# The Effect of Music on the Stress Severity among the Staff of Surgery Rooms

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# ABSTRACT

**Introduction:** the results of studies on the effect of music on reducing job stress sometimes are inconsistent and still not clear how the effect of music on the severity of job stresses. This study aimed to investigate the effect of music on the stress severity of the staff's surgery room working in hospitals in Shiraz city in 2016 was carried out.

**Methods**: This study was an intervention which 70 qualified personnel of surgery room divided into two intervention (n=35) and control group (n=35). To collect data, Spielberger Job Stress Questionnaire was used after surgery and in the intervention group before going to the surgery room, the personnel listened to music for 30 minutes, but control group did not receive any intervention. The intervention was performed five times for each nurse scrub.

**Results**: in the experimental group, the mean stress score before the intervention was 39.28±130.82, the severity of the stress in the first innings after 48.06±120.62, the second time after stress intensity 46.60±115.17. The severity of the stress in the third turn after 45.03±110.59, for the fourth time after averaging 43.68±103.65 stress and fifth innings stress intensity after the intervention was 43.76±100.80. The changes in the experimental group are statistically significant, and the mean score of stress is significantly different with the control group.

**Conclusion**: the present study showed that music therapy reduces the severity of stress in the surgery room personnel. So it is recommended this method used as a complementary therapy and improve to control stress.

Keywords: Music; Stress; Surgery Room Personnel; Music Therapy

## INTRODUCTION

Stress is a physical and mental reaction in humans and animals against disruptive external stimuli and internal physiological balance and stability which are undesirable and force living things to adapt to the changes in the result (1). The factor stressor can cause changes in a person's performance with uncertainty and change (2). Various studies indicated that 70 to 90% of diseases are stress related. If there is no correct answer to stress symptoms such as fatigue, irritability and lack of concentration and feelings of guilt and pain, gastrointestinal and physically occur (3).

Among the types of stress, the stress of the workplace is prevalent because the environment in which physical and psychological pressure to be ruling also, the job will be difficult to reach the targets, employees will have physical and mental problems (4). The stress caused by work among environmental factors concerning the effect that the user agent identity, social relations and material life, it is inevitable (5, 6). In this regard job as a driving factor in the health care system is the psychological pressure imposed on individuals (7), and in most cases leads to a negative impact on the quality of clinical care (8, 9).

Because of the responsibility for medical staff providing health and treatment of patients affected by multiple factors (10), long and ongoing stress, job burnout can lead to mental health syndrome, causing problems such as dropouts, frequent absences, reducing the energy efficiency of their business (8, 10). Also, symptoms such as headaches, sleep disturbances, lack of concentration, and moodiness to stress are common in these people (5). Job stress is one of the issues related to the behavior of surgery room personnel which for many reasons affects their job performance. Because professional duties of surgery room personnel are experiencing job stress and thus, reduce the level of service, they provide to patients. Communication with patients and surgery room personnel, including specific conditions of the work environment in the surgery room personnel are causes of occupational stress. Nurses matter what their personality differences in how to interact with patients and coping with job stress factors affect the surgery room personnel (11).

Methods used to manage stress (39) divided into two non-medical drugs (1) The tendency to use nonpharmacological methods to manage stress is on the rise one of these methods, the use of stimulants is sound or music therapy (12).

History of sound in the treatment of diseases is in the distant past so that the inscriptions of Egyptian, Greek, Chinese, Indian and Roman touted music as a means of healing (13). Music therapy is a complementary therapy improves the well-being of patients by increasing the threshold stress and eliminates negative emotions, set up internal processes, create a state of relaxation, boost

immunity, improve (12) the results of several studies (13-16). Music therapy is an inexpensive, non-invasive and is easy to reduce staff stress. So far, several studies (13), the effect of music on stress reduction are studied in multiple groups.

Egyptian music is used to treat infertility in women, as well as the remaining texts indicate that the Iranians to treat many patients used the sound of recurrence (15, 16). Music therapy and music as a healing and healing souls are as old as the history of (17) to use music therapy, in recent years, numerous studies to investigate the effect of music on anxiety and biological factors are taken (18). In the surgery room personnel, due to the high-stress work environment is observed, therefore, finding a way to reduce the stress and relax adjuvant therapy was useful to them and always worthwhile. In many studies, the effect of music interventions, during the period of intervention and listening to music with it for at least 30 minutes is recommended (19). In some studies, the effects of music therapy on staff stress was no significant difference between the two groups (15). While the results of other studies indicate that music therapy can reduce job stress (14, 16). A comprehensive study of all the factors mentioned so far seems to have been performed to evaluate the same time. Perhaps the reason for this lack of comprehensive research reports is contradictory. The search resulted in numerous scientific sites in the country showed that no study had been done about the effect of music in the surgery room personnel; therefore, finding a way adjunctive therapy to reduce stress and relax the personnel to implement this diagnostic method would be useful and valuable. Another problem is that it seems that no comprehensive study to examine simultaneously all the factors mentioned above have been performed. This study aimed to investigate the effect of music on the stress of surgery room personnel.

#### Methods

The effect of music therapy on the stress of surgery room personnel was investigated in a clinical trial study. The study was registered in X Registry of Clinical Trials. All of the surgery room personnel working in surgery rooms of X and X hospitals of X University of Medical Sciences in 2016 were included. A total of 35 personnel were included in each experiment and control groups. Inclusion criteria were acceptance to participate in the study, have the patient in elective surgery. Exclusion criteria included known history of mental illness or psychotropic drugs, history of participation in problem-solving skill training, stress management and yoga techniques in the past 6 months, recent crisis, such as the death of first-degree relatives, divorce or divorce of parents in the past 6 months, drug addiction, reluctance and unwillingness to listen to music and anything that's open to taking part in the study.

The study was approved by X University of Medical Sciences ethical committee then was presented to the units. The participants were randomly divided into two

groups. After obtaining informed consent, the surgery room staff completed Spielberger job stress questionnaires. Then, the intervention group listened to a piece of the Iguana for 30 minutes before the start of practice by laid instrumental music. Intervention for each nurse scrubs was performed five times before going to the surgery room was in the break room. There was no intervention for the control group. The demographic data (age, gender, marital status and education) and Spielberger job stress questionnaire were completed by self-reporting.

Spielberger job stress questionnaire and containing 30 questions, 9-point Likert-type response the scale 1 represents the lowest and 9 is the highest amount of stress. The reliability of the questionnaire through remarkable Cronbach's alpha 0.81 is achieved. A minimum of 30 and maximum of 270 points will be possible. A score between 30 and 120 employees and managers in occupational stress is low. A score between 120 and 150: The amount of job stress and middle. Score higher than 150 reflects high stress (20).

Music as an independent factor was the iguana which was approved by the Iranian Music Therapy Association. It has a clean uniform, smooth and free of any emotional melodic and rhythmic rhythm is less than 80 beats per second (21). For music playback, the device used MP3 player and headphones.

Data analysis were used by SPSS software. The descriptive statistics were shown by mean±standard deviation, and the means of stress were compared by ANOVA test, Fisher's exact test, Chi-square and paired t-test. Chi-square and t-test were used to compare qualitative and quantitative data among the participants and to compare stress levels between the study groups before and after the intervention; paired t-test was used. P values lower than 0.05 were considered as significant.

#### Results

21 patients (60.00%) of the experimental group were married, and 20 (57.14%) than the control group was single. Education Level of 33 (94.3) of patients in the intervention group and 31 people (88.6 percent) in the control group were undergraduate. In both experimental and control groups there was no statistically significant difference in sex, being married, and education (p>0.05). The average age in experiment group was  $31.28\pm4.97$  and in the control group was  $31.25\pm3.25$  years (p>0.05). Average work experience in experiment group was  $41.60 \pm 97.37$  months (p>0.05).

The mean score of stress before the intervention was not significantly different to control groups and also there was not a significant relationship between age with stress and work experience with stress (p>0.05 was in Pearson correlation test).

Table 1 shows mean and standard deviation of stress score in two groups and also 6 level. Also the effect of time, group and time/group are shown in Table 1. The first

group to break up and then stress changes over time in each group were examined separately. As the table shows, the changes in the score of stress in control group is not statistically significant, but it is significant in experiment group. The change in the mean score of stress before and five times after the intervention and control groups are shown in Figure 1.

Table 1. Compare the mean stress score five times in the surgery room staff before the intervention and	l after th	۱e
intervention and control groups		

Time\groups	Experiment		Control		p-value				
Time (Broups	mean	SD	mean	SD	Time	group	Time/ Group		
Before intervention	130.82	39.28	132.40	35.12	**				
1st intervention	120.62	48.06	129.37	26.43					
2nd intervention	115.17	46.60	129.65	26.56		**	**	**	
3rd intervention	110.59	45.03	129.37	25.96					
4th time intervention	103.65	43.68	134.11	33.86					
5th time intervention	100.80	43.76	134.68	34.27					
p-value	(P<0.001)		(P=0.36)		-				

\*\* Significant at the level of <0.001



Figure 1. Mean score of staff changes over time in the intervention and control groups

# Discussion

The effect of music on the stress of surgery room personnel was investigated in our study. There was a control group which their stress was investigated without intervention. However, the stress of experiment group was investigated before intervention and five times after intervention. The intervention was 30 minutes music listening based one similar studies and Nilsson systematic review (22).

The results of this study showed that the music could reduce stress in the surgery room staff. Several studies have evaluated the impact of music therapy on stress (23). Studies conducted by Heidari and Shahbazi (23) Nanbakhsh et al. (24) Chang et al. (25) Swat et al. (26) found similar results. Also, another study consistent with the results of our study have shown the positive impact of the music through divert attention from pain and stress and negative experiences toward the pleasant, it helps to cope with emotional stress and stimulates the relaxation response reduces stress (27, 28).

It also increases the stress threshold and eliminates negative emotions, set up internal processes, create a state of relaxation, boost immunity and help the integration of psychosocial, physiological and emotional stress may be involved in musical composition (29, 30). Smolen taking into account the changes in the Roy stress adaptation model and physiological parameters of physiological adaptation is the result of listening to music knows people with medical conditions and says that music helps distressed people with medical conditions obtain physiological adaptation (31). While Almerud believes that the impact of music on the brain and stimulates the secretion of endorphins, the brain's alpha waves by causing relaxation reduced stress (32). Studies have shown that music reduces stress hormones and can, therefore, be predicted that music reduces stress. The study showed that music therapy could reduce psychological stress levels (33). The study results of Heidari and Shahbazi in 2012 also showed that music reduces stress situation in the intervention group than the controlled group (23). The results of Nanbakhsh et al. in 2008 showed that auditory sensory stimulation is effective in reducing stress in anxious individuals (24) these findings are consistent with our findings. Several studies have shown that stress causes the release of catecholamines. Music by engaging the hearing would be a distraction and subsequently reduced the stress (34).

As a result of anxiety and stress is reduced. Also, factors such as the relaxed state (35), endorphins (36), looking Music (37), may be involved in reducing stress. Listen to music systematic intervention and treatment is a supplement that can help to reduce stress. The use of music has the advantage of easy access, lower cost and non-invasive compared with pharmacologic therapy are for people anxious. Therefore, it is recommended that can eventually promote healing and well-being (38). Music increases people's comfort and subsequently regulates heartbeat and reduces stress levels. Chelan believes that music creates a feeling of comfort and relaxation associated with lower levels of adrenaline in the blood decreased heart rate (39). The findings Imami Zaidi et al. found that music reduced heart rate (40).

Several studies have been done directly and indirectly in the context of our study(41-46). Although, some of the previous studies have found conflicting results so that in some studies, music caused a decrease in heart rate (47, 48), and some studies have suggested no effect of music on heart rate (49, 50). The difference in the results there may be because of cultural differences and social in the country compared to other countries.

## Conclusion

The results could be an explanation for planners, hospital design, and other medical groups to increase the role of non-pharmacological methods to be put on treatment and care programs. The results of this study show the effectiveness of the effect of music on stress surgery room staff. According to the surgery room staff, with a high prevalence of stress experience could cause problems during the work period. Listen to music systematic intervention and complementary treatment which can help reduce stress. It is recommended that we can use music which ultimately promotes healing and well-being of stress. This study showed that music therapy could have a positive effect on reducing stress.

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