Original Article

Health, Spirituality and Medical Ethics. 2015;2(2):8-14

The Effect of Listening to the Voice of Quran on Anxiety before Cardiac Catheterization: A Randomized Controlled Trial

Atye Babaii[1], Mohammad Abbasinia[1], Seyed Fakhreddin Hejazi[2], Seyyed Reza Seyyed Tabaei[3], Fariba Dehghani[1*]

1 Department of Nursing, Faculty of Nursing & Midwifery, Qom University of Medical Sciences, Qom, Iran
2 Department of Cardiology, Faculty of Medicine, Qom University of Medical Sciences, Qom, Iran
3 Department of Psychiatry, Faculty of Medicine, Qom University of Medical Sciences, Qom, Iran

Abstract

Background and Objectives: Patients experience moderate to high level of anxiety before cardiac catheterization. This study aimed to investigate the effect of voice of Quran on anxiety before cardiac catheterization.

Methods: In this randomized controlled trial, 60 patients who met the inclusion criteria were conveniently sampled and randomly allocated to the experimental and control groups. In the experimental group, patients received 18 minutes of voice of Quran, whereas in the control group, patients had 18 minutes of rest in bed. The level of anxiety was measured immediately before, and immediately after the study using the State-Trait Anxiety Inventory (STAI).

Results: Before the study, there was no significant difference between the study groups in terms of the mean score of state and trait anxiety as well as the mean scores of total STAI. However, after the study, the mean scores of state and trait anxiety as well as the mean scores of total STAI in the experimental group were significantly lower than those of the control group.

Conclusion: The findings of the study demonstrated that the voice of Quran can significantly improve patients' anxiety before cardiac catheterization.

Keywords: Anxiety, Cardiac catheterization, Cardiovascular system, Voice of Quran.

***Correspondence:** Should be addressed Fariba Dehghani. **E-mail:** faribadehghan@ymail.com

Please Cite This Article As: 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):8-14.

Introduction

Coronary artery disease is characterized by atherosclerosis in the epicardial coronary arteries. Atherosclerotic plaques, progressively narrow the coronary artery lumen and impair myocardial blood flow (1). The incidence of coronary artery disease has touched alarming proportions. It has almost doubled during the past 3-4 decades (2). According to reports of the American Heart Association (AHA), CVD is a leading cause of death for both men and women (3). One study showed that the CVD, with the incidence of 32%, is the major cause of death in Iran (4). Therefore, early diagnosis of this disease is very important. Cardiac catheterization, as a primary and the gold standard test to diagnose of CAD, are used to evaluate the coronary artery perfusion (5). The AHA reports that in 2007, an estimated 1,061,000 inpatient diagnostic cardiac catheterizations were performed (3). About 18-16 thousand patients annually have undergone cardiac catheterizations, in Iran (6). Despite the benefits of Cardiac catheterizations, it has many complications. One of these complications is

anxiety. More than 82 percent of patients had fear and anxiety before cardiac catheterizations (7). Anxiety increases blood levels of epinephrine and norepinephrine, resulting in increased blood pressure, heart rate, and myocardial oxygen demand (8, 9).

Many strategies such as sedative-hypnotic agents, have been developed for improving anxiety (10). However, these pharmacological agents are usually associated with adverse effects such as bradycardia, hypotension, gut dysmotility, immobility, weakness, and delirium (11-14). Furthermore, despite protocols provided by clinicians, patients still experience significant levels of anxiety (15, 16). Therefore, the new non-pharmacological treatments are taken into account. Complementary therapies including massage therapy, therapeutic touch, relaxation, aromatherapy, muscle relaxation, and music therapy are effective in reducing anxiety while reducing medication (17-20).

Music therapy is one of the complementary therapies that could improve patients' anxiety. Music is a powerful destructor that can alter perceived levels of anxiety by occupying attention channels in the brain with meaningful, auditory stimuli rather than stressful environmental stimuli (21). Buffum et al. found that the music therapy reduced patients' anxiety before cardiac catheterizations (20). Rafieeyan et al. also found that the music therapy decreased patients' anxiety after caesarean section (22). However, Razavian et al. came to the conclusion that the music therapy had no significant effect on anxiety among patients undergoing root canal therapy (23). In the study by Eckhouse et al., it was found that music therapy had no significant effect on anxiety among patients receiving orthopedic or cancer treatment (24).

The voice of Quran in Islamic countries, including Iran, is considered a mystical music (25). Religious behaviors such as reading Quran could reduce the stress and worries among hospitalized patients (26). Majidi et al. found that the voice of Quran decreased patients' anxiety before cardiac catheterization (27). Ildarabadi et al. also found that the voice of Quran decreased anxiety among patients undergoing open heart surgery (28).

To the best of authors' knowledge, there seems to be a controversy about numerous studies conducted in the area of the effect of listening to the music on patients' anxiety. Only a limited number specifically evaluate the effect of listening to the voice of Quran on patients' anxiety. Furthermore, people in different places have different beliefs and may have a different reaction, to hearing the voice of the Quran. Consequently, this study was conducted aiming at investigating the effect of listening to the voice of Quran on anxiety before cardiac catheterization.

Methods:

This non-blind randomized controlled trial was conducted in March-April 2015. The study setting was the Cath Lab ward of Beheshti Hospital in Qom, Iran. Sixty patients were conveniently sampled and randomly allocated to the experimental and control groups. The study sample size was calculated using the results of a local study conducted by Kanani et al. Based on the results of Kanani et al. d, and σ were respectively equal to 7.8, and 7. Accordingly, with a type I error probability of 0.05 and a power of 0.80, the sample size was determined to include fifteen patients for each group (29).

The study population comprised all patients hospitalized in the study setting, waiting for cardiac catheterization. The inclusion criteria were being oriented to time, place, and person, no hearing impairments, no known anxiety diseases, no history of resolving psychological drugs, no history of catheterization in each organ and no diseases of the thyroid, adrenal, or pituitary glands (including underactive or overactive). The exclusion criteria included the patient's reluctance to remain in the study, decreased consciousness, cardiac arrest and using tranquilizers or hypnotic-sedative agents during the study.

The data collection instrument consisted of two parts. The first part included the demographic and clinical information (age, job, living arrangement, educational status, and income) and the second part included the State-

Trait Anxiety Inventory (STAI). The STAI has 40 items. This scale assesses two subscales of trait anxiety and state anxiety each of which 20 themes. Each theme is scored based on 4 points Likert scale (one almost never to four almost always). The total score for each subscales of STAI will be between 20 and 80. Higher scores represent higher anxiety and vice versa individual (30, 31). In this study, a Persian version of STAI was utilized. Validation of the Persian version has yielded satisfactory results. Rabiee et al. and Roohy et al. calculated the Cronbach's alpha coefficient of 0.89 and 0.90 for the Persian version of STAI, respectively (32, 33).

Firstly, the researcher explained the objectives and methodology of the study to hospital administration, physicians, nurses and the head of the Cath Lab of Beheshti Hospital in Qom, Iran and obtained their consent. Then the researcher attended this unit every day from 7:00 to 19:00 and randomly allocated the patients, who had met the inclusion criteria and signed the consent form, to the experimental and control groups. There are perceived relationships between gender and marital status with levels of anxiety (34-36). Therefore, before allocating the subjects to the two groups, they were matched according to gender and marital status.

After allocating the patients to the experimental and control groups, the researcher extracted all the patients' demographic and clinical information and entered them in the first part of the instrument. In the experimental group the voice of Quran (Surah Yaseen with the voice of Sheikh Mishary bin Rashid Alafasy) was played back with a headphone for each patient for 18 minutes. The patients in the control group only rested during this period. The level of anxiety was measured in the stages immediately before, and immediately after the study and entered into the second and part of the instrument.

Data were analyzed by using the Statistical Package for Social Sciences (SPSS, v. 11.5). The difference between two groups regarding demographic and clinical data were assessed by independent-samples t-test and the Chi-square tests. The independent-samples t-test was used to assess the effects of voice of Quran on level of anxiety. A p value less than 0.05 was considered statistically significant for all tests.

The Ethics Committee of Qom University of Medical Sciences approved the study. In addition, permissions were obtained from the hospital and Cath Lab authorities. The patients were informed of the aims and the process of the study, being free to participate in the study, or to withdraw from the study at any time, and ensured of the confidentiality of personal information. In addition, a written informed consent was received from each participant.

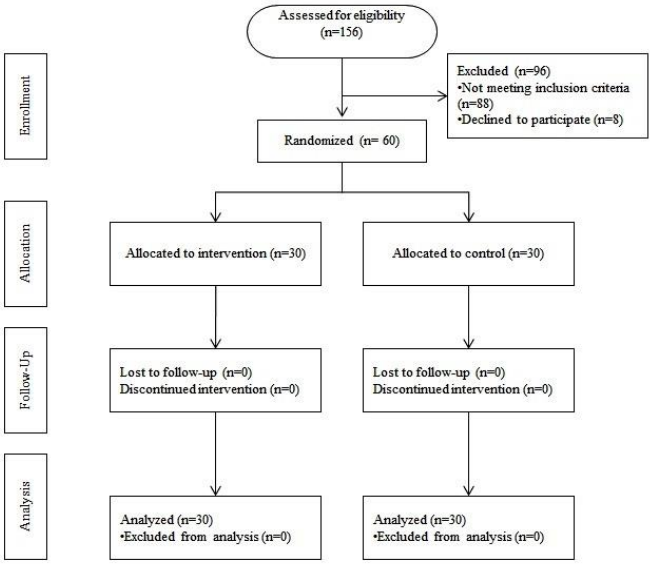

Figure 1: Sampling

Results

Thirty patients were enrolled in each group (Fig. 1). The mean age of participants in the experimental and the control groups was 53.63±9.99 and 56.96±7.89 years, respectively. Most of the patients were employed (53.3%), living with their spouses (81.8%), illiterate (55%), and had a moderate income (45%). The results of independent t-test and Chi-square test showed no significant differences in age (P= 0.718), job (P=0.301), living arrangement (P =0.1000), educational status (P=0.694), and income (P=0.546) between the two groups (Table 1).

The results of paired t-test showed that in the experimental group, the mean score of state (P = 0.301) and trait anxiety as well as the mean scores of total STAI significantly decreased

Table 1. Patients' demographic characteristics

Variable		Experimental group, N (%)	Control group, N (%)	P value (Chi-square test)
Job	Employed	18 (60)	14 (46.70)	0.301
	Unemployed and retired	12 (40)	16 (53.30)	
Living arrangements	With spouse	24 (80)	25 (83.30)	1.000
	Without spouse	6 (20)	5 (16.70)	
Education	Illiterate	18 (60)	15 (50)	0.694
	Primary school	8 (26.70)	9 (30)	
	High school or higher	4 (13.30)	6 (20)	
Income	Low	7 (23.30)	6 (20)	0.546
	Moderate	15 (50)	12 (40)	
	High	8 (26.70)	12 (40)	

after the intervention (P=0.000). However, neither the mean score of state and trait anxiety nor the mean scores of total STAI changed significantly at the end of study in the control group (P = 0.100, 0.368, and 0.967 respectively; Table 2).

The results of the independent t-test for between-group comparison showed that before the study, there was no significant difference between the study groups in terms of the mean score of state and trait anxiety as well as the mean scores of total STAI (P = 0.843, 0.344, and 0.818 respectively). The results of the same test revealed that after the study, the mean scores of state and trait anxiety as well as the mean scores of total STAI in the experimental group were significantly lower than those ofthe control group (P = 0.000; Table 2).

Discussion:

This study investigated the effect of listening to the voice of Quran on anxiety before cardiac catheterization. The findings revealed that voice of Quran significantly improved the participants' anxiety. This is in line with the findings of studies conducted by Buffum et al. and Rafieeyan et al. (20, 22). However, Razavian et al. and Eckhouse et al. found that music therapy had no significant effect on participants' anxiety (23, 24). Razavian and Eckhouse's difference in results with the current study may be related to differences in methodology of the intervention. In Eckhouse's study the sample size was much bigger than that of the present study (112 vs. 60), Moreover, the duration of intervention in Razavian's study was more than that of the present study (total duration of treatment vs. 18 min). Furthermore, in the studies conducted by Razavian et al. and Eckhouse et al. the intervention was the soft music. However, in the current study the intervention was the voice of Quran.

The present study found that the voice of Quran significantly improved state and trait anxiety before cardiac catheterization. In line with the current study, Majidi et al. found that the voice of Quran decreased state and trait anxiety among patients undergoing cardiac catheterization (27). Ildarabadi et al. found that the voice of Quran decreased anxiety among patients undergoing open heart surgery (28). Mirbagher Ajorpaz et al. also reported that the voice of Quran decreased patient's anxiety before abdominal surgery (25).

Table 2. Trait and strait anxiety in the experimental and control groups

Variable	Groups	Before	After	Paired t-test
State anxiety	Experimental	50.10±5.80	41.20±6.53	P=0.000 t=4.978
	Control	49.80±5.87	50.43±5.63	P=0.100 t=-1.698
	Independent t-test	P=0.843 t=0.199	P=0.000 t=0.157	
Trait anxiety	Experimental	53.23±2.71	47.30±4.51	P=0.000 t=8.441
	Control	53.96±3.22	53.36±3.14	P=0.368 t=0.914
	Independent t-test	P=0.344 t=-0.954	P=0.000 t=-6.035	
Total	Experimental	103.33±6.65	88.50±10.31	P=0.000 t=6.416
	Control	103.76±7.85	103.80±6.75	P=0.967 t=-0.041
	Independent t-test	P=0.818 t=--0.213	P=0.000 t=-6.799	

In the different parts of the Quran, mention had been made of the relationship between the remembrance of Allah, and reading Quran with relaxation, which reduces anxiety. “We sent down of the Quran that which is a healing and a mercy to believers” (Al-Isra/ 82), “Those who believe, and whose hearts find comfort in the remembrance of Allah, is it not with the remembrance of Allah that hearts are satisfied” (Al-Rad/ 28) (37). It seems that listening to the voice of Quran diverts thoughts from anxiety, pain, and negative experiences to the pleasant thoughts (remembrance of Allah). Therefore, it helped people to cope with emotional stress and decreased their anxiety (25).

This study has several limitations. Different people have different levels of psychological development and hence, different abilities for coping with the strains and pressures. Moreover, different people have different beliefs, which may lead to different reactions to listening to the voice of Quran. These two factors might have affected findings of the present study.

Conclusion:

The findings of this study indicate that the voice of Quran can significantly improve anxiety in patients before cardiac catheterization. Accordingly, healthcare providers can use the voice of Quran in combination with current treatments for improving patients’ anxiety. However, conducting further long-term, large-scale studies on patients undergoing cardiac catheterization as well as other patient populations are necessary for providing ample evidence regarding the effectiveness of the voice of Quran in improving the anxiety. Furthermore, comparing the effects of voice of Quran with sedative-hypnotic drugs on patients’ anxiety is also recommended.

Conflict of interest statement

no conflict of interest to declare.

Acknowledgments

This article is the report of a Master’s thesis, funded by the Qom University of Medical Sciences under the fund number 92374. The recorded code in the registration center of clinical trials is IRCT2013050111954N2. The authors would like to gratefully thank the Research Administration for the university fund as well as the managers and the staff of the study setting who helped and supported us during the study. The authors are also thankful to the patients for their participation in this study.

References

1. Thej MJ, Kalyani R, Kiran J. Atherosclerosis in coronary artery and aorta in a semi-urban population by applying modified American Heart Association classification of atherosclerosis: An autopsy study. J Cardiovasc Dis Res. 2012;3(4):265-71.
2. Vyas P, Gonsai RN, Meenakshi C, Nanavati MG. Coronary atherosclerosis in noncardiac deaths: An autopsy study. J Midlife Health. 2015;6(1):5-9.
3. Roger VL, Go AS, Lloyd-Jones DM, Adams RJ, Berry JD, Brown TM, et al. Heart disease and stroke statistics--2011 update: a report from the American Heart Association. Circulation. 2011;123(4):e18-e209.
4. Rezaeian M, Dehdari Nejad A, Esmailie nadimi A, Tabatabaei SZ. Geographic epidemiology of death from cardiovascular disease in cities of Kerman province, Iran. Iran J Endocrinol. 2008;4(1):35-41.
5. Lewis SL, Dirksen SR, Heitkemper MM, Bucher L. Medical-Surgical Nursing: Assessment and Management of Clinical Problems, Single Volume. New York: Elsevier - Health Sciences Division; 2013.
6. Tahmasbi H, Mahmoodi G, Mokhberi V, Hassani S, Akbarzadeh H, Rahnamai N. The Impact of Aromatherapy on the Anxiety of Patients Experiencing Coronary Angiography. Zahedan J Res Med Sci. 2012;14(3):51-5.
7. Jamshidi N, Abaszade A, Najafi-Kaliani M. Stress, anxiety and depression of patients before coronary angiography. Zahedan Journal of Research in Medical Sciences. 2012;13(10):29.
8. Garland D. Revisiting Waterbirth: An Attitude to Care. New York: Palgrave Macmillan; 2010.
9. Sadock BJ, Sadock VA. Kaplan and Sadock's Synopsis of Psychiatry: Behavioral Sciences/Clinical Psychiatry. Philadelphia: Wolters Kluwer Health; 2011.

10. Cagni P, Komorowski M, Melo GC, Lima T, Barros M. Diazepam-induced decrease in anxiety-like behaviors of marmoset monkeys exposed to a novel open-field. Pharmacol Biochem Behav. 2012;100(3):518-21.
11. Glass J, Lanctot KL, Herrmann N, Sproule BA, Busto UE. Sedative hypnotics in older people with insomnia: meta-analysis of risks and benefits. Bmj. 2005;331(7526):1169.
12. Arroliga AC, Thompson BT, Ancukiewicz M, Gonzales JP, Guntupalli KK, Park PK, et al. Use of sedatives, opioids, and neuromuscular blocking agents in patients with acute lung injury and acute respiratory distress syndrome. Crit Care Med. 2008;36(4):1083-8.
13. Mehta S, Burry L, Fischer S, Martinez-Motta JC, Hallett D, Bowman D, et al. Canadian survey of the use of sedatives, analgesics, and neuromuscular blocking agents in critically ill patients. Crit Care Med. 2006;34(2):374-80.
14. Pandharipande P, Shintani A, Peterson J, Pun BT, Wilkinson GR, Dittus RS, et al. Lorazepam is an independent risk factor for transitioning to delirium in intensive care unit patients. Anesthesiology. 2006;104(1):21-6.
15. Chlan L, Savik K. Patterns of anxiety in critically ill patients receiving mechanical ventilatory support. Nurs Res. 2011;60(3 Suppl):S50-7.
16. Li DT, Puntillo K. A pilot study on coexisting symptoms in intensive care patients. Appl Nurs Res. 2006;19(4):216-9.
17. Ghazavi Z, Namnabati M, Faghihinia J, Mirbod M, Ghalriz P, Nekuie A, et al. Effects of massage therapy of asthmatic children on the anxiety level of mothers. Iran J Nurs Midwifery Res. 2010;15(3):130-4.
18. Ko YL, Lin PC. The effect of using a relaxation tape on pulse, respiration, blood pressure and anxiety levels of surgical patients. J Clin Nurs. 2012;21(5-6):689-97.
19. Keville K, Green M. Aromatherapy: A Complete Guide to the Healing Art. California: Ten Speed Press; 2008.
20. Buffum MD, Sasso C, Sands LP, Lanier E, Yellen M, Hayes A. A music intervention to reduce anxiety before vascular angiography procedures. J Vasc Nurs. 2006;24(3):68-73; quiz 4.
21. Chlan LL, Weinert CR, Heiderscheit A, Tracy MF, Skaar DJ, Guttormson JL, et al. Effects of patient-directed music intervention on anxiety and sedative exposure in critically ill patients receiving mechanical ventilatory support: a randomized clinical trial. JAMA. 2013;309(22):2335-44.
22. Rafieeyan Z, Azarbarzin M, Safaryfard S. The effect of music therapy on anxiety, pain, nausea and vital signs of caesarean section clients in Dr. Shariatee hospital of Esfahan in 2006. Med Sci J Islam Azad Univ Tehran Med Branch 2009;19(1):25-30.
23. Razavian H, Barekatain B, Mohammadi Sepahvand S. Evaluation of the effect of music on pain perception, anxiety and blood pressure of patients undergoing root canal therapy. J Isfahan Dent Sch. 2012;8(5):425-32.
24. Eckhouse DR, Hurd M, Cotter-Schaufele S, Sulo S, Sokolowski M, Barbour L. A randomized controlled trial to determine the effects of music and relaxation interventions on perceived anxiety in hospitalized patients receiving orthopaedic or cancer treatment. Orthop Nurs. 2014;33(6):342-51.
25. Mirbagher Ajorpaz N, Aghajani M, Shahshahani M. The effects of music and Holy Quran on patient's anxiety and vital signs before abdominal surgery. Evid Basic Care. 2011;1(1):63-76.
26. Sadeghi H. Voice of Quran and health: A review of performed studies in Iran. Quran Med. 2011;1(1):33-7.
27. Majidi S. Recitation effect of holy Quran on anxiety of patients before undergoing coronary artery angiography. J Guilan Univ Med Sci. 2004;13(49):61-7.
28. Ildarabadi E, Saleh Moghadam A, Elmi M, Ghanbari b, Mazloom S. Effect of listening to the Holy Koran on patients' anxiety before open heart surgery. J Mashhad School Nurs Midw. 2004;5(17-18):15-20.
29. Kanani M, Mazloum SR, Emami A, Mokhber N. The effect of aromatherapy with orange essential oils on anxiety in patients undergoing hemodialysis. Journal of Sabzevar University of Medical Science. 2012;19(3):249-57.

30. Alipour M, Feizi Z, Seyedfatemi N, Hosseini F. Correlation between Maternal Anxiety During Pregnancy and Incidence of Preeclampsia in Primigravid Women. Iran J Nurs. 2006;19(47):79-88.
31. Ghorbani M, Dolatian M, Shams J, Alavi-Majd H. Anxiety, post-traumatic stress disorder and social supports among parents of premature and full-term infants. Iran Red Crescent Med J. 2014;16(3):e13461.
32. Rabiee M, Kazemi Malek Mahmodi S, Kazemi Malek Mahmodi S. The effect of music on the rate of anxiety among hospitalized children. J Gorgan Univ Med Sci. 2007;9(3):59-64.
33. Roohy GR, Rahmany A, Abdollahy AA, Mahmoody GhR. The effect of music on anxiety level of patients and some of physiological responses before abdominal surgery. J Gorgan Univ Med Sci. 2005;7(1):75-8.
34. Reteguiz JA. Relationship between anxiety and standardized patient test performance in the medicine clerkship. J Gen Intern Med. 2006;21(5):415-8.
35. Rezazadeh M, Tavakoli M. Investigating the relationship among test anxiety, gender, academic achievement and years of study: A case of Iranian EFL university students. English Language Teaching. 2009;2(4):68-73.
36. Chapman Z, Shuttleworth CM, Huber JW. High levels of anxiety and depression in diabetic patients with Charcot foot. J Foot Ankle Res. 2014;7:22.
37. Yusuf Ali A, Eliasii M. The Holy Quran. Jersey Ishi Press; 2010.