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Effect of media messages on health-promoting lifestyle of acute coronary syndrome patients: A randomized clinical trial

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Abstract:

BACKGROUND: Patient education is a key factor in promoting the health of people with acute coronary syndrome (ACS), and the effective use of technology can play an important role in this regard. This study aimed to determine the effectiveness of education using media messages on the lifestyle of patients with ACS.

MATERIALS AND METHODS: The present clinical trial was conducted on 91 cases with ACS admitted to the cardiac ward of Afshar Hospital in Yazd, Iran, during 2018–2019, 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 3 months after the intervention, the Walker's Lifestyle Questionnaire was completed. The independent *t*-test, paired *t*-test, and Chi-square test were 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 ($P < 0.001$).

CONCLUSIONS: Education using media messages is useful to promote the lifestyle in cases with ACS, which seems effective in planning the follow-up for these patients.

Keywords:

Acute coronary syndrome, lifestyle, media messages

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Introduction

Coronary artery disease is one of the most important cardiovascular diseases (CVDs) and one of the chronic diseases, causing limitations in one's daily life.[1,2] CVD has found with high prevalence in Iranian people that comprises 46% of all mortalities.[3] By 2020, CVD is expected to be listed as a disabling disease around the world.[4,5] 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 factor rates in developed countries.[6-8] 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.[9]

Drug treatment, surgical procedures, management of risk factors, and lifestyle modifications are ideal treatments for acute coronary syndrome (ACS).[10,11] Evidence shows that 80% of ACS cases

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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 heart disease.[12] Lifestyle includes daily activities of an individual, which influence his/her health, as well as behaviors toward daily activities.[10] However, lifestyle modification interventions cannot change factors, such as age, gender, or family history of patients with CAD.[11]

As a result of increased workload and high rates of patient admission, patient training has been negatively affected.[13] On the other hand, telenursing is an efficient, simple, and cost-effective strategy, which can be applied for patient training.[11,14] Communicating with patients via social media is a cost-effective way to facilitate patient follow-up, transfer necessary health information, and reduce hospital admissions. Optimal and effective use of different social media has provided a platform that can be used to communicate with people in different places and times by using videos, photographs, and text messages.[15] Ultimately, it improves healthcare and reduces health costs since educating patients, including patients with ACS, and lifestyle changes are important to prevent the disease from getting worse and to reduce the quality of life. The present study was performed using social network on patients with ACS.

Materials and Methods

Study design and setting

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. This randomized clinical trial survey design was used to assess the effect of media messages on the lifestyle in ACS patients.

Study participants and sampling

The sample size was calculated to be 40 individuals per group, with 80% power and 95% confidence interval. Because of the possibility of dropout, 91 individuals were evaluated. They were randomly assigned to 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;[10] age >21 years;[16] having access to a personal or family mobile phone; and being able to read, write, and speak Farsi.[10] 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;[7] 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;[11] a known mental, intellectual, or motor disability; and a physical or mental problem after entering the study that resulting in disability at any stage of the research.[10,17] Furthermore, the exclusion criteria for the patient's family included disability at old age[10] and inability to read and write in Farsi language.[16]

Data collection tool and technique

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, while the maximum score is 208. A separate score can be calculated for each area, and a higher score is an indication of a better health condition.[10,18,19] Patients with a score of <102 show a poor lifestyle status, a score of 103–156 with a moderate lifestyle, and a score of 157–208 with a good lifestyle.[20] Mohammadi Zeidi *et al*. established the validity and reliability of the tool in Iran. Its total reliability was estimated at 91%, and the 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.[18] In the present study, the Cronbach's alpha of the scale was 0.85, and these patients were eliminated from the study.

Data were collected from two groups of patients before and 3 months after the intervention. First, the research objectives were explained for the subjects followed by collecting the informed consent. After primary data collection, the patients' mobile phone numbers were obtained. Finally, cases were randomly assigned to two groups. Then, in addition to routine training during discharge provided for the patients in the intervention group, a social messaging group was created and the patients were added to the group. The participants in the intervention group received educational text and video messages, according to the dimensions of the Walker's Lifestyle Questionnaire. In the 1st week, the patients received materials and instructions about different types of coronary heart disease, disease causes, risk factors, and ACS symptoms. Besides, training based on the content of the dimensions of Walker's health-promoting lifestyle

questionnaire content was sent to the participants from the 2nd to 12th week [Table 1]. During the 12 weeks of training, messages were sent to the participants in the intervention group, each week from 08:00 to 20:00. If participants had questions about their illness or medication or messages posted on social media, they could ask questions via text messages from 8:00 to 20:00 and the researcher would answer the questions. The text and video messages sent to the intervention group included training with lifestyle content and instructions. The materials and data used in this study were taken from the website of the American Heart Association, which were modified for use by ordinary people. For 12 weeks, the participants in the control group did not receive any messages and were only given routine training during discharge. The researcher had the questionnaires completed by the participants in both groups through face-to-face interviews and even using online questionnaires before conducting the study and 3 months after the intervention. Finally, all data were analyzed using SPSS 21 statistical software (SPSS 21.0 SPSS Inc., Chicago, IL, USA). The independent *t*-test, paired *t*-test, and Chi-square test were employed for data analysis.

Ethical consideration

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 written consent form for the 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.

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 *t*-test results, both groups showed no significant difference regarding the mean age (P = 0.293). Table 2 shows the absolute frequency and percentage of the patients participating in the study, in terms of demographic variables, such as sex, education, and history of other previous diseases. As can be seen, more than half of the participants in both groups were men (60% in the control group and 60.9% in the intervention group). Besides, more than half of the participants hold a diploma and lower education (53.3% in the control group and 58.3% in the intervention group), while the rest hold a bachelor's degree or higher education. Further, 48% and 54% of the participants in the intervention and control groups stated that they have a history of other diseases. In addition, no significant difference was found between both groups in gender, education, or record of hospitalization with Chi-square test.

Table 1: Content of media messages in the intervention group

Days of the week	Subjects of the messages sent
Saturday	Nutrition (the diet of patients with ACS)
Sunday	Physical activity (the time to start physical activity and its duration and types after ACS)
Monday	Stress management (the role of stress in the incidence and severity of ACS and stress reduction techniques)
Wednesday	Interpersonal relationships (communication and factors affecting communication skills)
Thursday	Self-realization (encouraging the engagement in regular family and social activities)

ACS=Acute coronary syndrome

The results of independent *t*-test indicated that the mean total score of lifestyle in the two groups was significant before the intervention. On the other hand, 3 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 3 and 4].

The results of paired *t*-test showed that 3 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, 3 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 3 and 4].

Discussion

Providing education through social networks and media messages can affect the lifestyle of patients with ACS. In the present study, the groups showed no significant difference before the intervention regarding demographic variables, the mean total score of lifestyle, and the 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

Table 2: Distribution of demographic variables in two groups of intervention and control

Variables	Intervention group		Control group		*P*
	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	

Table 3: The mean total and dimension scores of lifestyle in the intervention group at different intervals

Groups	Lifestyle dimensions	Mean (SD)		Paired *t*-test
		Before the intervention	Three months following the onset of intervention	
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
	Interpersonal relations	18.48 (2.71)	19.78 (2.67)	<0.001
	Health responsibility	24.46 (5.49)	26.37 (5.61)	<0.001
	Self-realization	23.94 (3.71)	24.35 (3.78)	0.017

SD=Standard deviation

Table 4: The mean total and dimension scores of lifestyle in the control group at different intervals

Groups	Lifestyle dimensions	Mean (SD)		Paired *t*-test
		Before the intervention	Three months following the onset of intervention	
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

SD=Standard deviation

and history of risk factors, including hyperglycemia, high blood pressure, dyslipidemia, smoking, and hospitalization.[10]

Based on our findings, the intervention group was found with significantly higher the average total and dimension values of lifestyle 3 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 ($P = 0.001$).[21] This similarity can be due to the similarity of the type of samples (patients with ACS). Of course, the difference between this study and the present study is the use of social network in education, which is not limited to follow-up by phone.

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 ($P < 0.05$).[22] The advantage of our study is educating using media compared to traditional and face-to-face training.

It is known that the information obtained from treatment teams and media can influence the patients' health-related behaviors.[23] 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 score of lifestyle dimensions in the intervention group were significantly more than the control group 3 months after the intervention; this finding indicates that 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 after 3 and 4 months of intervention compared to the preintervention stage.[11] The similarity of these two studies can be due to the similarity of age, gender, and education of the samples.

Contrary to the present study, Antypas and Wangberg examined the effect of Internet and short message system (SMS) intervention on physical activity in women diagnosed after a cardiac rehabilitation program. They found that 3 months after follow-up, there was no significant difference between the two groups (control and intervention) in terms of mean physical activity, social support, anxiety, depression, self-efficacy, and drug adherence ($P < 0.05$).[24] It can be said that in the present study, more follow-up and less dropout in the study samples produced significant results.

Moreover, Frederix *et al*. conducted a study on the impact of a comprehensive rehabilitation program via the Internet and SMS in patients with coronary heart disease. They found that the number of steps performed per day increased in the experimental group; however, the mean physical activity score was not significant and no changes in patients' weight and blood pressure were observed.[25] The younger age of the participants and the shorter intervention time increased the participants' cooperation and reduced their dropout rate, which can be considered as one of the strengths of this research project.

Limitation and suggestion

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, and lack of cooperation of families to participate in this intervention or during research.

It is suggested that in future studies, the effect of education using social network on self-care, spiritual health, and quality of life of patients with ACS be investigated. Furthermore, a tool can be provided to evaluate the effectiveness of family support.

Conclusions

According to the findings of the present study, the implementation of a continuous educational program using social media and networks can contribute to improving the lifestyle of patients with ACS. Since ACS is a very common disease, education is essential for patients suffering from the disease, and the use of new available methods can be an effective alternative to traditional education. An example is the use of social media for patient education. In addition to reducing the need for patients to refer to the treatment team, the use of social media can raise patients' awareness of their disease and thus leading to a more effective treatment.

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Conflicts of interest

There are no conflicts of interest.

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