

# The Effect of Supportive Educational Program on Depression, Anxiety, Stress and Satisfaction of the Families of Patients with Acute Coronary Syndrome

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## Abstract

**Background:** Hospitalization in the coronary care unit causes psychological stress for the patient's family members. Education and support of these families may control depression, anxiety and stress and increase their satisfaction.

**Aim:** This study was performed with aim to determine the effect of the supportive educational program on depression, anxiety and stress and satisfaction of the families of patients admitted to the coronary care unit.

**Method:** This randomized clinical trial study was performed in 2019 on 70 families of patients with acute coronary syndrome hospitalized in the coronary care unit of Imam Reza and Ghaem hospitals in Mashhad. Patients' families were randomly assigned to the intervention and control groups by time block method. In the intervention group, the supportive educational program was implemented for three days and the control group received routine care. Depression, anxiety and stress scale (DASS) was completed in both groups before and after the intervention, and the questionnaire of the Family Satisfaction with Care in the Intensive Care Unit (FS-ICU) was also completed after the intervention. Data were analyzed by SPSS (version 16).

**Results:** After the intervention, the mean total score of depression, anxiety and stress of the patients' families in the intervention group was significantly lower than the control group ( $P<0.001$ ). Also, the total score of depression, anxiety and stress after the intervention was reduced compared to before the intervention in the intervention group and also in the control group ( $P<0.001$ ). Also, the mean satisfaction score of patients' families in the intervention group was significantly higher than the control group ( $P<0.001$ ).

**Implications for Practice:** Based on the findings of this research, the supportive educational program reduced depression, anxiety and stress in the families of patients with acute coronary syndrome hospitalized in the coronary care unit and increased their satisfaction.

**Keywords:** Acute coronary syndrome, Anxiety, Coronary care unit, Depression, Satisfaction

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## Introduction

Acute coronary syndrome (ACS) is considered one of the most common chronic and life-threatening diseases in most countries of the world (1,2). Despite the great progress in the diagnosis and treatment of this disease, it is still one of the most important causes of death worldwide (2,3). This disease is considered as a major health problem in Iran and accounts for major causes of death (2).

Acute coronary syndrome is an emergency characterized by acute and sudden ischemia of heart muscle. This syndrome includes a range of disorders, such as stable angina, unstable angina, and myocardial infarction, which are life-threatening disorders and require emergency procedures and hospitalization in the intensive care unit (4,5). Since cardiovascular diseases are life-threatening, experiencing a cardiac event will be stressful for the patient and his family and causes anxiety and emotional crisis for the family (6,7). Also, the structure of the intensive care unit and the physical condition of patients who need to be hospitalized in this unit imposes stress on the patient and his family (8,9).

The results of studies indicate the symptoms of anxiety, depression and acute stress in family members of patients hospitalized in ICU (10). Based on the results of these studies, the incidence of depression, anxiety and stress in the family members of ICU admitted patients in Iran has been reported as 68%, 57.5% and 46.7%, respectively (11). The cause of this stress and anxiety can be the fear of the patient's permanent disability, the families' unfamiliarity with care, equipments and procedures in the ICU (12,13). In addition, researches show that during the ICU hospitalization, the family members receive insufficient information about the course of the disease, treatment and prognosis (11). Failure to provide correct and appropriate information to the patient and family leads to misunderstanding, fear and anxiety that can distort the family's understanding of the care provided for the patient and reduce their satisfaction (14).

When the patient is hospitalized in the intensive care unit, the family members of the patient, due to being involved in the difficult and complex conditions of the patient, forget their needs and concern about patient and his/her condition (6), while the complications caused by lack of attention to their condition will have severe mental and physical consequences for them (15). Today, paying attention to the patient's family is one of the important pillars of patient's care because the family is responsible for supporting the patient and plays an important role in accelerating and promoting patient's recovery (16). For this reason, evaluating and responding to the family's needs reduces the negative effects of stress on the family and also decreases its impact on the treatment team and ultimately on the patient (1).

Literature review showed that many studies have been conducted with aim to identify and meet the needs of the families of ICU admitted patients (17-20), but most of these researches evaluated only specific and individual aspects of the needs of the families of ICU admitted patients; no study was found which covered all the needs of this group of people (21). However, based on research, limited coverage of needs do not remove anxiety and psychological complications in families, and a comprehensive supportive educational program is needed in this regard (11). On the other hand, among the studies conducted to support the families of ICU admitted patients, no study was found which specifically examined and covered the needs of the families of patients hospitalized in the coronary care unit. Regarding to the acute and emergency situation and life-threatening conditions in cardiac patients, and because the supportive and educational needs of the families of these patients are different and specific, therefore, it seems necessary to design and implement an intervention with a combined educational and supportive content along with continuous informing of the families of patients hospitalized in the coronary care unit. In this regard, the present study was designed with aim to determine the effect of supportive educational program on depression, anxiety and satisfaction of the families of patients with acute coronary syndrome hospitalized in the coronary care unit.

## Methods

This two-group randomized clinical trial study was conducted in 2018 on 70 families of patients admitted to the coronary care unit of Imam Reza and Ghaem hospitals in Mashhad. The sample size was determined according to the results of Navidian et al.'s study (2014) (11) and based on the formula of comparing the mean of two communities with a confidence factor of 95% and a test power of 80% and based on the indicators of anxiety, depression, stress and satisfaction. The sample size was calculated as 30 people in each group (mean score of depression in the intervention group was  $X_1=2.1$ , standard deviation of depression score in the intervention group ( $S_1=1.78$ ), mean score of

depression in the control group ( $X^2=8.97$ ), standard deviation of depression score in the control group ( $S^2=2.98$ ). But considering the possibility of dropping samples, finally, the sample size was considered as 35 people in each group.

Inclusion criteria for the patient were confirmation of the diagnosis of acute coronary syndrome by a cardiologist. Inclusion criteria for one of the first-degree family members of ICU patients according to the patient's choice also included consent to participate in the study, no history of disease and psychological disorders based on the patient's self-report, education level of at least elementary school, no medical jobs, no care of another person at the same time, no history of hospitalization in the coronary care unit, being able to understand Persian language, no hearing and visual problems, and the age range of 18 to 70 years. Exclusion criteria for the patient were death of the patient and discharge less than 48 hours from the coronary care unit, and for the family members, it included unwillingness to cooperate, change of the patient's companion, and the occurrence of severe emotional problems. Thus, 35 people in each group were included in the statistical analysis. Consort flowchart was shown in Figure 1.

Data collection tools included the research unit selection form, personal characteristics questionnaire, depression, anxiety and stress scale (DASS) and the Family Satisfaction with Care in the Intensive Care Unit (FS-ICU).

The depression, anxiety and stress scale (DASS) consists of 21 questions, each seven questions measure a psychological factor or structure. The range of answers to the questions includes not at all, low, moderate and high, and each question is assigned a score of 0 to 3, if the answer to the question is at all, the score is zero, score 1 is for answer of low, score 2 is for answer moderate and score 3 for answer high. This scale measures depression, anxiety and stress in four areas: mild, moderate, severe and very severe (22). Sahebi et al. in 2014 validated the DASS for the general population and reported that this tool meets the necessary conditions for use in psychological research and clinical situations. The reliability of this scale was assessed by internal consistency and its validity by factor analysis and criterion validity with the simultaneous implementation of Beck depression test, Zang anxiety test and perceived tension. Overall, the reliability and validity coefficients were satisfactory and significant

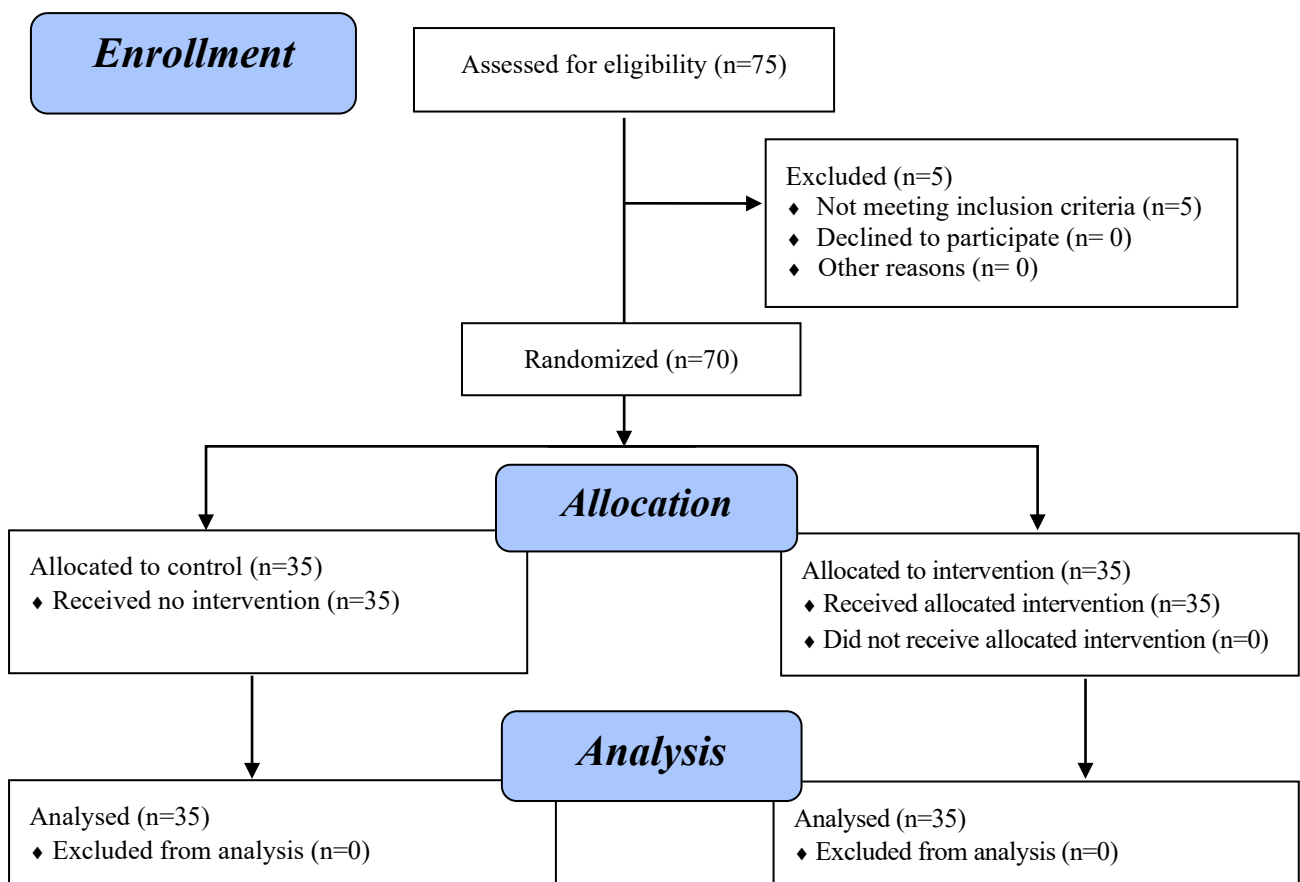


Figure 1. Consort flowchart

( $P < 0.001$ ). Correlations between DASS depression subscales with Beck depression test was reported 0.70, DASS anxiety subscale with Zang anxiety test as 0.67 and DASS subscale with tension test as 0.49 (23). Also in Jafari et al.'s study, Cronbach's alpha coefficient in the area of anxiety was 0.82, stress was 0.90, depression was 0.88, and finally the reliability of the whole tool was confirmed with 0.93 (24). In the study of Salayani et al., the validity of this tool by calculating the Cronbach's alpha coefficient has been reported as 0.93 (25).

The Family Satisfaction in the Intensive Care Units (FS-ICU) has three key subscales, which include the subscale of satisfaction with the performance of medical staff and comfort, each with 12 items, and the decision making subscale with 6 items (26). It was reported in Dolutyar's study (2015) that the Persian version of FS-ICU 34 questionnaire has high reliability ( $\alpha = 0.95$ ). Also, the content validity index of the whole Persian tool of family satisfaction of adult patients hospitalized in intensive care units by two validity methods, S-CVI/Ave and S-CVI/Universal was obtained 0.97 and 0.86, respectively, which shows the good validity of the Persian version of the tool (27).

In the present study, 70 people from the families of patients with acute coronary syndrome hospitalized in the coronary care unit of Imam Reza and Ghaem hospitals who were eligible for the research were selected as available. After explaining about the research and obtaining written informed consent, the subjects were included in the study. Then the participants were randomly assigned (by time block method in the selected section) to two groups of intervention (implementation of supportive educational protocol) and control (receiving routine care) using the random sequence generated by spss software. A total of 12 one-week time blocks was randomly assigned to the intervention and control groups by the software. This generated sequence was kept in a closed envelope and from the start of sampling at the beginning of each week, it determined that all eligible patients in that week be placed in which group. As long as the patients selected for that group were present in the department, sampling was not done for the other group, and after the discharge of the patients of the first group, sampling was done for the next group according to the sequence specified in the envelope. This process continued until the number of samples in the two groups completed.

In the intervention group, in the first stage, according to the review of the literature (6, 20, 28, 29), the families' needs in the coronary care unit were determined, and a supportive educational program was prepared, formulated and implemented to meet these needs. The intervention was implemented from the beginning of the patient's hospitalization in the CCU and continued for 3 days. Thus, during the patient's hospitalization, the researcher was present with the patient's family members and explained about the patient's condition and answered their questions and concerns, as well as about the environment of the CCU, equipments, patient's connections, nature of the disease and treatment process. The trainings were provided face-to-face and individually for 40 minutes in the ward's conference room in a quiet environment, and educational pamphlets were given to the patient's family. Also, when there is a need for therapeutic interventions, necessary explanations on the types of treatment methods (stent, balloon, and surgery), complications and benefits of each treatment were given to the patient's family.

During the hospitalization period, the researcher at least once a day asked the nurse about the patient's condition in terms of alertness and vital signs and informed the patient's family, while the researcher answered the questions and concerns of the patient's family. Also, after the patient's status was stable, the patient's companion visited the patient at least once a day in a planned manner. This visit was determined according to the needs of the patient and the patient's companion. The patient's companion was taught to control his emotions, use hopeful and encouraging words to calm the patient, and help the patient for personal hygiene and grooming. If requested by the patient's companion, this visit was arranged twice a day. Finally, on the third day of the patient's hospitalization, necessary explanations were given to the patient for 45 minutes about post-discharge care, including proper diet, proper physical activity, and regular use of medications, and the prepared pamphlet was provided. The number of educational sessions during the hospitalization period of the patient was planned according to the patient's needs, and was held at least two and at most three educational sessions during these three days of intervention.

In the control group, according to the ward's routine, at the beginning of the patient's hospitalization, a welcome pamphlet containing information about the rules and environment of the ward, the ward's phone number and meeting hours was given to the patient. In the case of request by the patient's

companion, information about the patient's condition was given by the patient's nurse. At the time of discharge, information related to diet, medications, and physical activity was presented to the patient and the patient's companion, and an educational pamphlet was given. Also, all the patient's companions could visit the patient every evening at a specific time for half an hour.

At the beginning of the patient's hospitalization, the anxiety, depression and stress of the patient's companion were assessed by the researcher in both groups using the DASS. This questionnaire was again completed for both groups after the intervention at the end of the third day. Also, the Family Satisfaction with Care in the Intensive Care Unit (FS-ICU) was completed for both groups at the end of the third day of the patient's hospitalization.

The present study was approved by the Ethics Committee of Mashhad University of Medical Sciences. Also, the research units were assured about the confidentiality of the collected information and there was a possibility to leave the study whenever they want.

Data were analyzed by SPSS (version 16). The characteristics of the research units were described using descriptive statistics including frequency distribution table, mean and standard deviation. Normal distribution of quantitative variables was checked by Kolmogorov Smirnov and Shapiro-Wilk tests. Independent t-test was used to compare the two groups in terms of normal quantitative variables, and Mann-Whitney test was used for non-normal quantitative variables and rank variables. Analysis of covariance test was also used to eliminate the effect of non-homogeneous variables. Nominal variables were also compared in two groups using chi-square test, exact chi-square test and Fisher's exact test. In the conducted tests, the reliability coefficient was 95% and the significance level was 5%.

## Results

The mean age of the patients in the supportive educational program group was  $60.6 \pm 13.4$  years and in the group receiving routine care was  $57.1 \pm 13.0$  years. Among the 70 subjects, 24 (68.6%) in the intervention group and 20 (57.1%) in the control group were female. All demographic variables were homogeneous in the two groups (Table 1).

**Table 1. Demographic characteristics of the patients' families in the supportive educational protocol group and the routine care group**

Variable		Supportive educational program group	Routine care receiving group	Test result
Age (yrs)		44.9±9.6	43.9±8.3	P=0.66*
Gender	Female	24 (68.6)	20 (57.1)	P=0.32**
	Male	11 (31.4)	15 (42.9)	
Education level	Elementary	3 (8.6)	3 (8.6)	P=0.32**
	Secondary	9 (25.7)	5 (14.3)	
	Diploma	16 (45.7)	14 (40.0)	
Job	Higher than diploma	7 (20.0)	13 (37.1)	P>0.99***
	Free	12 (34.3)	13 (37.1)	
	Employee	7 (20.0)	6 (17.1)	
	No job	1 (2.9)	0 (0.0)	
Marital status	Retired	1 (2.9)	1 (2.9)	P=0.67***
	Household	14 (40.0)	15 (42.9)	
	Single	3 (8.6)	2 (5.7)	
Monthly income level	Married	31 (88.6)	33 (94.3)	P>0.99***
	Deseased spouse	1 (2.9)	0 (0.0)	
Relationship of companion with patient	Poor	5 (14.3)	4 (11.4)	P>0.99***
	Moerate	30 (85.7)	31 (88.6)	
Residency place	Spouse	14 (40.0)	14 (40.0)	P>0.99***
	Child	17 (48.6)	18 (51.4)	
	Mother	1 (2.9)	1 (2.9)	
	Others	3 (8.6)	2 (5.7)	
Residency place	Mashhad	18 (51.4)	19 (54.3)	P=0.81**
	Other cities	17 (48.6)	16 (45.7)	

\* Independent t-test \*\* Chi-square test \*\*\* Exact chi square test



**Table 2. Mean total score of depression, anxiety and stress of the patients' families before and after the intervention in the supportive educational protocol group and the routine care group**

	Groups		Result of intergroup test
	Supportive educational protocol (n=35)	Routine care (n=35)	
Total score of depression, anxiety and stress	Mean±SD	Mean±SD	
Before intervention	68.8±15.1	77.1±20.0	P=0.05*
After intervention	42.4±12.4	66.9±20.0	P<0.001*
difference after the intervention compared to before the intervention	-26.3±9.1	-10.2±5.7	P<0.001*
Result of intragroup test	P<0.001**	P<0.001**	

\*Independent t-test \*\*Paired t-test

The findings of this study showed that before the intervention, the mean total score of depression, anxiety and stress of the patients' families in the intervention group was 68.8±15.1 and in the control group was 77.1±20.0 (P=0.054). But after the intervention, the mean total score of depression, anxiety and stress of the patients' families in the intervention group was 42.4±12.4, which was significantly lower than the control group (66.9±20.0) (P<0.001). The analysis of covariance test to remove the effect of the total score of depression, anxiety and stress of the patients' families in the pre-intervention phase showed that by removing this effect, there was still a significant difference in the mean score of this variable between the intervention group (43.8±11.9) and the control group (64±1.196) (p=0.003). In addition, the total score of depression, anxiety and stress after the intervention compared to before the intervention decreased by 26.3±9.1 in the intervention group and 10.2±5.7 in the control group (P<0.001). Moreover, in the intervention group, as well as in the control group, there was significant difference in the total score of depression, anxiety and stress between stages (P<0.001) (Table 2).

On the other hand, the results showed that the mean satisfaction score of patients' families in the intervention group (179.5±21.8) was significantly higher than the control group (136.2±25.7) (P<0.001). The mean satisfaction of the patients' families with the performance of the medical staff in the intervention group (64.1±11.7) was significantly higher than the control group (45.5±8.7) (P<0.001). In addition, the mean satisfaction of the patients' families with comfort in the intervention group (55.5±9.8) was significantly higher than the control group (37.0±6.9) (P<0.001). In addition, the mean satisfaction of the patients' families with decision-making in the intervention group was 59.9±7.7 and in the control group was 53.7±18.3, this difference was not significant (P=0.435) (Table 3).

**Table 3. Mean satisfaction of the patients' families after the intervention in the supportive educational protocol group and the routine care group**

Satisfaction domain	Group		Result of intergroup test
	Supportive educational protocol (n=35)	Routine care (n=35)	
	Mean±SD	Mean±SD	
Total score of satisfaction	179.5±21.8	136.2±25.7	P<0.001*
Medical staff performance	64.1±11.7	45.5±8.7	P<0.001**
Comfort	55.5±9.8	37.0±6.9	P<0.001*
Decision-making	59.9±7.7	53.7±18.3	P=0.43**

\*Mann-Whitney test \*\*Independent t-test

## Discussion

The present study was conducted with aim to determine the effect of the supportive educational program on depression, anxiety, stress and satisfaction of the families of acute coronary syndrome patients admitted to the coronary care unit. The results of the research showed that implementation of a supportive training program, which covers most of the informational and emotional needs of patients' families can reduce anxiety, depression, and stress and increase the satisfaction of these families. In this regard, the results of Navidian et al.'s study (2015) also showed that providing the required information, along with empathy and emotional support of the families of patients

hospitalized in the intensive care units, increased the understanding and reduced the level of stress, anxiety and depression of the patients' family members (10).

The study by Shoushi and colleagues (2015) also confirm the reduction of depression and anxiety following the implementation of a family-centered care program in caregivers of patients undergoing open heart surgery, and it has resulted in their satisfaction (22). Zakeri Moghadam et al. (2013) also showed that depression, anxiety and stress can be reduced in patients' families during heart surgery by implementing a nursing support program (16). Since stress, anxiety and depression of the families in the intensive care unit is mainly due to the uncertainty of the disease, lack of information about the patient's condition and the environment and equipment, therefore it seems that close contact with care team and most importantly, informing the patient's family about the patient's condition can help reduce the family members' concerns (10), which is also considered in the current study's protocol.

On the other hand, the results of Imanipour et al.'s study (2012) showed that informational support from family caregivers of patients undergoing open heart surgery didn't significantly affect their anxiety (30). It seems that the reason for this discrepancy is the difference in the type of intervention; because in the study by Imanipour, only the informational and educational needs of the patient's family were addressed and other needs, including the need for empathy and psychological support, were not considered (30), but the intervention in the present study included the implementation of a comprehensive support program, which decreased the level of anxiety and depression of the patients' families.

On the other hand, the results of numerous studies show that receiving information related to the disease and care is requested by patients and their companions, and providing information and reassurance to the patients' family members not only reduces the intensity of psychological reactions, but also increases their satisfaction (31). The results of the present study also indicated the satisfaction of the patients' families increased following the implementation of the supportive educational program. The results of Karlsson et al.'s study (2011) also showed that providing regular and clear information to the patient's family and the possibility of visiting the patient, as well as improving the environmental conditions of the waiting room are among the important needs of the families of ICU patients and the fulfillment of these needs affects the family's satisfaction (32). Farnia et al. (2014) also reported that implementing family-centered care increase satisfaction of the family of ICU patients (33). It seems that providing sufficient information for the patient and the patient's family based on their needs is an important factor in reducing the anxiety of the patients and their families, and this can lead to the observance of the rights of the patient and the patient's family.

Personality differences can affect people's adaptation to stress, and the support received by family members from other sources was another limitation of this study. Also, it seems that the psychological status of the patients' families has affected the way of answering the questions of the questionnaires, which was not fully controlled by the researcher; however, this limitation was relatively controlled by creating the same time conditions and a suitable environment.

### **Implications for practice**

The findings of the present study indicate that the supportive educational program can reduce depression, anxiety and stress in the families of acute coronary syndrome patients hospitalized in the coronary unit and increase their satisfaction. Therefore, the results of this research can be used by managers of intensive units to take measures for the implementation of educational support programs for families in these wards.

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### **Conflicts of interest**

The authors declared no conflict of interest.

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