



Effects of music therapy on perception of stress, relaxation, mood, and side effects in patients on a solid organ transplant unit: A randomized effectiveness study



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ABSTRACT

Solid organ transplant donors and recipients typically present with a variety of potential stressors at both pre- and posttransplant, which may lead to symptoms such as psychological distress and depression. The purpose of the study was to determine the effects of single-session music therapy on stress, relaxation, mood, and perception of side effects in hospitalized solid organ transplant donors and recipients. Participants ($N = 38$) were randomly assigned to experimental or wait-list control conditions in a pre–posttest single-session design. As sense of control has been associated with positive health outcomes in solid organ transplant patients, participants were offered the choice of receiving either patient-preferred live music or a brief harmonica lesson followed by a blues performance session with guitar accompaniment. Though there were no between-group pretest differences, there were significant between-group posttest differences in relaxation, stress, and mood, with experimental participants having more favorable scores than control participants. Thirty seven participants selected patient-preferred live music while one patient selected the brief harmonica lesson. From the results of this randomized controlled study, it seems that music therapy can be an effective psychosocial intervention concerning relaxation, stress, and mood for solid organ transplant patients. Additionally, most participants selected receptive music therapy in the form of patient-preferred live music rather active music therapy in the form of a brief harmonica lesson. Results are congruent with existing literature. Limitations of the study, suggestions for future research, and implications for clinical practice are provided.

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Literature review

In 1990, medical specialists performed approximately 15,000 organ transplants in the United States. By 2009, the number of transplants had increased to more than 28,000. Such an increase is notable and serves as a testament both to the abilities of modern science as well as to the generosity of organ donors. However, the number of transplants performed still pales in comparison with the number of people on the waitlist for organ donations. In 2009, the waitlist for organs was over 104,000 names long, with 4000 names being added each month (National Kidney Foundation, 2011).

Organ donation websites reveal the ongoing need for donors, as well as the joy and excitement experienced by transplant recipients. A new organ can lead to an improved and extended life for someone experiencing organ failure. However, the transplant experience is not complete after surgery or hospital discharge. Numerous stressors can be present after transplantation, leading transplant patients to be at risk for maladaptive coping (Campbell

& Etringer, 1999) and heightened anxiety and depression levels. Dew et al. (1996) found that one-third of the heart transplant recipients in their study experienced high levels of psychological distress in the year following transplantation. Financial burden can be a contributing factor that can lead to such distress. Medications required to support a heart transplant can cost up to \$2000 per month (Dew et al., 1996). In addition to medications, patients might also pay for hospital visits and stays, medical maintenance, and likely experience unemployment or may be unable to work.

Emotional and behavioral factors can also contribute to distress in transplant patients (Campbell & Etringer, 1999). After receiving an organ transplant, recipients typically undergo a lifestyle change in order to maintain the new organ. These often unexpected and undesirable changes may consist of frequent returns to the hospital and a life-long requirement of immuno-suppressants. These medications can have side effects including hypertension, osteoporosis, and diabetes (Campbell & Etringer, 1999). Moreover, patients who lack adequate coping resources are likely to experience depression as a result: Campbell and Etringer (1999) reported that over 50% of the patients in their study were prescribed antidepressants at least once after transplantation.

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Researchers have documented various psychosocial interventions that may alleviate symptoms experienced by transplant patients. Mindfulness-based stress reduction (MBSR) has resulted in improved sleep and lowered depression and anxiety scores in transplant patients (Gross et al., 2004). Engle (2001) noted that cognitive behavioral interventions and emotional support groups have also resulted in decreased anxiety among transplant patients.

While hospitalized organ transplant patients may receive excellent medical care, they do not often experience a high sense of control over their bodies or environments. However, in the literature, researchers have repeatedly articulated the importance of autonomy and sense of control for hospitalized patients. In a review of literature, Thompson (1981) concluded that cognitive and behavioral control can lessen anticipatory anxiety and improve post-event effects when facing aversive stimuli. Lachman and Weaver (1998) found a sense of mastery or control was related to perceptions of better health, fewer depressive symptoms, and greater life satisfaction. Among patients with cardiac disease, a sense of personal control over life was found to be associated with fewer depressive symptoms (Penninx et al., 1998). Additionally, Bohachick, Taylor, Sereika, Reeder, and Anton (2002) reported that personal control was related to positive psychological outcomes and found that patients with a higher sense of personal control during their hospital stays reported higher levels of optimism, satisfaction with life, and wellbeing at six-month follow-up.

Generalizing the concept of control and autonomy to music therapy, Robb (2000, 2003a, 2003b) developed theoretical underpinnings concerning the contextual support model of music therapy as related to hospitalized pediatric cancer patients. While Robb primarily focused on hospitalized children, the applications may be applicable to adult hospital patients. She noted the three basic elements of the contextual support model were structure, autonomy support, and involvement. While structure and involvement are fundamental and their importance should not be negated, autonomy is the focus of the current study.

Patrick, Skinner, and Connell (1993) defined autonomy as the extent to which a person feels free to show behaviors of choice. In generalizing this theory to music therapy in a medical setting and incorporating Robb's (2000, 2003a, 2003b) theories, a patient might make a number of decisions during music therapy interventions, such as choice of song, tempo, genre, length of intervention, or even type of intervention. Thus, the patient can manipulate the music therapy session, potentially providing a sense of control, mastery, and autonomy. Moreover, patients should first be provided the choice of accepting or denying music therapy services, a luxury not often afforded to hospitalized patients by other health-care providers.

Although researchers have published numerous studies concerning the use of music and music therapy in medical facilities, to date, researchers have only published two studies measuring the effects of music therapy with patients on a solid organ transplant unit. Using patient-preferred live music (PPLM), Madson and Silverman (2010) found significant and positive differences in measures of anxiety, pain, relaxation, and nausea. However, external validity was limited as the researchers did not utilize a control group in the pre-posttest design of this exploratory study.

Ghetti (2011) examined the effects of Active Music Engagement (AME) and Emotional-Approach Coping (EAC) in music therapy on affective states, pain, coping self-efficacy, satisfaction with hospitalization, and willingness to ambulate in solid organ transplant patients. The researcher utilized a three-group randomized controlled design. Kidney and liver transplant recipients ($N=29$), who were at least in the second day of postoperative hospitalization, were randomly assigned to a standard care group, AME group, or EAC and AME combined group. The AME group received an individual, 30-min, patient-preferred music-making session with

the researcher, who encouraged the participants to sing or play along with rhythm instruments as much as they felt comfortable. Participants in the EAC and AME combined group received a similar intervention. Although these participants were encouraged to engage in singing or instrument play during the preferred music-making session, the researcher prompted the participants to choose from a list of musical selections that were thematically linked to the researcher's perception of their emotional states. The researcher also discussed possible coping strategies in the session. The standard care group received no music therapy intervention. Ghetti found significant differences in positive affect between the AME and AEC and AME combined groups ($p < .05$), with AEC and AME combined group being more effective than AME or standard care. She also found statistically significant differences in negative affect between groups ($p < .05$), with both AEC and AME combined group and AME group reducing negative affect more than the standard treatment group. AME participants reported lower levels of pain than AEC and AME combined participants or standard care participants ($p < .05$). There was no significant between-group difference in coping self-efficacy, satisfaction with hospitalization, willingness to ambulate, or length of ambulation.

Although previous results from Madson and Silverman (2010) and Ghetti (2011) have supported the use of music therapy for solid organ transplant patients, there is a need for additional research specific to autonomy and music therapy with this population. Therefore, the purpose of the current study was to determine if music therapy interventions can reduce stress and perception of side effects and increase relaxation and improve mood of hospitalized solid organ transplant donors and recipients during a randomized controlled effectiveness study. Specific research questions were as follows:

1. Will experimental participants have higher self-report measures of relaxation and mood and lower measures of stress and perception of side effects than control participants?
2. Will patients choose PPLM or a brief harmonica lesson followed by a blues jam as their intervention?

Method

Research participants

Participants ($N=38$) were 19 female (six control) and 19 male (eight control) patients on the solid organ transplant unit of a mid-western teaching hospital. As both donors and recipients were hospitalized on the same unit and the researchers wanted to be as inclusive as possible in an attempt to provide music therapy to anyone who may be interested, donors were also eligible for study inclusion. The researchers of the present study utilized the inclusive approach of Dew et al. (2007), who recommended that donors receive comparable care to organ recipients throughout the transplantation process. Some participants had recently undergone a transplant (10 control), while others were returning to the hospital due to infection or other complications (five control). Thus, in this purposely inclusive design, the only inclusion criterion was to be an inpatient on the unit receiving an initial music therapy session. Descriptive statistics concerning participants' ages and number of days in the hospital prior to researcher contact are depicted in Table 1.

Design

Participants were randomly assigned via a computer program to either the experimental group ($n=22$) or wait-list control group ($n=16$). In an attempt to provide music therapy to all interested

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