

Comparison the Effect of Organized education by Group discussion and film screening on Anxiety and Contrast-induced nephropathy in Coronary catheterization Patients; A Randomized Clinical Trial

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Abstract

Background: Anxiety is one of the most prevalent psychological complications in patients undergoing cardiac catheterization that can be effective on the patients' understanding to do self-care to prevent some complications such as contrast induced nephropathy. The aim of this study was to compare the effect of education by group discussion with videotape on anxiety and contrast induced nephropathy of Coronary catheterization patients.

Method: A randomized clinical trial was implemented with 213 patients in three groups at Javad-Al-Aemeh Hospital, Mashhad, Iran, during February to September 2018. An organized educational program was first developed based on an integrative review. The patients were randomly allocated to three groups: group discussion (n=71), film (n=73) and control (n=69) using randomized time blocks. Anxiety was assessed using Spiel Berger Inventory before and 1 hour after the education, before transferring to Cat Lab. The serum creatinine was assessed on arrival, 24 and 72 hours after the procedure. The data were analyzed using ANOVA, Tukey, repeated ANOVA, paired t test and chi square tests by SPSS16.

Results: There was no significant difference in mean anxiety between groups before the intervention ($P= 0.64$), but the anxiety in the videotape group and group discussion decreased significantly after the intervention ($p<0.001$). There wasn't any significant clinical increase in serum creatinine in all three groups after 72 hours.

Conclusion: Using Group discussion and film screening can be recommended to the community nurses to reduce the cardiac catheterization candidate patient's anxiety and prevent contrast-induced nephropathy.

The present study was registered in the Iranian Registry of Clinical Trials with a code of IRCT2016022626776N1.

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Introduction

Coronary angiography (CAG) and percutaneous coronary interventions (PCI) are frequently performed diagnostic and therapeutic procedures with a relatively low risk that are called cardiac catheterization (1). Percutaneous coronary interventions (PCI), including percutaneous transluminal coronary angioplasty (PTCA) and stent implantation is an important treatment for patients with stable ischemic heart diseases and is widely used as a standard treatment in acute coronary syndromes (2, 3).

Pre-procedural anxiety is one of the most prevalent psychological complications in patients undergoing cardiac catheterization. More than 82% of patients, especially women, experience high levels of anxiety (4), and fear prior to the procedure because of their lack of familiarity with its procedure and lack of knowledge about results of their diagnosis(5).

Anxiety before coronary angiography (CAG) and percutaneous coronary interventions (PCI) can increase myocardial oxygen demand and cause ischemic pain, thereby putting more pressure on the heart and affecting the patient's recovery may increase the duration of process and amount of sedative medication (6). Also along with High levels of anxiety, lower immune response and alterations of **cardiovascular function** like impaired heart rate variety, **endothelial dysfunction** and vascular inflammation may be occurred. Thus these kind of conditions may be effected on the procedure's result(7). On the other hand the patients' anxiety before the procedure has a negative effect on the patient's ability to concentrate and learn the self-care education recommendations (8) to limit the probable complications such as hemorrhage and contrast-induced nephropathy (CIN).

Therefore, planning to do strategies with the aim of minimizing anxiety in these patients is not only important for patient comfort but also could potentially improve outcome (7).

According to the literature search, a great number of studies have been conducted on the reduction of anxiety in coronary patients such as: reflexology(9), relaxation(10), music therapy(11), listening to Quran (12), acupressure(13), intentional

presence(14) and etc. In accordance to the patient education studies, most of them aimed to only reduce the anxiety but any of them didn't report the patient's secondary outcomes after the catheterization.

Also the content of most of the educational methods are based on informing the patients about the subjects that can reduce the anxiety like knowing about how the procedure would be done? The anatomy and physiology of heart and coronary arteries, what the physician do during the procedures, etc(15, 16).

Although the self-care strategies that the patient should do during and after the cardiac catheterization are very important subjects, any of the literature didn't mention these topics in their patient education contents. Thus there is no evidence about the impact of anxiety reduction on the patient's self-care outcomes such as CIN.

An important part of preventing these complications depends on how the nursing team care and train patients. The most important prerequisite for this care and education is to have a standardized-organized protocol based on the latest evidence. According to reviews of various literature, despite the existence of organized guidelines and updated standard medical treatment protocols for medical staff, unfortunately, there is no specific, comprehensive, updated and organized guideline for nurses. In the existing clinical guidelines, nursing interventions and weights of nursing care have diminished compared to medical interventions. Patient education has not been based on the instructional guidelines and current nursing guides have not been updated(17)

Also a large number of studies evaluated the effect of one method of education like face to face(18, 19), video or multimedia(8, 20) or group discussion(21). Because of the limitations of nurse's time it is unclear that what kind of education strategy can be more effective(22). Can the nurses use an alternative method to the face to face education? According to the search the researchers didn't find a study to compare a face to face method with a virtual method of patient education in cardiac catheterization situation. Thus the present study aimed to design and apply an organized evidence based instructional guideline by group discussion and watching an educational film to reduce anxiety and prevent contrast-induced nephropathy in patients undergoing cardiac catheterization.

Methods

This study is a randomized controlled clinical trial was implemented with 213 patients in three groups at Javad-Al-Aemeh Hospital, Mashhad, Iran, during February to September 2018. The patients were randomly allocated to three groups, film (n = 73) (providing an evidence based educational guidance through film), group discussion (n= 71) (providing an evidence based educational guidance with group discussion) and control (n= 69) (providing routine education). Because the method of the research was based on educating, the patients in all three group knew they are allocated in which group. Also the first researcher was the man who guided the discussion groups and set the time of showing film to the videotape group, then he couldn't be blind in this study. Only the analyzer of the data was blind about the sampling.

According to a guide study (8) along with a comparison mean scores formula considering 95% confidence interval and 80% test power were used and estimated 44 individuals in each group as the sample size. Considering the probability of loss and the difference between two angiography and angioplasty procedures, and also the arterial access way (radial or femoral) the study population increased to 70 patients per group.

$$n = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2 (S_1^2 + S_2^2)}{(\bar{x}_1 - \bar{x}_2)^2}$$
$$n = \frac{(1.96 + 0.84)^2 (7.85^2 + 11.36^2)}{(44.85 - 50.70)^2} = 44$$

Inclusion criteria included: Age between 30 -70; ability to speak and communicate; literacy; no previous history of cardiac catheterization; no kidney (eGFR(Estimated glomerular filtration rate) <30 ml/ min), heart (LVEF(Left Ventricular Ejection

Fraction) <40%) and liver failure; no history of mental diseases (using psychiatric drugs) or severe stressors (divorce or death of closed relatives) in the past six months. Exclusion criteria included: life-threatening heart rhythm (ventricular fibrillation, pulse-free ventricular tachycardia), need for CPR, systolic blood pressure less than 90mmHg, embedded balloon pump, and more than once attempt at arterial access (multi-puncture).

The statistical population consisted of patients undergoing coronary angiography and angioplasty in Javad Al-Aemeh Cardiology Hospital of Mashhad (Iran). Participants were patients of both sexes who were candidates for angiography or angioplasty from February to September 2018.

225 patients with the inclusion criteria were selected and then assigned to one of three groups, namely film screening (n= 76), group discussion (n= 74) and control (n= 75) by the time block random method. Only one form of intervention was necessarily implemented every day in order to prevent the association of groups and transfer of information to each other. Therefore, the number of days of month (30) were first given to www.Randomization.com. The first 10 digits were randomly assigned to videotape group, the second 10 to the control group, and the third 10 to the discussion group. Based on the sampling date, patients were assigned to a group based on the random digits of that day, and then the appropriate method was taken.

For example at the beginning of the research the researcher assessed the date it was 4th of February 2018, then according to the random digits, number 4 was allocated to the videotape group. Then all of the patients admitted for doing angioplasty or angiography in 4th of February were assessed according to the inclusion and exclusion criteria. Then the patients who had the inclusion criteria completed the informed consent and then the rest of the research questionnaires. Then the film was showed to them with the television of their room.

The process continued until sampling was completed. During the study, 6 individuals in the control group, 3 in the discussion group, and 3 in the film screening group were excluded. The final analysis was performed on 213 patients (Figure 1).

Thus although the number of samples in each group were determined 70, in the last day of sampling in two groups the numbers of patients got more. Because the process of sampling was time block and the researcher selected all of the eligible patients to the educational program in the target day.

The method of this research was included in to two steps: 1- an integrative review 2- a randomized clinical trail

1- At the first an integrative review was done to prepare an organized educational package. All of the original and guideline articles in Pubmed, Google Scholar, clinical key, Eric and SID were searched from October 2010 to October 2018. The key words were Anxiety, contrast- induced Nephropathy, Coronary Catheterization, Patient education, Nursing care were used by the linkage of AND, OR. After revising 17 articles were included in to the integrative review. Then the recommendations for prevention of anxiety contrast- induced nephropathy and in cardiac catheterization were extracted from the literature.

The main subjects of patient education were categorized in two titles 1- prevention of contrast induced nephropathy 2- prevention of anxiety 3- prevention

According to the articles the recommendations were ordered for three groups 1- Heart specialists 2- Nurses(17) 3- Patients

The main categories of prevention of contrast induced nephropathy were fluid therapy (23, 24) (intravenous and oral intake)(25, 26), caution to order and use drugs(27) and monitoring the serum creatinine and GFR(28).The main categories of prevention anxiety were included informing and educating the patients about the hospitalization(16, 19), the procedure of coronary catheterization(29), the complications and limitations, and the hospital environment(18).

2- After preparing the organized educational content, a scenario was provided in a simple language. To produce a film, the researcher contracted with a professional film maker team. The film was made in the actual hospital environment. The benefits of this 30-minute film were the use of real-time contexts, spoken and written explanation, special effects, music, standard animation as well as the use of professional, experienced team of directing, filming, sound recording and editing.

3- The third step was the clinical trial that was conducted in three groups. So that patients' demographic and disease data along with blood pressure, and pulse rates were first measured. Thereafter, the pre-procedure blood samples from patients were taken. Then, Spiel Berger state-trait anxiety inventory was given to patients prior to the intervention.

In group discussion, groups of 4 to 6 patients with a circular-shaped arrangement with researcher were created in the education class of the angiography ward. The researcher stated the purpose of group creation; and the patients introduced themselves to the group. The educational content (based on the organized educational guidance) was then provided for 15 minutes, followed by discussion by the team members by asking purposive questions led by the researcher. Finally, the researcher made sure that all members understood the content correctly. The group discussion lasted for approximately 30 minutes.

In the film screening group, the film (based on the instructional guideline) was displayed in the patient room television for 30 minutes.

The instructional pamphlets and routine hospital care were provided in the control group. After the intervention and an hour before transferring patients to the Cath Lab, the Spiel Berger state anxiety inventory was again completed by the patients.

Serum creatinine was measured 24 hours after the procedure at the hospital to evaluate the incidence of contrast-induced nephropathy. The discharged patients were referred to the laboratory of Javad Al-Aemeh Cardiology Hospital for a third time serum creatinine testing 72 hours after.

The instruments included the demographic and disease information questionnaire and the Spiel Berger Anxiety Inventory, including the state (situational) and trait anxiety.

The demographic and disease information questionnaire was constructed by the researchers according to the literature review. The content validity of the questionnaire was confirmed by 10 members of the special cardiac catheterization nurses and physicians.

The State-Trait Anxiety Inventory (STAI) is a commonly used measure of trait and state anxiety that was introduced by Spiel Berger and his colleagues at 1983 (30). It can be used in clinical settings to diagnose anxiety and to distinguish it from depressive syndromes (31, 32).

Form Y, its most popular version, has 20 items for assessing trait anxiety and 20 for state anxiety. All items are rated on a 4-point scale (e.g., from "Almost Never" to "Almost Always"). Higher scores indicate greater anxiety.

Internal consistency coefficients for the scale have ranged from .86 to .95; test-retest reliability coefficients have ranged from .65 to .75 over a 2-month interval (30). Test-retest coefficients for this measure ranged from .69 to .89. Considerable evidence attests to the construct and concurrent validity of the scale (33).

Its Persian translation validity has been confirmed in a master thesis in Allameh Tabatabaee university of Tehran By Mahram in1994(34).

Its reliability was confirmed by Cronbach's alpha method with a value of 0.86 in this study.

The creatinine was measured by the laboratory of Javad Al-Aemeh Cardiology Hospital by HITACHI 717 apparatus through blood sampling. Its reliability was determined by the internal calibration method. The research data was statistically analyzed by SPSS 15. The significant level was considered by $P < 0.05$. The data were at first tested about the normality by Kolmogorov–Smirnov test. The data were analyzed by chi square, one way ANOVA and Tukey HSD post hoc, repeated Measure ANOVA and paired t test.

The present study was conducted according to the ethical criteria of the Helsinki statement and was approved by the Ethics Committee of Mashhad University of Medical Sciences with a Code of Ethics (IR.MUMS.REC.1396.66). Participants were informed of study nature and their written consent to participate in the study was obtained. If the patient didn't want to continue the educational sessions he/she could leave the research any time.

Results

Finally in this study the results of the anxiety and CIN of 213 patients in three groups: control (n=69), group discussion (n=71), and film (n=73) were compared. The findings of ANOVA showed that the participants in three groups were not significantly different ($p=0.932$) in mean scores of age (control (55.14 ± 9.03), group discussion (54.74 ± 9.04) and film (55.26 ± 7.72)). Also the patients were homogenous according to BMI ($P=0.822$) and left ventricle ejection fraction ($P=0.112$) at the beginning of the research.

According to the chi square test the patients in three groups were homogenous in all of the other demographic and disease information, except the sex ($p=0.009$) (Table 1).

According to the comparison of the trait anxiety of the patients in three groups the results of one-way ANOVA test indicated no significant difference between the three groups ($F=0.229$, $P=0.79$); in other words, the groups were homogeneous in terms of mean trait anxiety scores.

The Results of the one-way ANOVA test indicated that the mean state anxiety scores in the pre-intervention phase were not statistically different ($P=0.64$) in three groups.

This test showed that there were statistically significant differences in mean scores of anxiety in three groups ($p<0.001$) after the intervention (table2). So that the patient's state anxiety mean score was decreased to 8.93 and 7.77 respectively in Film and discussion groups but it was increased to 2.04 in control group. This difference was statistically significant ($P<0.0001$) (table 2).

The Tukey HSD test showed that there were statistical significant differences between control and group discussion ($p<0.001$) and control and film groups ($p<0.001$) after the intervention. But there was no significant difference between the anxiety mean scores of the patients in film and group discussion after the intervention ($P=0.70$) (table 3).

The results of the study showed that all of the patients in three groups didn't experience a significant creatinine rise or EGFR reduction.

The results of the one way ANOVA test indicated that the level of the patients' creatinine ($P=0.311$) and EGFR ($P=0.95$) at the admission time was not significantly different between three groups. The repeated measure ANOVA showed that although there is significant increase in the level of creatinine and EGFR reduction in three time measurement ($P<0.001$), there is no significant creatinine increase ($P=0.57$) and EGFR decrease ($P=0.74$) between three groups during three time measurement (Table 4).

Discussion

According to the aim of the study about comparison the effect of education by videotape(film screening) and group discussion on anxiety and contrast induced nephropathy prevention of patients undergoing cardiac catheterization, Findings of the study indicated that applying an evidence- based educational package in both group discussion and film screening could reduce the patients' anxiety. The results showed a significant increase in control group's anxiety before catheterization, while the anxiety scores of patients in both two intervention groups were significantly decreased.

The results also indicated that despite the higher mean decrease in anxiety score in the film group than the discussion group, the difference was not statistically significant.

The results showed no contrast-induced nephropathy in three groups after the cardiac catheterization. But in comparison with the control group the patients in film screening had less creatinine rise after the cardiac catheterization.

In line with a study by Abdollah-zadeh et al. (2015) on the effect of native-language film training on anxiety of patients undergoing coronary angiography that indicated film training was effective in reducing anxiety in patients. Since a training film was used as a teaching aid in the present study and could save time and energy of nurses, thereby reducing the anxiety of

patients undergoing coronary angiography, film training could help reduce anxiety in the patients consistent with Abdollahzadeh's study(20).

Results of a study by Saleh Moghaddam et al. (2016) titled "the effect of training film on preoperative anxiety in patients undergoing open heart surgery without pump" indicated that training film to reduce anxiety before open heart surgery was more effective than pamphlet and face to face training. Given that the film screening led to a decrease in the anxiety of patients in line with the present study, the film produced in the study was not based on an instructional guideline, and thus the use of a standard protocol can lead to a more effective intervention(15)

Mohammadi et al.'s (2012) study on comparing effects of two methods, group and individual training on the knowledge and anxiety of patients admitted for coronary angiography indicated that both training methods reduced anxiety compared to pre-training. After training, patients experienced less anxiety despite being closer to the angiography time. The reduction of patients' anxiety in group training was significantly more than individual training. The study was consistent with the present study in terms of reducing anxiety in both training methods; and since the present study used film screening in individual training based on a standard protocol, but in Mohammadi's study used a face-to-face training with questions and answers and no modern teaching tools in individual education, it was inconsistent with the present study in terms of the effectiveness of reducing anxiety in group training compared to individual training(21).

In a study by Ruffinengo et al. (2009), titled "the effectiveness of an instructional video on reducing anxiety levels in 93 patients undergoing coronary angiography", anxiety significantly decreased in the film screening group. The study was consistent with the present study in terms of using film screening in reducing anxiety in patients undergoing coronary angiography(35).

Based on results of research team's exploration, most of the training studies were not based on instructional guidelines and patients were trained using existing training tools and traditional methods, as some of the trainings were nonstandard or outdated. Therefore, in the absence of valid training guidelines for patient training, an organized training guideline should be used by means of an integrative review of the literature that was used in the training of both intervention groups. Accordingly, film screening and group training in the study were able to significantly reduce anxiety in patients with coronary angiography and angioplasty by providing sufficient evidence-based information. Therefore, it is suggested using these techniques to reduce anxiety in patients. On the other hand, as the most important barriers to patient training in a study by Aziznejad et al. were disproportionate numbers of patients with number of nurses (lack of staff), lack of time and high workload of nursing duties(22), it is suggested using the film screening as a suitable alternative to group training at medical centers to train patients.

According to the results about the contrast-induced nephropathy (CIN) screening in three groups, the data showed that the mean score of serum creatinine and GFR in all patients in three groups 24h and 72 didn't increase clinically (serum creatinine more than 25% from baseline) from the arrival score. Although all of the patients in three groups had significant changes in creatinine and GFR scores from arrival to 72 hours, these increasing rates were less than 1.

The mean creatinine and GFR were compared in three groups before intervention and 24 and 72 hours after the intervention in order to determine the effect of group training and film screening on the incidence of nephropathy. The results indicated that the incidence of contrast-induced nephropathy decreased in the film screening group.

The prevention was the best treatment for contrast-induced acute kidney injury (CI-AKI)(36). The main methods of preventing the CI-AKI were the effective hydration, careful monitoring of fluid balance, urine excretion, and creatinine levels during the first 72 hours after coronary angiography or angioplasty(26). In a study, the adequate urinary excretion (more than 150 ml/h) during 6 hours after the radiologic procedure was associated with a reduced incidence of acute kidney injury (AKI)(24). The goal of fluid therapy is to maintain sufficient intravascular volume to increase renal perfusion to provide adequate diuresis prior to administration of the contrast agent and avoid hypotension(37).

A study by Lambert et al. (2017) titled "reducing contrast-induced acute kidney injury: how nurses can improve patient safety?" during 2007 to 2012 to improve quality and reduce the incidence of contrast-induced nephropathy on 20147 patient candidates for angioplasty in 10 centers in the north of England indicated that the standardization of the best evidence-based practices in

nursing care could reduce the incidence of contrast-induced acute kidney injury(38). Since the present study used a standard protocol based on different papers for interventions, our intervention indicated that standardized training could reduce the incidence of nephropathy. Consistent with Lambert's study, if the care is standard and evidence-based, it can reduce the incidence of contrast-induced nephropathy.

One of our training was to emphasize the use of at least two liters of mineral water on admission for up to 24 hours after angiography and no urine retention after the procedure. A study by De-Gui KONG et al. (2012) with an aim to determine the effectiveness of oral fluids in the prevention of contrast-induced nephropathy in patients undergoing elective coronary intervention indicated that adequate oral fluid intake before and after coronary angiography and angioplasty could be effective as much as normal intravenous saline infusion in the patients; hence, it was consistent with the present study(37).

A study by Abdollahi Moghaddam et al. (2013), titled "the protective effect of intravascular volume increase in the prevention of contrast-induced nephropathy in patients undergoing cardiac catheterization" indicated that increasing the intravascular volume with normal saline had no protective effect on patients' renal functions, and it was inconsistent with the present study, but creatinine was measured two times and randomization was not performed well in their study(39).

Based on findings of the present study, applying an organized instructional guideline in group training and film screening did not affect the incidence of contrast-induced nephropathy in patients undergoing coronary angiography and angioplasty in the film screening group.

One of the limitations of this study was getting access to the patients' after discharge. Because the patients' creatinine must be measured 72 hours after the procedure, it was very hard to consider exactly 72 hours after the procedure. Because the researcher asked somebody to go to the patient's houses and got their blood sample.

Although the patients were randomly allocated to the groups by the admit day, but sometimes the patients in three groups might meet each other. Thus the researcher couldn't limit the distribution of information between the patients.

Declarations

Ethics approval and consent to participate

The present study was conducted according to the ethical criteria of the Helsinki statement and was approved by the Ethics Committee of Mashhad University of Medical Sciences with a Code of Ethics (IR.MUMS.REC.1396.66). Participants were informed of study nature and their written informed consent to participate in the study was obtained. If the patient didn't want to continue the educational sessions he/she could leave the research any time.

Availability of data and materials

The datasets used and/or analysed during the current study available from the corresponding author on reasonable request.

Consent for publication

Not applicable

Competing interests

The authors declare that there was no conflict of interest in the present study

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Authors' contributions

The first author is the student, he wrote the proposal of the research, developed the evidence based educational program, participated in film providing meetings and coordinated the discussion groups. The second author is the supervisor, she conceptualized and coordinated the research, critically reviewed the educational program, consulted the researcher to do the sampling and analysis of the data, she supervised all of the process of the research. The third author is the advisor, he is a statistical specialist and participated to analysis of the data. The last author participated to sampling and writing the article.

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Tables

Table 1: Comparison of patients' demographic and disease information in three groups

Variable		Group			Test result
		Control N=69 N(%)	Group discussion N= 71 N(%)	Film N=73 N(%)	
Sex	<i>Female</i>	29 (42.0)	42 (59.2)	25 (34.2)	$X^2= 9.40$ P=0.009*
	<i>Male</i>	40 (58.0)	29 (40.8)	48 (65.8)	
Hypertension	<i>Yes</i>	36 (52.2)	41 (57.7)	38 (52.1)	$X^2=0.73$ P= 0.641
	<i>no</i>	33(47.8)	30(42.3)	35(47.9)	
Diabetes	<i>Yes</i>	15 (21.7)	19 (26.8)	22 (30.1)	$X^2=1.30$ P= 0.521*
	<i>no</i>	54 (78.3)	52(73.2)	51(69.9)	
hyperlipidemia	<i>Yes</i>	36 (52.2)	42 (59.2)	42 (57.5)	$X^2=0.758$ P= 0.685*
	<i>no</i>	33(47.8)	29(40.8)	31(42.5)	
Type of procedure	<i>Angiography</i>	43(62.3)	52(73.2)	44(60.3)	$X^2= 3.058^*$ P = 0.217
	<i>Angioplasty</i>	26(37.7)	19(26.8)	29(39.7)	
Arterial access way	<i>Femoral</i>	51(73.9)	60(84.5)	60(82.2)	$X^2= 3.411^*$ P =0.492
	<i>Radial</i>	18(26.1)	11(15.5)	13(17.8)	

Chi-square

Table 2: Comparison of mean and standard deviation of state anxiety in three groups

State anxiety	Control (n=69) Mean±Sd	Group discussion (n= 71) Mean±Sd	Film (n= 73) Mean±Sd	Between -group test result
Before	44.39±10.65	45.11±10.99	43.46±10.22	F=0.043 P = 0.64
After	46.43±8.95	37.33±5.64	34.53±4.28	F = 63.417* P <0.001
Mean difference before and after the intervention	-2.04±8.69	7.77±8.70	8.93±8.5	F= 34.17 P<0.001
Within-group test result Before-after	t= -1.952** P = 0.05	t= 7.52 ** P <0.001	t=8.96** P <0.001	

One way ANOVA ** paired t-test

Table 3: comparison the mean difference and standard error of the state anxiety of each two groups after the intervention

Group		Mean difference	SE	p-value***	95% Confidence Interval	
					Lower Bound	Upper Bound
Group-discussion	Control	-9.818	1.45	<0.001	-13.26	-6.37
	film	1.156	1.43	=0.70	-2.24	4.55
Film	control	-10.97	1.45	<0.001	-14.39	-7.55
	Group-discussion	-1.15	1.43	=0.70	-4.55	2.24

** Tukey HSD

Table 4: Comparison of mean and standard deviation of serum creatinine and eGFR in patients of three groups before and after the intervention

	Control (n= 69) Mean±Sd		Group discussion (n=71) Mean±Sd		Film (n= 73) Mean±Sd		Between group test	
	Creatinine	eGFR	Creatinine	eGFR	Creatinine	eGFR	Creatinine	GFR
Baseline	0.86±0.2	102.59±26.22	0.81±0.27	104.54±35.44	0.87±0.26	104.27±31.2	Time effect F=54.97 P<0.0001*	Time effect F=57.042 P<0.0001*
12 weeks	0.97±0.23	90.76±25.67	0.94±0.3	89.75±29.38	0.94±0.28	96.24±27.89		
24 weeks	0.96±0.25	92.57±26.16	0.91±0.28	92.19±30.36	0.96±0.27	94.12±27.88		
Inter-group	F=31.29 P<0.0001*	F=30.52 P<0.0001*	F= 19.30 P<0.0001*	F= 20.21 P<0.0001*	F=10.51 P<0.0001*	F=13.30 P<0.0001*		

Repeated Measure ANOVA

Figures

CONSORT 2010 Flow Diagram

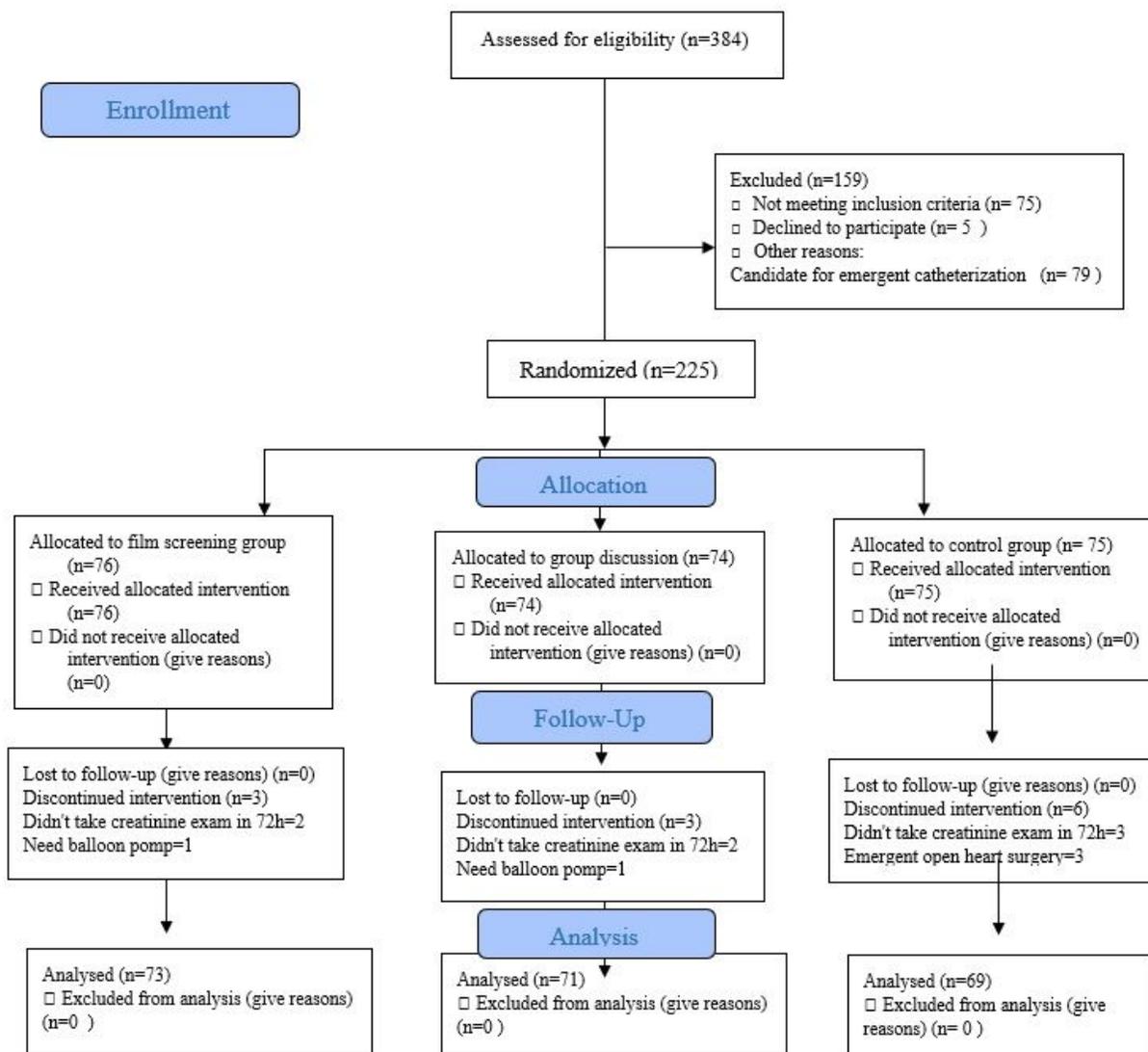


Figure 1

The consort flow diagram of the process of the study