced obstacles in the way of doing the behavior [22].

The Awareness of the participants following the education in the intervention group significantly increased by the p-value = 0.0 towards the control group; this is in agreement with the studies by Karimi (2007) and Rahmati (2001) that represents all the importance of education and its impact on increasing awareness [23,24]. It is

suggested that in future studies the seventh stage or phase lasting model be considered.

The limitation of this study includes lack of motivation for study 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.

## 5. CONCLUSION

According to this study, the 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 perceived benefits 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 not applicable.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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