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# Assessing the effect of Healthy Belief Model application on behavior change of the patients with Myocardial Infarction

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**ABSTRACT**

**Aims:** Myocardial Infarction is the most common disease in industrial countries. Changing lifestyle is necessary for decreasing heart diseases. This study had been done with the aim of assessing the effect of healthy belief model application on health behaviors of patients with Myocardial Infarction.

**Methods**: In this quasi-experimental research, 74 samples had been chosen by purposeful sampling method they were in two experimental and control groups in Kermanshah in 2011. Experimental group achieved education based on health belief model for health behaviors and control group achieved traditional education. The data were gathered by a questionnaire with reliability of r=0.81 and collection checklist and statistical analysis with SPSS-18 software and descriptive and inferential statistical tests.

**Results:** The averages age of the two groups were the same and most of the samples were males. There was signification difference between model concepts in both groups in the stage after interference in all elements except nutritional function (p=0.001).

**Conclusions:** In order to increase knowledge and improvement of activity function of the patients with Myocardial Infarction, it is recommended to use health belief model but education with this model did not have any tremendous impact on nutritional function.

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## 1. Introduction

Myocardial Infarction is one of the most common diseases in twenty-first century. About one and half million Myocardial Infarctions happen in U.S.A annually [1]. Coronary artery disease is one of the main reasons of death in U.S.A, that about one million people suffer that disease annually and it is the direct cause of death of 450000 people [2]. According to the report of Cardiac Society of America until 2020, from every 3 Americans 1 person or more is going to suffer different types of cardiovascular disease and in Europe, among every 4 million deaths in a year, 2 million

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deaths are related to cardiovascular disease [3]: it is estimated that until 2030, 32.5% of all the death reasons of the world is going to be due to cardiovascular disease [4]. Percentage of cardiovascular diseases death in countries of east of Mediterranean and middle east such as; Iran has been reported 25-45 percent [1].

In Iran death due to coronary artery diseases is increasing, and unfortunately every year due to the advancement of technology, lack of physical activity, increased emotional stress, increased levels of cortisol and catecholamine Morning, increased blood pressure and heartbeat, decreased activity and lack of proper nutrition, the age of this disease in decreasing in a way that now this disease is seen even in youth [5].

Heart failure is one of the complications of Coronary Artery disease that has high prevalence and causes life expectancy decrease in these patients that unfortunately only 35% of the patients suffering from heart failure survive until 5 years after the initial diagnosis [6]. Life expectancy is increasable in these patients by changing lifestyle such as; improvement of dietary habits and physical activities. Changing unhealthy lifestyle is necessary for decreasing Coronary Artery diseases complications [7].

Different studies have reported that lack of physical activity increases the danger of cardiovascular disease from 1.5 to 2 times [8] or women who sit more than 12 hours a day and have little activity are at risk of Coronary Artery disease more than women who have more activities and sit only 4 hours a day [9, 10]. In order to decrease risk of Coronary Artery disease and its complications, healthy lifestyle including; healthy diet, weight control, and physical activity are specifically important [11].

One of the basic tools in changing patient's lifestyle is the educational program as a part of treatment plan. Researchers showed that education have tremendous impact on decreasing behaviors related to risk factors and also increase of healthy behaviors related to health and they have completely clear economic justification that the average of every dollar that is spent for patient's education has 3 to 4 dollars savings in medical expenses and rehabilitation costs consequently [12].

Providing education to the patient does not only cause major changes in risk behaviors such as; smoking, improvement of tolerance level of physical activity and obeying medical advices, but it also causes savings in health and treatment expenses. Patients hold great value for the information that they achieve from treatment staff and they recognize nurses as the source of correct recommendations for lifestyle [12].

Health believe model had been presented for the first time by psychologists in 1950 [13] and it is one of the psychological models that predicts patients' health behaviors by focusing on people's believes. Details of health believe model is including; perceived threatening, perceived benefits and barriers and function guide [14]. The aim of this model is reinforcing of preventive positive behaviors such as; screening, immunization and controlling risk factors [15].

Assessing the articles of health believe model during ten years from 1974 to 1984 showed that perceived barriers is the most important dimension of health believe and perceived susceptibility is a strong factor for adopting healthy behaviors [16]. Different studies have pointed to the effects of education with this model in rehabilitation of the patients having open heart surgery [17] and change in lifestyle of the patients suffering from chronic heart diseases [18].

Treatment- health recommendations for doing health behaviors is going to be performed by patient and his /her family at the time that it had become in the form of believe in the patient's mind and action. Patient and his/her family's participant for using treatment-health recommendations in taking care and retaining health behaviors is essential and participation



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can be done only when it had been become health belief [17].

Nowadays there are many studies in Medical Science about educational needs of the patients having Myocardial Infarction and in most of them lack of information of the way of diet and physical activities are the things that had been pointed. In Iran, study of educational needs of the patients suffering from Myocardial Infarction showed that most of the samples need to have education about questions of disease nature, activity and diet [18].

With these assumptions and considering that there hasn't been any complete studies that assess awareness level dimensions about Artery Coronary disease, correct nutrition and appropriate exercise, the level of perceiving disease, perceived benefits and barriers of diet and appropriate exercise simultaneously in patients suffering from Myocardial Infarction, this study had been done with the aim of assessing the effect of application of health believe model on awareness level and activity function in patients suffering from Myocardial Infarction.

## 2. Methods

This semi-experimental study had been done in two treatment educational centers of Imam Ali and Imam Reza affiliated to Medical Science University of Kermanshah in 2011 and the study population was the patients hospitalized in these centers. Research sample in this study were 74 patients suffering from Myocardial Infarction with having inclusion criteria for participating in the study.

Sampling method was purposeful method and samples participated in the study voluntarily and they were in two groups of experimental and case group randomly. Sample size estimation had been estimated 74 people by using below formula and using Moradi's study (2005) [17].

$$n_1 = n_2 = n = \frac{2\sigma\left(Z_{\alpha/2} + Z_{\beta}\right)^2}{(\overline{X}_1 - \overline{X}_2)^2}$$

Data collection tools included an 82-item questionnaire based on health belief and researcher-made checklist. The questionnaire had demographic variables, patients' awareness level about Artery Coronary disease, correct nutrition and appropriate exercise, perception level of disease, perceived benefits and barriers about diet and doing appropriate exercise and action guide or reminders in doing health behavior.

Checklist that had been designed in three parts and 34 questions included: 6 questions about demographic features of one of the members of the patient's family that participated in the study, 14 questions about patient's function of following correct diet and 15 questions about patient's function in doing appropriate exercise. Scoring was according to Likret's five-point scale.

In this way that score one was counted as the lowest point and score five as the highest. The questionnaire that has been used in this study had been developed according to designed questionnaire of Moradi (2005) about application of health belief model in health behaviors of the patients' candidate for Coronary Artery bypass graft and it had been corrected and prepared according to the aims of the present study.

In order to achieve content and face validity, the opinion of ten faculty members of nursing and midwifery college of Azad University O Isfahan (Khorasgan) and Kermanshah had been used and in order to measure reliability of the questionnaire and checklist, with doing a preliminary study with size of 15 people by the presence of them and using Cronbach's alpha coefficient of the questionnaire it had been counted r=0.81.

Experimental group had health education in the framework of health belief framework and



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control group achieved education with traditional method. Sampling had been done during two months Imam Ali and Imam Reza hospitals of Kermanshah. In the first stage researchers started to complete questionnaires and checklist by one of the members of the family after achieving necessary permissions and introducing themselves and taking informed consent from all the samples.

Then samples had been put in the experimental and control group randomly by toss method. In the second stage (intervention stage), for experimental group direct education had been provided in individual form (face to face) and in the presence of one of the members of the patient's family for 30 minutes and about the importance and introduction of heart disease, disease signs and risk factors, the importance of following diet and doing regular activities and the importance of adjusting risk factors and changing lifestyle with considering details and factors that form health belief model and in order to follow effective educational program, it was performing in a determined time and place and at the end of the education session, a chance had been assigned for the samples and their families for asking and answering and for encouraging and answering their questions, one educational booklet that had been provided by the researchers was given to them. Descriptive and inferential analysis had been done by SPSS-18 software and statistical tests of t-test, chi-two and variance analysis. The level was significant $p<0.05$.

## 3. Results

The findings of the study showed that samples of the two experimental and control groups did not have statistical significant difference ($p<0.05$) in the variables of age, gender, occupation, pervious MI in the family among first-degree relatives, death due to MI among second-degree relatives and awareness score of every dimension of awareness (table 1).

In both groups of experimental and control, the highest frequency percentage, respectively 73% and 65.3% were related to men. The highest frequency percentage in experimental group

Table 1: Comparing the average of awareness dimensions scores in the groups of the study before and after intervention.

| Awareness dimensions | | experimental | | control | | p- value |
|---|---|---|---|---|---|---|
| | | average | Standard deviation | average | Standard deviation | |
| Awareness about Artery | Before | 1.96 | 1.23 | 2 | 1.21 | 0.789=p |
| Coronary disease | after | 4.16 | 1.67 | 2.09 | 1.24 | 0.000=p |
| Awareness about diet | before | 2.09 | 1.19 | 2.06 | 1.44 | 0.689=p |
| | after | 5.66 | 1.65 | 1.79 | 1.09 | 0.000=p |
| Awareness about the way of physical activity | before | 6.75 | 1.98 | 6.86 | 1.77 | 0.236=p |
| | after | 8.99 | 1.47 | 6.67 | 2.27 | 0.000=p |
| Total score of awareness | before | 10.83 | 2.77 | 10.82 | 3.27 | 0.907=p |
| | after | 18.41 | 4.24 | 10.75 | 2.24 | 0.000=p |



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was related to high school and in control group, it was related to guidance school that by using Chi test in both groups, there was no significant difference from educational point of view (p=0.266). About occupation variable, the highest frequency percentage in both groups of experimental and control related to the staff were respectively 24.3% and 23.3%.

Findings of the study showed that the average of the score in the area of awareness of Coronary Artery disease in control group before education, it was 2 (±1.21) and after education it was 2.09 (±1.24). In the area of awareness about the way of physical activity before education, it was 6.68 (±1.77) and after education it was 6.67 (±2.27).

In the area of awareness of following diet before education, it was 2.06 (±1.44) and after education it was 1.79 (±1.09). Paired t-test did not show any significant difference between the averages of the scores in control group at the stage before education and after education.

Findings in experimental group showed that this difference considering the average of awareness in the area of awareness of Coronary Artery disease in experimental group in the

Table 2: Comparing assessed contents and health belief model details in the groups of the study before and after the intervention.

| Comparing assessed contents and model details | | Experimental | | Control | | p- value |
|---|---|---|---|---|---|---|
| | | average | Standard deviation | average | Standard deviation | |
| Awareness level | before | 71.43 | 9.67 | 86.86 | 14.46 | 0.907=p |
| | after | 91.4 | 13.18 | 13.44 | 18.11 | 0.000=p |
| Perceived level | before | 25.78 | 9.55 | 25.79 | 10.37 | 0.862=p |
| | after | 36.49 | 7.9 | 27.06 | 10.41 | 0.000=p |
| Perceived benefits | before | 43.77 | 3.38 | 44.07 | 7.15 | 0.734=p |
| | after | 47.61 | 4.36 | 43.49 | 3.44 | 0.000=p |
| Perceived barriers | before | 85.37 | 4.89 | 86.01 | 18.52 | 0.804=p |
| | after | 101.53 | 16.35 | 85.06 | 5.01 | 0.000=p |
| Nutrition function | before | 39.67 | 3.90 | 40.76 | 5.93 | 0.4666=p |
| | after | 41.34 | 4.42 | 38.43 | 5.85 | 0.137=p |
| Activity function | before | 31.8 | 8.57 | 46.09 | 12.76 | 0.047=p |
| | after | 50.04 | 10.91 | 45.01 | 17.48 | 0.000=p |
| Total nutrition and activity function | before | 10.84 | 2.77 | 10./82 | 3.27 | 0.046=p |
| | after | 18.41 | 4.24 | 10.75 | 2.24 | 0.000=p |



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stage before intervention was1.96 (±1.23) and after intervention 4.16 (±1.67) and in the area of awareness about the way of physical activity in the stage before intervention was 6.75 (±1.98) and after intervention; 8.99 (±1.44) and in the area of awareness about following diet, the average before intervention was 2.09 (±1.19) and after intervention it was 5.66 (±1.65). Paired t-test in the experimental group before and after intervention showed statistical significant difference (p=0.001).

Findings of the study showed that education based on health belief model in experimental group has caused significant statistical increase in the level of awareness about disease (p=0.002), the perceived level (p=0.003), perceived benefits of diet and exercise (p=0.001), perceived barriers of diet and exercise (p=0.000) and also it has caused improvement of exercise activities of the samples (p=0.004). Although education has caused increase of patients' nutrition function but this increase was not statistically significant, (table 2).

## 4. Discussion

Results of this study showed that education in the framework of health belief model causes increase in the level of awareness and perception of heart disease and increase of the perceived benefits in the patients suffering from MI and as the effect of this education, it causes improvement in the function of the patients' activities.

Results of this study confirm results of the study of Zeighamit (2008) about application of health belief model in the patients undergoing Coronary surgery [19] and the results of the study of Ali and Hadad (2010) about application of this model in the level of participation of the exercise activities of the patients suffering from heart disease in Jordan [20].

Results of this study about the effect of education on preventive behaviors were also in line with the results of the study of Tafa [21].

The results showed that there was little effect in the way of diet function that were similar with the results of Hak-seon and Joo Ahn (2012) [22] and they were not in line with the results of the study about application of health belief model in changing Diabetes patients' behavior [23]. The cause of this finding can be due to the attitude of the patients suffering from MI toward following diet and the change due to education, in addition to that the distance of completing questionnaire in this study was one month after education, while it took four months in the study of diabetes patients.

Findings of this study showed that there is significant relationship between the age and the physical function and there was no significant difference between gender and awareness level. This finding was not similar with the study of Motamedi et al. (2010) that assessed the effect of education based on health belief model on preventing cutaneous leishmaniasis [24]. It seems that the reason of this difference is due to the difference of the patients' age range of the study in both researches. There was no significant difference between the gender of the samples of the study and the way of patients' function in two experimental and control group, while assessing women's function and awareness about nutrition and exercise and their relationship with cardiovascular patients showed that women failed to bring in action what they have been educated [25].

## 5. Conclusions

According to the results of this study about the positive and tremendous impact of using education in the framework of health belief model on behavior and activity function of the patients who suffer from Myocardial Infarction and awareness increase about disease, diet, exercise and also increase of perceived level and perceived benefits of Myocardial Infarction disease, it is recommended to use this model more in the program of rehabilitation of the patients suffering from MI.



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