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The effect of the music listening and the intensive care unit visit program on the anxiety, stress and depression levels of the heart surgery patients candidates

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ABSTRACT

Aims: Heart surgery is an invasive procedure which results in more anxiety, stress and some complication among the patients. Nurses should choose measures to reduce anxiety and stress for these patients. Studies have suggested that music can decrease anxiety in hospitalized patients. This study focused on the music listening and intensive care unit (ICU) visits effects for the control of anxiety, stress, and depression levels of patients who were candidates for heart surgeries.

Methods: In a quasi-experimental, pretest-posttest design, 150 patients were randomly assigned to either control or experimental groups. Experimental groups received music listening or a visit from ICU program. Levels of variables measured before and after interventions, by using the Depression, Anxiety, and Stress Scale (DASS 21).

Results: The sample was consisted of 57% males and 43% females. Before intervention there were no significance differences ($p>0.05$) of the scores means of DAS-21. But, after interventions, the scores means of anxiety were 4.25 ± 2.60 (music group), 4.35 ± 2.91 (ICU visits), and 7.12 ± 3.45 (control group). Also the scores means of stress were 8.94 ± 3.28, 8.673 ± 3.57, and 13.59 ± 4.32, respectively. Additionally, the scores means of depression in the music group were 2.05 ± 1.87 and in the ICU visits group was 2.13 ± 1.28, meanwhile it was 3.27 ± 2.65 at the control group.

Conclusions: Listening to music or ICU visits program may reduce the anxiety, stress, and depression level of patients who undergoing to the heart surgeries, therefore may be useful to use them as a nursing care intervention in the patients.

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1. Introduction

Every year in the more patients undergoes heart surgery [1]. This surgery is one of those operations, which is followed by too much mental and physical reactions from the patients.

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Among these reactions are mental reactions such as anxiety, stress and depression [2]. In many branches of medical sciences, anxiety and depression have been recognized as disruptive factors in the patients' treatment procedure. They have also been identified as impeding factors which affect patients' resistance to the required surgical operations [3]. It even troubles the patient's quality of life after the operation. Anxiety has the patients experience a terrible state of agitation and apprehension and sometimes it induces cognitive disorders. It seems that anxiety has an impact even on the outcome of the surgery [4]. It is shown that the death rate in the patients who underwent heart surgery and experienced more anxiety and excitement was higher [5]. Stress and anxiety stimulate the adrenal glands and sympathetic system, which through a complicated procedure causes an increase in blood pressure, disordered breathing, dyspnea and an increase in pulse and respiratory rate. The patient may feel dizzy and nauseous that is a very dangerous symptom in a patient with heart disease [6, 7]. It is revealed that those patients who encountered more stress before the operation would endure more pain afterwards [4]. Although patients' anxiety can be prevented from prescribing drugs, but they have considerable side effects. Furthermore, it has been proved that non-medicinal methods can be effective in reducing the anxiety [1]. One of these methods may be visiting intensive unit care (ICU) and operation room before surgery. It is shown although visiting ICU along with informing patients reduced the intubation time but it did not have an impact on the patient's anxiety though [8]. Some studies have illustrated that giving information can cause a considerable decrease in the patient's anxiety and fear. Patients are afraid of what would be going to happen to them after the operation [9-10-11]. Moreover, giving information causes the patients have a good time after the operation and feel better [9]. Therefore, it seems that visiting ICU can decrease their anxiety. The other way of decreasing anxiety is music listening. Lee, et al., while investigating the impact of playing music on the alleviation of anxiety before surgery, demonstrated that this method had a noticeable effect on the reduction of anxiety [3]. Other researches confirmed that music as a sedative has also alleviated both pain and anxiety of the patients [1]. However, the sufficient study which shows that whether music listening or visiting ICU will result in the reduction of anxiety, stress and depression in patients, candidate for the heart surgery, is sparse. On the other hand the impact of culture and specific social and regional features should be taken into consideration. Therefore, the aim of this study was to examine the impact of listening to music and visiting ICU on the level of the anxiety, stress and depression of the patients, candidate for the heart surgery. They are hopeful of helping nurses in the heart surgery ward to mitigate the anxiety, stress and depression of their patients before and after surgery.

2. Methods

This study is a quasi- experimental one which was conducted to investigate the effect of music and visiting ICU on the intensity of anxiety, stress and depression of the patients before and after open/closed heart surgery. This study is the outcome of a research plan in cooperation with Kerman University of Medical Sciences. It started in winter, 2010 in Shafa medial-educational center of Kerman and extended to Mordad, 2011. At the first a pilot study consisting of 10 subjects was carried out in both groups of control and observation which had the requirements of the main groups. Then the main study was done, in which three 50-subject groups that were qualified to join in this study were randomly assigned.

Including criteria of subjects included: 1- subjects have to be 20 years old or older 2- It has to be their first time they undergo heart surgery 3- they are expected to be mentally healthy and conscious of time and place 4- subjects are supposed not to have visual or

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auditory problems 5- the surgery ought not to be an emergency case.

In this study demographic information questionnaire and depression, anxiety and stress scale (DASS 21) were used. DASS 21 is a questionnaire which measures the intensity of depression, anxiety and stress in adults. This questionnaire has been translated and validated to Persian from English by others [12]. Also, the content and face validity of the measuring tools for personal information and DASS 21 were approved by 10 nursing professors of Kerman University of Medical Sciences. To determine the reliability, test-retest reliability was used. To the effect that completing the above mentioned questionnaire was done in two phases in a six-day interval by 10 qualified patients. Depression with r=0. 81, stress with r=0. 76 and anxiety with r=0. 85 were approved and final consistency of the instruments with r=0. 86 was confirmed. This research was proposed in Ethical Committee of Kerman University of Medical Sciences and was approved ethically. It was granted the ethical code number of K/90/90.

The subjects were asked for their conscious consent and then they were randomly assigned to the groups. Research units were not informed of the other groups though. To avoid overlapping, three groups were assigned in different weeks. First the participants filled in the questionnaire. Then for half and hour a piece of music with natural sound effects such as birds' sound or sea sound was played for the group that was going to be treated with music. And subjects assigned to a visiting group visited ICU. There was no intervention for the control group besides routine and then a few hours before the surgery the questionnaire was completed again.

3. Results

There were 150 subjects in this study and no significant statistical difference was observed in terms of clinical and demographic information (Table 1).

The results showed that there was no significant statistical difference among all three groups in

Table 1: patients' demographic information

Demographic information		Treatment group		Control group 50 subjects	P value*
		Visiting the information patient in the ICU 50 subjects	Music 50 subjects		
	Age (year)	55.75 ±10.6	57.35 ±10.3	56.71± 9.9	P>0.05
Gender	Female	44.5%	42.3%	45.3%	P>0.05
	male	56.1%	58.5%	57.9%	P>0.05

* T-test / Chi-square test

Table 2: comparing the mean and standard deviation of anxiety, stress, and depression in all three groups before and after intervention

	Music Listening Group		Visiting ICU Group		Control Group	
	before intervention	after intervention	before intervention	after intervention	before intervention	after intervention
Anxiety	6.75±4.1	4.25±2.6	6.43±3.80	4.35±2.91	6.51±3.9	7.12±3.45
Depression	3.18±2.15	2.05±1.87	3.45±2.26	2.13±1.28	3.25±2.82	3.27±2.65
Stress	13.37±4.76	8.94±3.28	13.64±4.43	8.67±3.57	12.89±4.5	13.59±4.32

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terms of three dimensions in the questionnaire (anxiety, stress and depression) ($p>0.05$). As the data illustrated the mean scores of the anxiety in two treatment groups, before listening to music and before visiting ICU, were respectively 6.75 ± 4.10 and 6.43 ± ٣.80. This score for the control group was 6.51 ± 3.90 which did not indicate any significant difference between two groups. However, after intervention the mean score in the group treated by music listening decreased to 4.25 ± 2.60 and in the group treated by visiting ICU this score increased to 7.12 ± 3.45. This difference after intervention was not statistically significant in treatment groups whereas between treatment groups and control group a significant variation was detected ($p<0.001$).

Moreover, the mean score of stress in two treatment groups and control group did not vary significantly before intervention while a significant statistical variation was noticed after intervention ($p<0.001$). Therefore the mean scores of stress in the two treatment groups was 13.37 ± 4.76 before listening to music and 13.64 ± 4.43 before visiting ICU. This score in the control group was 12.89 ± 4.50. However after intervention the mean score of stress in the music group and the group treated with visiting ICU declined to 8.94 ± 3.28 and 8.67 ± 3.57 whereas this score reached 13.59 ± 4.32 in the control group.

The results of the research revealed that the mean scores of depression in the two treatment groups before listening to music and before visiting ICU were 3.18 ± 2.15 and 3.45 ± 2.26 and in the control group it was 3.25 ± 2.82. That was not a significant difference between treatment groups and control group. Yet after intervention the mean score of depression in the music group declined to 2.05 ± 1.87 and in the group who visited ICU to 2.13 ± 1.28 while in the control group it went up to 3.27 ± 2.65. This variation was not significancy after intervention in treatment groups while between treatment groups and control group the variation was statistically significant ($p<0.001$) (table 2).

4. Discussion

Heart surgery is a very fraught and stressful operation. The findings of this study demonstrated that the subjects in all three groups did not vary a lot at the moment of reception in terms of anxiety, stress and depression. The findings equally indicated that the groups treated by music listening and visiting ICU had a lower mean of anxiety, stress and depression compared to that of group without intervention. But between the groups of listening to music and visiting ICU there was not any significant statistical difference. Studies have depicted that anxiety and stress hinder recovery after heart surgery [9, 13]. Also it is confirmed that music listening can bring about relaxation for the patients after operation [14].

The data provided by the study revealed that music listening causes a decline in the level of the anxiety, stress and depression of the patients, candidate for heart surgery. Along with that a study, it is proved that music listening reduced the level of anxiety in patients under heart surgery [1]. Nilsson, in 2009, manifested that listening to music can relieve stress of the patients after heart surgery [15] that, in this regard, is compatible with the outcome of this research.

It has been contended that music, through relaxation, increases the level of blood oxygen after operation [16] and consequently lessens stress in heart patients [17]. Music can be an effective intervention since it deviates the mind from undesirable stimulations [18]. Music may act as a competitive stimulus which can distract patients' attention from pain or anxiety. The development of calmness could be due to listening to music and this can result in less stimulation of central nervous system. Although there has been no research on the effect of visiting ICU on the level of anxiety, stress and depression of the patients before cardiac surgery, studies claim that informing patients before operation can cause a considerable reduction in anxiety [19,9]. Our study manifested that listening to music reduces not only anxiety but also stress and depression.

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Thus we recommend that nurses make use of these methods to lower anxiety, stress and depression of the patients.

5. Conclusion

The findings of the present study demonstrated that giving information to the patients for example in the form of visiting ICU as well as listening to music such as natural sounds, before demanding undertakings such as going to the operating room, can reduce anxiety, stress and depression of the patients. Having said that, it is recommended that some researches should be carried out to investigate the effect of impeding and facilitating factors, imposed by the treatment team and treatment situation, on examining the impact of music and visiting ICU.

According to any research the patients' reaction may not be a true reflection of their real feelings specially their unpleasant experiences. Also the participants may guess the hypothesis of the research, which can affect their behavior. Besides, the presence of the researchers during intervention can bring about Hawthorne effect and the participants may evince better reactions. Implementing an intervention immediately before surgical operation and conducting the study in a hospital are among the limitations of the research. Listening to music as visiting ICU is systematic intervention and a complementary treatment that can be helpful in lessening the anxiety, stress and depression of the patients. Listening to music and visiting ICU has some advantages, such as being less time-consuming, facile, cheap, non-aggressive and innocuous, over medicinal methods. Thus their using can be recommended since they can improve the patients' well-being and the procedure of their recuperation.

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