Original Article

The Effect of Continuous Care Model on Lifestyle of Patients with Myocardial Infarction

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A R T I C L E   I N F O

ABSTRACT

Background: Cardiovascular diseases are known as the first cause of death and disability throughout the world. Evidence suggests that lifestyle is a determining factor in prognosis, progression, and recurrence of this group of disease. Therefore, it is important to consider modification of lifestyle. This study aimed to determine the effect of continuous care model on lifestyle of the patients with myocardial infarction.

Methods: This quasi-experimental study was performed on the patients with myocardial infarction referring to two hospitals in Jahrom, Iran during 2014-2015. Seventy patients were selected through convenience sampling method and were randomly assigned to the two groups of intervention and control. For the intervention group, continuous care program was performed as four stages of familiarization, sensitization, follow-up, and evaluation during six group sessions of 30-60 min for three months. The data were collected by demographic data form and Walker and Pender Health Promoting Lifestyle questionnaire before and one week after the intervention. The data were analysed by Chi-square and independent t-test using SPSS 19.

Results: After execution of continuous care model, the mean of total lifestyle score in intervention group increased from 126.6±16.36 to 181.1±25.2. This difference was statistically significant between the two groups (P<0.001).

Conclusion: According to the results of present study, applying continuous care model could modify the life style. Therefore, this model is recommended as a valuable intervention for improving the lifestyle among patients with myocardial infarction.

1. Introduction

Cardiovascular diseases and myocardial infarction as a category of chronic diseases are the leading cause of death throughout the world.[1] As studies show, the mortality rate due to these reasons will reach up to 16% per year by 2020.[2, 3] In Iran, cardiovascular diseases are considered as the main cause of death and mortality in adults. So that, according to the reports of the Ministry of Health and Medical Education, about 46% of deaths in Iran occur due to myocardial infarction.[4, 5] This fact indicates changes in the risk factors for these diseases, such as increased daily calorie intake, augmented saturated fats consumption, lack of physical activity, and raise in rate of smoking cigarette in society.[6]

Researches have shown that many chronic diseases result from improper lifestyle and behaviors. Therefore, health-promoting behaviors are among the best strategies for maintaining and controlling health.[7] People can choose the appropriate lifestyle to maintain and improve their health and prevent diseases by taking proper nutritional diet, sleep and rest, exercise, body weight control, avoiding smoking and alcohol, in addition to immunization against diseases.[8] Changing the behaviors requires a continuous training program proportional to patients' needs.[9]

Continuous care model is a systematic and continuous process for effective, interactive, and continuous communication between the client as the subject of care and nurse as health-care services provider. The model is conducted to identify the

needs and problems of the client in addition to sensitize the clients for accepting and applying the continuous health behaviors. This care mode helps the individuals to recover and promotes their health. The purpose of this care model is to design and develop a program that leads to acceptance and enhances the insight and proper functioning for continuous care, thereby being influential in control of the disease and its potential complications.[10]

The main applications of the continuous care model include recognizing the disease and its nature, identifying the actual and potential problems of the disease, accepting the disease and its effects as a shadow in the life pathway, playing the self-control continuous role of favorite health behaviors, investing in health and well-being, involving the families in management of the current and future issues, changing the lifestyle patterns and promoting self-confidence, in addition to recognizing the care and treatment team as well as the process of using them.[11]

The results of previous studies is indicative of a positive effect imposed by continuous care model on various life aspects of patients with chronic diseases. For example, Li et al. (2008) demonstrated that the continuous care model may improve the self-efficacy of patients with cardiac myocardial infarction and also control the complications associated with the disease.[6] In the study performed by Sadeghi et al. (2010), application of this model resulted in enhanced dialysis adequacy in hemodialysis patients.[12] Moreover, this model was shown to control blood pressure and sleep quality in patients with chronic renal failure.[13]

According to the results of the aforementioned studies, it seems that continuous care model might be able to affect the lifestyle of patients with cardiac infarction and reduce the complications of this disease. Therefore, an effective role would be played in diminishing the mortality rate in a large group of society consisting of people aged 35-65 years. These people are highly responsible for community and their families and are affiliated with cardiovascular diseases, especially myocardial infarction.[14] It should be mentioned that patients with cardiac infarction are at re-admission and multiple complication risks due to their low self-care capacity and low knowledge about the disease. Consequently, some costs might be imposed on the families and sometimes even results in work drowning of the family's head.

Considering the training and supportive roles of nurses, caring models which can influence the lifestyle of chronic patients seem to be necessary. Therefore, the present study aimed to determine the effects of continuous care model on lifestyle of the heart stroke patients.

2. Methods

2.1. Design

This quasi-experimental study was performed on a population consisting of patients with myocardial infarction admitted in intensive care units of educational hospitals in Jahrom, Iran during 2014-2015.

2.2. Participants and settings

Sample size was calculated according to the study performed by Taherian et al. (2007)[15] using the following sample size formula:

$$n=\frac{\left(z_{1-\alpha}/2+z_{1-\beta}\right)^2}{\left(\mu_1-\mu_2\right)^2}(\sigma_1^2+\sigma_2^2)$$

(μ_1=15.91, μ_2= 10. 89, δ_1= 1.5 ,δ_2=0.32, $Z_{1-\alpha}$= 1.28, $Z_{1-\alpha/2}$ =1.96).

Power of test was considered as 90% resulting in 35 people for each group and a total of 70 individuals.

The participants were selected through convenience sampling method and were then assigned to the two groups of intervention and control using randomized block design. Firstly, the size of blocks was considered as five and regarding the sample size, 15 blocks were selected based on random numbers table. The individuals were divided into the two study groups based on the positions in the blocks.

The inclusion criteria entailed: 1) experiencing heart stroke for the first time, 2) age of < 75 years, 3) being possible to follow-up by phone call post-discharge, and 4) being able to communicate. The exclusion criteria included: 1) absence in more than one training session, 2) re-occurrence of myocardial infarction during the study, 3) open heart surgery, and 4) getting expired.

2.3. Instruments

Demographic data form and The Health Promoting Lifestyle Profile II (HPLP-II) questionnaire developed by Walker & Pender were used in this study. The demographic data form included age, gender, marital status, education, occupation, hypertension, diabetes, and smoking cigarette.

The HPLP questionnaire was designed and psychometrically tested by Walker et al. in 1987.[16] This questionnaire consists of 52 items in six fields, including health, physical activity, stress

management, spiritual growth, interpersonal communication, and nutrition with 9, 8, 8, 9, 9, and 9 questions, respectively. The questionnaire is scored based on the 4-score Likert scale (never=1, sometimes=2, often=3, and always=4). The scores in this questionnaire range from 52-208, and an increase in the score demonstrates improved lifestyle. In Iran, this instrument was validated by Mohammadizeidi et al. (2011) and the reliability was confirmed by Cronbach's alpha coefficient of > 82% for the entire instrument as well as the subthemes.[17] In the present study, reliability of the tool was confirmed with the alpha coefficient of > 0.89%.

2.4. Data Collection

Firstly, the eligible patients were invited to participate in this study based on the ethical considerations in addition to the inclusion criteria and were divided into the two groups of intervention and control. Demographic data form and the HPLP questionnaire were completed separately as interviews in both groups when the newly admitted patient in intensive care unit (ICU) was stable.

Content of the care plan was developed during 12 weeks based on a continuous care model and according to the pre-test data using the valid scientific resources.[3, 9, 10, 12, 15] This model is a native continuous care model designed by Ahmadi et al. (2006) compromised of four stages, namely awareness, sensitization, control, and evaluation in both continuous and coherent ways.[10]

In order to execute this model, the identification stage was performed at the time of admission and after completing the pre-test as sessions of 30-45 minutes in patients' rooms and individually in ICU by the researcher with regard to the patients' condition. At this stage, in addition to interactive familiarization (patient, family, and nurse), it was tried to motivate the patients through discussing and sharing ideas about need for continuous care, proper lifestyle, and accurate implementation of all the four stages of this model. The next steps were developed according to the information obtained in this stage. After this session, the patients were divided into groups of 3-5 people, and the required arrangements were performed about the exact time and place of the next sessions.

The sensitization phase was also performed with the aim of sensitizing the patient for taking responsibility. This step was taken according to the previous coordination as five group sessions of 45-60 minutes at conference hall of one of the clinics in Jahrom, Iran. All the necessary trainings were given to patients and one of their family members regarding the proper diet, physical activity, importance of using the pharmaceutical diet, main symptoms of disease, complications of myocardial infarction, need for elimination of some inappropriate habits such as smoking, and necessity of continuous care as well as modification of lifestyle and various risk factors. Overall, the first two steps took three weeks since the beginning of the project.

The control stage in this model was designed with the purpose of institutionalizing and sustaining health behaviors in order to promote health. This step was performed following the procedure and implementation of continuous care model as well as responding to the patients' complaints in form of daily counseling tailored to the patients' needs or by visits at home. This stage took the nine final weeks of the project. Finally, the evaluation procedure was presented to investigate the care process and measure the extend of change. At this stage, the HPLP questionnaire was again completed after nine weeks of follow-up through interview by the researchers at patients' homes. The individuals in control group also completed the HPLP questionnaire 12 weeks after repeating the pre-test (Diagram 1).
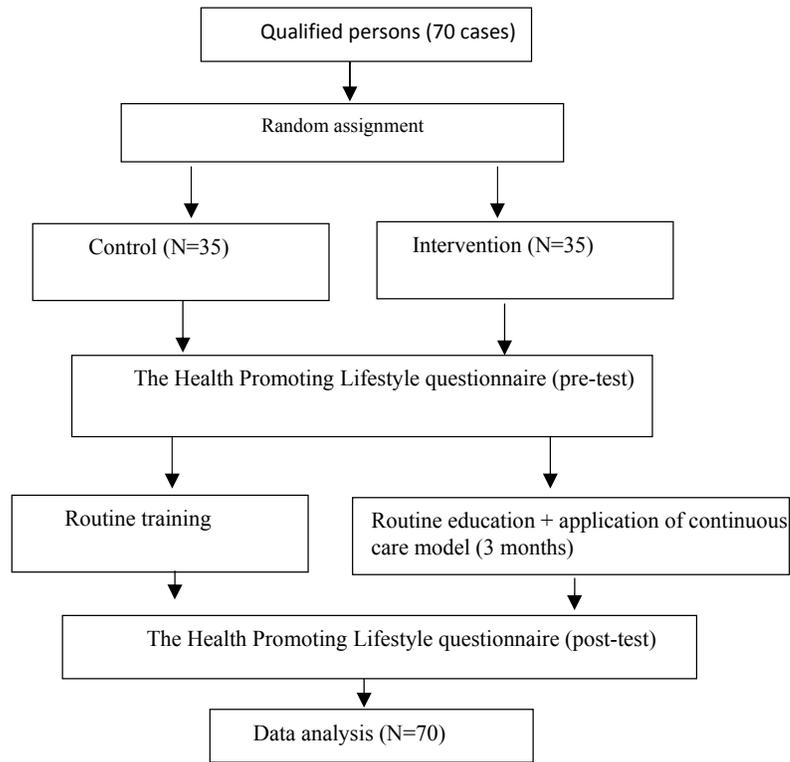
Diagram 1. Stages of study

2.5. Ethical considerations

After selecting the research units, the goals and stages of the study were explained to the participants and they were assured about confidentiality of their information and that they could leave the study whenever they desired. Afterwards, informed consents were obtained from the participants. At the end of study, in order to follow the ethical principles of research, the educational materials were provided to the individuals in the control group.

2.6. Statistical analysis

Descriptive statistical analysis was performed. In addition, Chi-square test was used to examine the difference between individual characteristics of the two groups of intervention and control. Moreover, independent t-test was applied in order to compare the mean age, mean scores of completing the HPLP questionnaire as well as the different aspects between the two groups. All the statistical analysis was performed using the SPSS version 19. P < 0.05 was considered as statistically significant.

3. Results

Demographic data of the patients are shown in Table 1. According to this table, there was no significant difference between the variables of the two intervention and control groups.

As table 2 and results of t-test demonstrate, the mean pre-intervention total score of lifestyle was not significantly different between the two groups of intervention and control (P=0.07). After the intervention, the mean score of lifestyle and aspects of stress management, communication, spiritual growth, nutrition, physical activity, and health responsibility augmented in the intervention group. These differences were statistically significant between the intervention and control groups (P<0.001).

Table 1. Demographic and clinical characteristics of the participants in the two groups of intervention and control

Variable	Groups	Intervention N(%)	Control N(%)	P∗
Gender	Male	19(54.3)	19(54.3)	0.62[*]
	Female	16(45.7)	16(45.7)	
Marital status	Single	21(62.9)	24(68.6)	0.69[*]
	Married	8(22.9)	6(17.1)	
	Widow	4(11.4)	3(8.6)	
	Divorced	2(2.9)	2(5.7)	
Education	Under diploma	12(34.3)	16(45.7)	0.20[*]
	Diploma	11(31.4)	7(20)	
	Bachelor	8(22.9)	9(25.7)	
	Master	4(11.4)	3(8.6)	
Occupation	Free	9(25.7)	12(34.3)	0.60[*]
	Staff	12(34.3)	12(34.3)	
	Retired	6(17.1)	4(11.4)	
	Housewife	8(22.9)	7(20)	
Blood Hypertension	Yes	29(82.9)	26(74.3)	0.43[*]
	No	6(17.1)	9(25.7)	
Diabetes	Yes	19(54.3)	21(60)	1[*]
	No	16(45.7)	14(40)	
Smoking	Yes	12(34.3)	11(31.4)	0.49[*]
	No	23(65.7)	24(68.6)	
Age	M±SD	55.11±57.19	55.1±14.71	0.87[**]

*Chi-square test, ** Independent t-test

Table 2. Comparison of mean lifestyle and various aspects scores pre- and post-intervention between the intervention and control groups

Variable	Group	Intervention Mean±SD	Control Mean±SD	P∗
Stress management	Pre-intervention	17.3±54.61	17.86±4.35	0.85
	Post-intervention	27.27±7.14	17.4±74.17	< 0.001
Communication	Pre-intervention	21.26±3.8	24.34±5.15	0.05
	Post-intervention	26.34±4.19	24.26±5.56	< 0.001
Spiritual growth	Pre-intervention	22.17±3.38	26.22±5.11	0.2
	Post-intervention	4.18±27.83	25.81±6.2	< 0.001
Nutrition	Pre-intervention	21.46±3.37	20.2±4.43	0.05
	Post-intervention	31.91± 3.36	19.3±94.61	< 0.001
Physical activity	Pre-intervention	13.2±3.36	12.49±2.76	0.35
	Post-intervention	25.94 ± 5.26	12.48± 4.03	< 0.001
Responsibility for health	Pre-intervention	19.23 ± 4.56	17.77± 3.84	0.13
	Post-intervention	31.46±3.62	17.2±4.38	< 0.001
Total score	Pre-intervention	126.6±16.36	114.51±18.27	0.07
	Post-intervention	181.1±25.2	115.9±24.2	< 0.001

* Independent t-test

4. Discussion

The findings of this study demonstrate that using continuous care model leads to improved lifestyle in patients with myocardial infarction. This intervention resulted in enhancement of all lifestyle aspects, including stress management, communication, spiritual growth, nutrition, physical activity, and responsibility for health.

In this regard, Ahmadi et al. (2005) showed that continuous care model was effective in controlling the coronary artery disease. According to their

results, application of this model for three months had a positive influence on physical activity of these patients in quality of life questionnaire. The latter result is consistent with the findings of the present study, especially in terms of improving physical activity. This improvement can be due to the same duration of these studies and justification of the patients in educational sessions about the importance of physical activity and regular follow-up in controlling the cardiovascular diseases.[18]

Likewise, In a study conducted by Sadeghi Sherma et al. (2009) two months of continuous care in patients undergoing coronary artery bypass graft surgery resulted in enhancement of their quality of life.[19]

Continuous care model considers behavior assessment and follow-up of the patients at home. Therefore, health behaviors training is expected to be deeper and the quality of life is improved following the appropriate lifestyle. In addition, the previous studies indicate that there is a direct relationship between the quality of life and lifestyle.[20-22] Moreover, results of the study performed by Akbari et al. (2015) showed that training the patients and institutionalization with repeating, supervising, and management of nurses based on continuous care model might lead to self-efficacy changes in patients with myocardial infarction.[3]

Results of the mentioned studies can confirm findings of the present study, because self-care can affect the lifestyle of patients.[23] Furthermore, training can lead to positive changes in quality of life, self-efficacy, and consequent lifestyle improvements in case it is based on patients' needs and is accompanied by regular follow-up.

Saei et al. (2006) performed a study on patients under hemodialysis. They demonstrated that execution of continuous care model had a remarkable impact on enhancement of simple life skills.[11] In addition, in the study conducted by Ghavami et al. (2006), continuous care model was extremely effective in recovery of the patients and remission of the signs. The latter result reveals that this model can enhance the patient's responsibility for disease.[24]

According to results of the current study, a significant difference was observed regarding the responsibility aspect. This difference might be associated with the follow-ups in this model and the long-term communication between nurse, patient, and even families. As a result, feeling of responsibility and control of disease may rise in the person.

Atak et al. (2008) revealed in their study that a training program and regular follow-up led to an increase in regular exercise.[25] Their result is consistent with the findings of this study in terms of physical activity, although the research population was different between these two studies. Considering the chronicity of disease and importance of physical activity in control and improvement of both diseases, it could be concluded that proper training toward disease control can result in compliance if it clarifies the importance of subject for the patient. Therefore, significance of physical activity was well addressed in scheduled sessions of this study.

Dehghani et al. (2015) also studied the effect of educational and supportive intervention on improvement of lifestyle in the cardiac patients. They indicated that this intervention can affect the patient's lifestyle aspects, such as augmenting physical activity, improving blood pressure as well as decreasing lipid profile, obesity, and smoking.[26] Results of Chainani-Wu et al. (2011) showed that administration of an intensive care intervention could be influential in improving lifestyle of the cardiac patients, and raises physical activity in these patients.[27]

In addition to the studies that focus on use of continuous care model, some studies also investigated the impact of education on cardiac patients. The study performed by Taherian et al. (2007) addressed the positive influence of implementing educational programs and phone call follow-ups on knowledge, and enhanced self-care among the patients with cardiac failure.[15]

Time limited and long follow-up period as well as difficulty of preventing sample dropout could be mentioned as the limitations of the present study. We attempted to overcome these limitations by continuous follow-ups performed by the researchers, elucidating the goals and benefits of the study, and considering free visits for the participants with inter-coordinating efforts.

5. Conclusion

According to the findings of this study, execution of continuous care model can promote the lifestyle of patients with cardiac infarction. Therefore, this model is recommended as an effective and safe nursing intervention to improve the lifestyle of patients with cardiac infarction. Furthermore, chronic diseases usually occur in middle ages and above, during which the trained self-care principles may be forgotten. Consequently, it is suggested that care programs involve the patients' family members in addition to the patients themselves. Furthermore, following up the patients regarding implementation of the learned principles should always be continued.

Conflicts of interest

The authors declare no conflicts of interest.

Authors' contributions

Acknowledgments

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