

Effects of Benson's relaxation technique on comfort level of patients before coronary artery bypass grafting (A clinical trial)

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ABSTRACT

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Background: Comfort, especially before major surgeries, is regarded as a basic patient need. Lack of this issue is mainly due to neglect of healthcare staff. Therefore, performing effective nursing interventions to provide comfort is of paramount importance. This study aimed to determine the effect of Benson's relaxation technique on patient comfort before coronary artery bypass grafting (CABG).

Methods: This clinical trial was conducted on patients admitted to a hospital in Qazvin, Iran, to undergo CABG surgery in the first half of 2016. In total, 64 patients were selected through convenience sampling and randomly divided into control and intervention groups. Benson's relaxation technique was performed for the intervention group in the form of two 30-minute sessions in the evening of the day before surgery and morning of the surgery day. Data were collected using a demographics form and Kolcaba's General Comfort Questionnaire pre- and post-intervention. Data analysis was conducted in SPSS, version 19, using Chi-square, as well as independent and paired t-test.

Results: Before the intervention, mean comfort scores of the subjects in the intervention and control groups were 57.37 ± 7.71 and 54.9 ± 4.31 , respectively. These means were reported to be 35.96 ± 8.84 and 53.43 ± 3.65 in the intervention and control groups after the intervention, respectively, revealing a significant difference between the study groups in this regard ($P < 0.001$).

Conclusion: According to the results of this study, Benson's relaxation technique had positive effects on promoting patient comfort before CABG. Therefore, this simple, non-invasive, cost-effective, and beneficial method can be used to enhance patient comfort.

1. Introduction

Cardiovascular diseases are some of the most common chronic diseases¹ and are recognized as the main cause of mortality in Iran and around the globe.² Further, they are introduced as a major health and social concern.³ There is a wide range of cardiovascular diseases, the most common of which is coronary artery disease. The main manifestation of this disease is coronary artery stenosis identified by atherosclerotic lesions. Coronary artery disease will be globally recognized as the most important disease by 2020.^{4, 5}

Today, various methods have been proposed to treat coronary artery disease, however, coronary artery bypass grafting (CABG) is the selective treatment in most cases.^{4, 6} CABG is an important

surgery annually performed on thousands of individuals all over the world.⁷ In Iran, 60% of open-heart surgeries are related to CABG.⁸ In addition to its special role in pain mitigation in patients, this surgery increases survival since compared to medical treatment, CABG is more effective in eliminating angina and increasing the level of exercise tolerance.⁴ Although this surgery improves overall survival in patients, it is associated with discomfort in patients.⁶

Discomfort, along with pain, is one of the most stress-inducing factors,⁹ which might be due to environmental factors, health cares,¹⁰ and certain medical or surgical treatment conditions,¹¹ such as chest pain, shortness of breath, sleep disorders,⁶ light, disturbing noises, hospitalization stress, fear of

future events, pain at the injection site, fear of losing family support, lack of safety, pre-operative anxiety, unpleasant odors, and discomforts related to bed, which disturb patient comfort and affect recovery process and patient discharge.¹²⁻¹⁴ Preoperative discomfort can even predict the level of anxiety and discomfort post surgery.¹⁵ Thus, mitigating patient discomfort is the mainstay of nursing care and a considerable challenge.^{16, 17} Providing comfort can prevent the undesirable physiological complications of patients and exert positive effects on mental and physical conditions and treatment costs of patients, leading to a more precipitous discharge.¹⁷

One of the nursing interventions used as a complementary and alternative therapy is relaxation techniques.¹⁸ Relaxation is a state of freeness from any anxiety and musculoskeletal strain.¹⁹ There are diverse types of relaxation techniques, one of which is Benson's relaxation technique, which can be performed along with relaxing music.

In this relaxation method, muscle tension is reduced by creating a calm environment, and attention of individuals increases by focusing on a word.²⁰ On the other hand, there is no elevation in respiratory rate, heartbeat, or blood pressure in the Benson's relaxation technique due to lack of muscle stiffness. In addition, this method is associated with no complications for cardiovascular patients, who can independently apply this technique. The beneficial effects of this method on psychological indicators can be enhanced if applied along with relaxing music.²¹ Furthermore, it is an easy technique to decrease pre- and post-operative complications and can be applied by patients themselves without requiring a specialist.²² Therefore, Benson's relaxation technique can be used as an accessible technique to improve patient comfort.

The effect of relaxation techniques on enhanced patient comfort was evaluated in previous studies. For instance, Slomon et al. indicated that use of relaxation techniques can be effective by increasing the comfort of patients with advanced cancer.²³ In another study by Yilmaz and Arsalan, it was reported that performing relaxation techniques can lead to improved comfort and decreased anxiety of patients with breast cancer undergoing chemotherapy.²⁴

However, there has been no study in which relaxation was applied by patients without the presence of a specialist to improve their comfort before CABG surgery. Given the fact that some factors can disrupt patient comfort and lead to increased stress and anxiety of patients, and since the increment of these factors is sometimes fatal for patients, it is essential to employ a relaxation technique that can be applied by patients

themselves. With this background in mind, this study aimed to determine the effect of Benson's relaxation technique on patient comfort before CABG surgery.

2. Methods

2.1. Design

This clinical trial was conducted on all the patients undergoing CABG in one of the hospitals of Qazvin, Iran, in the first half of the year 2016.

2.2. Participants and settings

The standard sample size was estimated at 66 cases based on the study by Malmir et al. (2015)²² and according to the sample size formula ($\mu_1 - \mu_2 = 5$, $S_2 = 6.98$, $S_1 = 6.9$, $Z_{1-\alpha/2} = 1.96$, $Z_{1-\beta} = 0.84$, $\alpha = 0.05$), with probability of Type I error of 0.05, test power of 0.80, and 10% possibility of sample attrition. The subjects were selected through convenience sampling and divided into intervention and control groups (n=32 cases) using the random number table and allocating odd and even numbers.

The inclusion criteria comprised age ≥ 30 years, lack of previous history of open-heart surgery and relaxation, non-emergency CABG, consciousness, ability to comprehend and understand Farsi, lack of known psychological disorders or auditory problems, lack of addiction to drugs or alcohol, and comfort scores of moderate to low.^{1, 21} This information was collected through patient records, observations, interviews with patients, and self-reports. The exclusion criteria comprised of patient death and change of hemodynamic status of patients.

2.3. Instruments

In this study, a demographic characteristics form (including age, gender, occupation, and level of education) and Kolcaba's General Comfort Questionnaire were applied.

Kolcaba's General Comfort Questionnaire was first designed by Kolcaba et al. to assess the level of patient comfort.²⁵ This Questionnaire was translated into Persian by Soltani et al. (2015) and its reliability and validity were confirmed using content validity and internal consistency at Cronbach's alpha of 0.78.¹ In this study, reliability of the study tool was calculated at Cronbach's alpha of 0.81.

Kolcaba's General Comfort questionnaire evaluates the level of comfort using 21 items in three physical, environmental, and mental dimensions (7 positive and 14 negative items). In total, six items are related to physical dimension, whereas seven and eight other items are associated with environmental and mental dimensions, respectively.

The questionnaire was rated using a 4-point Likert-type scale (ranging from completely agree to completely disagree). In addition, items 2, 3, 5-7, 9-12, 14, 16, 17, 19, and 21 had negative load and other items had positive load. However, scoring of the items with positive load was reversely performed in order for item convergence, facilitate the scoring process, and obtain accurate scores. After this process, the total comfort score of patients was obtained by adding up the item scores. The possible scores range was 21-84 with lower scores indicating more sense of comfort. According to the cut-off points of the questionnaire, comfort score was divided into three categories of weak (64-84), moderate (43-63), and high (21-42).¹

2.4. Data Collection

Sample selection was initiated after recognizing the surgery candidates by the physician. In addition, the inclusion criteria were assessed on admission until being admitted to intensive care units.

After selecting the participants of the two groups and half an hour to one hour after admission, the patients were required to individually enter a private room and complete the demographic characteristics form and Kolcaba's General Comfort Questionnaire by self-report. Following that, Benson's relaxation technique was taught to the participants of the intervention group face-to-face and individually using simple and comprehensible sentences.

To teach the Benson's relaxation technique, a calm and quiet environment was provided for the patients. In the next stage, the patients settled on the bed with comfortable cloths and in the best and most comfortable state. Afterwards, they were required to select a word that has always been comforting to them and start regular and deep breathing. In doing so, the patients were asked to inhale from the nose and exhale from the mouth and repeat their selected word in each exhalation. During this process, the patients were asked to relax their muscles from toes towards the upper muscles of the body, so that all the muscles are fully expanded.

After ensuring learning the relaxation technique, an audio file, which simply explained the relaxation process using light background music, was provided for the patients in a Sony MP3 player (made in China) with headphones. The patients were asked to listen to the file in the evening of the day before surgery and morning of the operation day, each time for 30 minutes, and perform the relaxation technique according to the provided educations.^{26, 27}

It should be mentioned that the background music was selected by patients from four suggested relaxing music tracks (Rain of love by Nasser Cheshmazar, and three tracks by Arnd Stein with titles of relaxation in dreams and two pieces of motivation). In the end, comfort level of the patients of both groups was assessed half an hour before the surgery (diagram1).

2.5. Ethical considerations

Written informed consent was obtained from all of the subjects prior to the study based on the principles of the Ethics Committee of Research Council of Islamic Azad University, Medical Sciences branch of Tehran, Iran. The research objectives were explained to the participants and they were assured of the confidentiality terms regarding their personal information. At the end of the study, contents of all the educational sessions of the intervention group were taught to the control group and the audio file was provided to them, as well.

2.6. Statistical analysis

Data analysis was performed in SPSS, version 19, using descriptive statistics and Chi-square (to compare the study groups in terms of gender, occupation, and educational level), independent t-test (for comparison of the two groups regarding age and mean comfort score), and paired t-test (to compare mean comfort score before and after the intervention).

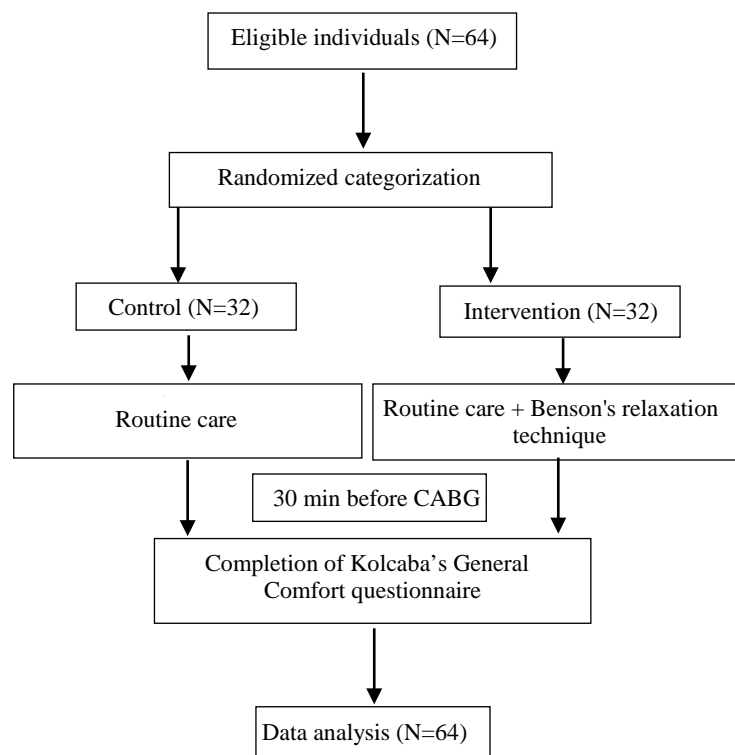


Diagram 1. Research stages

3. Results

The demographic characteristics of the participants are presented in Table 1, according to which no significant differences were observed between the intervention and control groups in

terms of the studied variables. After the intervention, mean comfort score of the intervention group significantly decreased, compared to the control group ($P < 0.001$; Table 2).

Table 1. Demographic characteristics of the participants

Variable	Group	Intervention	Control	P
		N (%)	N (%)	
Gender	Male	23(71.9)	18(56.3)	0.14*
	Female	9(28.1)	14(43.7)	
Occupation	Self-employed	8(25)	8(25)	0.74*
	Employee	6(18.8)	7(21.9)	
	Retired	6(18.8)	9(28.1)	
	Housewife	6(18.8)	5(15.6)	
	Unemployed	6(18.8)	3(9.4)	
Educational level	Below diploma	9(28.1)	12 (37.5)	0.72*
	High school diploma	15(46.9)	13(40.6)	
	University degree	8 (25)	7(21.9)	
Age	M \pm SD	53.34 \pm 7.96	53.87 \pm 4.77	0.74**

*Chi-square; **Independent t-test

Table 2. Comparison of mean scores of comfort in the study groups pre- and post-intervention

Variable	Group	Before the intervention	After the intervention	P*
		M±SD	M±SD	
Comfort	Intervention	57.37±7.71	35.96±8.84	<0.001
	Control	54.9±4.31	53.43±3.65	0.12
	P**	0.21	<0.001	

*Paired t-test; **Independent t-test

4. Discussion

According to the results of the present study, application of Benson's relaxation technique can increase the comfort of patients undergoing CABG surgery. Review of the literature revealed that no studies have been performed to accurately evaluate the impact of the Benson's relaxation technique on promoting patient comfort. However, findings of some studies were in line with the results obtained in the current study. In this regard, Yilmaz and Arslan (2015) ascribed that use of Benson's relaxation technique could increase comfort and lower anxiety in breast cancer patients.²⁴

Ciftci and Oztunc (2015) concluded that use of music as a relaxation technique increases comfort in cardiovascular accident patients.²⁶ In another study, Sloman et al. (1994) reported that performing relaxation techniques improved comfort in patients with advanced cancer.²³ Results of the mentioned studies are in congruence with our findings since Benson's relaxation technique is in fact a relaxation technique, which is associated with decreased muscle tension, heart rate, cortisol level, respiratory rate, and blood lactate and can heighten patient comfort by creating a calm environment along with the use of music.

Similar results were obtained in various studies regarding the effect of music on improved comfort of patients with various diseases.²⁸⁻³⁰ Performing a study on cancer patients undergoing chemotherapy, Bilgic and Acarogh (2017) reported that general comfort of patients improved after the use of music.²⁸ In another study, Zaroorati et al. (2016) marked that music therapy is a way to improve patient comfort.²⁹ Moreover, Ponte et al. (2014) carried out a study on women with myocardial infarction, concluding that music can be a suitable and cost-effective method to improve patient comfort.³⁰

Given the fact that Benson's relaxation technique is accompanied with music, and music therapy is introduced as a relaxation technique, it could be stated that this type of relaxation is beneficial for improving patient comfort and can be applied by nurses.

One of the major limitations of this study was the fact that the level of comfort is subjective and is expressed as self-report; therefore, the researcher had to create a suitable environment for the patients to answer the questions and they were given plenty of time (30-60 minutes) as the questionnaire had no time limitation. Another limitation of the present study was lack of blinding of the research units and determining a specific time for performing the relaxation technique, which was due to the nature of the intervention.

5. Conclusion

According to the results of the present study, Benson's relaxation technique can enhance patient comfort before CABG surgery, that is, the mentioned therapeutic technique can be applied as a nursing intervention and a non-pharmaceutical technique to increase comfort and positive feelings among patients. We recommend evaluating the effects of different types of relaxation techniques on other complications before and after CABG in future studies.

Conflicts of interest

The authors declare no conflicts of interest.

Authors' contributions

Masoumeh Sahrakhil: design and implementation of the research, as well as drafting the manuscript, Tahereh Nasrabadi: cooperation in monitoring the implementation of the study and final confirmation of the article, Ebrahim Ebrahimi Abyaneh: contribution to design of the study and monitoring the data analysis process.

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