International journal of muscolossicieit I ach provention International Journal of Musculoskeletal Pain prevention

Volume 1, Number 3, Summer 2016



# The Effect of Educational Interventions based on Health Belief Model in adopting Preventive Behaviors of Musculoskeletal Problems in Female Afghan Health Workers

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Background: Preventive measures such as training and awareness and prevention skills for personal protection in the musculoskeletal areas are one of the most important strategies in health care systems. The aim of this study was to investigate the effect of an educational intervention based on Health Belief Model (HBM) on promoting preventive behavior of musculoskeletal problems in female Afghan health workers. Material and Methods: In this study, 60 female employees of Afghanistan health ministry were selected and divided randomly into control and experimental groups (N = 30 women for each one). Data, collected through a questionnaire based on health belief model on preventive behaviors of musculoskeletal problems. The experimental group received the educational intervention for a month, and three months after the program, both groups completed a questionnaire and data were analyzed. Results: The results indicated that before the educational intervention program, there were no significant differences between the experimental and control groups in knowledge, perceived susceptibility, severity, benefits and barriers and performance. However, after the intervention, these factors significantly increased in the experimental group compared to the control group and also perceived barriers decreased (all  $P \le 0.001$ ). Conclusion: According to this study, health education program based on Health Belief Model was an effective program on promoting preventive behaviors of musculoskeletal problems. Therefore, for successful implementation of these programs, control, monitoring and follow-up training is recommended.

Keywords: Educational intervention, Health Belief Model, Musculoskeletal problems.

# Introduction

H ealth education has been considered as an effective approach for special attention to prevention at all levels, in the developed countries and it has been regarded as one of the key areas in order to better control of human disease and ailment.

Furthermore, the value of the health education programs depends on the effectiveness of these programs and the effectiveness of health education program mainly depends on proper use of related

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DOI:					

theories and models. The models aim to identify and understand the factors influencing the behavior and to determine how these factors work (Glanz, Rimer & Viswanath, 2008).

The models also offer suggestions that can be effective on elements of behavior in a variety of conditions. One of the most effective models of health education is Health Belief Model (HBM). HBM is a comprehensive model that plays a role in preventing diseases and unhealthy behaviors and it is based on individuals' motivation for action (Glanz, Rimer & Viswanath, 2008). The value of the health education programs depends on the effectiveness of these programs and the effectiveness of health education program mainly relies on proper use of related theories and models. In other words, sufficient theoretic support along with fundamental health needs will increase the effectiveness of health education programs. HBM as the main used framework in this study is one of the oldest models of health behavior and it is utilized by experts in various

fields of behavior in designing and evaluation of behavioral interventions (Shaw, 2016). According to this model, motivation of a person to adopt a healthy behavior is divided into three distinct categories of personal perception, modifying behaviors and action/behavior likelihood.

Individual perception is a factor that affects understanding of a disease, an illness and consequences of healthy behaviors. The likelihood of an action discuss the effective factors on adopting appropriate behaviors. Moreover, moderating factors or facilitating factors such as demographic variables, perceived threat and cues to action play their role after the appearance of individual perception. Self-efficacy is a newly added concept based on Bandura's social cognitive theory which is a key factor in recent pattern formulas and is affected by moderating variables (Glanz, Rimer & Viswanath, 2008).

Existed literature indicated that after educational intervention based on HBM could improve susceptibility, perceived severity, perceived perceived benefits, perceived barriers, selfawareness and self-care behaviors regarding the educated behavior(Glanz, Rimer & Viswanath, 2008) Results of previous study (Saunders et al, 2016; Gautam, 2012), which were based on HBM represent an increase of average severity score of educational interventions, but another study (Austin et al., 2002) showed that low perceived severity is one of the main obstacles on preventive behaviors. Considering the performance of NBM on promoting preventive behaviors of musculoskeletal problems, given that musculoskeletal problems as health behavior issues and threats to public health, this study aimed to evaluate the effectiveness of health educational intervention based on HBM on promoting preventive behavior of musculoskeletal problems in female Afghan health workers. Moreover, the results of this study can be used in improving the care system regarding female Afghan health workers with musculoskeletal problems.

### Method

In this experimental study statistical population consisted of female Afghan health ministry workers. Sample size at confidence level of 95% by using the sample size formula for comparison of two groups, was calculated as 60 subjects randomly divided into two groups of intervention and control (N = 30 women for each group). Data collection tool, was a multi-part questionnaire consisted of moderating factors, including demographic information (8 questions), knowledge (30 questions), 41 questions about HBM

perceived benefits (5 items), perceived sensitivity (5 questions), perceived severity (4 questions), perceived cues to action (3 questions) and perceived self-efficacy (19 questions) which was designed as a checklist. To assess dimensions of the HBM, a four-point Likert scale was used. Regarding the perceived susceptibility, perceived severity, perceived benefits, perceived barriers and perceived self-efficacy, each question scores from "0 = strongly disagree" to "4 = strongly agree". Scores 1, 2 and 3 respectively represented: disagree, neutral, agree. Total scores of each part (perceived susceptibility, perceived severity, perceived benefits, perceived barriers and perceived selfefficacy) were calculated based on score of 100. The validity of data collection was measured through content validity and related literature reviews. By calculating Cronbach's alpha, reliability of the research tool was approved as 0. 88. Questionnaire reliability was confirmed as perceived susceptibility 0. 83, perceived severity 0. 81, perceived benefits 0. 85, perceived barriers 0. 87, cues to action 0. 83, selfefficacy 0, 86. Also, checklist reliability was obtained as 0. 89 by using Kappa coefficient. The questionnaire was completed by both groups before the intervention. After gathering and analysis of data, the educational program was designed and developed based on the HBM. Afterwards, the experimental group was exposed to health educational intervention and according to this model for promoting preventive behavior of musculoskeletal problems; first, they faced the problem (risk of musculoskeletal problems) and felt threatened (perceived susceptibility). Then, they understood the depth of the risk and seriousness of complications (perceived severity), and by receiving the positive signs from surroundings or internal environment (cues to action), they believed the possibility and benefits of their behavior (perceived benefits) and thought the barrier of action outweighs the benefit (perceived barriers). Finally, they believed in their ability to pursue preventive behaviors of musculoskeletal problems and to achieve promoting preventive behavior of musculoskeletal problems. The intervention program was conducted through lectures with questions and answers, providing pamphlets and booklets, in five sessions. In order to save time and resources, lots of theoretic materials were provided in a session to create a sense of security and usefulness in the attendees. The question and answer method was used to engage the attendees in the learning process. Educational contents, including the definition of musculoskeletal problems and its symptoms, the importance of musculoskeletal problems, especially

during the work (perceived barriers and benefits,

constructs, including perceived barriors (5 questions),

perceived severity and sensitivity) and prevention methods were provided. Three month after the educational program, information about awareness, HBM model and performance of research units were collected by the same questionnaire. After data extraction, data were analyzed using SPSS 23 software. In order to compare the mean score of knowledge, HBM model and behaviors of each group, before and after the intervention, paired t-test was used and for comparing between groups comparison independent t-test was utilized.

## Results

Sixty employees were enrolled in this study and the questionnaires were completed in two stages (100% response rate). The average age of the subjects was 42. 57 years with a standard deviation of 0. 95 and age range of 25 to 50 years. In the beginning of the study, the two groups were similar regarding all demographic characteristics (P < 0.5). There were no significant diffidence's between two groups in terms of HBM constructs at initial of the study (p < 0.05) (Table 1).



#### Figure 1. Total sample size.

In the following (table2), descriptive indicators of variables in pre-test and post-test were reported. According to the table, Kolmogorov–Smirnov *is* not significant for all variables. Therefore, distribution of group variables is normal and parametric tests can be used.

Table 1. Measures of descriptive variables in control and experimental groups (n = 60).

Variable	Phase	Group	Mean	Standard Deviation	K-SZ	р
	Dro tost	Experimental	10.32	1. 93	0.458	0.345
Vnowladza	Pie-test	Control	10.11	1.84	0.365	0. 547
Knowledge	Deat test	Experimental	13.21	1.33	0.645	0. 547
	Post-test	Control	10.32	1.85	0.536	0.658
	Dro tost	Experimental	14.80	4. 63	0.911	0.378
Perceived	Pie-test	Control	13.20	1.69	0.731	0.66
Barriers	Doct toot	Experimental	21.33	2.32	0.567	0. 905
	Post-test	Control	13.07	2.76	0.453	0. 987
	Dra taat	Experimental	18.33	5	0.420	0. 995
Perceived	Pre-test	Control	17.27	3. 63	0.759	0. 612
Benefits	Deat test	Experimental	21.87	2.50	0.986	0. 285
	Post-test	Control	16.47	2.50	0.727	0. 666
	Dra taat	Experimental	14.67	3.20	0.743	0. 639
Perceived	Pre-test	Control	13.40	2.56	0.692	0. 725
Sensitivity	Deat test	Experimental	20. 27	2.15	0.713	0. 690
	Post-test	Control	11.80	3. 38	1.007	0. 262
	Dra taat	Experimental	28.60	8.68	0.458	0. 985
Perceived	Pre-test	Control	29	8.07	0.489	0. 971
Severity	Don't toot	Experimental	42.60	3. 27	0.508	0.958
	Post-test	Control	31.27	8.07	0.734	0.654
	Dra taat	Experimental	14.25	3. 41	0.695	0. 901
Cus to Astism	Pre-test	Control	12.05	2.14	2. 14 0. 852 0. 5	0. 598
Cue to Action	Deatherst	Experimental	19.47	1. 95	0.745	0.354
	Post-test	Control	11.95	2.12	0.802	0. 612
	Dra taat	Experimental	18.54	5.01	0.540	0. 729
Perceived	Pre-test	Control	13.98	3. 24	0.701	0. 821
self-efficacy	D ( )	Experimental	25.57	2.56	0.720	0. 790
	Post-test	Control	14. 21	3. 02	0.821	0. 328

Table. 2 shows the results before the intervention. According to Table. 2 there was no significant difference between two groups regarding knowledge (p = 0.786), perceived barriers (p = 0.491), perceived benefits (p = 0.135), perceived susceptibility (p = 0.640), perceived severity (p = 0.260), efficacy (p = 0.777) and cue to action (p = 0.546).

Results of Table 3 shows that, three months after the intervention there was a significant difference between the two groups in terms of all variables of knowledge (p = 0.001), perceived barriers (p = 0.001), perceived benefits, perceived susceptibility (p = 0.001), perceived severity (p = 0.001), Perceived self-efficacy (p = 0.001) and Perceived cue to action (p = 0.001)

Table 2. Comparison of scores of health belief model constructs in experimental and control groups before intervention.

Variable	Phase	Group	Mean	Standard Deviation	р
Knowledge	Pre-test	Experimental	10.32	1. 93	0.786
Kilowicuge		Control	10.11	1.84	0. 780
Perceived	Dra taat	Experimental	14.80	4. 63	0. 491
Barriers	Pre-test	Control	13.20	1. 69	
Perceived	Dro tost	Experimental	18.33	5	0. 135
Benefits	Pre-test	Control	17.27	3. 63	
Perceived	Dra taat	Experimental	14. 67	3. 20	0. 640
Sensitivity	Pre-test	Control	13.40	2.56	
Perceived	Dro tost	Experimental	28.60	8. 68	0.260
Severity	Pie-lesi	Control	13.40	2.56	0.200
Perceived Self-	Dra taat	Experimental	18.54	5. 01	0 777
Efficacy	rie-iesi	Control	13.98	3.24	0. ///
Perceived Cue to	Dro tost	Experimental	14. 25	3. 41	0. 546
Action	110-1051	Control	12.05	2. 14	

Table 3. Score comparison of Health Belief Model between experimental and control groups after the intervention.

Variable	Phase	Group	Mean	Standard Deviation	р
Knowledge	Dra tast	Experimental	13.21	1.33	< 0. 001
Knowledge	ric-lest	Control	10.32	1.85	
Dorriora	Dra tast	Experimental	21.33	2.32	< 0. 001
Damers	Pre-lesi	Control	13.07	2.76	
Donofita	Dra tast	Experimental	21.87	2.50	< 0. 001
Denents	Pre-lest	Control	16. 47	2.50	
Consitivity	Dra taat	Experimental	20. 27	2.15	< 0. 001
Sensitivity	Pre-lest	Control	11.80	3.38	
Perceived	Dra tast	Experimental	42.60	3.27	< 0. 001
Severity	Pre-test	Control	31.27	8.07	
Salf Efficient	Dra taat	Experimental	25.57	2.56	< 0. 001
Sen-Encacy	Pre-lest	Control	14. 21	3.02	
Cue to Action	Dro tost	Experimental	19. 47	2.56	< 0.001
	110-1051	Control	11.95	3.02	~ 0. 001

Before the intervention, there was no significant difference between the experimental and control groups, regarding all variables of knowledge, Perceived severity, Perceived benefits, perceived barriers, Perceived self-efficacy and Perceived cues to action, however, after the intervention, the difference between the intervention and control groups was statistically significant regarding all variables. Since, in all of these variables, both lower and upper bounds are positive that indicates the average scores of knowledge and constructs of HBM in intervention group are higher than ones in control group.

#### Discussion

Health Belief Model is a theoretical model which leads to change in the patients' values which tend to avoid disease by believing that a particular health behavior is available as a value for the individual and will prevent health problem.

The purpose of this study was to evaluate the effect of the educational program based on HBM on promoting preventive behavior of musculoskeletal problems in female Afghan health workers.

Results showed that before intervention, there was no significant difference between the mean score of knowledge in the two groups, while these factors, after the intervention, significantly increased in the intervention group. However, no significant change was observed in the mean score of knowledge regarding the control group. The findings of this study showed that the health education program was effective on improving the knowledge and performance of the subjects regarding the preventive behavior of musculoskeletal problems. This finding is in line with the findings of previous researches (Saunders et al., 2016; Gautam, 2012).

The results of our study revealed the effect of educational program on knowledge of the experimental group. Similar results were obtained by existed evidence (Saunders et al., 2016) confirming the effect of educational intervention on knowledge of the experimental group. Increase of average score of perceived barriers indicated that after the intervention, subjects became more aware of the obstacles which prevented them from carrying out preventive behavior and have tried to solve them. Several studies have found that perceived barriers, is the most powerful dimension speech and predicting health protective in behaviors. The findings of this study suggested that the perceived benefits of the participants after the

intervention was improved that is in the line of previous study (Zara et al., 2016).

In the present study, perceived susceptibility of the participants in intervention group was increased. A study concluded on 46 studies using HBM revealed that the perceived sensitivity has profound impact on predicting behavior. If a person is sensitive towards a health issue, believing that he can be infected without developing the symptoms, this perceived sensitivity can lead to correct behavior and disease prevention. Health belief model, led a person to understand his vulnerability to disease risk and motivate him to adopt risk reduction behaviors (Carmel, 1989).

In this study perceived severity increased after the intervention. This increase can be caused by attendance of women on training courses about the musculoskeletal problems. The knowledge of the seriousness of musculoskeletal problems and understanding its complications and treatment costs, are important factors in improving the level of perceived severity. In a study (Lin, Simoni & Zemon, 2005) revealed that there is a significant relationship between perceived severity, threat and reduction of high-risk behaviors.

In the present study, the perceived self-efficacy improved after the intervention. Sharp and Salayr (2013) also proposed that self-promoting program design (including components observational learning, behavior and verbal persuasion) can greatly affect the levels of self-efficacy. (Sharp & Salayr, 2013).

The findings of this study showed that health education program based on health belief model, by raising knowledge and positive impact on the perceived barriers, perceived benefits, perceived susceptibility, severity, can greatly affect preventive behaviors of musculoskeletal problems in female Afghan health workers.

This study, examining the effect of educational intervention on musculoskeletal problems, has carried out for the first time in Afghanistan and major limitation of the study was lack of similar studies for comparison. Therefore, given the importance of this subject, performing of the similar studies is recommended. It also seems that using other education models, recommend control, monitoring and follow-up training in implementing of these programs, reforming the common educational field programs in the of musculoskeletal problems and training people with musculoskeletal problems by the operators involved in education and health promotion utilizing health belief model can help preventing musculoskeletal problems.

#### **Conflict of Interest**

There is no conflict of interest for this study.

#### Acknowledgement

This study was financially supported by research deputy of Tarbiat Modares University, Tehran Iran. Therefore, all authors would like to appreciate this support.

#### Author contribution

M. V; Study implementation, Data collection and analysis, writing the first draft of Paper.

M. V: Study design and data analysis, editing and confirming the final draft of the paper.

M. V: Study design, confirming the final draft of the paper.

#### **Funding/Support**

No Declared.

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**How to cite this article**: Vaezi, M., The Effect of Educational Interventions based on Health Belief Model in Adopting Preventive Behaviors of Musculoskeletal Problems in Female Afghan Health Workers. IJMPP. 2016; 1 (3): 137-142.