



# Comparison of the Effect of Instrumental Music and Holy Quran Recitation on the Anxiety of Patients with Acute Coronary Syndrome: Semi-Experimental Study

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## Abstract

**Background:** Anxiety is one of the most common psychological problems after myocardial infarction and can lead to many problems in acute coronary syndrome (ACS). Two possible ways to reduce anxiety are to listen to music and to recite the Holy Quran, the effects of which have never been compared to date.

**Objectives:** The aim of this study was to compare the effect of listening to instrumental music and listening to Quran recitation on the anxiety level of patients with acute coronary syndrome.

**Methods:** This semi-experimental study was conducted among 96 patients with ACS referred to Hajar Hospital, Shahrekord, Iran, from 3/10/2019 to 4/30/2019. The patients were entered into the study using the convenience sampling method and then randomly assigned to the three groups of Quran recitation, instrumental music, and control. In this study, the patients' anxiety level was measured using Spielberger's state-trait anxiety inventory (STAI) before and after listening to Quran recitation and instrumental music. Data were analyzed by SPSS version 16 using descriptive and analytical tests, including paired samples *t*-test, Chi-square, and one-way ANOVA.

**Results:** Anxiety level decreased from  $43.1 \pm 6.15$  to  $38.5 \pm 3.82$  in Quran recitation group ( $P < 0.001$ ) and from  $44.2 \pm 1.21$  to  $39.1 \pm 4.17$  in the instrumental music group ( $P = 0.035$ ), and from  $46.3 \pm 3.84$  to  $44.7 \pm 6.21$  in the control group ( $P < 0.001$ ). There was no significant difference between the three groups before the program. However, the mean score of anxiety level showed a significant difference, indicating that listening to Quran recitation had a greater effect than listening to instrumental music in reducing the patients' anxiety ( $P = 0.02$ ).

**Conclusions:** Both interventions can be useful in decreasing the anxiety level of patients with ACS; however, the Holy Quran recitation had a greater effect in this regard.

**Keywords:** Coronary Care Unit Patients, Acute Coronary Syndrome, Anxiety, Quran Recitation, Instrumental Music

## 1. Background

Anxiety is an inseparable part of human life, and as a physiological phenomenon, it can cause adverse impacts on one's behaviors, thoughts, and reactions (1). A vague feeling, worry, concern, or apprehension is among the most common problems of cardiac patients (2). Its symptoms include restlessness, irritability, difficulty concentrating, muscle tension, sleep disturbances, and being easily fatigued (3).

There is not much known about the influence of anxiety on cardiovascular diseases (3). However, the most recent meta-analysis conducted by Batelaan et al. (4) demonstrated a 52% increased risk of CVD onset for patients with anxiety symptoms and disorders. According to a study by Ronaghi et al. (5), the anxiety level of cardiac patients is 26% higher than that of psychiatric patients. Following a cardiovascular event, patients often experience anxiety, which remains unresolved among 50% of the patients during the following year (6, 7). The most important causes

that can lead to anxiety in these patients include separation from family members, being in an unfamiliar environment, lack of knowledge about diagnostic and therapeutic methods and their consequences, costs of treatment, concerns about the ability to accomplish self-care and return to work, and risk of mortality (8, 9).

Anxiety causes not only non-cardiac complications in these patients but also aggravates cardiac complications such as cardiac dysfunction, hypertension, tachycardia, dysrhythmia, ischemia, and heart failure (10). Thus, nurses working in the Coronary Care Unit (CCU) should pay attention to patients' anxiety as well as other aspects of the patient to provide better care (11). Up to now, many treatments have been suggested to reduce anxiety, including pharmacological and non-pharmacological therapies, but the former is more common while causing many complications and heavy costs (12). Thus, nowadays, non-pharmacological management of anxiety is more popular (13). Listening to music and listening to religious carols are among these non-pharmacological managements for anxiety (14).

Maleki and Kamali (15) stated that various studies have been conducted using the Holy Quran recitation because of its various psychological effects. A study of Ildarabadi et al. on the Holy Quran recitation effects on patients' heart rate and respiratory rate (16), and another study by Keshavars et al. (17) on the positive effects of Holy Quran recitation on oxygen saturation, heart rate and respiratory rate of premature infants are among these various studies. Sound waves of Quran recitation have specific frequency and wavelength that produce undulations that allow cells to restore balance and coordination (18).

Similarly, listening to music and rhythmic sounds can reduce heart rate, adjust breathing, and cause muscle relaxation. In addition, listening to music can reduce the effect of harmful sound stimuli and decrease stress responses by drawing attention in patients (17). Listening to music also decreases acute coronary syndrome (ACS) patients' anxiety levels (19). One form of music is speechless music or instrumental music that can transmit human feelings, emotions, perceptions, and cognitions only through sound with no need for speech and language (20). Listening to instrumental music has many positive effects, including reducing the anxiety level in patients with ACS (21).

Even though both interventions have been shown to be useful methods to decrease patients' problems, according to our literature review, no study has been conducted to compare the effects of these interventions on the anxiety level of patients with ACS to date.

## 2. Objectives

The aim of this study was to compare the effects of listening to instrumental music with listening to Quran recitation on the anxiety level of patients with ACS.

## 3. Methods

This semi-experimental study was part of a larger study of an MSc student's thesis. The thesis was approved by the Vice-Chancellor of Research, Information and Technology, and the Ethics Committee of Shahrekord University of Medical Sciences (ID: IR.SKUMS.REC.1397.297).

The present study was conducted among 96 patients admitted from February to April 2019 to Hajar Hospital, Shahrekord, Iran. Considering the mean and standard deviation ( $S_1 = 3.14$  and  $S_2 = 2.61$ ;  $x_1 = 34.2$  and  $x_2 = 43.3$ ) of the anxiety score reported by Heidari et al., 95% confidence interval, and power of 80%, the authors allocated 32 individuals to each group, who were chosen by the convenience sampling method. Then, they were randomized by cards into three groups, including listening to Quran recitation group ( $n = 32$ ), instrumental music group ( $n = 32$ ), and control group ( $n = 32$ ). The inclusion criteria included completing and signing the informed consent form, age between 18 and 65 years, complete consciousness, no history of neurological illnesses leading to hospitalization or taking antipsychotic drugs, lack of a history of deafness, and stable vital signs (22). The exclusion criteria were having any stress or physiological changes that need medical or nursing attention, any alteration in the level of consciousness, critical conditions, and withdrawal from the study. All the eligible patients were provided the necessary explanations about the interventions and their harmlessness, and they were assured of the confidentiality of their information. Then, they read the informed consent form and completed it.

Sampling was continued until the target sample size reached. The data collection tools were a demographic data form and the 20-item Spielberger state-trait anxiety inventory (STAI) that measures apparent anxiety or state anxiety. The answers were rated on a four-point Likert scale (1 - 4) with 20 and 80 being the minimum and maximum scores, respectively. The respondents with a score below 43 were classified as non-anxious, and those with a score above 43 were considered as anxious (23). The main questionnaire was a standard two-part inventory developed by Mahram in 1995 (24). Also, the validity of the first part was confirmed by Nazemian et al. (25), in 2008. In our study, its reliability was calculated to be 0.90 using Cronbach's alpha.

Questions were answered by all the patients themselves. Then, both interventions were carried out by the first author, and the patients were not visited during the audio broadcast. In the Quran recitation group, the patients listened to verses 78 - 111 of Surah Al-Isra recited by the Master Sa'ad al Ghamdi as hymns and according to the Nahavand style by using audio headphones at night while the CCU lights were turned off. The verses were selected considering the previous studies and the cleric of the Islamic education's advice. In the instrumental music group, the patients listened to the sound of the ocean by using audio headphones at night while the CCU lights were turned off. According to a similar previous study (23), the length of both interventions was 10 minutes, and upon the viewpoints of the experts, after three sessions, the anxiety inventory was filled out by all the patients again. Considering the ethical issues of care and research, the routine treatments and cares continued in the three groups. Data were analyzed using descriptive and analytical tests, including mean and standard deviation, mean difference, chi-square, one-way ANOVA, and post hoc with SPSS version 16. P value less than 0.05 was considered significant.

#### 4. Results

The mean age of the Quran recitation, instrumental music, and control groups was 42.4, 43.5, and 52.6, respectively. According to the one-way ANOVA test, the three groups were significantly different ( $P < 0.001$ ). However, the chi-square test indicated no significant difference between the three groups regarding the remaining demographic characteristics (Table 1).

In order to investigate the effect of holy Quran recitation and instrumental music on the anxiety level of the patients, the difference in anxiety score before and after the intervention was calculated in each group, and comparison was made between the three groups. One-way ANOVA showed a significant difference between the three groups. The lowest anxiety score was calculated in the Holy Quran recitation group, and the highest score was determined in the control group. Post-hoc test demonstrated a significant difference in anxiety scores between the Holy Quran recitation group and the control group and between the instrumental music group and the control group ( $P < 0.001$ ; Table 2).

#### 5. Discussion

The findings of the present study indicated that both interventions were effective in reducing anxiety in patients with ACS. However, listening to the Holy Quran recitation

was more effective than instrumental music in decreasing anxiety. The study of Bechtold et al. (26) reported stress reduction in patients undergoing colonoscopy after listening to music. Since anxiety is highly dependent on stress (27), we can conclude that their finding was consistent with our results as to the effects of music.

In the study of Raffieian et al. (28), music therapy was reported to reduce pain, anxiety, and nausea of patients undergoing cesarean section. Yousefinezhad et al. (29) also reported that music was effective in reducing stress and pain in patients as much as body relaxation techniques do. This may explain the effect of music on anxiety reduction in these studies.

On the other hand, Bradt et al. (30), through a systematic review showed that music had few benefits against psychological distress and moderate effects on the anxiety of patients with coronary heart disease that supports the above studies.

Mirbagher et al. (31) compared music and Quran recitation. They found that both had a significant effect on decreasing blood pressure, pulse rate, and respiratory rate as well as reducing patients' anxiety; however, Quran recitation was more effective, which is in line with the results of the present study. Perhaps one of the reasons for the relatively greater influence of Quran recitation is that all the participants in both studies were Muslims. Thus, religion, especially Holy Quran, had an influence on all aspects of their lives, including health.

In a more recent study, Babaii et al. (32) stated that listening to Quran decreased anxiety before cardiac catheterization, and this therapy could be used in combination with other cares and treatments to decrease patient anxiety. Majidi (33) found Holy Quran recitation effective to decrease anxiety level before and after coronary angiography, and Ildarabadi (34) found it to be effective in lowering anxiety before cardiac surgery. They also found that those who listened to the recitation of Quran had more normal vital signs than the control group (33, 34). Recently, Musavi et al. (35) reported that the Holy Quran recitation decreased anxiety, but it had no effect on depression after cardiac surgery. All these are in line with the results of the current study.

God states in Surah Isra, verse 2: and we send down a Quran, which is healing and mercy for all believers and adds nothing to the transgressors except their harm. Therefore, the reason for the positive effect of Quran on reducing anxiety can be found in the book itself.

Barrett et al. (36) found that mortality rate after open-heart surgery decreased from 9% to 5% by using spirituality as a complementary medicine by a group of nurses trained in this field. Considering religion as a part of spirituality (37), it can be stated that listening to the Holy Quran recitation can act as a complementary medicine and reduce pa-

**Table 1.** Baseline Demographic Characteristics of Patients in Three Groups<sup>a</sup>

	Holy Quran Recitation Group	Control Group	Instrumental Music Group	P Value
<b>Educational level</b>				0.539 <sup>b</sup>
Illiterate	9 (30)	6 (20)	8 (26.7)	
High-school	12 (40)	8 (26.7)	9 (30)	
Diploma	4 (13.3)	8 (26.7)	9 (30)	
Academic	5 (16.7)	8 (26.7)	4 (13.3)	
<b>Gender</b>				0.826 <sup>b</sup>
Male	12 (40)	12 (40)	10 (33.3)	
Female	18 (60)	18 (60)	20 (66.7)	
<b>Marital status</b>				0.005 <sup>b</sup>
Single	29 (96.7)	19 (36.3)	21 (70)	
Married	1 (3.3)	11 (36.7)	9 (30)	
<b>Employment status</b>				0.008 <sup>b</sup>
Housewife	10 (33.3)	9 (30)	7 (23.3)	
Self-employed	13 (43.3)	7 (23.3)	17 (56.7)	
Civil-servant	5 (16.7)	3 (10)	5 (16.7)	
Retired	2 (6.7)	3 (10)	0 (0)	
Jobless	0 (0)	8 (26.7)	1 (3.3)	
<b>History of ACS</b>				0.407 <sup>b</sup>
Yes	9 (30)	11 (36.7)	14 (46.7)	
No	21 (70)	19 (63.3)	16 (53.3)	
<b>Age</b>	52.6 ± 2.30	42.4 ± 10.8	43.5 ± 9.37	< 0.001 <sup>c</sup>

<sup>a</sup>Values are expressed as mean ± SD or No. (%).

<sup>b</sup>Chi-Square.

<sup>c</sup>One-way ANOVA.

**Table 2.** Comparison of Mean ± SD of Anxiety Score Before and After the Intervention in the Three Groups<sup>a</sup>

Group	Before Intervention	After Intervention	Before-After
Holy Quran recitation	43.1 ± 6.15	38.5 ± 3.82	-5.133 ± 3.451
Instrumental music	44.2 ± 1.21	39.1 ± 4.17	-4.966 ± 4.197
Control	46.3 ± 3.84	44.7 ± 6.21	-2.233 ± 5.587
<b>P value</b>			0.023 <sup>b</sup>

<sup>a</sup>Values are expressed as mean ± SD.

<sup>b</sup>One-way ANOVA.

tients' problems, including anxiety.

This study proved that a non-pharmacological, simple, inexpensive, and short-term intervention offered in only two 10-minute sessions can reduce the anxiety level of the patients with ACS. The results of this study showed that Quran recitation was more effective than instrumental music in reducing anxiety. The mean age of the three

groups varied, which may affect the results of the study and was one of the limitations of current research.

### 5.1. Conclusions

This method of care and its importance can be taught through holding nursing education sessions. In addition, the results of this study can serve as a prelude to further studies. The influence of religion was one of the most important limitations of this study because the entire patients in this study were Muslims who believed in the Holy Quran as they said. Thus, we recommend conducting similar studies on populations with different religions and beliefs.

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#### Footnotes

**Authors' Contribution:** Masoomeh Mohammadpoor did study concept and design and acquisition of data. Shirmohammad Davoodvand did study concept and design, drafting of the manuscript, Critical revision of the manuscript for important intellectual content. Seyed Alimohammad Hashemini did study supervision. Arsalan Khaledifar did administrative support. Morteza Sedehi did analysis and interpretation of data. Seyed Yahya Kazemi Sheikh Shabani did administrative support.

**Conflict of Interests:** None declared.

**Ethical Approval:** The Ethics Committee of Shahrekord University of Medical Sciences approved the study (ID: IR.SKUMS.REC13970297).

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#### References

1. Salimi. [The relationship between sleep quality and stress and depression of non-native female students of Samandaj University]. Iran; 2015.
2. Taylor C, Boyer MJ, Shives LR, Lynn P. *Fundamentals of nursing*. Philadelphia, PA: Lippincott Williams & Wilkins; 2008.
3. Ivanovs R, Kivite A, Ziedonis D, Mintale I, Vrublevska J, Rancans E. Association of depression and anxiety with cardiovascular co-morbidity in a primary care population in Latvia: a cross-sectional study. *BMC public health*. 2018;**18**(1):328.
4. Batelaan NM, Seldenrijk A, Bot M, van Balkom AJ, Penninx BW. Anxiety and new onset of cardiovascular disease: critical review and meta-analysis. *The British journal of psychiatry*. 2016;**208**(3):223-31.
5. Ronaghi JR, Paravar M, Rezaei M, Ebrahimi H. [Relationship between Burnout and Social Support in Emergency Medical Personnel in Kashan City]. *Knowl Health Basic Med Sci*. 2017;**11**(4):63-72. Persian.
6. Reavell J, Hopkinson M, Clarksmith D, Lane DA. Effectiveness of cognitive behavioral therapy for depression and anxiety in patients with cardiovascular disease: a systematic review and meta-analysis. *Psychosomatic medicine*. 2018;**80**(8):742-53.
7. Psychother P. Prospective Examination of Anxiety Persistence and its Relationship to Cardiac Symptoms and. *Psychotherapy and Psychosomatics*. 2004;**73**:6.
8. Afzali S, Masoudi R, Etemadifar S, Moradi M, Moghaddasi J. [The effect of progressive muscle relaxation program (PMR) on anxiety of patients undergoing coronary heart angiography]. *J Shahrekord Univ Med Sci*. 2009;**11**(3):77-84. Persian.
9. De Jong MJ, Moser DK, An K, Chung ML. Anxiety is not manifested by elevated heart rate and blood pressure in acutely ill cardiac patients. *Eur J Cardiovasc Nurs*. 2004;**3**(3):247-53.
10. Najafi Z, Tagharrobi Z, Taghadosi M, Sharifi K, Farrokhian A. [The Effect of Simultaneous Aromatherapy and Quran Recitation on Anxiety Level of Patients with Myocardial Infarction]. *J Fac Nurs Midwifery*. 2014;**4**:700-12. Persian.
11. Hojjat M, Zahadatpour Z, Nasr Eshahani M. [Comparing the lilt voice of Koran with normal situation, silence, Arabic music and Iranian music on adequacy of dialysis]. *J Crit Care Nurs*. 2010;**11**(3):69-74. Persian.

12. Alonso J, Liu Z, Evans-Lacko S, Sadikova E, Sampson N, Chatterji S, et al. Treatment gap for anxiety disorders is global: Results of the World Mental Health Surveys in 21 countries. *Depression and anxiety*. 2018;**35**(3):195-208. doi: 10.1002/da.22711. [PubMed: 29356216].
13. Ströhle A, Gensichen J, Domschke K. The diagnosis and treatment of anxiety disorders. *Deutsches Ärzteblatt International*. 2018;**115**(37):611.
14. Ghiasi A, Keramat A. The effect of listening to holy quran recitation on anxiety: A systematic review. *Iranian journal of nursing and midwifery research*. 2018;**23**(6):411. doi: 10.4103/ijnmr.IJNMR\_173\_17. [PubMed: 30386389].
15. Maleki M, Kamali Z. [Effects of Quran recitation on sleeping of hospitalized patients]. *J Shahid Beheshti Univ Med Sci*. 2005;**51**:24-30. Persian.
16. Soloukdar A, Goodarzi B. The Relationship of Agility of Human Resources on Performance of Staffs at Tehran Emergency Center. *Nurse and Physician Within War*. 2019;**7**(22):27-33.
17. Keshavars M, Eskandari N, Jahdi F, Ashaieri H, Hoseini F, Kalani M. [The effect of holly Quran recitation on physiological responses of premature infant]. *Koomesh*. 2010;**11**(3):169-77. Persian.
18. Shirvani M, Mirzaeian R. . 3th Provincial Congress on Quran and Health. 2013. p. 17-23. Persian.
19. Arab M, Mousavi SS, Borhani F, Rayyani M, Moniri SA. The Effect of Music Therapy on Anxiety and Vital Signs of Patients with Acute Coronary Syndrome: A Study in the Cardiac Care Unit of Vali-Asr Hospital, Eghlid, Iran. *Journal of Health and Development*. 2015;**4**(4):287-95.
20. Sheibani Tazraji F, Pakdaman S, Dadkhah A; Hasanzadeh Tavakoli M. [The Effect of Music Therapy on Depression and Loneliness in Old People]. *Iran J Ageing*. 2010;**5**. Persian.
21. Cheraghi M, Akbari K, Bahramnezhad F, Haghani H. The effect of instrumental music on sleep in patients admitted to Coronary Care Unit. *Iranian Journal of Cardiovascular Nursing*. 2015;**3**(4):24-33.
22. Dyer O. Covid-19: hospitals brace for disaster as US surpasses China in number of cases. British Medical Journal Publishing Group; 2020. Contract No.: 1756-1833.
23. Heidari M; Shahbazi S. [Effect of Quran and Music on Anxiety in Patients during Endoscopy]. *Orig Artic Knowl Heal*. 2013;**8**:67-70. Persian.
24. Mahram B. [Spielberger test standardization in Mashhad]. Tehran: Al-lameh Tabatabaei University; 1995. Persian.
25. Nazemian F, Ghafari F, Poorghaznein T. Evaluation of depression and anxiety in hemodialysis patients. *Medical journal of mashhad university of medical sciences*. 2008;**51**(3):171-6.
26. Bechtold M, Puli S, Othman M, Bartalos C. Effect of Music On Patients Undergoing Colonoscopy: A Meta-Analysis of Randomized Controlled Trials. *Gastrointestina Endoscopy*. 2007;**65**(5):366-73.
27. McEwen BS, Eiland L, Hunter RG, Miller MM. Stress and anxiety: structural plasticity and epigenetic regulation as a consequence of stress. *Neuropharmacology*. 2012;**62**(1):3-12.
28. Raffiean Z, Azar Barzin M, Safaarfard S. [The Effect of music therapy on anxiety pain, nausea and vital signs of caesarean section clients in DR Shariatee Hospital of Esfahan in Medical Sciences]. *J Islamic Azad University*. 2009;**19**(55):33-8. Persian.
29. Yousefinezhad A, Madadi A, Majedzadeh R, Shabannia R, Sadeghian N, Zarinara R. [The effect of music therapy on chronic pain in patient with cancer]. *J Qazvin Univ Med Sci*. 2005;**8**(34):39-42. Persian.
30. Bradt J, Dileo C, Potvin N. Music for stress and anxiety reduction in coronary heart disease patients. *Cochrane Database of Systematic Reviews*. 2013;(12).
31. Mirbagher AN, Aghajani M; Shahshahani M. [The effects of music and holy Quran on patient's anxiety and vital signs before abdominal surgery]. *J Mashhad Nurs Midwifery Fac*. 2011;**1**(1):63-76. Persian.
32. Babaii A, Abbasinia M, Hejazi SF, Seyyed Tabaei SR, Dehghani F. The effect of listening to the voice of Quran on anxiety before cardiac catheterization: a randomized controlled trial. *Health, Spirituality and Medical Ethics*. 2015;**2**(2):2-7.

33. Majidi SA. Recitation Effect of Holy Quran on Anxiety of Patients before Undergoing Coronary Artery Angiography. *J Med Fac Guilan Univ of Med Sci.* 2004;**49**(13):67-70.
34. Ildarabadi E, Mazloom S, Saleh Moghadam A, Elmi M. Effect of listening to the Holy Koran on patients' anxiety before open heart surgery. *J Mashhad School Nurs Mid.* 2004;**5**:15-20.
35. Musavi F, Gholizadeh B, Heidari MR. The effect of the holy Quran voice on anxiety and depression after cardiac surgery: a randomized controlled trial. *Journal of Urmia Nursing And Midwifery Faculty.* 2019;**17**(5):401-10.
36. Barrett B, Marchand L, Scheder J, Appelbaum D, Plane MB, Blustein J, et al. What complementary and alternative medicine practitioners say about health and health care. *Ann Fam Med.* 2004;**2**(3):253-9.
37. Peteet JR, Balboni MJ. Spirituality and religion in oncology. *CA: A Cancer Journal for Clinicians.* 2013;**63**(4):280-9.