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The effect of educational program (based on BASNEF model) on quality of life and adherence to treatment in patients with myocardial infarction in Shahrekord, Iran

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Abstract:

BACKGROUND: Myocardial infarction (MI) is one of the most common cardiovascular diseases affecting quality of life and adherence to treatment. This study aimed at assessing the impacts of an educational program based on the Belief, Attitude, Subjective Norm, and Enabling Factors (BASNEF) Model on quality of life and adherence to treatment in patients with MI.

MATERIALS AND METHODS: The present quasi-experimental study was conducted on eighty patients with MI admitted to hospitals affiliated to Shahrekord University of Medical Sciences in 2019, which were selected by the convenience sampling and then randomly divided into intervention and control groups. The intervention group received a BASNEF model-based educational-supportive intervention including three 45-min training sessions and three months' follow-up individually for each participant. Data were collected by Ferrans and Powers Quality of Life Index (QLI)-Cardiac Version, Modanloo Adherence to Treatment Questionnaire (MATQ) and questionnaire modified based on BASNEF model constructs. The collected data were analyzed using SPSS version. 22 software using the descriptive and analytical statistical test.

RESULTS: The total score of the MATQ and its subscales had significantly improved in the intervention group after the intervention ($P < 0.001$). The total score of the QLI and its subscales had significantly improved in the intervention group after the intervention ($P < 0.001$). In addition, the mean scores of the model constructs had significantly improved after the intervention in the intervention group ($P < 0.001$).

CONCLUSION: The results of this study showed that applying BASNEF model-based educational interventions can lead to improved quality of life and adherence to treatment in the patients with MI. Therefore, this model can be used to reduce the complications of MI.

Keywords:

Educational models, myocardial infarction, quality of life, treatment adherence

Introduction

Non communicable and chronic diseases are now considered as of the most important health problems in developed and developing countries.^[1,2] Cardiovascular disease (CVD) is among the most important chronic diseases, which are the leading

cause of death in most countries, including Iran, and the most important cause of disability.^[3] It is estimated that 23.6 million people will die from CVDs, especially myocardial infarction (MI), by 2030.^[4] About five million people develop CVD each year in the United States, and 285,000 die because of these diseases.^[5] CVD kills 138,007 people

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in Iran annually,^[6] and the life span of 3000 years is lost daily due to these diseases.^[7]

MI, also known as a heart attack, is one of the most common CVDs that often occur following a decrease in blood flow to the coronary artery due to thrombotic obstruction.^[8] In the US, one person has a heart attack every 20 s which causes a death of one person per minute.^[9] In Iran, the MI is the first cause of death in people over 35 years of age, with an estimated incidence of 181.4 per 100,000 people.^[7] Due to the impact of MI-mediated complications on all aspects of patients' lives, it affects the quality of life. Many studies have shown that the MI development has decreased the patients' quality of life, so it is important to improve the quality of life in the MI patients.^[10,11] On the other hand, these patients are at risk of recurrent MI (reMI) and various related complications and should receive long-term treatment to prevent these complications. Studies show that the CVD patients have poor adherence to treatment.^[12] Despite the numerous stressors in CVD patients, long-term physical problems and the need to make extensive changes in their lives, their quality of life is likely to decline.^[10,11] Many MI patients experience symptoms such as fatigue, sleep disturbances, dyspnea, reMI, and stroke within the 1st year after the disease, which causes patients to report a lower quality of life after MI.^[12] Quality of life is a mental concept that encompasses the positive and negative aspects of one's life and represents the way in which one understands and responds to health and other aspects of life.^[13] Efforts to improve the quality of life of MI patients appear to be essential, which is one of the objectives of the present study.

On the other hand, the prevention of the complications and successful treatment of CVDs are essential and require various prophylactic and therapeutic measures such as physical activity, proper diet, and adherence to treatment. This is achieved only through the active participation of patients in treatment and the implementation of the recommendations of members of the treatment group, which is called adherence to treatment.^[14] The adherence to treatment is an appropriate way of preventing patients from disease recurrence with more severe conditions. Accordingly, the current study was conducted to investigate the effect of BASNEF model-based intervention on quality of life and adherence to treatment in the MI patients to answer the question of what effects the interventions have on quality of life and treatment process of the MI patients. Learning self-care behaviors can direct people toward maintaining health enhance their adaptability to the illness. Adherence to self-care behaviors is very important in patients with chronic diseases. The patients can influence their comfort, functional abilities, and disease processes by acquiring self-care skills.^[15]

The BASNEF model is one of the educational frameworks involved in the process of behavior change in addition to knowledge and attitudes of factors such as environment and subjective norms.^[16] The BASNEF model is one of the models that is of particular interest to international health organizations such as United Nations International Children's Emergency Fund and the World Health Organization due to its wide application in the field of health and environmental improvement, whose application results have shown remarkable success in Asian and African countries.^[17] Since the BASNEF model examines all the individual and social factors affecting health care decision-making in individuals, and then provides comprehensive and specific health care for each patient after examining the patient's condition, as well as contributes to the patient's family in health-care decision making, it can be an appropriate and effective model for improving health care in chronic patients.^[18] Therefore, due to the problems of MI patients, the use of this model seems to be necessary to improve the conditions of MI patients and extend the life span of these patients by making unhealthy lifestyle changes.

The purpose of this study was to evaluate the effect of BASNEF model-based intervention on quality of life and adherence to treatment in patients with MI.

Materials and Methods

Study design and setting

The present quasi-experimental study was conducted with intervention and control groups during December 2018 to February 2019; the study population was the MI patients admitted to Cardiac Care Unit in hospitals affiliated to Shahrekord University of Medical Sciences.

Inclusion and exclusion criteria

First incidence of MI, no history of active mental illness and mental retardation, willingness to participate in the study, ability to read and write Persian language, Ability to communicate with the research team, and the participants excluded from study include unwillingness to continue participating in the study, appearance of complications causing the patient to be unable to continue the study.

Study participants and sampling

The sample size was estimated according to the following equation and based on the study of Baghaei *et al.* who examined the effect of applying BASNEF model on adherence to treatment in hypertensive patients.^[19] In total, the sample size was determined to be 76 at first and finally 80 (40 in each group) considering the dropout. The study samples were selected by the convenience sampling and then assigned to the intervention and control groups [Figure 1].

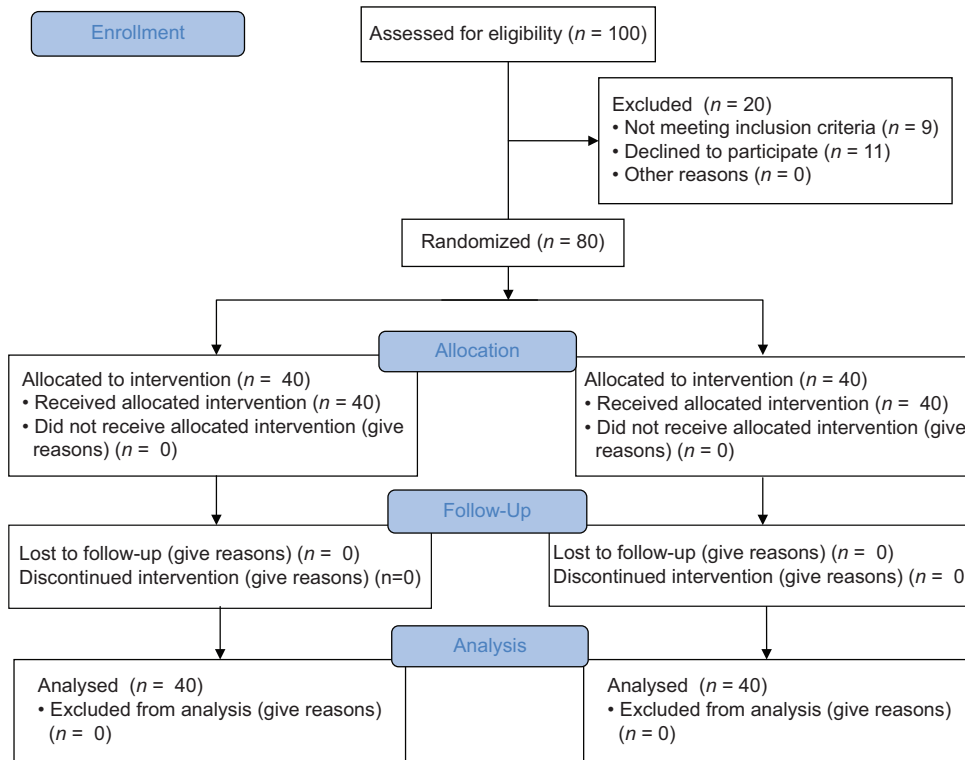


Figure 1: The consort diagram of the number of participants and the reasons for their exclusion the intervention phase in the intervention and control groups

The probability of picking two colored balls was used to randomly assign the samples to the intervention and control groups. Thus, 40 white balls and 40 black balls were placed into a bag so that the test person could not see the color of the ball. The subject was requested to pick up one of the balls. The control group was black and the intervention group was white.

$$N = \frac{4\delta^2(Z_{\alpha} + Z_{\beta})^2}{(\mu_1 - \mu_0)^2}$$

Data collection tool and technique

Data were collected by Ferrans and Powers' Quality of Life Index (QLI), Modanloo Adherence to Treatment Questionnaire (MATQ), and then modified based on the BASNEF model constructs questionnaire. Data were collected at three stages, before the intervention, immediately after educational intervention, and 3 months after the intervention. Patients in both groups were contacted to collect the data 3 months after the intervention and were asked to complete the QLI, MATQ and a researcher-made BASNEF model questionnaire.

Validity and reliability of data collection questionnaires

The Ferrans and Powers QLI-Cardiac Version (QLI: CV). This questionnaire was designed by Ferrans and Powers in 1999 to evaluate the quality of life in cardiac patients and has been used in various studies to date.^[18,20]

The QLI: CV questionnaire measures the quality of life of cardiac patients in different physical, socioeconomic and family dimensions, and consists of two parts, the first part measuring the importance that individuals place on different aspects of their lives and the second part measuring patient satisfaction with each of these dimensions. The questionnaire was scored on a six-point Likert scale and scored in terms of the importance of each item's responses from very important (6) to very unimportant (1). In the satisfaction survey, the answers are formulated from very satisfied (6) to very unsatisfied.^[21] Finally, scores range from 0 to 30, with scores of 0–9 indicating poor quality of life, scores of 10–19 indicating moderate quality of life, and scores of 20–30 indicating high quality of life.^[22]

The QLI: CV has been used in Iran by Shojaei *et al.*, the Cronbach's alpha was calculated to be 0.86.^[23] The adherence to treatment was measured through the MATQ. The questionnaire consists of 40 questions and seven domains including making the effort for treatment (9 items), intention to take the treatment (7 items), adaptability (7 items), integration of treatment with life (5 items), sticking to the treatment (4 items), commitment to treatment (4 items), and indecisiveness for applying treatment (3 items). The MATQ is a six-point Likert scale from strongly agree, very high, high, low, very low, and never, scoring from 5 to 0. The minimum and maximum scores of the questionnaire are 0–200 and the minimum and maximum scores of the dimensions are

0–45 in the making the effort for treatment, 0–35 in the intention to take the treatment, 0–35 in the adaptability, 0–25 in the integration of treatment with life, 0–20 in the sticking to the treatment, 0–20 in the commitment to treatment and 0–15 in the indecisiveness for applying treatment. According to the questionnaire designer's instructions, the initial scores turn into a score of 0–100 and a score of 75–100 means very good adherence to treatment, a score of 50–74 means good adherence to treatment, a score of 26–49 means moderate adherence to treatment, and a score of 0–25 means poor adherence to treatment.^[24] In the study of Modanloo, the correlation coefficient of this questionnaire was reported 0.875 through test-retest reliability with Cronbach's alpha coefficient of 0.9221.^[24] In the study of Poshtchaman *et al.*, the correlation coefficient of this questionnaire was reported to be 0.73 using the test-retest reliability.^[14]

The questionnaire modified based on BASNEF model constructs in this study included two parts. The first part contained the demographic characteristics of the patient, including age, gender, educational level, marital status, and occupation. The second part of the questionnaire contained knowledge, behavioral beliefs, attitudes, subjective norms, and enabling factors based on a researcher-made BASNEF model. Based on library studies and scientific articles and resources, questions related to BASNEF model construct contained knowledge (9 items), behavioral beliefs (10 items), attitudes (7 items), subjective norms (5 items), and enabling factors (6 items).

The BASNEF model constructs were scored on a five-point Likert scale including strongly disagree (score 1), disagree (score 2), neutral (score 3), agree (score 4), and strongly agree (score 5). Knowledge questions were designed in four-answer choice manner, 1 for true answer and 0 for false answer, so the total knowledge score was between 0 and 9. Minimum and maximum scores of dimensions were 7 and 35 in attitude, 5 and 25 in subjective norms, 10 and 50 in behavioral beliefs, and 6 and 30 in enabling factors, respectively. The face validity was first approved to determine the content validity index (CVI) of the BASNEF model questionnaire. The questionnaire was validated for qualitative content by 10 faculty members of School of Nursing and Midwifery at Shahrekord University of Medical Sciences. Content validity ratio (CVR) and CVI were used to determine the quantitative approach to content validity. Based on the CVI, the degree of relevance, clarity, and simplicity of each item on the scale was determined on a three-part basis with four scores of zero to three.^[25] Based on this index, the relevance of all the items was first measured so that if the index was 75% or higher, the item would be accepted. Then, the necessity of the items was assessed using the three-part CVR (essential, useful

but not essential and not necessary) and by using the Lawshe's table and number of experts, the CVR < 0.62 was excluded from the scale.^[25,26] The mean validity index of the questionnaire was 0.917. The reliability of the questionnaire was confirmed using Cronbach's alpha coefficient of 0.76. The Cronbach's alpha coefficients for each of the dimensions of the questionnaire were 0.758 for knowledge, 0.877 for attitudes, 0.860 for subjective norms, 0.936 for enabling factors, and 0.926 for behavioral beliefs.

Ethical consideration

The study protocol was approved by the Ethics Committee of Shahrekord University of Medical Sciences (IR.SKUMS.REC/1397.286) prior to performing the study, informed consent was obtained verbally. Participation in the research did not have any financial burden for the participants. The respondents were fully informed of the purpose of the study and were ensured of the confidentiality of their personal data. Participants were also free to withdraw from the study at any stage.

Implementation

In the first stage, the research team received the necessary permits from the relevant centers and In the second stage, after selecting the participants and dividing them into intervention and control groups, they filled in the questionnaires before any intervention Then, in the intervention group, they received educational-supportive intervention based on BASNEF model, including three 45-min training sessions and 3 months of follow-up for each participant Then, the educational content was presented to the participants in the form of educational booklets and pamphlets. These were presented as lectures, question and answer session, and problem-solving session with the participation of patients and their families; the booklets and pamphlets were given the participants [Table 1].

After the educational sessions, the researcher provided patients with a self-report checklist and asked them to complete the checklist weekly. In addition, the researcher made a phone call to the participants 4 and 8 weeks after the third intervention session, emphasized the presented matters, and answered the possible questions of patients and their families. Finally, the variables studied were re-measured by questionnaires 3 months after the third session.^[17] In order to measure the variables in the stage of 3 months after the intervention, the researcher asks the patient to refer to the hospital under study, then the researcher provides them with questionnaires to complete these questionnaires. The control group received only routine care. The studied variables in the participants of the control group were measured at the same times as the experimental group and the mean of these variables before, immediately after and after the

intervention in both groups and between the two groups were compared with each other.

Statistical analysis

Data were inserted into SPSS (SPSS V.22 Inc., Chicago, IL, USA) and analyzed using descriptive statistics (mean, standard deviation, etc.) and inferential statistics (Chi-square, independent *t*-test, paired *t*-test, and repeated measures analysis of variance [ANOVA]).

Results

In this study, 80 MI patients were divided into intervention and control groups. The demographic characteristics and background variables of the research units in terms of age, gender, marital status, occupation, and educational level are presented in Table 2.

The results showed that the mean age was 54.85 ± 8.70 years in the intervention group and 54.35 ± 10.97 years in the control group. The independent *t*-test showed no statistically significant difference in the mean age between the two groups ($P = 0.822$). According to Fisher's exact test results, no significant difference was observed in marital status between intervention and control groups ($P = 0.480$).

No statistically significant difference was found between the quality of life scores before and immediately after the intervention in the intervention group ($P = 0.13$). There was a statistically significant difference in the quality of life score after 3 months of rehabilitation interventions ($P < 0.001$). The repeated measures ANOVA showed a significant

difference in the mean scores of quality of life in the intervention group before, immediately and 3 months after the intervention ($P < 0.001$). In addition, in qualitatively dividing the QLI by the range of achievable scores (between 0 and 30), the results showed that all patients' scores (100%) before the intervention were between 10 and 19, which is moderate or semi-desirable in classifying the level of quality of life. This means that the quality of life of all patients was moderate before rehabilitation intervention. According to the range of scores (0–9.9: poor), (10–19.9: moderate) (20–30.9: high) after intervention, the results showed moderate-to-high quality of life in 40 patients (50%) and high quality of life in 50%, indicating an improvement in patients' quality of life after the intervention. The results showed a statistically significant difference in the scores of different dimensions of quality of life after rehabilitation than before intervention, and that scores in all dimensions were significantly increased after intervention; based on the paired *t*-test, these differences were statistically significant ($P < 0.001$) [Table 3].

According to the table and the independent *t*-test results, there was no significant difference in the mean scores of adherence to treatment before intervention between the intervention and control groups ($P = 0.556$). The statistical analysis showed that the intervention and control groups had a significant difference in the mean scores of adherence to treatment 3 months after the intervention ($P = 0.001$). The mean changes after intervention compared to the pre-test showed a significant difference between the two groups ($P = 0.001$). The RMA test showed a significant difference in the mean scores of adherence to treatment in the intervention group before, immediately and 3 months

Table 1: The content of the educational sessions in the intervention group for patients after myocardial infarction

Phase	Session number	Content of sessions
Phase 0: Initial assessment, brief statements of subjects for the intervention group	Initial meeting	introducing educator to patients, explaining the number of sessions and their structure for patients, completing of the consent form by patients, and completing of the questionnaires in the first stage before the intervention
Phase I: Increasing knowledge and changing the beliefs, attitudes, and behaviors of patients based on the educational model	Session 1	A short speech about heart disease and explaining MI, risk factors and causes of the disease, medication, prescribed diets and the importance of following the prescribed treatments after discharge from the hospital.
Phase II: The formation of behavioral intention based on the educational model	Session 2	Educating patients about healthy behavior after disease and what is exactly expected of them, explaining the necessity of the cessation of high-risk behaviors such as smoking cigarettes and tobacco explaining how drugs are used and the importance of adherence to regular drug use, explaining the side effects of the medications used by patients, educating them about the importance of blood pressure control and how to measure and record it, educating them on relaxation techniques in order to avoid stress and anxiety
Phase III: Formation of subjective norms and enabling factors based on the educational model	Session3	A meeting with a family member of the patient who has the greatest impact on the patient in managing their living conditions, talking about its role in improving the patient's healthy behavior and adherence to treatment after disease, Providing patients with a pamphlet and a booklet in order to continue education during the study, introducing patients to therapeutic centers where they can go if they need medical care
Phase IV : Evaluation	After 3 month of intervention	Reviewing the content of past sessions, and completing of the questionnaires on the last session by patients

Table 2: Absolute and relative frequency distribution of gender, occupation and educational level between case and control groups based on Chi-square test

Variable	Groups						Significance level
	Case			Control			
	Mean±SD	Minimum	Maximum	Mean±SD	Minimum	Maximum	
Age (year)	54.85±8.70	39	72	54.35±10.97	36	78	0.822
Variable	Groups	Groups		Total, n (%)			Significance level
		Case, n (%)	Control, n (%)				
Gender	Female	11 (27.5)	7 (17.5)	18 (22.5)			0.284
	Male	29 (72.5)	33 (82.5)	62 (77.5)			
	Total	40 (100)	40 (100)	80 (100)			
Age group	20-39	1 (2.5)	2 (5)	3 (3.8)			0.838
	40-59	26 (65)	25 (62.5)	51 (63.8)			
	≤60	13 (32.5)	13 (32.5)	26 (32.5)			
	Total	40 (100)	40 (100)	80 (100)			
Educational level	High school	15 (37.5)	23 (57.5)	38 (47.5)			0.196
	High school diploma	17 (42.5)	11 (27.5)	28 (35)			
	University degree	8 (20)	6 (15)	14 (5.17)			
	Total	40 (100)	40 (100)	80 (100)			
Occupational level	Employee	5 (12.5)	10 (25)	15 (18.8)			0.438
	Retired	3 (7.5)	4 (10)	7 (8.8)			
	Unemployed	12 (30)	8 (20)	20 (25)			
	Other	20 (50)	18 (45)	38 (47.5)			
	Total	40 (100)	40 (100)	80 (100)			
Marital status	Single	2 (5)	2 (5)	4 (5)			0.48
	Married	31 (77.5)	34 (85)	65 (81.3)			
	Divorced	1 (2.5)	2 (5)	3 (3.8)			
	Widow	6 (15)	2 (5)	8 (10)			
	Total	40 (100)	40 (100)	80 (100)			

SD=Standard deviation

after the intervention ($P = 0.001$). There was no significant difference between the two groups in the control group ($P = 0.23$) [Table 4].

Independent *t*-test results showed no statistically significant difference in the mean scores of BASNEF model dimensions before intervention between intervention and control groups ($P = 0.399$), but statistically significant difference was seen 3 months after intervention ($P = 0.002$). In addition, there was a statistically significant difference in the mean changes after intervention between the intervention and control groups ($P = 0.001$). The RMA test showed a significant difference in the mean scores of the BASNEF model dimensions in the intervention group before, immediately and 3 months after the intervention ($P = 0.001$). This test also revealed no significant difference in the mentioned dimensions in the control group ($P = 0.113$) [Table 5].

Discussion

The results of the present study showed that the mean score of quality of life before intervention was low in both groups, in line with a study of Shojaei *et al.* who reported that 71.4% of patients had poor or relatively desirable quality of life,^[23] and a study of Rejeh *et al.* who

showed that different dimensions of quality of life in the MI patients were undesirable.^[27] Therefore, it seems necessary to focus more on nursing care to improve the quality of life of this group of patients.

The results showed that the mean score of adherence to treatment in the intervention and control groups was unacceptable before intervention, consistent with the findings of Poshtchaman *et al.* Among the dimensions related to adherence to treatment before the intervention, our results showed that the lowest score was related to indecisiveness for applying treatment with the mean score of 56.69 ± 5.23 , and the highest score was related to the integration of treatment with life with an mean score of 50.01 ± 4.64 , consistent with the results of Poshtchaman *et al.*^[14] In addition, the results of the study revealed that the mean score of adherence to treatment in the intervention group was significantly increased compared to the control group, in line with the results of Torknejad *et al.* and Arabshahi *et al.*^[2,28] Furthermore, Kamrani *et al.* examined the effect of patient education and nurse-led telephone follow-up on adherence to treatment in patients with acute coronary syndrome, and reported that the mean score of adherence to treatment increased after the test.^[29] Sanaie *et al.* also found that the adherence to treatment was increased in the intervention group.^[30] Concerning

Table 3: Mean and standard deviation scores of different dimensions of quality of life in patients with myocardial infarction

Variable Quality of life	Phase	Groups, mean±SD		P (Intergroup)
		Control	Case	
Health and functional status	Before the intervention	6.63±0.79	6.55±0.55	0.643
	Immediately after the intervention	6.62±0.70	6.73±0.67	0.502
	3 months after the intervention	6.66±0.77	7.93±0.41	<0.001
	P (within the group)	0.395	<0.001	-
Social and economic domain	Before the intervention	3.55±0.42	3.50±0.40	0.594
	Immediately after the intervention	0.37±3.54	3.60±0.36	0.441
	3 months after the intervention	3.56±0.41	4.24±0.22	<0.001
	P (Within the group)	0.302	<0.001	-
Psychological and spiritual domain	Before the intervention	3.08±0.37	3.05±0.35	0.521
	Immediately after the intervention	3.08±0.32	3.13±0.31	0.362
	3 months after the intervention	3.10±0.36	3.69±0.19	<0.001
	P (Within the group)	0.379	<0.001	-
Family relationships	Before the intervention	2.16±0.25	2.13±0.24	0.587
	Immediately after the intervention	2.15±0.22	2.19±0.21	0.433
	3 months after the intervention	2.17±0.25	2.58±0.13	<0.001
	P (Within the group)	0.342	<0.001	-
Quality of life	Before the intervention	15.44±1.83	15.25±1.75	0.509
	Immediately after the intervention	15.41±1.62	15.65±1.56	0.386
	3 months after the intervention	15.50±1.80	18.45±0.95	<0.001
	P (within the group)	0.090	<0.001	-

SD=Standard deviation

to determine and compare the mean score of knowledge before, immediately and 3 months after intervention in the intervention and control groups, the results showed that the mean knowledge score was increased in the intervention group after the intervention. Our results are in line with the results of Karimy *et al.*,^[9] Jalilian *et al.*^[31] and Hazavehei *et al.*^[32] In addition, the results of this study are in line with the studies of Khani Jeihooni *et al.*,^[33] Pirzadeh *et al.* who showed a significant increase in the mean scores of knowledge after the educational intervention in the intervention group,^[34] and Hemati maslak *et al.* who showed an improvement in the mean score of knowledge in the intervention group.^[35] Concerning to determine and compare the mean score of attitudes, the results showed that the mean score of attitudes increased immediately and 3 months after the intervention.^[36] Momenabadi *et al.* showed that the mean score of attitudes was increased after the intervention in the intervention group.^[37] In the studies of Hemati *et al.*^[38] and Ghaffari *et al.*, the mean score of attitudes was increased after the intervention.^[39] Concerning to determine and compare the mean score of subjective norms before, immediately and 3 months after intervention in the intervention and control groups, the results showed that the mean score of subjective norms in the intervention group increased immediately and 3 months after intervention, respectively. The subjective norms are among the factors influencing

and indicating the role of others in one's behavior. In the studies of Izadirad *et al.*^[20] and Yarmohammadi *et al.*, the mean score of subjective norms was increased after the intervention.^[40] Khani Jeihooni *et al.* confirmed the effect of the BASNEF model-based educational program on increasing the mean score of subjective norms in glycemic control of patients with type 2 diabetes.^[33] Concerning to determine and compare mean scores of enabling factors before, immediately and 3 months after intervention in the intervention and control groups, the results showed that the mean score of enabling factors in the intervention group was increased immediately and 3 months after the intervention. The availability of enabling factors can be an effective behavioral facilitator. Sadeghi *et al.*^[41] introduced the enabling factors as the most important factor in predicting self-monitoring behavior in hypertensive patients.

Concerning to determine and compare mean scores of enabling factors before, immediately and 3 months after intervention in the intervention group increased immediately and 3 months after intervention, respectively, emphasizing the positive impact of educational intervention on the enabling factors. Izadirad *et al.*^[20] and Tol *et al.*^[2] showed an increase in the mean score of enabling factors after the intervention.^[2]

Table 4: The results of the mean scores of adherence to treatment in the control and intervention groups before, immediately and three months after the intervention

Variable	Phase	Groups, mean±SD		Independent t-test P (Intergroup)
		Control	Case	
Adherence to treatment	Before the intervention	57.608±7.21	57.583±7.13	0.567
	Immediately after the intervention	57.50±7.68	58.52±7.79	0.319
	3 months after the intervention	57.714±7.62	63.297±8.95	<0.001
	Mean changes compared to pretest			
	Immediately after the intervention	0.108±13.42	0.937±17.25	0.133
	3 months after the intervention	0.106±0.951	5.714±2.26	<0.001
Dimensions of adherence to treatment				
Effort for treatment	Before the intervention	57.61±8.66	57.58±8.58	0.489
	immediately after the intervention	57.73±8.60	58.48±8.78	0.354
	3 months after the intervention	57.69±8.52	60.386±8.23	0.295
	Mean changes compared to pretest			
	Immediately after the intervention	0.12±12.36	0.9±18.66	0.201
	3 months after the intervention	0.08±3.33	2.80±5.75	0.162
Intention to take the treatment	Before the intervention	64.25±9.22	64.17±9.10	0.496
	Immediately after the intervention	64.27±9.46	64.95±9.41	0.120
	3 months after the intervention	64.49±9.36	69.896±9.59	0.0052
	Mean changes compared to pretest			
	Immediately after the intervention	0.02±1.32	0.78±5.23	0.0960
	3 months after the intervention	0.24±4.70	5.72±6.63	<0.001
Ability to adapt treatment to life	Before the intervention	53.687±7.89	53.61±7.45	0.646
	Immediately after the intervention	53.71±7.90	53.96±7.57	0.398
	3 months after the intervention	53.75±7.92	75.78±8.010	0.023
	Mean changes compared to pretest			
	Immediately after the intervention	0.023±1.48	0.35±2.65	0.165
	3 months after the intervention	0.063±5.21	4.179±8.95	< 0.001
Combination therapy with life	Before the intervention	69.780±10.23	69.75±10.09	0.555
	Immediately after the intervention	69.65±9.78	70.25±10.64	0.314
	3 months after the intervention	69.93±10.25	77.69±11.13	0.0025
	Mean changes compared to pretest			
	Immediately after the intervention	0.13±15.48	0.49±12.78	0.115
	3 months after the intervention	0.15±4.32	7.94±7.52	<0.001
Sticking to the treatment	Before the intervention	55.69±4.52	55.59±4.36	0.785
	Immediately after the intervention	55.72±4.60	56.09±4.95	0.401
	3 months after the intervention	55.72±4.56	59.96±5.12	0.050
	Mean changes compared to pretest			
	Immediately after the intervention	0.022±3.43	0.5±10.23	0.132
	3 months after the intervention	0.022±3.43	4.37±5.78	0.032
Commitment to treatment	Before the intervention	52.269±9.91	52.369±10.06	0.748
	Immediately after the intervention	52.269±9.91	53.98±9.99	0.169
	3 months after the intervention	52.329±9.99	58.659±11.29	0.045
	Mean changes compared to pretest			
	Immediately after the intervention	0	1.611±14.69	0.069
	3 months after the intervention	0.06±2.59	6.29±4.48	0.009
Indecisiveness for applying treatment	Before the intervention	49.96±4.59	50.01±4.64	0.569
	Immediately after the intervention	49.16±4.32	51.99±5.12	0.166
	3 months after the intervention	50.09±4.759	56.69±5.23	0.056
	Mean changes compared to pretest			
	Immediately after the intervention	0.79±14.36	1.98±17.45	0.009
	3 months after the intervention	0.12±2.77	6.68±4.96	<0.001

SD=Standard deviation

Clinical apply

The results of this study detected that in caring of the

chronical patient's such as MI apply model such as BASNEF will can very effective on the life style change

Table 5: Comparison of the mean and standard deviation scores of different dimensions of BASNEF model in patients with myocardial infarction before and after the intervention

Variable	Phase	Groups, mean±SD		Independent t-test, P (intergroup)
		Control	Case	
BASNEF Model Training Program	Before the intervention	84.65±7.85	83.22±7.29	0.399
	Immediately after the intervention	91.31±7.53	92.15±6.58	0.604
	3 months after the intervention	105.89±6.36	110.60±6.59	0.002
	Mean changes compared to pretest			
	Immediately after the intervention	6.65±4.11	8.93±4.63	<0.001
	3 months after the intervention	21.24±10.91	27.38±8.85	<0.001
Dimensions of BASNEF Model Based Training Program				
Knowledge	Before the intervention	2.22±0.94	2.50±1.50	0.956
	Immediately after the intervention	2.77±0.97	4.95±1.75	<0.001
	3 months after the intervention	3.47±0.986	7.87±1.45	<0.001
	Mean changes compared to pretest			
	Immediately after the intervention	0.55±0.90	2.45±1.28	<0.001
	3 months after the intervention	1.25±1.10	5.37±1.21	<0.001
Attitudes	Before the intervention	15.87±1.57	15.07±1.97	0.060
	Immediately after the intervention	20.37±2.12	19.07±2.30	0.010
	3 months after the intervention	22.67±2.12	23.77±1.52	0.010
	Mean changes compared to pretest			
	Immediately after the intervention	4.50±1.28	4.00±1.39	<0.001
	3 months after the intervention	6.80±1.68	8.70±1.84	<0.001
Subjective norms	Before the intervention	16.70±2.91	15.70±2.46	0.101
	Immediately after the intervention	15.45±2.34	16.12±1.98	0.169
	3 months after the intervention	15.60±1.99	17.15±1.77	<0.001
	Mean changes compared to pretest			
	Immediately after the intervention	2.41±1.25	0.42±1.79	<0.001
	3 months after the intervention	1.10±2.29	1.45±2.35	<0.001
Enabling factors	Before the intervention	15.57±2.06	15.07±1.98	0.272
	Immediately after the intervention	19.07±1.80	17.07±1.67	0.09
	3 months after the intervention	19.82±2.21	21.60±2.13	<0.001
	Mean changes compared to pretest			
	Immediately after the intervention	3.50±2.55	0.002±0.98	<0.001
	3 months after the intervention	4.25±3.21	6.52±0.02	<0.001
Behavioral beliefs	Before the intervention	28.75±5.79	28.52±5.92	0.864
	Immediately after the intervention	34.56±3.89	33.33±2.98	0.118
	3 months after the intervention	36.85±4.01	35.15±3.06	0.037
	Mean changes compared to pretest			
	Immediately after the intervention	5.81±4.42	4.80±6.14	<0.001
	3 months after the intervention	8.10±4.86	6.66±6.26	<0.001

SD=Standard deviation

and obey medical order and diets that is very scientific effect on the results of medical intervention and the survival of the patients.

Limitations and recommendation

Psychological issues and individual and personality differences between patients and families may influence research findings. In this regard, an attempt was made to minimize these differences by randomly selecting samples. Considering the findings of this study, future studies are suggested to examine the effect of similar programs on other variables such as lifestyle, anxiety, depression, sleep quality, health literacy, fatigue, and other diseases.

Conclusion

The results of the present study demonstrated that the implementation of BASNEF model-based intervention is effective on the promotion of quality of life and adherence to treatment of patients with MI. The BASNEF model-based intervention programs are suggested to be included in the nursing agenda. This study shows that identifying the needs of patients and educating them after MI based on an appropriate education model can affect patient's knowledge, behavior intention, attitude, subjective norms, and enabling factors. Thus, patients' adherence to treatment and quality of life will improve after MI.

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Conflicts of interest

There are no conflicts of interest.

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