



The effects of selected relaxing music on anxiety and depression during hemodialysis: A randomized crossover controlled clinical trial study



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ABSTRACT

The aim of this study was to determine the effect of selected relaxing music on anxiety and depression in patients during hemodialysis. This crossover clinical trial involved 102 patients undergoing hemodialysis at a leading hospital in an urban setting. Patients were randomly assigned to groups A (treatment) and B (control) and their levels of anxiety and depression at the beginning and the end of the hemodialysis were measured using Spielberger State-Trait Anxiety Inventory and Beck Depression Inventory tests, respectively. Both groups consecutively, and with a two-week washout, listened to experimenter selected instrumental music on their earphones individually for three hours. Data were analyzed using SPSS software, version 18. No significant differences in BDI-II ($P=0.253$), t-anxiety ($P=0.546$), and s-anxiety ($P=0.253$), T-Anxiety ($P=0.546$), and S-Anxiety ($P=0.776$) was observed between the two groups prior to hemodialysis. There was not any significant difference in BDI-II ($P=0.253$) and T-anxiety ($P=0.253$) and T-Anxiety ($P=0.546$) between the two groups after hemodialysis. However, a significant difference was observed between the two groups regarding s-anxiety (PS-Anxiety ($P=0.021$)). Yet, this difference did not imply the positive effect of listening to music in reducing the s-Anxiety level. The findings indicate that the use of recorded music did not reduce depression and anxiety in HD patients. However, due to the limited number of studies into the effect of music listening for patients receiving hemodialysis, further investigations in this matter are recommended.

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Background

Many music listening studies have been conducted to alleviate depression and anxiety in medical patients who have a range of psychological and physical disorders. The results have shown effects for music, on psychological parameters, and also indirect effects in physiologic domains. For instance, reduction of stress and anxiety due to surgery, diseases, and disorders (Peters, 1993; Satei, 2004), controlling anger, anxiety, and tensions before surgery,

hope, feeling of comfort, remembering good memories and forgetting pain are influential factors in reducing anxiety and the role of music is apparent in them (Mohammadi, 2002). In a clinical experiment with patients receiving hospice care, two groups of patients (25 patients in each group) aged 18–90 listened to music for 20 to 40 minutes. Using the Edmonton Symptom Assessment System, a significant reduction of anxiety through music listening was demonstrated (Horne-Thompson & Grocke, 2008).

In a study in 2003, 120 patients undergoing heart surgery at King Stone Hospital, Colombia, were examined in a randomized clinical trial. The control group received anti-anxiety tablet, like diazepam, and the treatment group received their favorite music pre, intra, and post operatively and Spielberg test was administered to them before and after the intervention. Visual Analog Scale (VAS)

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measured their level of pain. They concluded that the first group of patients showed a certain level of anxiety and pain while the patients who were exposed to music showed lower levels of anxiety and pain (Bally, Campbell, Chesnick, & Tranmer, 2003). Chronic renal failure (CRF), especially the higher stages of this disease (ESRD) which are associated with the renal replacement treatments (RRTs), has negative effects on the social performance, psychological condition, and patient's quality of life, leading to considerable costs. According to the authors (Cantekin & Tan, 2013; Ginieri-Coccosis, Theofilou, Synodinou, Tomaras, & Soldatos, 2008; Hou et al., 2014; Karamanidou, Theofilou, Ginieri-Coccosis, Synodinou, & Papadimitriou, 2009; Theofilou, 2011, 2012), high frequency of depression, anxiety, suicide, and other psychological disorders can be justified in CRF and ESRD, especial HD patients due to several reasons such as chronicity of and physical disabilities caused by this disease. Radbruch et al. (2003) and Smith, Gomm, and Dickens (2003) reported high anxiety levels in ESRD patients. Hemodialysis patients, because of their inability due to the disease and their dependence on dialysis devices and different medications, are very similar to terminally ill patients and their management is very difficult. During the period of adjustment to the dialysis procedure, patient is going through three periods. Based on the patients period (honeymoon, frustration, and adjustment) different supplementary modern treatments were prescribed which were inexpensive (Gerogianni & Babatsikou, 2014). Music is one of these treatments. These patients suffer from different psychological and mental disorders among which depression is a serious psychological disorder (Horne-Thompson & Grocke, 2008). In the study by Kim on 36 hemodialysis patients in Korea, it was observed that anxiety ($P=0.008$) and depression levels ($P=0.002$) reduced in patients who listened to music (Kim, Lee, & Sok, 2006).

There are few studies on the relationship between hemodialysis and the effect of music. Additionally, due to inconsistency between the effects of music on different psychological, racial, and economic conditions (Satei, 2004; Suhartini, 2011), the aim of this study was to determine the effect of selected relaxing music on reduction of anxiety and depression in patients during hemodialysis in Arak, Iran.

Methods

Participants

This crossover clinical trial involved 147 patients from a leading hospital in a major city in Iran. Overall, 102 hemodialysis patients, aged 20–80, that did not suffer from hearing disorders and significant or chronic psychiatric disorders, able to hear music; and interested in listening to music were included in the study and were, then, assigned to intervention who received music intervention and control group who did not receive music intervention. The exclusion criteria were including patients with hyperacusis, tinnitus, and loudness recruitment.

Procedure

Their levels of depression and anxiety were measured by a pre-test and post-test before and after hemodialysis by administering Beck Depression Inventory-II (BDI-II) and State-Trait Anxiety Inventory (STAI). Intervention group received a 3-h relaxing music during hemodialysis by Leono mp3 player and JVC headphones made in Korea in a way that they could manage the process to pause, stop, or change the music (the total length was measured). According to the opinion of a music expert the classical music and new age music including the pieces entitled "Voices of the Wind" and "Immortal beauty" which were composed by a German composer,

Aeolia, were used. For control group, the same headphones were available but no music was played with the same procedure with the intervention group. Then after two weeks of wash-out trial, the patients of intervention and control were changed and the study was continued. The music was chosen very selectively and carefully because many people choose the music that they like and not the one, which is beneficial for them (Aldridge, 1994). 40 relaxing music tracks which were determined by experts in art and music were selected for patients and they had the permission to increase or decrease the volume and even stop the music or change the music track. The researcher wrote down the duration of listening to music at the end of each hemodialysis session. The exclusion criteria included the patients who were used to listening to music, those who had used sedatives, those who were addicted, or those who had the history of hearing disorders or deafness.

Data collection

A questionnaire including personal details, demographics, socio-economic, and family variables, BDI-II and STAI were administered in this study.

Beck Depression Inventory-II

The severity of depression symptomatology was measured using the Beck Depression Inventory (BDI-II) (Beck, Steer, & Brown, 1996). This test has been internationally used for depression measurement and it has high content validity, acceptable sensitivity in discriminating subjects without depression, and high level of generalization. The BDI-II consists of 21 items including a range of cognitive, affective and somatic symptoms elements. Each question is measured via a 4-point scale (0–3), that when summed range from 0 to 63. Typically a score of below 9 indicates a normal range, between 10 and 18 suggests mild depressive symptoms, between 19 and 29 moderate and 30 plus indicates severe depressive symptomatology (Chilcot, Wellsted, & Farrington, 2008; Watnick, Wang, Demadura, & Ganzini, 2005).

State-Trait Anxiety Inventory

The first version of State-Trait Anxiety Inventory (STAI) was released in 1970 and then it was revised in 1983. The revised version includes 40 questions, 20 items allocated to each of the State Anxiety Scale (S-Anxiety) and Trait Anxiety Scale (T-Anxiety). Respondents are asked to state their level of anxiety at the time of the test and for trait anxiety asked about anxiety during the whole time and score it from 1 to 4 (1 = Nothing, 2 = Occasionally, 3 = Usually, 4 = All the time). Each category requires 15 to 20 min. Sentences expressing anxiety are scored from one to four and that sentences that show no anxiety are scored from four to one. Thus, the total score ranges between 20 and 80. This questionnaire has high content validity and Cronbach' alpha level is 0.92 for "State" and 0.90 for "Trait" (Meredith, Bair, & Ford, 2000; Panahi, 1994).

Statistical analysis

The collected data were analyzed with SPSS software (Statistical Package for the Social Sciences, version 18.0, SPSS Inc., Chicago, Ill, USA) and descriptive statistics methods for frequency determination. Categorical data were expressed as number (percentage) and compared with Chi-square test. P values less than 0.05 were considered significant. In all stages of this study, we were loyal to Helsinki declaration principles and we obtained written consent from all the participants and they were free to exit the study by their will. This

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