







## Comparison of the Effects of Face-to-Face and Group Education on Awareness and Anxiety of Family Members of Candidates for Coronary Angiography

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### Abstract

**Background:** Coronary angiography causes anxiety in patients and family that is a major cause of anxiety and lack of awareness. Choosing the right educational method is effective in increasing family awareness and support of patients. The present study aimed to compare the effects of Face-to-Face and group education on awareness and anxiety of family members of candidates of coronary angiography.

**Methods:** This randomized clinical trial study was conducted on 90 family members of candidates of coronary angiography at Amiralmomenin Hospital of Kordkuy as a referral center in Northeast of Iran in 2017. Eligible family member of patients was recruited through convenience sampling method and then allocated three; face-to-face education (A), group education (B), and control groups randomly. Family members in both intervention groups received same educational content about the method of performing coronary angiography, and the necessary care. The control group only received routine information. Data were collected using the Spielberger State-Trait Anxiety Inventory (STAI) and awareness questionnaire. SPSS Statistics for Windows, version x.0 (SPSS Inc., Chicago, Ill., USA). Software using descriptive statistics, paired t-test, Chi-square, Wilcoxon, and Kruskal-Wallis tests. The significance level was considered less than 0.5.

**Results:** The score of anxiety and awareness in patients' family members were not significantly different in the three groups before the intervention. After intervention, the mean scores of anxiety were  $42.12 \pm 4.71$  and  $42.37 \pm 5.53$  in the participants of group A and B respectively, and it was significantly different from the pre-intervention score ( $P < 0.001$ ). The mean awareness score was significantly higher in group B than in the other two groups ( $P < 0.001$ ).

**Conclusion:** According to the results, group education was more effective than face-to-face education in increasing awareness and reducing anxiety in families. We suggest developing programs in this regard.

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### Introduction

Coronary artery diseases are major health problems in today's society (1). In Iran, the highest mortality rate is related to cardiovascular diseases so that they account for about 40 percent of all deaths in society (2). Coronary angiography is a common invasive and diagnostic test that is considered the best and most accurate method and standard in the diagnosis of coronary artery diseases (3). Invasive diagnostic procedures such as angiography have been increasing due to the increase in coronary artery diseases in recent years. Research has indicated that the diagnosis and treatment of coronary artery diseases and the need for angiography have always led to fear and anxiety of patients and their families (4) and it can have negative consequences for the care of patients by the family. Furthermore, family members' anxiety can cause anxiety to transfer to the patient. Research indicates that the lack of information about angiography procedures and care before and after it, and fear of problems during the procedure are the most common causes of anxiety in families (5). Therefore, it is important to plan and implement a support program to reduce anxiety before performing an angiography procedure (6). Effective education has not been provided in medical centers of Iran according to the research and due to the time-consuming nature of the education process, and lack of sufficient human resources (7). Furthermore, candidates for angiography and angioplasty have a shorter hospital stay than patients with coronary artery bypass graft surgery that is also challenging because the possibility of psychological interventions is lower and less education is provided for patients and their families in this short period (2). Löfvenmark acknowledged that if a patient was unable to participate in training programs, it was important to involve the patient's attendants in education programs and care decisions. It can improve the quality of life and increase patients' awareness and consequently improve their adherence to the treatment regimen and reduce fatigue and confusion in caregivers. Therefore, given that the family plays an important role in improving the patient's health and mood, nurses need to pay attention to the patients in addition to family members and plan to meet their information needs. Therefore, the families' awareness and support can increase and their care-support capacity can be used in patient care by proper planning and selection of appropriate educational methods and correct training for them

(8). Meanwhile, even though all approaches to education such as Face-to-Face and group education can affect the rates of learning and adaptation to stressful conditions of diseases, it is necessary to consider the purposes of education, personnel, and financial resources before deciding on the method of education (9). Face to face training and group discussions are the most common education approaches in health education programs. According to health education bases, face to face method has a greater effect on patients than other methods (10). This method also has a valuable place in people with low levels of understanding and education (11), but it is impossible to use face to face education in most situations due to the lower available resources, equipment, and workforce so that other education methods like group discussion should be used (10). Accordingly, since the researchers were working in Amiralmomenin Hospital of Kordkuy and there were a large number of patients' families with worries and anxieties behind the door of the angiography, they asked questions and sought to solve their ambiguities by visiting medical staff. Considering the busy nursing staff and the lack of sufficient opportunities for Face-to-Face education of each patient and family, the present study aimed to compare group and Face-to-Face education on the awareness and anxiety of family members of candidates for coronary angiography (8).

### Methods

The randomized clinical trial was conducted on 90 family members of patients who candidates for coronary angiography at Amiralmomenin Hospital of Kordkuy affiliated to the Golestan University of Medical Sciences in northeastern Iran in 2017. The sample size was calculated to be 90 based on the formula at a 95% confidence level and 80% power (10, 32). Participants were recruited using the convenience sampling method considering the inclusion criteria. Then, they allocated into three; face-to-face education (A), group education (B), and control groups, randomly. To prevent information exchange of participants, sampling of different groups was done in intermittent periods. To this end, sampling was performed in group B and then in the control group respectively after sampling

in the group A. Sampling lasted from October to the end of December 2017. Inclusion criteria were age >18 years, the patient's attendance during the angiography, the ability to read and write Persian, not be a healthcare providers, schedule for elective angiography, and not having psychiatric or anxiety disorders. Before sampling, informed consent was obtained from participants while giving explanations about the research and its goals. The intervention was done for patients' attendants in both intervention groups. The educational content was the same in both intervention groups included training on the purpose of angiography, its method, procedure duration, and its post and pre-care. It should be noted that the content validity of the curricula was evaluated by experts. The intervention method was done using Face-to-Face method in groups A in a 25-30-minute training session and 15 minutes of the necessary practical training by the researcher for participants. They were also given 10-15 minutes to exchange information, express their ideas to clarify the information, and ask and answer the questions. For participants in the A group, training was provided at the patient's bedside during 15 minutes. Ten minutes were considered for questions and answers. The control group received routine training. For participants in the B group training was provided in the small groups (6-8 participants) with the same content. To comply with the ethical principles after the completion of the questionnaires by the control group, the training was provided for the participants in the control group after data gathering. The data collected using demographic questionnaire, Spielberger State-Trait Anxiety Inventory (STAI), and the awareness questionnaire. The anxiety and awareness levels were once measured in A, B, and control groups during the hospitalization of the angiography for candidates and then two hours before the angiography by a researcher who had no information about the participants' allocation in groups. Demographic information included age, sex, education, occupation, and family relativity with the patients. The STAI was designed by Spielberger in 1983. The questionnaire composed of 20 items, each rated on a 4-point Likert scale (1=never to 4=always). Ten items with direct expressions had scores of 1 to 4 and 10 items with inverse expressions received scores of 1 to 4 respectively. Thus, total scores range from 20 to 80. Higher scores indicate a higher anxiety, which the scores of 20-39 were put in the mild anxiety group, 40-59 in the moderate anxiety group, and 60-80 in the severe anxiety group (12). The validity and reliability were approved in different studies (13, 14). The awareness questionnaire was designed and used by Mohammadi et al. (2012) and its content validity and reliability of 0.81 were obtained (10). The questionnaire consisted of 17 four-choice questions. The lowest and highest scores obtained from the awareness questionnaire were 0 and 17, respectively. To determine the awareness score based on 100, the total score of the questionnaire was multiplied by 100 and divided by 17, and thus we divided the participants' awareness in the study into three categories, namely the poor awareness (score of 0-35), moderate awareness (score of 35-70), and high awareness (score of 70-100). We analyzed the data using the paired t-test, Chi-square test, Wilcoxon, and Kruskal-Wallis tests in the SPSS Statistics for Windows, version x.0 (SPSS Inc., Chicago, Ill., USA).for at a significance level of 0.05

**Results**

In the present study, the mean age of participants was 37.4±9.69 in the group a, 39.1±10.03 in the group B, and 36.7±9.8 in the control group. The majority of participants (55%) had a high school diploma (75.12%), were housewives (50.16%), and 62.92% had child-to-patient relativity. Comparisons indicated that all three groups, A, B and control groups were similar in terms of demographic characteristics such as age, sex, education, occupation, and relativity with patients and there was no statistically significant difference between them (Table 1).

**Table 1. Frequency distribution of demographic the characteristics of participants in intervention and control groups**

Variable	Intervention			Control N (%)	P-value
	Group B N (%)	Group A N (%)			
Gender	Female	16 (53.3)	16 (53.3)	17 (58.6)	0.895
	Male	14 (46.7)	14 (46.7)	12 (41.4)	
Occupation	employee	10 (33.3)	3 (10)	7 (24.1)	0.748
	worker	1 (3.3)	0 (0)	8 (27.6)	
	Self-employment	7 (23.3)	4 (13.3)	4 (13.8)	
	Other	12 (40)	23 (76.7)	10 (34.5)	
Relative	Spouse	3 (10)	0 (0)	2 (6.9)	0.657
	offspring	19 (63.3)	20 (66.7)	17 (58.6)	
	Brother, sister	5 (16.7)	5 (16.7)	4 (13.8)	
	Other	3 (10)	5 (16.7)	6 (20.7)	
Education	Illiterate	1 (3.3)	0 (0)	1 (3.3)	0.327
	Primary school	6 (20)	4 (13.3)	10 (34.4)	
	High school	11 (36.7)	13 (43.3)	12 (41.4)	
	Academic	12 (40)	13 (43.3)	6 (20.7)	

**Table 2. Comparison of mean anxiety scores of patients' family members of in three; A, B and control groups before and after the intervention**

Anxiety	Intervention				Control	
	Group B		Group A		Before N (%)	After N (%)
	Before N (%)	After N (%)	Before N (%)	After N (%)		
Mild (20-39)	1 (3.3)	10 (33.3)	1 (33.3)	8 (26.7)	0 (0)	0 (0)
Moderate (40-59)	29 (96.3)	20 (66.7)	26 (87.7)	22(73.3)	29 (100)	29 (100)
Severe (60-80)	0 (0)	0 (0)	3 (10)	0 (0)	0 (0)	0 (0)
Total	30 (100)	30 (100)	30 (100)	30 (100)	29 (100)	29 (100)
Mean±SE	47.6±3.22	42.37±5.53	48.83±8.55	42.12±4.71	46.52±3.28	45.45±4.89
Test result	t=5.179 df=29 P<0.001		t=5.852 df=29 P<0.001		t=.742 df=28 P=.464	

Participant (3.4%) in the control group left the study due to unwillingness to continue participating in the study and was excluded from the study. Before intervention, the anxiety scores were 55.63±3.22, 28.83±8.47, and 46.52±3.48 in three groups, A and B, and control groups respectively, and after intervention the anxiety scores were 42.12±4.71, 42.37±5.53, and 45.96±3.29 in the A, B, and control groups respectively. In before intervention, the results indicated that there was no statistically significant difference in the family members' anxiety scores in the A and B, and control groups (P=0.34) (Table 2).

The difference between the mean anxiety of the participants in A, B and control was statistically significant after intervention (P=0.003), but the differences in anxiety in the A and B group were not significant (Table 3).

The results indicated that the mean awareness of the participants in group A, B, and control groups were the same in the before intervention and there was no statistically significant difference (P= 0.430). The comparison of the awareness levels of after intervention in the A, B, and control groups indicated a statistically significant difference (P=0.027) (Table 4). Considering the mean of the three groups after intervention, level of awareness score was higher in the B group (52.83) than the A (46.78) and control (35.05) groups (P=0.027).

**Table 3. The difference of levels of anxiety after the intervention in family members of patients in A, B and control groups based on the post hoc least-squares significant difference method (LSD)**

Anxiety(i)	Anxiety(j)	Mean difference(i-j)	Error standard deviation	Significance level
Group B	Group A	.250	1.192	.834
	Control	-3.599*	1.202	.004
Group A	Group B	-.250	1.192	.834
	Control	-3.849*	1.202	.002
Control	Group B	3.599*	1.202	.004
	Group A	3.849*	1.202	.002

**Table 4. Comparison of mean awareness scores of participants in three A, B and control groups before and after the intervention**

Group	Group B		Group A		Control	
	Before N (%)	After N (%)	Before N (%)	After N (%)	Before N (%)	After N (%)
Poor awareness (0-35)	18(60)	5(16.7)	18(60)	10(33.3)	14(48.3)	9(31)
Moderate awareness (35-70)	12(40)	23(76.7)	12(40)	18(60)	14(48.3)	20(69)
High awareness (70-100)	0(0)	2(6.7)	0(0)	2(6.7)	1(4.3)	0(0)
Total	30(100)	30(100)	30(100)	30(100)	29(100)	29(100)
Mean±SE	97±12.92.30	43.33±12.78	29.78±11.05	14.87 ± 31.33	14.87±31.33	32.14±8.68
Test result	t=6.585=df= 29 P=0.000		t=-5.221 df=29 P=0.000		Z=-.092 <sup>a</sup>	df=.927

## Discussion

In the present study, we compared group and Face-to-Face education methods on the awareness and anxiety of family members of candidates for coronary angiography. The research results indicated that the group and Face-to-Face education intervention groups had higher awareness and lower anxiety than the control at the post-test stage. Comparing the post-test anxiety and awareness scores of the two intervention groups indicated that group education was more effective in increasing awareness than Face-to-Face education. Even though anxiety was lower in the intervention groups than the control group, the difference between the group and Face-to-Face education groups was not significant. Hospitalization and diagnostic and therapeutic interventions caused high levels of anxiety due to the complications and unknown environment for patients and family members (15- 17). The present study indicated that the majority of participants had moderate anxiety. The finding was consistent with other studies (16, 18- 20). The results of a study indicated that mean anxiety scores in the intervention group an hour before angiography and during the discharge day were less than the control group, and the result was consistent with results of the present study but the present study examined the anxiety in family members of angiography patients during hospitalization and two hours before angiography. (21) Furthermore, Saki et al. studies the reduction of anxiety through face-to-face and electronic education and found that the mean anxiety of patients was not statistically significant in the two groups even though the reduction of anxiety in the intervention groups was significant in comparison with the control group. Therefore, neither of these two education methods was superior to each other (22). Few studies have found that increasing the individuals' awareness of angiography may increase their anxiety. Astyle et al. studied angiographic anxiety reduction in Australia using three different methods, audio/visual, written, and oral (23). Researchers believe that different intervention methods should be studied and examined to detect and reduce the psychological problems of family members of patients admitted to the intensive care unit of angiography. Furthermore, the use of appropriate education methods is significantly important in health-oriented educational interventions (16, 23, 24, and 25). The use of an appropriate method helps to transfer content better leading to the higher efficiency of an intervention program (19). In Azarfarin's study, the use of information cards was useful in reducing the family members' anxiety in the waiting room for angiography and surgery (16). Obviously, due to the lack of any reference to answer the questions by patients' family members, they ask different groups of individuals in the hospital their medical questions; hence, they will be confused due to the lack of information or wrong information and different responses. To this end, family members cannot be sure of the provision of high-quality and acceptable medical and nursing services, and this can increase their levels of anxiety (26). Therefore, education is a more effective way to improve individuals' knowledge and awareness (3). Findings of a study by Mohammadi et al. indicated that group education was more effective on the anxiety of hospitalized patients for coronary angiography than Face-to-Face education. Their result was inconsistent with the present study; however, the present study examined the angiography patients' families (10). Bahrami's studies indicated that planned education significantly decreased the levels of stress and anxiety in family members of patients admitted to the intensive care unit (27). In a study by Riyazi et al., the results indicated that the education for pregnant mothers in the health system was mainly face to face, and sometimes in educational booklets and pamphlets, while group education not only took less time but also could convey a large amount of information to people due to having a regular schedule (28). In a study by Borimnejad et al., the group education had a greater effect than the individual learning on the follow-up of treatment by Warfarin users after the heart valve replacement (30). Results of studies on other fields have sometimes yielded conflicting results; for instance, a study by Ghavam-Nasiri on the emotional aspect of self-care in patients with diabetes in which there was a significant difference between the Face-to-Face and group education ( $p=0.394$ ) (29). Education has been considered as the main task for nurses (31). According to the positions of Face-to-Face and group education, they are two main methods of organized education in health system employees (9, 29). The present results also indicated that each of the two educational methods decreased the family members' anxiety; hence, group education was more effective in increasing the family awareness than Face-to-Face education probably due to the higher motivation, the individuals' interaction with each other, using each other's experiences, providing an opportunity for sharing ideas and receiving support from the group in dealing with problems leading to higher awareness. Given that people in different cultures participate in the study, they may not express their feelings in critical and stressful situations and some cultural barriers may prevent them from expressing their true feelings; hence, we suggest that future studies with the same topics should pay attention to cultural factors affecting the research results.

## Conclusion

The present study indicated that education could be effective in reducing anxiety and increasing awareness in family members of angiography patients. Education for the patients' attendants could increase their awareness, tolerance of the patients' families about the coronary angiography and its problems that could increase the patients' satisfaction and comfort, decrease complications and the length of stay in the hospital. Therefore, we suggest education for family

members as a suitable strategy along with all treatment and support measures to improve the quality of life of patients and families.

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## Ethical statement:

This study was approved by a committee for ethical research at Golestan University of Medical Science (code: IR.GOUMS.REC.1396.159) ) dated 19/09/2017 from the ethics committee of the university research council and a code IRCT 20190304042909 N1 registered on the Iranian Registry of Clinical Trials website All participants were agreed to participate in the study and signed a written informed consent before fulfilling the questionnaire .They were assured about confidentiality of private information and their voluntary for participation.

## Conflict of interest:

None declared

## Author contributions

Z.H and M.F and S.K designed the project. M.F and Z.H collected and analyzed the data and wrote the manuscript Z.H and M.F and S.K and M.M participated in data analysis, supervised the study and critical revisions for important intellectual content. All the authors approved the content of the manuscript.

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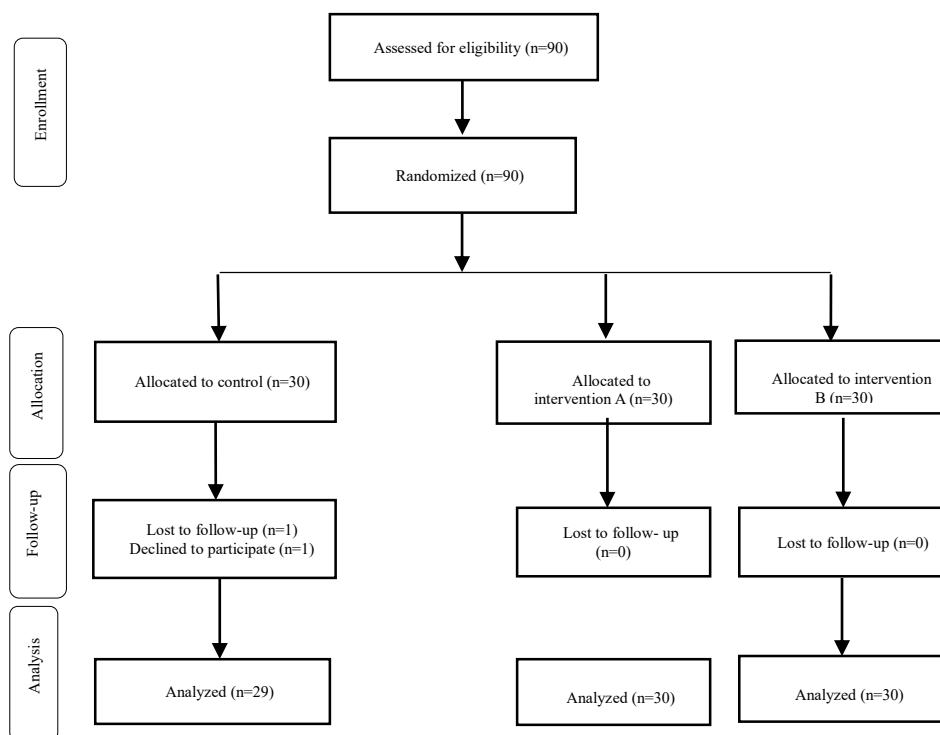


Figure 1. Flowchart of the process of participants' allocation and analysis

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