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**Examine the effect of education on health belief model to promote preventive behaviors of cardiovascular disease in Ahvaz personnel West Health Center**

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**A B S T R A C T**

Cardiovascular diseases are non-contagious diseases that are caused by various factors. Considering the importance of education in order to promote preventive behaviors of cardiovascular disease, this study have been performed to determine the effect of educational program, based on Health Belief Model, on the promoting the preventive behaviors of cardiovascular disease in the health center staff in the West of Ahva. This study is a quasi-experimental before and after design which was performed on 90 workers in the health center in the West of Ahvaz. Those people were selected randomly. In this study, an educational program and a questionnaire were designed based on the model for the staff of the health center in the West of Ahvaz. At first, the questionnaire was designed based on the pattern structure and then its validity and reliability were assessed and finally, it was completed in two stages before and after instruction with an interval of 2 months. Data was collected by questionnaires. After collecting and entering data into the computer, questionnaires data were codified and entered into SPSS 19 software. Paired-t test was used to evaluate and compare the awareness of knowledge and constructs models. This study has been performed, based on the Health Belief Model, to promote preventive behaviors of cardiovascular diseases of the Health Center staff in the West of Ahvaz. There was a big difference between the mean knowledge score and the construct model of Health Belief in studied group after the intervention. So that all cases significantly increased after receiving the instruction except the perceived barriers. Perceived Sensitivity and perceived barriers and benefits, according to the value of T, showed the greatest effect. This reflects the positive impact of an instructional program on the subjects. The results suggest that education based on health belief model, can improve the behavior of cardiovascular disease of subjects. This study shows that improving awareness can cause behavioral changes and improving health in people and insufficient knowledge of the risk factors of cardiovascular leads to poor performance of health promoting behaviors. This study indicates the need for training health staff in order to prevent cardiovascular diseases using the health belief model.

## **Introduction**

According to the World Health Organization, today cardiovascular diseases are one of the factors threatening human health and in many countries, including our country, they are known as the most important cause of death. It is predicted that by 2030, approximately 23.6 million people will die of cardiovascular diseases, especially coronary artery diseases and infarct. (1) 48% of deaths in the world are due to cardiovascular diseases. In Iran, 72% of deaths are caused by contagious diseases that 46 percent of it is related to cardiovascular diseases which are the major cause of death, disability and high cost of health care (2). According to the World Health Organization estimates, every year, 16.7 million people around the world die of cardiovascular diseases which is the cause of 29% of all deaths. Cardiovascular diseases are the first three causes of death and human disability around the world which one third of all deaths in the world (3). Although the risk of contagious diseases due to their nature of contagion are more urgent, the complications of chronic diseases such as cardiovascular diseases are longer, more expensive and more debilitating. Although some of the causes and progression of cardiovascular disease are not changeable like age, there are ways to prevent them. By applying these techniques and methods cardiovascular diseases can be prevented or at least their outbreak can be delayed (3). Numerous clinical studies have identified several factors which increase heart disease and heart attack. Most of these factors can be prevented, modified, and cured. Underlying heart disease and risk factors are behaviors or conditions that increase the risk of disease outbreak. Sedentary lifestyle, smoking and high-fat diet have been identified as the main behavioral risk factors of cardiovascular diseases (4) The

increasing prevalence of cardiovascular disease is such that now more than half of the government's health budget is spending for cardiovascular diseases. According to this high costs, as well as disability caused by disease, this issue need to be paid attention and some appropriate policy need to be done to reduce the rate of these diseases. At the present a quarter of people in America live with cardiovascular diseases and their complications. (5) More than 44 percent of deaths are due to cardiovascular disease in Khuzestan province (6). Behavioral Health Belief Model (HBM) is a precise and important behavioral pattern that represents health belief and behavior are related. This pattern can play a significant role in the prevention of diseases and it is based on this assumption that preventive actions are related to person's beliefs. The origin of this model back to 1950 and since then it has been tested in a variety of situations. This model is a comprehensive model that more plays a role in disease prevention and its base is individual motivation to act. It focuses on this issue that how individual understanding causes motivation and movement. In general, this model focuses on changes in beliefs and changes in beliefs lead to changes in behavior (7). According to this model, for adopting the preventive behaviors at first people should feel the risk of cardiovascular disease (perceived sensitivity), then they should perceive the depth of this risk and the significance of its physical, psychological, social and economic effects (perceived severity), then they should believe in the usability and applicability of the preventive cardiovascular diseases (perceived benefits ) by receiving the positive symptoms of the environment or their own local environment (guide of action) and they should find that the preventive factors are less costly (perceived barriers) until finally they take the preventive cardiovascular disease

behaviors (8, 9). HBM has played a role in many areas of health promotion, such as BSE (breast self-examination), controlling the blood pressure, Pap smear for cervical cancer, prevention of tuberculosis, diabetes and coronary artery disease, adherence to a diet (10) breast screening in people at risk (11) preventive nutritional behavior of cardiovascular diseases (12) and changing the behavior of patients undergoing coronary artery bypass graft (13). This study has been performed to determine the effect of instruction based on the health belief model on promoting the Preventive actions of cardiovascular diseases in the West Health Center staff.

### **Materials and Methods**

This study is a quasi-experimental before and after design in which 90 employees from the health center in the West of Ahvaz were studied in 2014-2015. They were selected randomly. In this study, an educational program and a questionnaire were designed based on the model for the staff of the health center in the West of Ahvaz. Before that the educational intervention was performed the designed questionnaires which was based on the HBM, were distributed among the subjects, then they were completed. Two months after the educational intervention, the questionnaires of the second phase were completed. Data were collected by questionnaire. This questionnaire consists of two sections, the first section is related to demographic data such as age, sex, residence status, family income, etc. The second section includes questions about knowledge, perceived sensitivity, perceived threat, perceived benefits and barriers, a guide to action and the efficacy. There are 11 demographic questions that have been considered 15 in order to assessing awareness. The criterion of measuring the

knowledge has been the number of correct answers to the questions. The score which has been given to each correct answer is (2) points, wrong answer (0) points and missed (1). Based on this scale, the range of knowledge was between 30-0, 6 questions to measure perceived sensitivity, 6 questions to measure perceived severity, 7 items to assess perceived barriers, 5 questions to measure the perceived benefits, 3 questions to assess the guide to action and one question was to assess efficacy. For scoring all structures of model, the Likert scale model with these three options: I agree=3, I disagree =2 and no idea=2, has been considered. So the range of score for perceived sensitivity and severity 6-18, for perceived barriers 7-21, for perceived benefits 5-25, for a guide to action 15 and for efficiency 3 have been considered. The higher score for all structure except for the perceived barriers indicates a better situation. In order to determine the scientific validity of information collecting tools, content validity method was used. At first, data collection was done by studying books and papers related to cardiovascular disease and then its content was studied and assessed by supervisors, professors, consultants and several other professors. The panel of experts was used to determine the scientific validity of the questionnaire too. The questionnaire was given to ten health and nutrition education experts and face validity was approved after some amendments. The content validity of the questionnaire (CVI = 0.7 and CVR = 0.62, based on Lavish table) was also approved.

To measure reliability of the questionnaire Cronbach's alpha and test-retest reliability methods were used. For this purpose, the questionnaire was given to 30 subjects of the society under study and after two weeks, the subjects were given the same questionnaire again. The questionnaires were matched

together in both innings with 85% confidence and finally the Cronbach's alpha 85% was calculated that is acceptable. It is important to mention that these people were excluded from the final study. After collecting data and entering them into the computer, the questionnaire data were codified and entered in SPSS 19 software and described using mean and standard deviation. For comparing awareness and model structures before and after, paired t-test was used and if data was not normal Wilcoxon would used. And for analyzing the data, chi-square tests and Anova were used and if data was not normal Kruskal–Wallis would use. The level of significance in this study has been considered 0.05. In order to comply with the ethical aspects of the research, the objectives of this study were explained to the participants and they were made sure that their information were kept secret and the questionnaires were completed anonymously.

## **Results and Discussion**

In this study, most participants were men. They have consisted 61.1 percent of all participants. Most of the subjects were in the age group 40-49 years who have been 53.3 percent of those surveyed. The average age is 41.7 with a standard deviation of 7/2. Most of the subjects (65.6 percent) had a BMI between 20-25. 31 percent of people were overweight. Most of the subjects (36.7 percent) had a bachelor's degree. The majority of the subjects (70 percent) were formally hired in the health center in the West of Ahvaz. The majority of the subjects (62.2 percent) had between 500 to 900 thousand toman monthly income. 71 percent of the subjects had a home.

The educational intervention increased. The mean of the score of perceived threat, perceived benefits and barriers, guides to

action and efficiency in the studied group indicates a significant difference before and after the intervention. All cases except perceived barriers have had a significant increase after giving instruction. Given to the amount of T, perceived sensitivity, benefits and barriers indicate the most effect.

This study was performed in order to promote preventive behaviors of cardiovascular diseases based on the health belief model in the staff of the Health Center in the West of Ahvaz. (Table 2) the mean of awareness score in the studied group has experienced a significant difference after instruction that it indicates a positive effect of an educational program on increasing awareness in the subjects. This result matches with the results of Amodeo's study and colleagues (14), Dr. Shakerinegad's study (15), the studies of Dr. Soosan Tahvildari (16), Godio Vegastrin (17), Abod and colleagues (18), Daniel Vemser (19), Ramezankhani (20), Kamali (21), and Ghofranipoor (22) who all have announced that after instruction awareness in subjects have increased. In this regard, in Mosca's study and colleagues (2005) in England, awareness of risk factors of cardiovascular disease is considered as a predictive factor of health promotion behaviors so that insufficient awareness of risk factors of cardiovascular disease leads to weak performance of health promotion behaviors.(23) The results of these studies indicate that awareness increase can lead to behavioral changes and health promotion in people who are at risk. Awareness increase in people is very significant because having awareness of cardiovascular disease, risk factors which create these diseases and preventive ways are considered as prerequisite to create an appropriate viewpoint about a special issue and adopting proper behavior (24).

**Table.1** Demographic characteristics of subjects in the health center in the West of Ahvaz

Statistics Variable	Average	Standard deviation	Statistics Variable	Number	Percent
Age	41.7	7.2	Employment status:	83	0.70
			Official	5	6.5
			Contractual	14	6.15
			Contractual	8	9.8
			Corporative		
Gender:	Number	Percent	Occupation:		
Male	55	61.1	Head of Unit	17	5.19
Female	35	38.9	Expert	35	2.40
			Administrative officer	22	3.25
			Services Employee	13	9.14
Marital status:			Housing:		
Married	77	6.85	Leased	64	17
Single	12	3.13	Property	26	8.27
Widow	1	1.1	Organizational	1	1.1
Academic degree:			Monthly income:		
The Diploma	13	4.14	Under 500 thousand toman	16.7	16
Diploma	20	2.22	Between 500 to 900 thousand taman	62.2	56
Associate's degree	9	0.10	More than 900 thousand toman	21.1	19
Bachelor's degree	33	7.36			
Master's Degree	9	0.10			
Doctorate	6	7.6			
Body Mass Index:			Work experience:		
Under 20	3	3.3	Under 5 years	6	6.7
20 to 25	59	6.25	Between 6 to 10 years	6	6.7
26 to 30	23	6.25	More than 10 years	78	86.8
More than 30	5	6.5			

**Table.2** comparing the mean and standard deviation of awareness scores and the constructs of the health belief model of the staff in the health center in the West of Ahvaz before and after instruction in 1393

Statistics Variable	The effect of instruction		After instruction N=90		Before instruction N=90		Level of significance in test
	SD	mean	SD	mean	SD	mean	
awareness	54.5	3.11	99.3	82.27	09.7	52.16	=0/0001p
Perceived sensitivity	2	9.0	29.0	9.11	2	11	=0/0001p
Perceived intensity	3.2	6.1	2.1	7.10	3.2	1.9	=0/0001p
Perceived benefits	6.1	6.0	1	1.9	7.1	5.8	=0/0001p
Perceived barriers	9.0	2	3.1	11.11	2.2	11.13	=0/0001p
Guides to actions	6.1	2	4.1	8.4	8.1	8.2	=0/0001p

And also in Table 2 it has been indicated that instruction is effective on perceived sensitivity to prevent from cardiovascular diseases so that sensitivity has been increased in the subjects. In Table 2, there is also a significant difference between perceived intensity before and after the instruction that shows perceived intensity about cardiovascular disease has been increased. The results of the studies performed by Ramezanknani (20), Sharifirad (25), and Shidfar (26) show the effect of instruction on the score of perceived intensity. Researchers believe that having information and awareness is not sufficient for doing preventive behavior rather thinking and viewpoint about a disease is an important factor to do or not to do a preventive action. In a study performed by VikiErdrive about patients, it was identified that when the perceived threat was significantly increased (27). Table 2 also shows that instruction has had effect on perceived barriers of cardiovascular disease and it decreased significantly after

intervening instruction. Both retrospective and prospective performed studies have indicated that perceived barriers are the most powerful dimension in explaining or predicting protective health behavior. (28) Ghofranipoor's study showed that perceived barriers decreased significantly after instructional intervene. (22) In Table 2 it has been indicated that perceived benefits score has increased significantly after the instructional intervene. AmolGhaderi's study and colleagues show a significant increase of perceived benefit score in test group after an instructional intervene (29). It has also been indicated in the Table 2. In general, the results of the present study confirms the positive effect of the designed instructional program on increasing the perceived sensitivity, intensity and benefits score of the subjects. The results of studies of Abood and colleagues (30), Wilson and colleagues (31), Kipping and colleagues (32), Foster and colleagues (33) confirm the results of this study which indicate the perceived sensitivity, intensity, benefits



scores of the subjects have increased after instruction.

### **Conclusion**

The results indicate that instruction based on the health belief model can improve the predictive behavior of cardiovascular diseases in the subjects. In this study, the mean score of awareness and health belief model constructs in the studied group has experienced a significant difference after the instruction compared to before the instruction such that all cases except of perceived barriers have significantly increased after the instruction which indicated a positive effect of the instructional program in the studied subjects. The results of this study shows that awareness increase can lead to behavioral changes and health promotion in people so that insufficient awareness of risk factors of cardiovascular diseases lead to weak performance of health increasing behavior. This study confirms the need to train the staff of health center about preventing from cardiovascular diseases using health belief model. The results also confirm that instruction based on health belief model can enhance the preventing behavior from cardiovascular diseases in the subjects.

### **Suggestions**

Determining the health needs and instructional priorities (preventing, awareness of factors and complications of diseases)

To train continually all health care staff about preventing from cardiovascular diseases until their performance improves. Providing appropriate and useful instructional materials for health care staff like training notes, pamphlets, posters and holding Retraining classes in understandable

terms for all people. Doing periodic examination and studying the risk factors of cardiovascular diseases. To pay attention to the quality of instructional classes and providing the newest information and achievements about preventing from cardiovascular diseases. Attracting the managers' attention to devote necessary facilities to train staff continually.

Studying the applications of health belief model in training in order to prevent from cardiovascular diseases in other groups.

Applying other health instructional models to prevent from cardiovascular diseases

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### **References**

1. WHO. Cardiovascular diseases (CVDs), editor. WHO Fact Sheet No. 317. Geneva: WHO; 2011. p. 317 [cited 2011 November]; Available from: URL: <http://www.who.int/media/centre/factsheets/fs317/en/index.html>.
2. Hatmi Z, Tahvildari S, Motlag AG, Kashani AS. Prevalence of coronary artery disease risk factors in Iran: a population based survey. *BMC Cardiovasc Disord* 2007;
3. Global status report on noncommunicable diseases [Online]. 2010;

4. WHO. Prevention of cardiovascular diseases. Swiss: Geneva; 2007: 1-16.
5. Soleimani, Ali. Risk factors of Coronary arteries closure in people under 45 years old in Shahid Madani hospital in Tabriz. Thesis of Mastery course. The Tehran University of Medical Sciences 1386
6. American Heart Association. Risk factors and coronary heart disease. 2012.
8. Shojaiezadeh, Davood. Studying behavior models in health training. Communication and health education Press Office. First Edition. Spring 1378
9. Rosenstock IM. The health belief model and preventive health behavior. Health Educ Monogr. 1974;2(4):354-86.
10. MardaniHamuleh M, ShahrakiVahed A, Piri AR. Effects of Education Based on Health Belief Model on Dietary Adherence in Diabetic Patients. Iran J Diabetes Lipid Disord 2010; 9(3): 268-75.
11. Hajian S, Vakilian K, Najabadi KM, Hosseini J, Mirzaei HR. Effects of education based on the health belief model on screening behavior in high risk women for breast cancer, Tehran, Iran. Asian Pac J Cancer Prev 2011;12(1): 49-54.
12. Tavassoli E, Hasanzadeh A, Ghiasvand R, Tol A, Shojaezadeh D. REffect of health education based on the Health Belief Model on improving nutritional behavior aiming at preventing cardiovascular disease among housewives in Isfahan. J Sch Public Health Inst Public Health Res 2010; 8(3): 11-24.
13. Zighaimat F, Ebadi A, Karimi-Zarchi AA, Moradi N, Hajiamini Z, Mehdizadeh S. The effect of education based on health belief model on dietary behavior of Coronary Artery Bypass Graft patients. Iran J Nurs 2010; 23(65): 50-60. [In Persian].
14. Amodeo R, De Ponti A, Sorbara L, Avanzini F, Di Giulio P, De Martini M. How to increase patient knowledge of their coronary heart disease: impact of an educational meeting led by nurses. G Ital Cardiol 2009; 10(4): 256-258
15. Shakerinegad. Ghodratoolah, studying the extent of effect of administering a nutritional education program on awareness, viewpoint and girl students' performance in a secondary school course in Ahvaz about Iron deficiency anemia
16. Tahvildari, Soosan. Study of application and adjustment of health belief model in Breast Self Examination training. Thesis of doctrate. Tarbiat Modares University of Tehran. 1377
17. Godin, G., 2009. The Effectiveness of Interventions in Modifying Behavioral Risk Factors of Individuals with Coronary Heart Disease. Journal of Cardiopulmonary Rehabilitation and Prevention, 9 (6), pp. 34-39
18. Abood D, Black DR, Feral D. Nutrition education worksite intervention for university staff: application of the health belief model. Nutr Educ Behav 2003; 35(5):260-67.
19. Daniel, M. and Messer, L.C., 2002. Perceptions of disease severity and barriers to self-care predict glycemic control in Aboriginal persons with type 2 diabetes
20. Ramazankhani A. [The effect of health education based on Health Belife Model on preventive actions of smoking in soldiers] Persian. Thesis presented for the Assistant Professor in Health Education. Tarbiat Modares University. 1999;40-45.
21. Kamali Mohammad, Heidarniya Ali Reza. Studying the extent of effect of health belief model on students' physical status (thesis of Doctorate)



- Tehran: Tarbiat Modares University; 1378
22. Ghofranipour F. [The application of Health Belief Model on prevention Brucellosis in the Shahrekord] Persian. Thesis presented for the Assistant professor in Health Education. Tarbiat Modares University. 1998;1:12-15.
  23. Mosca L, Linfante AH, Benjamin EJ, Berra K, Hayes SN, Walsh BW, et al. National study of physician awareness and adherence to cardiovascular disease prevention guidelines. *Circulation* 2009 Feb; 111(4): 499-510
  24. Hadizadehtalasaz F, Latifnejade R. [The effect of health education based on Health Belief Model on attitude female students towards Breast Self Examination] Persian. *Journal Birjand of university of medical sciences and health services*. 2004;1(1):25-30
  25. Sharifiehrad GH, Hazavei MM, Mohebbi S, et al. [The effect of health education based on Health Belief Model on self care of leg in type 2 diabetic patients] Persian. *Iranian journal of endocrinology and Metabolism. Journal of Shahidbeheshti university of medical sciences and health services*. 2005; 14(1):18-27
  26. Shidfar MR, Hosieni M, Shojaeizadeh D, et al. [The effect of health education program on knowledge and attitude cardiovascular diseases in the Mashhad hospital] Persian. *Journal of Birjand university of medical sciences and health services*. 2007;14(1):18-27
  27. Sharifiehrad GH, Hazavei MM, Mohebbi S, et al. [The effect of health education based on Health Belief Model on self care of leg in type 2 diabetic patients] Persian. *Iranian journal of endocrinology and Metabolism. Journal of Shahidbeheshti university of medical sciences and health services*. 2005; 14(1):18-27
  28. Mohammadi N, Rafee SH. [Health Education ,Health Team Guidance] Persian. 4th ed. Tehran: Ministry of Health and Medical Education press. 2004;74-77.
  - 29- Amal KA, Dalal MAR, Ibrahim KL. Effect of educational Film on the health belief model and self-examination practice. *East Mediterr Health J*. 1997;3(3):435-44.
  30. Wilson D B, Jones R M, McClish D, Westerberg A L, Danish S. Fruit and vegetable intake among rural youth following a school-based randomized controlled trial. *Preventive Medicine* 2012; 54: 150–15
  31. Kipping Ruth R, Russell Jago b, Debbie A. Lawlor. Diet outcomes of a pilot school-based randomized controlled obesity prevention study with 9–10 year olds in England. *Preventive Medicine* 2010; 51: 56–62.
  32. Foster Gary D, Sherman S, Borradaile K E, Grundy K M, Stephanie S, Veer Vander and et al. A Policy-Based School Intervention to Prevent Overweight and Obesity .*Pediatrics* 2008; 121 (4): e794 -e802.