



Effects of cognitive-behavioral music therapy on fatigue in patients in a blood and marrow transplantation unit: A mixed-method pilot study



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ABSTRACT

Cancer-related fatigue (CRF) is an under-treated condition frequently experienced by cancer patients, which can negatively affect wellbeing during and after hospitalization. The purpose of this mixed-method pilot study was to determine if and how cognitive-behavioral music therapy (CBMT) might reduce fatigue in hospitalized patients in an adult blood and marrow transplant (BMT) unit. The researchers measured the effects of CBMT on five aspects of participant fatigue using a convergent parallel mixed-method design. The participants ($N = 11$) were randomly assigned to experimental or wait-list control conditions and completed the Multidimensional Fatigue Inventory (Smets, Garssen, Bonke, & De Haes, 1995) at pre- and posttest. The experimental participants completed a semi-structured interview prior to hospital discharge. The quantitative results indicated no significant between-group differences regarding fatigue. However, the experimental participants tended to have decreases in the mean fatigue scores from pre- to posttest, whereas the control participants had increases in the mean fatigue scores from pre- to posttest. The qualitative data tended to support the quantitative data and indicated that CBMT: (a) cognitively influenced fatigue by increasing motivation and self-efficacy, (b) affectively influenced fatigue by promoting relaxation and restful states, and (c) represented a meaningful, unique, and holistic service for hospitalized BMT patients. CBMT may be an effective intervention regarding various aspects of fatigue in hospitalized BMT patients. Because of the small sample size, the results should be interpreted with caution. The limitations of the study, implications for clinical practice, and suggestions for future research are provided.

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Introduction

Cancer continues to represent a major social problem, which affects the individuals who are diagnosed, as well as their family members, caregivers, companions, and social networks. As a result of population growth, longer life expectancies, and increased cancer survival rates, the number of new cancer diagnoses in the United States is expected to reach 2.6 million individuals by 2050 (American Cancer Society [ACS], 2012). With the lofty prevalence of cancer, there is a heightened need for awareness toward the different types of cancer, as well as the available treatments.

When certain types of cancer, including lymphoma, leukemia, and multiple myeloma, prevent the body from producing sufficient healthy blood cells (National Heart, Lung & Blood Institute, 2011), patients are often treated with a blood and marrow stem cell transplant (BMT) that replaces a patient's abnormal stem cells with healthy stem cells. Cancer-related fatigue (CRF) represents one of the most commonly reported, under-treated, and debilitating symptoms in patients with cancer and cancer survivors (Bower et al., 2006; Mitchell, 2011; Mustian et al., 2007). The National Comprehensive Cancer Network (NCCN), (2012) defined CRF as a distressing, persistent, and subjective sense of tiredness or exhaustion related to cancer or cancer treatment, which is not proportional to recent activity and interferes with typical functioning. Because most BMT patients will undergo some form of treatment, including chemotherapy or radiotherapy prior to receiving a BMT (National Cancer Institute at the National Institutes of Health [NCINIH], 2012), BMT patients are likely to experience similar negative side effects, including CRF. Additionally, CRF can be experienced at different stages during and after cancer

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treatment (Goedendorp, Gielissen, Verhagen, & Bleijenberg, 2009). Although researchers and clinicians have demonstrated music therapy interventions to be effective (Boldt, 1996; Cassileth, Vickers, & Magill, 2003; Pothoulaki, MacDonald, & Flowers, 2012; Sahler, Hunter, & Liesveld, 2003; Zhang et al., 2012), there is limited literature regarding the details concerning *how* and *why* these interventions might be effective (Pothoulaki et al., 2012). A current mixed-method pilot study was conducted to determine if and how cognitive-behavioral music therapy might be an effective psychosocial treatment for fatigue in hospitalized BMT patients.

Literature review

Cancer-related fatigue (CRF) is a prevalent and under-treated symptom frequently experienced by cancer patients (Bower et al., 2006; Mitchell, 2011; Mustian et al., 2007), which negatively affects physical, cognitive, emotional, and spiritual wellbeing (Given et al., 2002; Hann et al., 2006; Hofman, Ryan, Figueroa-Moseley, Jean-Pierre, & Morrow, 2007; Janda et al., 2000; Mock, McCorkle, Ropka, Pickett, & Poniatowski, 2002) both during hospitalization and after discharged from the hospital (Schubert, Hong, Natarajan, Mills, & Dimsdale, 2007). While there is an awareness of CRF, there is limited evidence regarding the most applicable and effective treatments that target CRF. According to the fatigue coalition, 40% of cancer patients were not offered a recommendation for CRF management, and the most common treatment recommendations were bed rest and relaxation (Curt et al., 2007). Researchers issued diagnostic criteria to standardize the assessment of CRF; however, the criteria have not become widely accepted or implemented by clinicians (Andrykowski, Schmidt, Salsman, Beacham, & Jacobsen, 2005; Cella, Peterman, Breitbart, & Curt, 1998; Sadler et al., 2001; Van Belle et al., 2005). Although there is inadequate and inconclusive research (NCCN, 2013), the clinical awareness of CRF and its impact on the quality of life have increased (Hann et al., 2006). Previous researchers have identified non-pharmacological therapies, psychoeducational support, exercise or active interventions, and cognitive-behavioral techniques that reduce CRF in cancer patients (Goedendorp et al., 2009; Jacobsen, Donovan, Vadaparampil, and Small, 2008; Kangas, Bovbjerg, & Montgomery, 2008; NCCN, 2013).

The current non-pharmacological interventions that have impacted CRF consist of psychosocial therapies that aid in the adjustment of cognition, emotions, behavior, the social context, or a combination of these factors (Goedendorp et al., 2009). The NCCN (2013) has investigated a wide range of pharmacological and non-pharmacological interventions to treat CRF, which indicated that exercise, psychoeducational and psychosocial interventions, and cognitive-behavioral therapy (CBT) for insomnia are effective in the treatment of CRF. Researchers also demonstrated cognitive-behavioral techniques to have positive effects on the reduction of fatigue via self-management strategies toward sleep quality, relaxation training, and cognitive-emotional arousal (Duijts, Faber, Oldenburg, Van Beurden, & Aaronson, 2011; Goedendorp et al., 2009; Jacobsen et al., 2008; Montgomery et al., 2009). Furthermore, the authors of the NCCN's (2013) guidelines that outline the best level of care for effective CRF management have recommended counseling that uses forms of active cancer treatment, including physical-based therapies and psychosocial interventions.

As researchers have increased the literature base of non-pharmacological interventions that target CRF, educational interventions and psychological support have played a crucial role in the encouragement of coping skills in patients (Mitchell, 2011; NCCN, 2013). Kangas et al. (2008) conducted a systematic and meta-analytic review of non-pharmacological therapies to reduce CRF

and determined that exercise and psychological interventions that involved multimodal exercise and walking programs, restorative approaches, supportive-expressive, and cognitive-behavioral psychosocial interventions provided reductions in CRF. Goedendorp et al. (2009) identified a significantly higher effectiveness for psychosocial interventions specific for fatigue, including education on fatigue, teaching self-care or coping techniques, and learning activity management, compared with interventions that were not specific for fatigue. Regarding cancer and symptom management, Pothoulaki et al. (2012) demonstrated that physical, therapeutic, and psychological interventions are desirable to promote overall quality of life. There is a necessity for a multidimensional and individually tailored treatment plan to identify management strategies. Moreover, patients must be able to utilize an intervention as a distraction or aid to refocus their perspectives regarding their fatigue (Mitchell, 2011). Overall, additional research is warranted to contribute to the body of evidence regarding self-relief interventions for patients.

To date, there is limited music therapy (MT) research for patients recovering from a BMT. However, the authors who conducted the preliminary investigations have identified positive results (Anderson, Pitts, & Silverman, 2012; Boldt, 1996; Cassileth et al., 2003; Fredenburg & Silverman, 2014; Rosenow & Silverman, 2014; Sahler et al., 2003). Boldt (1996) noted decreased fatigue levels, as well as increased relaxation and endurance levels, for BMT patients who received MT. Sahler et al. (2003) demonstrated BMT patients reported a significant decrease in self-reported pain and nausea ratings following bi-weekly MT sessions. Additionally, Cassileth et al. (2003) demonstrated the participants in their experimental group scored 28% lower on the combined anxiety and depression scale and 37% lower on the total mood disturbance scale after they received three to seven group MT sessions. Although researchers have demonstrated MT interventions have positive outcomes on a BMT unit, there is limited literature regarding the details concerning *how* and *why* these interventions may be effective (Pothoulaki et al., 2012). Additionally, the researchers who examined the effects of music-based interventions in cancer patients have predominantly focused on anxiety; thus, additional studies are warranted to investigate other relevant outcomes, including CRF (Bradt, Dileo, Grocke, & Magill, 2011). In a similar manner, previous researchers within MT, oncology, and nursing professions have recommended additional research to demonstrate clear differences between intervention and control conditions and to examine the relationships between the frequency and duration of music interventions and the treatment effects (Bradt et al., 2011; Clark et al., 2006; Chaput-McGovern & Silverman, 2012; Mitchell, 2011; Pothoulaki et al., 2012).

Ultimately, patients with cancer need additional emotional support, education, and engagement in positive strategies to increase their abilities to manage their illnesses (Robb, Burns, & Carpenter, 2011). However, a gap in the literature remains regarding *if*, *how*, and *why* MT interventions impact CRF (Bradt et al., 2011). In the contemporary era of evidence-based practice, there is a need for research that investigates the effects of MT on multi-dimensional aspects of fatigue in this population. Therefore, the purpose of the current mixed-method pilot study was to determine if and how cognitive-behavioral music therapy (CBMT) sessions can reduce fatigue in hospitalized patients in a blood and marrow transplant unit. The questions that guided the present study were:

1. Can cognitive-behavioral music therapy reduce various aspects of cancer-related fatigue?
2. How may cognitive-behavioral music therapy reduce various aspects of cancer-related fatigue?

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