An Educational Intervention to Improve Quality of Life: A Single-blind Randomized Controlled Trial on the Quality of Life in Patients with Acute Coronary Syndrome

Neda Fayazi, Vahid Naseri Salahshour, Mahmood Karimy, Homa Fayazi

Background and Aim: Coronary artery disease is one of the most common cardiovascular diseases leading to disability and significant complications in patients. This also imposes burdens on families and societies. This study aimed to investigate the effect of self-care education on the quality of life of patients with acute coronary syndrome.

Materials and Methods: This clinical trial was conducted on 70 patients with coronary artery disease who were randomly divided into intervention (n=35) and control (n=35) groups. At the beginning of the study, both groups were asked to complete a 36-item Short Form (SF-36) survey of quality of life. Subsequently, the intervention group received three 30-45 min self-care training sessions with a one-day interval within a week. Immediately after the intervention and two months later, the patients completed the quality of life questionnaire. Finally, the data were analyzed in SPSS software (version 20) using independent t-test, Chi-square, and repeated measures analysis of variance.

Results: The mean scores of quality of life were 45.35 and 45.62 in the intervention and control groups before training, respectively. Immediately after the intervention and two months later, the corresponding values were 66.34 and 64.81 in the intervention group, which showed a significant difference between the groups in this regard (P=0.01).

Conclusion: According to the results, self-care education can increase the quality of life among patients with coronary artery disease. Moreover, it can be used as one of the non-pharmacological and effective methods for the treatment of coronary artery disease.

Introduction

Cardiovascular diseases are recognized as the first, common, and most important cause of deaths, compared to non-communicable diseases in Iran and many countries across the world (1). Among cardiovascular diseases, coronary artery disease is one of the most important diseases and health conditions in developing and developed countries, including Iran (1-3). The manifestations of this disease include a range of physical-psychological disorders, such as pain, sweating, nausea, vomiting, stress, and anxiety. Cardiovascular disorders are multifactorial illnesses and in addition to increasing age and genetic role, biological, environmental, and psychological variables are also involved in its etiology. About 17.3 million deaths worldwide occur annually due to coronary artery disease (4).

According to the American Heart Association (AHA), it is anticipated that in 2020, nearly 1 or more out of 3 Americans will suffer from this disease. Today, this disease has become a social
problem in Iran with its mortality rate accounting for 6.6 deaths per 10,000 population. This disease ultimately causes disability and significant complications in patients, which is a source of great harm to the community and families (5-7). In addition, studies have shown that the prevalence of cardiovascular disease followed by the financial burden has also been rising in recent years (8, 9).

Basically, in patients with chronic diseases, such as coronary artery disease, definitive treatment of the disease is not considered a real and achievable goal. This is because these disorders are disabling due to having a long and chronic process, and many internal and external factors have effects on its aggravation and recovery, thereby affecting the quality of life of patients (10, 11). Currently, even with medication-assisted treatment and aggressive therapies on coronary arteries, its prognosis is still not satisfactory, and its prevalence is increasing (1, 2). One of the important issues in the management of chronic diseases is training and helping the patient take care of themselves; moreover, the educational programs are considered among these main issues to increase their quality of life. Considering the key role of nurses in teaching self-care behaviors, the identification of the behaviors that lead to a better quality of life in patients is one of the most important interventions and goals of nursing (12). It is important to teach the patient that its valuable and useful effects have been proven in various studies (13-17). Despite its many benefits, health care centers ignored or neglected low-cost patient education. The results of a study conducted by Ismaili showed that patient education is not well-suited in Iran so that the training program is not implemented or it is implemented in a very incomplete and irregular manner. The education of self-care behaviors can lead a person to maintain good health and well-being, thereby increasing his/her ability to self-care (18). On the other hand, compliance with self-care behaviors is important in patients with chronic illness (19). Patients can affect their comfort, functional abilities, and disease processes by acquiring self-care skills. Moreover, they can have control over their life and adapt to complications, which results in an improvement in their quality of life (5, 13, 18-20).

In addition, self-care behaviors improve the patient’s abilities and help facilitate better daily activities, achieve autonomy, and therefore, perform more social functions, which leads to the patient’s self-esteem. The role of self-care and patient participation in treatment is an effective factor in the improvement of the quality of life (4, 21, 22). The prevalence of coronary artery diseases is increasing, and its manifestations have adverse effects on the quality of life (23). Moreover, the effect of self-care education has been approved on the quality of life. Therefore, it is of utmost importance to encourage patient participation in self-care behavior training sessions, which leads to the improvement of life quality. With this background in mind, this study aimed to determine the effects of self-care education on the quality of life among patients with acute coronary syndrome (ACS).

Materials and Methods
This single-blind randomized clinical trial was conducted on 70 patients with ACS hospitalized in the Coronary Care Unit (CCU) of Shahid Modarres Hospital, Saveh, Iran, during 2018. The patients were selected using the available sampling and simple random allocation methods. Subsequently, they were randomly divided into two groups of control (n=35) and intervention (n=35) according to CONSORT guidelines using a card with the names of groups (A or B). It is worth mentioning that the samples were unaware of the group allocation (Figure 1).

The inclusion criteria were: 1) diagnosis of ACS, 2) age range from 20 to 60 years, 3) lack of the previous hospitalization in the CCU, 4) lack of diagnosed underlying diseases, such as tuberculosis, cancer, and hepatitis, and 5) reading and writing abilities. On the other hand, the patients with hearing impairment, and those who were transferred to another health care center or were unwilling to participate in the research procedure were excluded from the study. The data were collected using a demographic characteristics form and a Short Form (SF)-36 survey of quality of life. The SF-36 survey of quality of life has been translated into Persian and validated in previous studies by Baghiyani Moghadam (24). The items in the questionnaire seek information about the various aspects of the quality of life. This questionnaire consists of 36 phrases in 8 dimensions, including physical function (n=10), mental health (n=5), social status (n=4), physical role-play (n=4), energy and vitality (n=4), physical pain (n=2), emotional role (n=3), and general health (n=4). The total calculated scores for each patient are 100, and according to the score, the life quality is divided into levels of weak (less than 34), moderate (from 34-67), and high (over 67). The intervention was initiated 24 h after the hospitalization. At the beginning of the study, research objectives, benefits, and protocol were explained to the patients. They were then asked to complete the demographic characteristics form and SF-36 survey of the quality of life. After rest, stability, and identification of the educational needs,
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The intervention group received three 30-45-min self-care sessions with a one-day interval within a week. The educational sessions were held in the hospital’s assembly hall in the form of lectures and multiplayer groups. Table 1 tabulates the educational content.

It should be noted that the intervention and control groups completed the questionnaires two months after the training, and the results were compared with each other. Finally, the data were analyzed in SPSS software (version 20) through descriptive and inferential statistics, as well as the Chi-square test. In addition, the Kolmogorov-Smirnov test and independent t-test were utilized to check the normality of the data and compare the two groups regarding the effectiveness of the educational program, respectively. The repeated-measures analysis of variance was used to determine the effectiveness of the educational intervention over time. A p-value less than 0.05 was considered statistically significant.

**Ethical Considerations**

The study protocol was approved by the Ethics Committee of Saveh University of Medical Sciences, Saveh, Iran (IRCT20161223031522N6; IRSAV EHUMSREC1396.07).

Moreover, the required permission was obtained from the authorities of the hospital and CCU. Subsequently, the samples were selected based on the inclusion criteria. The written informed consent was obtained from the participants, and they were
told that continuing or leaving the study would not affect the treatment procedure and would not have any expenses. Moreover, the participants were assured regarding the confidentiality of the data, and the researchers explained that they could leave the study anytime they desired.

**Results**

According to the findings of this study, the majority of the participants in the control (89.9%) and intervention groups (85.8%) were female. Moreover, regarding the educational level, the majority of the patients in the control (34.79%) and intervention (39.13%) had a primary school degree. The mean ages of the patients in the control and intervention groups were 54.61±17.97 and 59.92±18.36 years, respectively. Furthermore, the mean weight values of the patients in the control and intervention groups were 62.26±21.43 and 57.32±19.76, respectively, which shows no significant difference between the two groups in this regard.

The mean scores of the quality of life in the intervention group before, after, and two months later were 45.35±12.52, 66.34±15.41, and 64.81±13.31, respectively. These corresponding values were obtained at 45.62±13.75, 49.51±13.8, and 44.93±16.1, respectively, in the control group. Accordingly, there was no significant difference between the two groups in this regard. In other words, no significant difference was observed between the two groups regarding the mean score of the quality of life before intervention (P=0.23). However, a significant difference was found between the intervention and control groups in terms of the mean score of the quality of life after the intervention (P=0.01). In addition, there was a significant difference between the intervention and control groups regarding the mean score of the quality of life two months later (P=0.01) (Table 3).

**Table 2.** Demographic characteristics of the patients

| Variable          | Group       | P-value |
|-------------------|-------------|---------|
|                   | Intervention| Control |
|                   | Mean±SD     | Mean±SD |
| Age (year)        | 34.8±8.3    | 32.4±7.9| 0.740   |
| Weight (Kg)       | 10.7±57.32  | 10.4±62.26| 0.42    |
| Category          | Number (%)  | Number (%)|
| Gender            | Male        | 6 (14.2)  | 4 (10.2) | 0.53    |
|                   | Female      | 29 (85.8)| 31 (89.8)|         |
| Marital status    | Single      | 5 (14.3)  | 9 (25.7) | 0.63    |
|                   | Married     | 30 (85.7)| 26 (74.3)|         |
| Educational level | Primary School| 28 (65.6)| 24 (51.8)| 0.56    |
|                   | High school degree| 7 (34.4)| 8 (38.9)|         |
|                   | Academic degree| 0 (0)| 3 (9.3)|         |
| Job status        | Unemployed  | 1 (2.2)   | 1 (2.2)  |         |
|                   | Employed    | 5 (11.2)  | 9 (24.4) |         |
|                   | Housewife   | 25 (77.7)| 18 (57.8)| 0.12    |
|                   | Retired     | 1 (2.2)   | 5 (11.2) |         |
|                   | Self-employed| 3 (6.7)| 2 (4.4)|         |

*Independent t-test, **Chi-square

**Table 3.** Mean±SD of the quality of life in two groups before, immediately, and two months after the intervention

| Variable          | Groups       | Before the intervention | After the intervention | Two months after the intervention | P-value * |
|-------------------|--------------|-------------------------|------------------------|----------------------------------|-----------|
|                   | Intervention | 45.3±12.52              | 66.3±15.41              | 64.8±13.31                       | 0.001b    |
| Quality of life   | Control      | 45.6±13.75              | 49.5±13.8               | 44.9±16.1                        | 0.26c     |
|                   | P-value      | 0.28b                   | 0.01c                   | 0.01a                            | -         |

*Repeated measures analysis of variance, a: t-test, b: before and after the intervention, c: after the intervention and two months later, d: before and two months after the intervention.

**Discussion**

The results of this study showed an increase in the mean score of the quality of life in the intervention group after the intervention and two months later. The results of a study conducted by Salavati et al. were consistent with the findings of the present study. The mean life quality scores were obtained at 2.68±0.52 and 4.78±0.51 before and after the intervention, respectively, which indicates an increasing trend in the quality of life among patients with myocardial infarction (23).

Regarding the mean score of the quality of life at the beginning of the study, after training, and two months later in the control group, the results
showed an increase in the mean score of the quality of life; however, it was not statistically significant. In this regard, Najafi Gheilisheh et al. showed that the quality of life scores were 38±0.34 and 38±0.60 at the beginning and the end of the study in the control group, respectively (24). Moreover, the results of the aforementioned study revealed no significant difference between the intervention and control groups regarding the mean score of quality of life before intervention (P=0.23). Nonetheless, the intervention group obtained significantly higher mean life quality scores, compared to the control group after training sessions (P=0.01).

Furthermore, two months later, the mean quality of life score in the intervention group was significantly higher than that in the control group (P=0.01). Delir et al. found that feedback-based education promoted self-care in patients with heart failure (25). These findings are consistent with the results of the study performed by Babazadeh et al. in which they showed that self-care behavior training significantly increased the quality of life in patients with diabetes. Many studies have been carried out to investigate the impact of different educational methods on the enhancement of the patients’ quality of life (14, 16). The results of these studies have shown that the educational methods have led to the promotion of self-esteem followed by self-confidence and an increase in the quality of the patients (26). In a study, Ataei et al. evaluated the effect of self-care behavior training on the quality of life among patients with permanent pacemakers (18). The results of their study indicated that self-care education was effective in the quality of life of patients, which was consistent with the findings of the present study. Self-care and quality of life are individual concepts and their foundation depends on individual’s insights and attitudes toward life (12). Similarly, the results of a study conducted by Alhani et al. showed that self-care education in patients with heart failure led to an improvement in the quality of life in this population. Although the aforementioned study included the patients suffering from heart failure, and the current study investigated the patients with ACS, self-care methods have been shown to improve the quality of life in both studies (27).

In a study conducted by Shams et al., self-care education methods led to an increase in the quality of life of diabetic patients, especially the physical aspects. It should be noted that the patients were diabetic and most of their physical aspects have been investigated in the mentioned study. On the other hand, the present study assessed the patients with ACS regardless of the physical aspect of the patients. However, the results of both studies showed that self-care education led to the promotion of life quality (28).

Today, the life quality of the patients is recognized as an important principle in the patient care process. Moreover, it is considered a goal in national and international health and safety organizations (25). Iran is a developing country with a growing aging population, which is a sign of the importance of education (29). The implementation of the educational methods (e.g., self-care) to the current state of today's human societies (e.g., industrialization), and an increase in the incidence and prevalence of chronic diseases can be very important in health promotion (30).

Nursing is a holistic career, and education is one of the missions of nursing in the patient care process (14). The empowerment of the patients to take care of themselves using different educational methods led to the improvement of community health. This can be conducted by the development of plans and programs in order to reduce the costs induced by the patient re-admission.

One of the limitations of the present study was the low sample size, which caused a relative decrease in the power of the study generalizability. Therefore, the findings should be approved by larger studies in this regard.

**Conclusion**

The findings of this study showed that self-care education led to the improvement of the quality of life among patients with ACS and caused self-confidence in these patients. Therefore, as mentioned above, education can increase productivity and reduce the treatment costs as well as occupancy rate of the hospital beds.

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**Conflicts of interest**

The authors declare that there is no conflict of interest regarding the publication of the study.

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