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

Hadi Hatami, Ali Hassanpour Dehkordi¹, Shahriyar Salehi Tali², Masoud Lotfizadeh³, Haifeh Ganji⁴

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 one 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.³ CVD kills 138,007 people...
in Iran annually, and the life span of 3000 years is lost daily due to these diseases.

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. In the US, one person has a heart attack every 20 s which causes a death of one person per minute. 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. 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. 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. 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. 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. 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. 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. 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 patients with MI.

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. 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].
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.

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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. 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. 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.

The QLI: CV has been used in Iran by Shojaei et al., the Cronbach’s alpha was calculated to be 0.86. 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. 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. In the study of Poshtchaman et al., the correlation coefficient of this questionnaire was reported to be 0.73 using the test-retest reliability. 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. 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. 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. 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 after intervention.

### 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 | Session 3 | 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 |
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 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

| 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   |
| 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
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., Jalilian et al. and Hazavehei et al. In addition, the results of this study are in line with the studies of Khani Jeihooni et al., Pirzadeh et al. who showed a significant increase in the mean scores of knowledge after the educational intervention in the intervention group, and Hemati maslak et al. who showed an improvement in the mean score of knowledge in the intervention group. 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. Momenabadi et al. showed that the mean score of attitudes was increased after the intervention in the intervention group. In the studies of Hemati et al. and Ghaffari et al., the mean score of attitudes was increased after the intervention. 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. and Yarmohammadi et al., the mean score of subjective norms was increased after the intervention. 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. 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. 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. and Tol et al. showed an increase in the mean score of enabling factors after the intervention.

### 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±1.95 | <0.001        |
|                          | P (within the group) | 0.090 | <0.001 | -             |

SD=Standard deviation
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.
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.

References
1. Taher M, Abredhari H, Karimi M, Abedi A, Shamsiazadeh M. The relation between social support and adherence to the treatment of hypertension. J Educ Community Health 2014;1:63-9.
2. Tol A, Farhandi H, Mohabbi B, Sadeghi R. BASNEF Model intervention on blood pressure modification among hypertensive diabetic patients. J Educ Health Promot 2017;6:47.
3. Vahedian Azimi A, Alhani F, Ahmadi F, Kazemnejad A. Effect of family-centered empowerment model on the life style of myocardial infarction patients. Iran J Crit Care Nurs 2010;2:1-2.
4. Boomi Ghuchane Atigh M, Malekaneh M, Mashreghi Moghaddam H, Anani Sarah G. Evaluation of oxidative stress and homocysteine level in patients with acute myocardial infarction: A case-control study. J Birjand Univ Med Sci 2016;23:141-8. 
5. Members WG, Thom T, Haase N, Rosamond W, Howard VJ, Rumsfeld J, et al. Heart disease and stroke statistics – 2006 update: A report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Circulation 2006;113:e85-151.
6. Abedini A, Akhari H, Nezhad MT. Comparison of different methods of education on reducing the anxiety of patients with myocardial infarction. Iran J Nurs 2012;24:36-44.
7. Bouroumand S, Shahriri M, Abbasi Jebeli M, Baghersad Z, Baradaranfard F, Ahmadpoori F. Determine the level of self-efficacy and its related factors in patients with ischemic heart disease: A descriptive correlational study. Iran J Nurs Res 2015;9:61-9.
8. Behnammoghadam M, Zeighami R, Azimian J, Jahanhashemi H, Fotuhi M. Side effects of intravenous streptokinase in different age groups patients with acute myocardial infarction. Armaghan danesh 2014; 18.11: 910-917
9. Karimy T, Safaari M, Sanaeiniasab H, Khalagi K, Hassan-Abadi M. Impact of educational intervention based on theory of planned behavior on lifestyle change of patients with myocardial infarction. Iran J Health Educ Health Promot 2016;3:370-80.
10. Bagheri I, Memarian R, Hajizadeh E, Pakcheshm B. The effect of sex education on patients and their spouses satisfaction after myocardial infarction. Jornj Biomed 2014;2:46-0.
11. Taghizadeh P, Hekmatpour D, Rahzani K, Kazerani H, Rafiei M. Comparing of the Effect of Reflexive and Stroke Massages on Physiologic Indices in Patients With; Complementary Medicine Journal, 2013, 2.4: 279-290.
12. Manouchehrifar M, Ghasemi S, Shojaee M, Shahhosseini T, Lashgari A. Characteristics of patients with myocardial infarction admitted to the emergency department; a five years epidemiological study. Iran J Emerg Med 2016;3:138-42.
13. Jalilian M, Mostafavi F, Shirafirad G. Association between self-efficacy, perceived social support and quality of life in patients with cardiovascular diseases: A cross-sectional study. J Health Syst Res 2013;9:531-9.
14. Poshchaman Z, Jadid Milani M, Atashzadeh Shoorideh F, Akbarzadeh Bagheban A. Assessing patient adherence to treatment after coronary artery bypass graft. J Sabzevar Univ Med Sc 2015; 22.4: 668-675.
15. Majlessi F, Mohebbi B, Tol A, Azam K. Assessing the effect of educational intervention on treatment adherence based on AIM model among patients with type 2 diabetes. Iran J Diabetes Metab 2017;16:173-82.
16. Najimi A, Azadbakht L, Hassanzadeh A, Sharifirad GR. The effect of nutritional education on metabolic outcomes based on BASNEF Model in elderly patients with type 2 diabetes. J Res Health Sci 2010; 6 (3):549-58. (Persian)
17. Moghaddam M, Zeighami R, Ahmadi F, Sharifirad G. The association between social support and adherence to treatment of hypertension: A case-control study. J Health Syst Res 2013;9:531-9.
18. Mergat S, Hemmati Maslak Pak M, Didarloo A, Ghareh Aghaji R. Assessment of the effect of BASNEF Model based education on the attitudes, subjective norms, behavioral intention and enabling factors regarding healthy lifestyle in patients with heart failure. J Urmia Nurs Midwifery Fac 2017;14:822-9.
19. Baghaei R, Alinejad V, Didarloo A, Khaledian N. The effect of an educational intervention on the medication adherence in patients with hypertension: Based on BASNEF Model. J Urmia Nurs Midwifery Fac 2017;14:811-21.
20. Izadirad H, Masoudi GR, Zareban I. Evaluation of efficacy of education program based on BASNEF Model on self-care behaviors of women with hypertension. Journal of the Iranian in Statute for Health Sciences Research, 2014, 13: 487-95
21. Ataei E, Haghjoo M, Dalvandi A, Bakhshandehe H. Effect of self-care education on quality of life among patients with permanent pacemaker. Iran J Cardiovasc Nurs 2013;1:40-7.
22. LeungYW, Grewal K, Gravelle-Witte S, Suskin N, Stewart DE, Grace SL. Quality of life following participation in cardiac rehabilitation programs of longer or shorter than 6 months: Does duration matter? Popul Health Manag 2011;14:181-8.
23. Shojaei F, Asemi M, Yarandi AN, Hosseini F. Self care behaviours, quality of life among patients with heart failure. Iran J Nurs 2006;18:49-55.
24. Modanloo M. Development and Psychometric Tools Adherence of Treatment in Patients with Chronic. Iran: Iran University; 2013.
25. Lawshe CH. A quantitative approach to content validity 1. Pers Psychol 1975;28:563-75.
26. Souza AC, Alexandre NM, Guirardello EB. Psychometric properties in instruments evaluation of reliability and validity. Epidemiol Serv Saude 2017;26:649-59.
27. Jahan, Rejeh N, Heravi-Karimooi M, Hadavi A, Zayeri F, Khatoomi AR. The relationship between spiritual health and quality of life in patients with coronary artery disease. Islamic Life style Cent Health 2013;1:17-21.
28. Arabshahi A, Gharihoupour Z, Mohammadbeigi A, Mohebi S. Effect of educational intervention based on social support received by the spouse on promoting adherence to treatment regimen in hypertensive patients. J Educ Community Health 2020;7:153-60.
29. Kamrani F, Nkikhah S, Borhani F, Jalali M, Shahsavari S, Nirumand-Zandi K. The effect of patient education and nurse-led telephone follow-up (telenursing) on adherence to treatment in patients with acute coronary syndrome. Iran J Cardiovasc Nurs 2015;4:16-24.
30. Sanaie N, Nejati S, Zolfaghari M, Alhani F, Kazemnezhad A. The effects of family-based empowerment on family cooperation in following patient treatment regime after coronary arteries bypass surgery. Mod Care J 2014;11.1:19-27.
31. Jalilian N, Tavafian SS, Aghamolaei T, Ahmadi S. The effects of health education program on knowledge and attitudes of people...
suffering from hypertension. Iran J Health Educ Health Promot 2014;1:37-44.

32. Hazavehei M, Khani Jyhouni A, Hasanzadeh A, Rashidi M. The effect of educational program based on BASNEF Model on diabetic (Type II) eyes care in Kazemi’s clinic, (Shiraz). Iran J Endocrinol Metab 2008;10:145-54.

33. Khani Jeihooni A, Hatami M, Kashfi SM, Heshmati H. The effectiveness of education based on BASNEF Model program in promotion of preventive behavior of Leishmaniasis among health workers and families under health centers coverage. J Fasa Univ Med Sci 2012;2:26-33.

34. Pirzadeh A, Hazavei MM, Entezari MH, Hasanzadeh A. The effect of educational intervention on girl’s behavior regarding nutrition: Applying the beliefs, attitudes, subjective norms, and enabling factors. J Educ Health Promot 2014;3:79.

35. Hemmati Maslak Pak M, Didarloo A, Merghati S. Effectiveness of an educational intervention (based on BASNEF Model) on lifestyle of patients with heart failure. Payesh (Health Monitor), 2017, 16.4: 501-510.

36. Ferrans CE, Powers MJ. Psychometric assessment of the Quality of Life Index. Research in nursing and health. 1992;15 (1):29-38.

37. Momenabadi V, Iranpour A, Khanjani N, Mohseni M. Effect of educational intervention on water pipe behaviour of students in dormitories of Kerman Medical University: BASNEF Model. J Health Promot Manag 2015;4:12-22.

38. Hemati Z, Ganji F, Alidosti M, Reisi M. The Impact of Education, Based on the BASNEF Model, on Maternal Attitudes Toward Child Abuse in Shahrekord International Journal of Community Based Nursing and Midwifery, 2013, 1.3: 130-136.

39. Ghaffari M, Shariatrad G, Malekmakan E, Hassanzadeh A. Effect of educational intervention on physical activity-related knowledge, attitude and behavior of among first-grade students of male high schools. J Educ Health Promot 2013;2:4.

40. Yarmohammadi S, Mahmoodi M, Jazayeri SA, Chamari M. The effect of an educational program based on the BASNEF Model on the nutritional behavior of guidance school female pupils. J Sch Public Health Inst Public Health Res 2015;13:55-68.

41. Sadeghi R, Rezaeian M, Mohseni M. The effect of an educational program based on BASNEF Model on breast self-examination practice of 20-45-year-old women in Sirjan City: A training trial study. J Rafsanjan Univ Med Sci 2015;14:769-80.