Original article

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 $P < 0.001$).

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

Health 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 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

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Access this article online	
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DOI:	

[DOR: 20.1001.1.24765279.2016.1.3.7.8]

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 perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-awareness 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 constructs, including perceived barriors (5 questions), 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 self-efficacy) 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, self-efficacy 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,

[DOR: 20.1001.1.24765279.2016.1.3.7.8]

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).

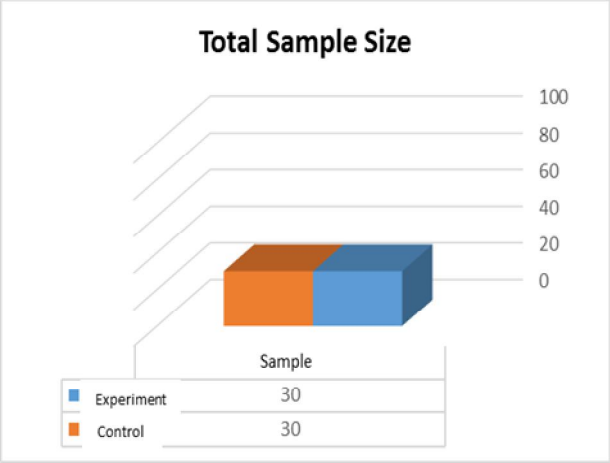

Figure 1. Total sample size.

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-S Z	p
Knowledge	Pre-test	Experimental	10. 32	1. 93	0. 458	0. 345
		Control	10. 11	1. 84	0. 365	0. 547
	Post-test	Experimental	13. 21	1. 33	0. 645	0. 547
		Control	10. 32	1. 85	0. 536	0. 658
Perceived Barriers	Pre-test	Experimental	14. 80	4. 63	0. 911	0. 378
		Control	13. 20	1. 69	0. 731	0. 66
	Post-test	Experimental	21. 33	2. 32	0. 567	0. 905
		Control	13. 07	2. 76	0. 453	0. 987
Perceived Benefits	Pre-test	Experimental	18. 33	5	0. 420	0. 995
		Control	17. 27	3. 63	0. 759	0. 612
	Post-test	Experimental	21. 87	2. 50	0. 986	0. 285
		Control	16. 47	2. 50	0. 727	0. 666
Perceived Sensitivity	Pre-test	Experimental	14. 67	3. 20	0. 743	0. 639
		Control	13. 40	2. 56	0. 692	0. 725
	Post-test	Experimental	20. 27	2. 15	0. 713	0. 690
		Control	11. 80	3. 38	1. 007	0. 262
Perceived Severity	Pre-test	Experimental	28. 60	8. 68	0. 458	0. 985
		Control	29	8. 07	0. 489	0. 971
	Post-test	Experimental	42. 60	3. 27	0. 508	0. 958
		Control	31. 27	8. 07	0. 734	0. 654
Cue to Action	Pre-test	Experimental	14. 25	3. 41	0. 695	0. 901
		Control	12. 05	2. 14	0. 852	0. 598
	Post-test	Experimental	19. 47	1. 95	0. 745	0. 354
		Control	11. 95	2. 12	0. 802	0. 612
Perceived self-efficacy	Pre-test	Experimental	18. 54	5. 01	0. 540	0. 729
		Control	13. 98	3. 24	0. 701	0. 821
	Post-test	Experimental	25. 57	2. 56	0. 720	0. 790
		Control	14. 21	3. 02	0. 821	0. 328

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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	p
Knowledge	Pre-test	Experimental	10. 32	1. 93	0. 786
		Control	10. 11	1. 84	
Perceived Barriers	Pre-test	Experimental	14. 80	4. 63	0. 491
		Control	13. 20	1. 69	
Perceived Benefits	Pre-test	Experimental	18. 33	5	0. 135
		Control	17. 27	3. 63	
Perceived Sensitivity	Pre-test	Experimental	14. 67	3. 20	0. 640
		Control	13. 40	2. 56	
Perceived Severity	Pre-test	Experimental	28. 60	8. 68	0. 260
		Control	13. 40	2. 56	
Perceived Self-Efficacy	Pre-test	Experimental	18. 54	5. 01	0. 777
		Control	13. 98	3. 24	
Perceived Cue to Action	Pre-test	Experimental	14. 25	3. 41	0. 546
		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	p
Knowledge	Pre-test	Experimental	13. 21	1. 33	< 0. 001
		Control	10. 32	1. 85	
Barriers	Pre-test	Experimental	21. 33	2. 32	< 0. 001
		Control	13. 07	2. 76	
Benefits	Pre-test	Experimental	21. 87	2. 50	< 0. 001
		Control	16. 47	2. 50	
Sensitivity	Pre-test	Experimental	20. 27	2. 15	< 0. 001
		Control	11. 80	3. 38	
Perceived Severity	Pre-test	Experimental	42. 60	3. 27	< 0. 001
		Control	31. 27	8. 07	
Self-Efficacy	Pre-test	Experimental	25. 57	2. 56	< 0. 001
		Control	14. 21	3. 02	
Cue to Action	Pre-test	Experimental	19. 47	2. 56	< 0. 001
		Control	11. 95	3. 02	

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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 in speech and predicting health protective 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 programs in the field of musculoskeletal problems and training people with musculoskeletal problems by the operators involved in education and health promotion

[DOR: 20.1001.1.24765279.2016.1.3.7.8]

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.

References

Abebe, G., Deribew, A., Apers, L., Woldemichael, K., Shiffa, J., Tesfaye, M., et al. (2010). Knowledge, health seeking behavior and perceived stigma towards tuberculosis among tuberculosis suspects in a rural community in southwest Ethiopia. *PLoS One. 5* (10), 133-39.

Austin, L. T., Ahmad, F., McNally, M. J., Stewart, D. E. (2002) Breast and cervical cancer screening in Hispanic women: a literature review using the health belief model. *Women's Health Issues*. 12 (3), 122-128.

Carmel, S. (1989) The Health Belief Model in the research of AIDS-related preventive behavior. *Public health Reviews*. 18 (1), 73-85.

Gautam, Y. R. (2012) *A study of assessing knowledge and health beliefs about cardiovascular disease among selected undergraduate university students using Health Belief Model* (Doctoral dissertation, Southern Illinois University, Carbondale).

Glanz, K., Rimer, B. K. & Viswanath, K. (2008) *Health behavior and health education: theory, research, and practice.* John Wiley & Sons. 4th edition, U. S.

Heid, C., Knobloch, M. J., Schulz, L. T., & Safdar, N. (2016) Use of the Health Belief Model to Study Patient Perceptions of Antimicrobial Stewardship in the Acute Care Setting. *Infection Control & Hospital Epidemiology*. 37 (05), 576-582.

Lin, P., Simoni, JM., Zemon, V. (2005) The health belief model, Sexual behaviors, and HIV risk among Taiwanese immigrants. *AIDS Education and Prevention.* 17 (5*):* 469-483.

Reynolds, G. L., Nguyen, H. H., Singh-Carlson, S., Fisher, D. G., Odell, A., Xandre, P. (2016) Application of the Extended Health Control Belief Model to Predict Hepatitis A and B Vaccinations. *PHN Public Health Nursing*. 33 (5), 430-439.

Saunders, G. H., Frederick, M. T., Silverman, S. C., Nielsen, C., Laplante-Lévesque, A. (2016) Description of adults seeking hearing help for the first time according to two health behavior change approaches: Transtheoretical Model (stages of change) and Health Belief Model. *Ear and hearing*. 37 (3), 324-333.

Sharp, P. B., & Salyer, J. (2012) Self-efficacy and barriers to healthy diet in cardiac rehabilitation participants and nonparticipants. *Journal of Cardiovascular Nursing*. 27 (3), 253-262.

Shaw, K. (2016) Exploring beliefs and attitudes of personal service practitioners towards infection control education, based on the Health Belief Model. *Environmental Health Review*. 59 (1), 7-16.

Zare, M., Ghodsbin, F., Jahanbin, I., Ariafar, A., Keshavarzi, S., et al., (2016) The Effect of Health Belief Model-Based Education on Knowledge and Prostate Cancer Screening Behaviors: A Randomized Controlled Trial. *International Journal of Community Based Nursing and Midwifery*. *4* (1), 57-68.

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.

[DOR: 20.1001.1.24765279.2016.1.3.7.8]