

## THE IMPACT OF EDUCATIONAL INTERVENTIONS BASED ON THE HEALTH BELIEF MODEL (HBM) PAP SMEAR TEST IN WOMEN REFERRED TO HEALTH CENTERS OF BANDAR ABBAS

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**Abstract: Background:** *Pap test is a cheap, uncomplicated and effective method of screening for cervical cancer in apparently healthy women which boosts health. HBM is one of the most useful models for studying the behavior of health education in order to determine its effects on education. The present study was conducted to determine the effect of education based on the Health Belief Model (HBM) Pap smeaartest in women referred to health centers of Bandar Abbas*

**Method:** *The research was a quasi-experimental study included a pre-post test design, which was conducted in the first six months of 2014 and the subjects included 120 mothers referring to Bandar Abbas health and treatment center.*

*The data were collected through questionnaire based on the HBM structures and they were analyzed using independent t-test (independent and paired samples) and chi-square test.*

**Results:** *The results showed that the average of awareness score, perceived susceptibility and severity, perceived benefits and barriers, self-efficacy and cues to action in internal and external dimensions were increased after educational intervention in treatment group compared with the control group ( $P(001/0>$ ).*

**Conclusion:** *The educational program designed based on the HBM can be effective in promoting awareness and doing Pap test screening in women*

**Key words:** *Pap smear test, educational interventions, Health Belief Model*

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## INTRODUCTION

Uterus mouth cancer, although being preventable to a great extent, is still regarded as the most common cause of death resulting from cancer in the developing world around the world (1). Approximately 10 percent of all invader cancers of women occur in the uterus, close to 30 percent of which appears in the uterus neck (2). Fighting with cancer includes all measures that exist in the fields of prevention, early diagnosis, treatment and recovery based on the current medical science (3). Pap Smear test as a cancer cervix screening method has been proposed for various communities' women (4) and unusual cells are easily detected with Pap Smear test (5). Therefore, because of being accessible a suitable screening program and effective treatment of primary losses, it is known as a preventable cancer. In spite of that, only five percent of women in the developing countries take part in the Pap Smear test screening program (6). Lack of regular screening accompanies with a two to six fold increase of uterus mouth danger of cancer (7). According to the conducted studies, factors such as lack of organized screening programs, lack of awareness and incorrect and superstitious beliefs affect low usage of Pap Smear (8). One important area for primary prevention of cancer is education. Nowadays, education and enhancement of awareness has led to prevention of one third of cancers (3). However, change of behavior is a complex process because human behavior reflects various factors. Researchers have used models to change the behavior. One of the effective models in health education is the health belief model, which regards behavior as a function of knowledge and attitude of an individual (9-10). The model insists on the point that how individual perception and beliefs about the fear from a health problem and evaluation of obstacles and benefits of the preventable behavior leads to adoption of the behavior (11). Effectiveness of the health belief model on improvement of awareness, attitude and adoption of behaviors in relation to health in various groups have been confirmed in many studies. As an example, Rakhshani, et al, (1392) and Pirzadeh (1389) have reported in their studies that using such a model for the issue of education has caused more participation of people in the Pap Smear test (11-12). In addition, Karimi, et al, (1388) also have demonstrated in their study that education based on the health belief model has been able to encourage people to participate in the screening program of uterus mouth cancer (2).

Taking into consideration the high prevalence and death toll of uterus mouth cancer in the developing countries as well as low acceptance of behaviors preventing from uterus mouth cancer, this study was conducted on the women who referred to the health centers of the city of Bandar Abbas to see the effect of the health belief model based educational intervention on the accomplishment of the Pap Smear test.

## MATERIALS AND METHODS

The present research was of the intervention type (semi empirical), which was

conducted in the year 1393. Using the  $n = \frac{2 * (z_{1-\alpha/2} + z_{1-\beta})^2}{d^2}$  formula, certainty

level of 95 percent, test power of 80 percent and the impact measure of 0.39, the necessary sample volume was considered and a sample number of 102 people was estimated accordingly. To avoid possible falling, the final volume of 120 samples was considered (60 people in the intervention group and 60 people in the case group). The sampling method was of the multi stage cluster type (each cluster represents a remedial health center). Four out of eleven remedial health centers were accidentally selected. Two centers were determined as the witness groups and two centers as the intervention groups. The existing questionnaire on this issue was used as tool to collect data (6).

The questionnaire was set into four sections. The first section consisted of questions about the demographic data. The second section consisted of fifteen questions about the awareness in the area of uterus mouth cancer and preventive factors. The third section consisted of the questions about the factors of the health model of belief (perceived severity: five questions, perceived sensitivity: seven questions, perceived benefits: eight questions, perceived obstacles: twelve questions, self-efficiency: eight questions, internal and external action guide: twenty two questions). The fourth section determined the questionnaire of the questions about the behavior, which was designed as a six question framework. The method to score the questions of the questionnaire was such that each question in the awareness section had three choices of true, false and "I don't know". The correct answer had one score while the incorrect or "I don't know" answers received no scores. The minimum score was zero and the maximum was fifteen. The more the score, the more the awareness was assumed. The factors of the health model of belief (perceived sensitivity, perceived severity, perceived benefits and obstacles) were of the five option attitude meter scale type of Likert, ranging from four score very agreeable to zero score very opposed. The maximum achieved score for the perceived severity, perceived sensitivity, perceived benefits and perceived obstacles were respectively 20, 28, 32 and 48 and the minimum score for the mentioned factors was zero. Self-efficiency was of the eight question framework of five option attitude meter scale of Likert, ranging from zero score very low to one score very high. The maximum score was 32 and the minimum was zero. The more the score, the more the self-efficiency was assumed. The internal and external action guide and the behavior had respectively the abundance and Yes (one score) / No (zero score) framework. The total score was six and the minimum score was zero. The more the score, the better the behavior was assumed. Criteria for the entrance to the

study were satisfaction of samples to participate in the study, having the primary literacy and lacking any disabilities or infirmity to answer the questions. Criteria for exiting the study were not having tendency to participate in the study and being absent in the educational sessions (even for one session). In order to enhance the awareness level, strengthen the model components and finally perform the Pap Smear test and explore the test in the samples, using the before hand obtained data, the educational intervention test was conducted on the intervention group for three sessions of three hours. The education method was lecture, question and answer and using two educational pamphlets.

In the first session, in order to realize the vulnerability and enhance the perceived severity among the samples, generalities about cancers focusing on uterus mouth cancer, symptoms and signs of the disease, the negative consequences of uterus mouth cancer, not answering the treatment and probability of metastasis to other parts of the body and ultimately death of the patient in the advanced stage was described. The second education session was taught based on the perceived benefits and obstacles factor and introduction of the Pap Smear test and its details of accomplishment. In the third session, to enhance self-efficiency, the learners were ensured that on time accomplishment of the Pap Smear test is not a difficult task and they can do the test easily. Educational slides were used as the action guide to show the symbols and symptoms of the disease. Two months after the educational intervention, the test was accomplished using the primary questionnaire for both groups (case and witness). Having been encoded in the software SPSS19, the questionnaire data was entered. To analyze the data, the Pair t, Independent t and K square were used.

## **FINDINGS**

120 ladies participated in the intervention study. 60 people were put in each group of witness and intervention. Average age of the witness and intervention groups were respectively  $29.1 \pm 5.58$  and  $30.1 \pm 5.75$ , where t test indicated that there wasn't any meaningful difference in the people's average age of both groups ( $P=0.34$ ). Average age of the first pregnancy of people in the witness and intervention groups were respectively  $21.77 \pm 4.07$  and  $23.22 \pm 3.62$ , which indicated no meaningful difference in the average age of the first pregnancy of people of both groups ( $P=0.05$ ). The abundance distribution of qualitative demographic variables of the people under study is separately shown in table 1 for both groups.

Before intervention, no meaningful statistical difference was seen between the groups in the average score of awareness, perceived sensitivity, perceived severity, perceived benefits, perceived obstacles, external action guide, internal action guide and behavior. However, after educational intervention a meaningful statistical

difference was seen in the intervention group for the average score of awareness and factors of the health model of belief (table 2).

**Table 1**  
**Abundance distribution of qualitative demographic variables of the people under study for both groups**

<i>Variable</i>	<i>In terms of variable</i>	<i>Witness group</i>	<i>Intervention group</i>	<i>Total</i>	<i>P-value</i>
		<i>Abundance (percent)</i>	<i>Abundance (percent)</i>	<i>percent</i>	
Education	Primary	13.3	6.7	10	0.14
	Secondary	15	15	15	
	Diploma	46.7	48.3	47.5	
	Upper diploma	11.7	5	8.3	
	Bachelor's and master's degree	13.3	25	19.1	
Job	Housekeeper and house occupation	88.3	83.4	85.8	0.77
	Public sector occupation	8.3	10	9.2	
	Private sector occupation	3.3	6.7	5	
Spouse's education	Primary	11.7	5	8.3	0.16
	Secondary	31.7	18.3	25	
	Diploma	36.7	38.3	37.5	
	Upper diploma	10	21.7	15.8	
	Bachelor's and master's degree	10	16	13.3	

**Table 2**  
**Comparison of scores of health model of belief factors for both groups after intervention**

<i>Factor</i>	<i>Witness</i>	<i>Intervention</i>	<i>t statistic</i>	<i>Degree of freedom</i>	<i>P-value</i>
	<i>Standard deviation average</i>	<i>Standard deviation average</i>			
Awareness	4.8±2.62	10.85±1.93	14.37	118	<0.001
Perceived sensitivity	15.78±4.84	22.03±3.54	8.18	118	<0.001
Perceived severity	12.97±3.52	17.02±2.50	7.27	118	<0.001
Perceived benefits	21.10±5.37	25.70±4.49	5.09	118	<0.001
Perceived obstacles	18.05±7.71	9.18±4.95	-7.50	118	<0.001
External guide	2.05±1.27	3.78±1.18	7.75	118	<0.001
Internal guide	2.12±1.70	6.72±1.19	17.16	118	<0.001
Self-efficiency	18.78±5.05	26.83±4.33	9.38	118	<0.001
Behavior	4.90±1.10	5.82±0.54	5.80	118	<0.001

## DISCUSSION

The present study was conducted with the aim of determining the effect of the health belief model based education on the accomplishment of the Pap Smear test for the women referring to the remedial health centers of the city of Bandar Abbas.

After intervention a meaningful statistical difference was seen in the average score of awareness of the intervention group.

The finding is compatible with the results of the study of Tavassoli, et al, (1389) to use the pattern to enhance the nourishment behaviors preventing cardiovascular illnesses, and with the results of the study of Mazloomi, et al, (1392) to adopt preventive health behaviors in the maturity period of girl students and also with the results of the study of Mohebbi, et al, (1391) to use the pattern to gain weight in the pregnancy period (13-15). Soumi Park, et al, (2005) have also demonstrated that educational intervention causes awareness enhancement leading ultimately to the participation of women in the screening program of uterus mouth cancer in the case group (16). One of the main reasons for the unfavorable performance of women at the accomplishment of the Pap Smear test can be known as their

low level of awareness because awareness is the pre requisite for the change of attitude, change of behavior and correct decision making to adopt the behavior (17). In the present study, the average score of perceived sensitivity before the education was 15.65, which upgraded to 22.03. This means that education has caused women to consider themselves as having the vulnerability to uterus mouth cancer. This finding is compatible with the results of the study of Sharifi Rad, et al, (2009), Sajjadi, et al, (2007) and Shamsi, et al (2001) about the increase of perceived sensitivity of people after education using the health model of belief (18-20). In addition, Karimi, et al, (1391) achieved the increase of perceived sensitivity of the samples in their study after educational intervention using the pattern to accomplish the Pap Smear test on the women (2).

The factor of perceived sensitivity indicates that sensitivity of an individual to a health problem together with the belief that even without the feeling of symptoms of a disease, there is the possibility of being afflicted with the disease, causes them to begin screening activities such as the Pap Smear test (2).

Findings of the present research indicated that the perceived severity for the people in the intervention group has increased (13.88 to 17.02), meaning that the people of the intervention group have taken the consequences of uterus mouth cancer serious and have known themselves vulnerable to the disease. Stating the negative consequences, blazoning on the dangers and blazoning on the severity of the issue for the people participating in the education program are of the ways of adjusting the perceived sensitivity and severity (21). Pirzadeh (1389) and Yakhforoosha, et al, (1387) also reported in their studies the enhancement of the perceived severity about the consequences of uterus mouth cancer, having finished the educational program for the women of the intervention group, which is compatible with the present study (1-12). The low percentage of behaviors preventing from the late consequences of diabetes resulted from the low perceived sensitivity and severity in the Tan May (2004) studies. However, existence of a meaningful difference between the perceived sensitivity score of the case and witness groups can be regarded as a suitable witness indicating the effect of education on the improvement of the perceived sensitivity of the case group, such that most of the diabetic patients, after the educational intervention, believed that they may also be vulnerable to lack of exercise (22).

The perceived severity means the consequences that a health problem can create for an individual (death, disability, social, family, ..., problems), and an increase of the perceived severity can have an effective role in most people to adopt behaviors preventing from the diseases. The average of the perceived benefits score for the accomplishment of the Pap Smear test showed a meaningful difference in the intervention group after education, which is on the same line as the results

obtained from the study of Sharif Rad, et al, (2006) on the effect of education on protecting legs of diabetic type 2 patients using this model, and the results of the study of Soomi, et al, (2005) about the Pap Smear test of Korean ladies indicating the increase of benefits average score (24). If it was possible to increase the individual's perceived benefits about the accomplishment or avoidance of a task, it might be possible to be hopeful to a great extent that the perceived benefits flatten the path towards adopting preventive behaviors. With respect to the perceived obstacles of accomplishment of the Pap Smear test, a meaningful difference was seen in the intervention group after the education, which is compatible with the results of the study of Anderson, et al, (2005), on the application of health belief model to prevent osteoporosis (25); while the results of the study of Agha Mollaei, et al (2005) conducted to improve the awareness and health beliefs of diabetic patients using booklets and interviews, showed no change in the perceived obstacles. The reason for the difference may lie in the difference between the research communities of the two studies. We had chosen healthy people for our present study and taught one preventive method, while Agha Mollaei, et al, had chosen patients for education, and maybe the perceived obstacles of our study hadn't been so severe and have been eliminated through education. The perceived obstacles are the most powerful dimension to state and forecast the health protective behaviors (26-27).

The health belief model states that based on the analysis of the difference between benefits and obstacles of an action, an individual does a behavior or avoid doing it. Therefore the obstacles of a preventive behavior must be removed as much as possible and its benefits be stated. In the present study, after educational intervention in the intervention group, the internal and external action guide showed a meaningful statistical increase with respect to the witness group, which is compatible with the results of Khorsandi, et al, (1388) who stated in their study that the internal and external guide leads mothers to adoption of behaviors preventing from the osteoporosis disease (27). The external action guide is a social factor that points to the social pressures and leads to the accomplishment or avoidance of a behavior, and the internal action guide is regarded as an internal stimulant (27).

In the present study, self-efficiency also showed a meaningful statistical difference after the education, which is compatible with the results of Taghdisi, et al, (1391) who showed in their study that education based on the health belief model has been able to increase self-efficiency of samples for the behaviors preventing from urine infection (21). Bandora believes that self-efficiency is the most important pre requisite for the behavior change and states that self-efficiency is efficient when choosing people for activities and their effort and perseverance. People with low self-efficiency are less probable to be involved in an activity, while those with high self-efficiency work harder and persevere more with the problems



confronting them. Self-efficacy is a principle linking awareness to the behavior. As a result, the feel of self-efficiency enables individuals to use their skills to do extraordinary works when confronting with obstacles. An effective performance needs both skill and the belief in the ability to do the tasks (2-27-28-29). In addition, the present study showed that the designed educational program has led to the increase of the average score of screening behavior of Pap Smear in the intervention group. Peyman, et al, (1393) showed in their study based on the education using the health belief model to enhance the behaviors of healthy life style of girls and women performance in relation to breast cancer and mammography showed that education has been able to affect positively on the attitude and behavior of the samples, which is consistent with the results of the present study (17). While the results of the study of Tabeshian, et al, (1388) showed that the impact of health education on the accomplishment of the Pap Smear test for women was meaningless (30). The present study was conducted five years after the study of Tabeshian et al, and it may be stated that during the years, educational system, education help tools and education methods have upgraded and has had a role in the effectiveness of the education.

The difference may also be justified by the role of the models in the effectiveness of the programs used in the education because the correct use of health education models for the issue of education can determine the base and foundation of the intervention and increase the effectiveness of education. Using questionnaire to collect data in this study may have caused some participants not to state their real information, and in addition, illiterate people not participating may decrease its generalization, which can be known as the limitation of the research.

## **CONCLUSION**

Taking into consideration the results of the study that demonstrated that the educational program causes self-efficiency level, severity, sensitivity and the perceived benefits to improve and the perceived obstacles to decrease and also to enhance awareness and behavior of participants, it is therefore suggested that administrators and those involved pay more attention to the design of educational programs based on health models and theories.

## **ACKNOWLEDGMENT**

This paper is the outcome of a student dissertation and the paper authors would like to fully thank all participants in the study as well as the respectable administrators of the remedial health centers of the city of Bandar Abbas

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