

The Efficacy of Educational Interventions for Anxiety Control in Patients Undergoing Coronary Angiography: A Rapid Systematic Review

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Abstract

Introduction: Coronary angiography is a common test for diagnosis of coronary artery disease. Coronary angiography, despite its benefits in diagnosing the disease, due to its invasive nature, it can cause psychological complications such as anxiety. The objective of this rapid systematic review is to assess the efficacy of educational interventions for reducing anxiety of patients undergoing coronary angiography.

Methods: In this rapid systematic review, all published, peer-reviewed, English-language interventional studies from 2010 to 2020 were identified in a search of Scopus, PubMed, and Google Scholar databases. Relevant studies were assessed with experimental and quasi-experimental designs that evaluated the interventions for anxiety control in patients undergoing coronary angiography. Data were extracted from studies and assessed.

Results: Totally, 36 studies with 3966 patients that evaluated the interventions for anxiety control in these patients were included. The types of interventions made to control anxiety in patients undergoing angiography include the use of educational videos, written education, peer-based education, verbal education, conducting educational tours, familiarization with the department and procedure.

Conclusion: The findings of these studies suggest that teaching the patient before coronary angiography is one of the non-pharmacological, safe and low-cost methods with effectiveness in reducing anxiety. According to the results of this study, different educational methods can be used to reduce and relieve anxiety before performing coronary angiography compared to routine methods.

Keywords: Systematic Review, Anxiety, Coronary Angiography, Educational Interventions

Introduction

Cardiovascular diseases are a wide range of diseases, among which coronary artery disease is the most common cause of mortality and morbidity in developing and developed countries.¹⁻³ Several invasive and non-invasive diagnostic tests are used to determine the extent and severity of coronary artery disease.⁴ Coronary angiography is one of the most common diagnostic tests, which is referred to as a definite and golden test in the diagnosis of this disease.⁵ Coronary angiography, despite its benefits in diagnosing the disease, due to its invasive nature, it can cause physical complications such as bleeding and hematoma, as well as psychological complications such as fear and anxiety.^{2,6-9} Anxiety is one of the most common complications among patients undergoing coronary

angiography.¹⁰ Numerous studies have shown that the level of anxiety in patients undergoing coronary angiography is high.¹¹⁻¹⁵ Lack of sufficient knowledge about the procedure, fear of death and the result of angiography have been mentioned as the main causes of anxiety in these patients.^{4,16} The anxiety caused by this procedure can increase the secretion of catecholamine, increase the workload of the heart, increase sympathetic activity and subsequently chest pain, hemodynamic changes and vital signs such as increased blood pressure and increased heart rate.^{2,16-18}

Many pharmacological and non-pharmacological methods are used to control the anxiety of these patients.^{6,19} The use of non-pharmacological methods has increased in recent years due to its advantages such

as lower cost, fewer complications, and easier access.^{20,21} One of the common non-pharmacological methods used in patients undergoing coronary angiography is patient education, which has been used in different ways by nurses in research on these patients.^{4,5,16} Considering the studies conducted in this field and the importance of anxiety control in these patients, this rapid systematic review was conducted with the aim of investigating the effect of educational methods on anxiety control in patients undergoing coronary angiography in order to determine the most effective method in controlling anxiety in patients.

Materials and Methods

Study Design

This rapid systematic review study was conducted with the aim of investigating the effectiveness of different educational methods in reducing anxiety in patients undergoing coronary angiography.

Search Strategy

In order to search and find relevant studies, Scopus, PubMed and Google Scholar databases were examined with the keywords of angiography, cardiac catheterization, anxiety, education and nursing interventions separately

and in combination between 2010 and 2020. In this search, all studies published in English were carefully screened to find studies related to the purpose of the research. Searched studies were entered in End Note 8 software for information management.

Selection of Studies

The main criteria for selecting articles to enter this rapid systematic review study was to conduct an educational intervention and investigate its effect on anxiety control in patients undergoing coronary angiography. In this process, interventional studies, having a control group, reporting patients' anxiety scores, using educational interventions, and using tools to measure anxiety in patients undergoing coronary angiography were included in the study. Exclusion criteria included studies not related to anxiety, existence of a single group, lack of control group and use of pharmacological methods to control and treat anxiety. In addition, studies conducted before 2010 and after 2020 were excluded from the study. Searched studies based on inclusion and exclusion criteria were reviewed by 2 researchers separately in terms of research quality as well as extracted data. The final selection of articles was based on discussion and agreement between the researchers.

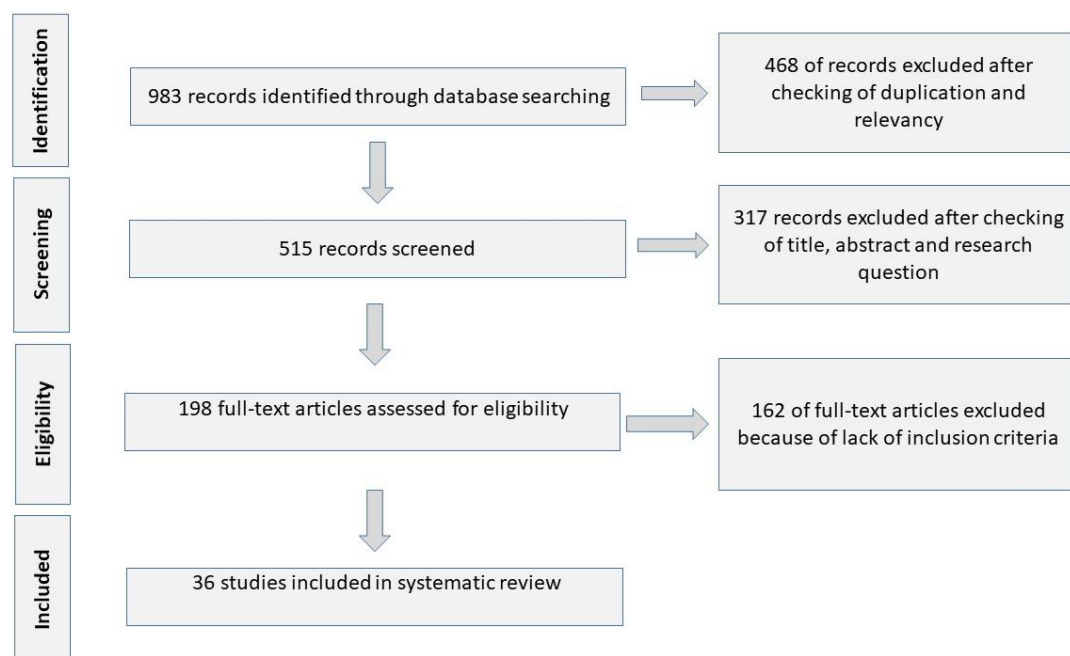


Figure 1. Flow Chart of the Study.

Merit Criteria

In order to check the merit of the searched studies, 4 criteria of population, intervention, comparison, and

outcome were used as follows:

Population: All patients undergoing coronary angiography.

Intervention: Educational interventions used to control

anxiety in these patients.

Comparison: Routine hospital care versus educational interventions.

Outcome: The patients' anxiety score was the only main outcome.

Extracting the Data

Based on the initial search, 983 articles were found in the databases. The merit of the found articles was evaluated based on quality and relevance criteria by 2 researchers. Following a detailed review of the studies, 36 articles out of 983 initial articles found were excluded from the review process due to lack of entry criteria or qualifications, and finally 36 articles were selected to enter the final analysis (Figure 1). The quality of the articles was evaluated by the article evaluation checklist designed by Donnes and Black.²² The data of the final articles included in the study were extracted by two researchers separately and finally, by discussing and summarizing the data in the form of author name, year of study, country, type of study, sample size, type of educational intervention, method of measuring anxiety and the anxiety score of the patients was given in the form of a pre-designed standard form.

Results

In the initial review of 983 articles based on the search criteria and after detailed review, 36 articles were included in the final analysis. Among these studies, 19 articles were from Iran, one from Jordan, two from Egypt, two from Singapore, one from Taiwan, three from China, three from Turkey, two from America, one from Israel, one from Iraq and one article from Brazil. The types of interventions made to control anxiety in patients undergoing angiography include the use of educational videos, written education, peer-based education, verbal education, conducting educational tours, familiarization with the department and procedure. In terms of methodology, 19 articles have been conducted experimentally and 17 have been conducted semi-experimentally. Examining the level of patients' anxiety, which is the main result of these studies, has been measured using various tools. The most commonly used instrument was the Spielberg Anxiety Scale.^{18,23-25} Other tools for measuring anxiety in these studies were Hamilton anxiety rating scale,²⁶ Visual Analogue Scale,¹⁶ Cardiac anxiety questionnaire,²⁷

Beck depression scale for depression.²⁸

Multimedia Education

16 studies with 3008 participants have been conducted on the effect of multimedia education on anxiety. These studies have shown that watching educational videos before performing the procedure has a significant reduction in the level of patient anxiety. The study conducted by Torrano et al., showed that watching educational videos in patients undergoing coronary angiography reduces the anxiety score.²⁹ The study of Hasan Qasim Abbas Abdul et al., showed that watching educational videos in the mother tongue has an effect on reducing the anxiety score of patients.¹ In the study of Ayasrah et al., it was shown that watching the film was effective in reducing anxiety before the procedure.¹⁸ In their study, Jonathan Yap et al., emphasized the effectiveness of using a 3-minute video of care before, after and during angiography in reducing patients' anxiety.³⁰ Basar et al., showed that video training is more effective than verbal training in reducing patients' anxiety.²⁸ In their study, Jamshidi et al., investigated the effect of educational film compared to verbal routine training on anxiety.¹⁶ The results showed that training through videos reduces patients' anxiety. In the study of Gavigan et al., educational videos reduced the anxiety score of patients compared to standard care.²⁴ The results of the study by Abdulzadeh et al., showed that education through videos in the native language is effective on the anxiety of patients undergoing angiography.³¹ Khezerlu et al., showed that video training reduces the anxiety level of patients.³² In the research of Lattuca et al., educational films had a significant effect on reducing anxiety.³³ In the research of Zafari et al., the use of educational videos on mobile phones was effective in reducing the anxiety of coronary angiography candidates and caused a decrease in anxiety.³⁴ In Jingwen Hu's study, the educational program in the form of a film was also significantly effective on the anxiety level of patients undergoing angiography.³⁵ In the research of Chaire et al., it was shown that the video reduces the level of anxiety and increases the level of awareness and satisfaction in angiography patients.³⁶ The study of Torabizadeh et al., showed that the use of multimedia training reduces the anxiety score of angiography patients compared to the control group.³⁷ Ka-Lai et al., compared three training methods. The results of this

study showed that the group that had multimedia training experienced less anxiety than the other two groups.²³ In the research of Ceyhan et al., the level of anxiety decreased after training in connection with angiography.³⁸

Written Training

Four studies with 402 participants have investigated the effectiveness of written training in reducing anxiety in coronary angiography patients.^{13,37,39,40} In the study of Gökçe E et al., the result showed that the groups that were trained experienced less anxiety.¹³ In the study of Sun et al., it was shown that writing training reduces anxiety before angiography.³⁹ Aboalizm et al., showed in their study that providing educational pamphlets reduces the level of anxiety and increases the awareness of patients.⁴⁰ The study of Torabizadeh et al., showed that the use of written training reduces the anxiety score of angiography patients compared to the control group.³⁷

Peer Group Education

Four studies with 426 participants have studied the effectiveness of peer education in reducing anxiety in coronary angiography patients.^{4,41-43} In a study conducted by Molazem et al., peer-centered education reduced the anxiety level of patients undergoing angiography.⁴ In the study by Farsi et al., patients in the peer-centered group reported less anxiety than the control group.⁴² In their study, Habibzadeh et al., showed that peer-based education, similar to education through educational videos, reduces patients' anxiety.⁴³ Dehghan et al., also showed in their study that peer-based education in relation to care before, during and after angiography has a significant effect in reducing the anxiety level of patients undergoing angiography.⁴¹

Educational Tour

Two studies with 130 participants have investigated the effectiveness of oral education methods on reducing anxiety in coronary angiography patients.^{26,47} In a study by Abdelmegid et al., patient education reduced anxiety.²⁶ In another study, it was shown that an educational program using verbal training is effective in reducing patients' anxiety.⁴⁸ The research of Shahpari et al., regarding verbal training to patients over the phone showed that the level of anxiety in the intervention group was lower than the control group.⁴⁷

Group Training

In a research conducted by Mohammadiet al., by comparing the effect of individual and group training on the level of anxiety of patients undergoing angiography, they concluded that there is no significant difference between individual and group training in the level of awareness of the two groups, but the level of anxiety that was measured by using The Spielberg scale was completed two hours before the angiography. It showed that in the group training where the person first received the same educational content as the individual training for 15 minutes, then they discussed and chatted for 35-40 minutes, the level was lower and there was a significant difference. between group and individual training.⁴⁹

Discussion

This rapid review study investigated the effectiveness of educational interventions in reducing anxiety in patients undergoing coronary angiography. The results obtained from this study showed that multimedia training, written training, peer-based training, familiarization tour and oral training are effective in reducing the anxiety of patients undergoing coronary angiography.⁴⁸⁻⁵⁰

Video training is one of the useful and efficient methods to reduce the anxiety level of patients before angiography.^{1,16,18,24,27-30,50-52} Using an educational video in the patient's own language reduces anxiety before angiography.^{28,50,51} The use of education reduces anxiety in patients undergoing angiography due to increasing patient awareness.^{48,53} Educational videos are more effective because they contain various information such as anatomy and function of the heart, how to perform the procedure, type of anesthesia and aftercare.^{29,30,48} Multimedia training can be combined with other teaching methods such as verbal and written such as pamphlets and books. These methods, individually or in combination, are effective in reducing patients' anxiety.^{13,16,26,39,40} In some studies, it has been shown that multimedia education is more effective than other educational methods such as verbal and written in reducing the level of anxiety.^{23,36} The reason for this greater effectiveness can be attributed to the training similar to the real environment and the patient's greater knowledge of what is going to happen to him. Peer-based education is another effective educational intervention in reducing the level of anxiety.^{4,42} Peer-oriented educations, due to the

provision of education by people with common experiences and feelings, leads to better acceptance of patients and, as a result, reduces anxiety.^{4,41} Peer-centered training has been reported to be effective in reducing anxiety, similar to multimedia training.⁴³ Also, compared to the educational tour, this method has the same effect in reducing patients' anxiety.⁴² Conducting familiarization tours is one of the educational interventions to reduce patients' anxiety. Familiarization tours reduce the patient's fear and anxiety of the unknown environment due to placing the patient in the real environment and observing the conditions and equipment of the place where the procedure is performed.^{42,45} In addition to different methods in teaching patients, various tools have been used to measure patients' anxiety in different studies.

Despite the effectiveness mentioned in all the studied studies regarding the effectiveness of educational methods in relieving the anxiety of patients before coronary angiography, several points should be taken into consideration. First: the difference in the design of these studies and the difference in the teaching method makes it difficult to compare the results of different studies with each other. Second: Differences in background variables of patients, differences in care protocols of different hospitals, differences in educational methods used and other background conditions can make it difficult to compare the results.

One of the most important strengths of this study is the inclusion of all studies conducted in the field of using interventions to reduce anxiety before angiography. All the studies conducted in different databases were included in the study. The difference in the design of different studies, the small sample size and the use of different interventions can be mentioned as limitations of this study.

Conclusion

Teaching the patient before coronary angiography is one of the non-pharmacological, safe and low-cost methods with effectiveness in reducing anxiety. According to the results of this study, different educational methods can be used to reduce and relieve anxiety before performing coronary angiography compared to routine methods.

Authors' Contributions

MB was involved in the conception and design of the

study, database search, the early drafting of the manuscript and revising the manuscript; MNK contributed to the conception and design of the study, database search, extracting data and writing and revising the manuscript.

Conflict of Interest

The authors declare no conflicts of interest.

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