The Effect of Family-Centered Interactive Education Using Social Networks on the Lifestyle of Patients with Acute Coronary Syndrome: A Randomized Clinical Trial

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Research article

Abstract

Background: Patient education is a key factor in promoting the health of people with acute coronary syndrome. Families are crucial to implement educational programs. Therefore, this research aimed at determining the family-centered interactive education efficacy using social networks on the lifestyle of patients with acute coronary syndrome (ACS). Materials and

Methods: The present clinical trial was conducted on 96 cases with ACS, who were randomly assigned to control and intervention groups. The former only was provided with routine training before discharge, while the latter, in addition to routine training before discharge, received education on social networking and sending text/visual messages. At baseline and three months after the intervention, the Walker's Lifestyle Questionnaire was completed. The paired t-test was employed for data analysis.

Results: the average lifestyle value of the intervention group was significantly higher compared with the control group after the intervention ($P < 0.001$). Moreover, the lifestyle score was significantly different pre- and post- intervention in the intervention group ($P < 0.001$).

Conclusion: Interactive education using social networks is useful to promote the lifestyle in cases with ACS, which seems effective in planning the follow-up for these patients.

Background

Coronary artery disease has known as one of the most important cardiovascular diseases (CVDs) and one of the chronic diseases, causing limitations in one's daily life [1]. CVD has found with high prevalence in Iranian people that comprises 46% of all mortalities [2]. By 2020, CVD is expected to be listed as a disabling disease around the world [3]. Lifestyle changes, such as high consumption of processed foods and saturated fats, low level of physical activity, and increased prevalence of obesity and type II diabetes, seem to cause a progressive enhancement in the cardiovascular risk factors rates in developed countries [4, 5]. In addition to mortality, CVDs can cause disabilities and diseases in individuals and decrease their quality of life. Low-income and middle-income countries are predominantly affected by CVDs, which account for more than 75% of all deaths worldwide [6].

Drug treatment, surgical procedures, management of risk factors, and lifestyle modifications are ideal treatments for acute coronary syndrome (ACS) [7, 8]. Evidence shows that 80% of ACS cases are due to risk factors, which can be moderated by lifestyle modifications. Therefore, lifestyle modification is considered as one of the effective strategies for the treatment of ACS. Lifestyle includes daily activities of an individual, which influences his/her health, as well as behaviors towards daily activities [7]. However, lifestyle modification interventions cannot change factors, such as age, gender, or family history of patients with CAD [8].

Diagnosis of a disease in a family member is often considered a family problem [9]. Family-centered care emphasizes on an effective collaboration between patients, families, and healthcare providers [10].

Family-centered education is a process through which families learn to increase their skills and abilities to help a family member who is suffering from a disease. Family-centered education is a crucial concept of nursing, which aims to increase the family's awareness and ability to provide specific care for patients and instructs the patients about lifestyle changes [1].

As a result of increased workload and high rates of patient admission, patient training has been negatively affected [11]. On the other hand, telenursing is an efficient, simple, and cost-effective strategy, which can be applied for patient training. Communication using social networks is an effective and cost-effective way to facilitate the follow-up of patients and encourage the transfer of health information in very remote areas [8]. This study aimed at determining the efficacy of education using social networks in ACS cases.

Methods

The current clinical trial (IRCT20160914029817N7) was conducted on cases with ACS admitted to the cardiac ward of Afshar Hospital in Yazd, Iran, during 2018-2019. The sample size was calculated to be 40 individuals per group, with 80% power and 95% confidence interval. Because of the possibility of dropout, 96 individuals were evaluated. They were randomly assigned to two the intervention (group A) and control (group B) groups. They were allocated to the groups via permuted block randomization. Two homogeneous blocks were considered with respect to confounding variables, such as age and gender. Allocation was performed double-blinded, that is, neither the allocator nor the patient knew the type of intervention.

The inclusion criteria for the patients were as follows: diagnosis of ACS by a cardiologist [7]; age >21 years [12]; having access to a personal or family mobile phone; and being able to read, write, and speak Farsi [7]. In addition, the inclusion criteria for the patient's family were as follows: having access to a third person who could read the text messages for them; being able to do daily activities [5]; having access to a personal or family mobile phone; and being able to read, write, and speak Farsi. In contrast, the exclusion criteria included change of mobile phone number and not informing the researcher [8]; having a known mental, intellectual, or motor disability; and having a physical or mental problem, resulting in disability at any stage of the research [13, 7]. Also, the exclusion criteria for the patient's family included disability at old age [7] and inability to read and write in Farsi language [12].

Data were collected from two groups of patients before and three months after the intervention. The research tool had two sections. The former included questions about the demographic characteristics and information about the disease (e.g., age, gender, education, and history of hospitalization). The latter consisted of Walker's Lifestyle Questionnaire with six dimensions: nutrition, physical activity, stress management, interpersonal relationship, health responsibility, and self-realization. The tool was ranked on a four-point Likert scale (1= never, 2= sometimes, 3= often, and 4= always); the minimum score is 52, and the maximum score is 208 [7, 14, 15]. The reliability and validity of this questionnaire have been determined in Iran. Its total reliability was estimated at 91%, and reliability of the dimensions, including

nutrition, physical activity, stress management, interpersonal relationships, health responsibility, and self-realization was 0.89, 0.75, 0.78, 0.80, 0.78, and 0.71, respectively [14].

First, the research objectives were explained for the subjects followed by collecting the informed consent. Next, the investigator's colleague completed the questionnaire through interviews with the patients, without providing any information about the groups or purpose of the study. After primary data collection, the patients' mobile phone numbers were obtained. Lastly, cases were randomly assigned to two groups. The intervention group received educational text and video messages according to the Walker's Lifestyle Questionnaire dimensions.

Time table: Content of text messages in the intervention group

Days of the week	Subject of messages sent
Saturday	Nutrition
Sunday	Physical activity
Monday	Stress management
Wednesday	Interpersonal relationships
Thursday	Self-realization

Results

The subjects' average age was 55.98 ± 8.1 and 56.89 ±8.27 years in the intervention and control groups. According to the paired t-test results, both groups showed no significant difference regarding the mean age (P=0.293). In addition, no significant difference was found between both groups in gender, education, or record of hospitalization. The results of paired t-test indicated that the mean total score of lifestyle in the two groups was significant before the intervention. On the other hand, three months after the beginning of the intervention, the average total value of lifestyle dimensions was significantly higher in the intervention group, than the control group (P<0.001), except for the dimension of self-realization, which was less significant than other dimensions (P=0.017) (Tables 1 & 2).

Table 1
Distribution of demographic variables in two groups of intervention and control

		intervention group		control group		P-value
		Percentage	Frequency	Percentage	Frequency	
Gender	Female	39.1	18	40	18	0.932
	male	60.9	28	60	27	
Education	Diploma and lower	58.7	27	53.3	24	0.551
	Bachelor's degree	41.3	29	44.4	20	
	Master's degree and above	0	0	2.2	1	
disease background	Yes	54.3	25	48.9	22	0.677
	No	45.7	21	51.1	23	

The results of paired t-test showed that three months following the intervention, the average total value of lifestyle was significantly higher in the intervention group (8.47±0.7), compared to the control group (1.42±0.3). In addition, three months following the intervention, the average values of six lifestyle dimensions were significantly higher in the intervention group (1.54±0.22 for nutrition, 1.55±0.43 for physical activity, 1.92±0.43 for stress management, 1.3±0.04 for interpersonal relationships, 1.91±0.12 for health responsibility, and 0.41±0.07 for self-realization), compared to the control group (0.22±0.07 for nutrition, 0.76±0.13 for physical activity, 0.18±0.03 for stress management, 0.16±0.11 for interpersonal relationships, 0.2±0.35 for health responsibility, and 0.09±0.24 for self-realization) (P<0.001; Tables 2 and 3).

Table 2
The mean total and dimension scores of lifestyle in the intervention group at different intervals

Groups	Lifestyle Dimensions	Prior to the intervention	Three months following the onset of intervention	Paired t-test
		Mean (SD)	Mean (SD)	
Intervention Group	Total score	103.22 (14.82)	111.69 (14.12)	<0.001
	Nutrition	15.93 (2.46)	17.47 (2.69)	<0.001
	Physical activity	11.06 (3.54)	12.61 (3.11)	<0.001
	Stress management	9.19 (1.82)	11.11 (2.15)	<0.001

Table 2
The mean total and dimension scores of lifestyle in the control group at different intervals

Groups	Lifestyle Dimensions	Prior to the intervention	Three months following the onset of intervention	Paired t-test
		Mean (SD)	Mean (SD)	
Control group	Total score	124.27 (19.69)	125.69 (19.16)	0.001
	Nutrition	19.82 (2.79)	20.04 (2.86)	0.097
	Physical activity	12.91 (5.34)	13.67 (5.21)	<0.001
	Stress management	9.78 (2.15)	9.96 (2.12)	0.071
	Interpersonal relationships	22.22 (4.38)	22.38 (4.27)	0.09
	Health responsibility	29.47 (8.31)	29.67 (7.94)	0.128
	Self-realization	30.07 (4.43)	29.98 (4.19)	0.511

Discussion

Interactive education using social networks can influence the lifestyle of patients suffering from ACS. In the present study, the groups showed no significant difference before the intervention regarding demographic variables, mean total score of lifestyle, and mean scores of lifestyle dimensions. In this regard, Moradi et al. conducted a study with the aim of determining the interactive text message follow-up efficacy on the health-promoting behaviors in ACS cases, in which two groups did not show significant difference regarding demographic characteristics and history of risk factors, including hyperglycemia, high blood pressure, dyslipidemia, smoking, and hospitalization [7]. Based on our findings, the intervention group was found with significantly higher the average total and dimension values of lifestyle three months following the intervention. In this regard, Kamrani et al. studied the patient's educational level as well as nurse-led telephone follow-up (telenursing) impact on the ACS patients' adherence to therapy. They found that participants in the education follow-up group showed more improvement in adherence to treatment compared with the control group following the intervention (P=0.001) [16]. Moreover, Babaei-Sis et al. determined the lifestyle modification intervention on the blood pressure control in patients with hypertension. The intervention group was found with a significant increase in the average values of exercise, weight control, nutrition, and mental health following the intervention (P<0.05) [17]. It is known that the information obtained from treatment teams and media can influence the patients' health-related behaviors [18]. Therefore, sending messages about healthcare can have substantial effects on patients. Nonetheless, based on our findings, the average total score of

lifestyle and the average scores of lifestyle dimensions in the intervention group were significantly more than the control group three months after the intervention; this finding indicates that interactive education using social networks can be effective. In this regard, Boroumand and Moeini performed a study to determine the efficacy of a follow-up program via text messages and phone calls on the self-efficacy of cases suffering from coronary heart disease. At three different intervals, the scores of cardiac self-efficacy were significantly different in the experimental group (P<0.001) and the cardiac self-efficacy score was significantly more three and four months after the intervention, compared to the pre-intervention stage [8]. The limitations of the research are as follows: Lack of completion of questionnaires by some patients, possible problems of insufficient access to social network or problems related to electronic interaction, lack of cooperation of families to participate in this intervention or during research.

Conclusion

According to the findings of the present study, a family-based interactive program using social networks can be appropriate for improving the lifestyle of patients with ACS. Since ACS is a very common condition, education is considered essential for patients, and use of new inexpensive methods can be effective in improving their lifestyle. It seems that use of social networks reduces the patients' need to visit the treatment team when it is not necessary. This method can also provide the patients with quick and easy access to health-related information. Moreover, when patients ask their questions via text messages, they feel more motivated to read the responses. In this area, nurses are the key members of healthcare teams, who establish the greatest communication with patients and have a more comprehensive understanding of their needs for promoting their lifestyle. In conclusion, the findings of the present study can be used for the education of patients with ACS.

Abbreviations

ACS: Acute coronary syndrome; CVD: Cardiovascular diseases; CAD: Coronary artery diseases

Declarations

Acknowledgments

Authors' Contributions

FSh and EN: involved with all stages of this project. TD performed the statistical analysis. also all Authors read and approved the manuscript.

Ethical approval and consent to participate

The researcher received permission and a written letter of introduction from Kerman University of Medical Sciences (Faculty of Nursing and Midwifery) and presented the letter to the authorities and managers of the research environment. The participants signed a written consent form for participation in the study, which stated that withdrawal is possible whenever they wish and that all of their personal information, including their names, would remain confidential.

Consent for publication

Not applicable.

Competing Interest

FH, EN and TD declare that they have no conflict of interest.

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