

Exercise Intervention

Attrition, compliance, adherence, and progression following hematopoietic stem cell transplantation

Tara Peters, BS, Ruby Erdmann, RD, LDN, and Eileen Danaher Hacker, PhD, APN, AOCN®, FAAN

BACKGROUND: Exercise is widely touted as an effective intervention to optimize health and well-being after high-dose chemotherapy and hematopoietic stem cell transplantation.

OBJECTIVES: This article reports attrition, compliance, adherence, and progression from the strength training arm of the single-blind randomized, controlled trial Strength Training to Enhance Early Recovery (STEER).

METHODS: 37 patients were randomized to the intervention and participated in a structured strength training program introduced during hospitalization and continued for six weeks after release. Research staff and patients maintained exercise logs to document compliance, adherence, and progression.

FINDINGS: No patients left the study because of burden. Patients were compliant with completion of exercise sessions, and their adherence was high; they also progressed on their exercise prescription. Because STEER balances intervention effectiveness with patient burden, the findings support the likelihood of successful translation into clinical practice.

KEYWORDS

attrition; compliance; adherence; progression; hematopoietic stem cell transplantation

DIGITAL OBJECT IDENTIFIER

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MORE THAN 20,000 HEMATOPOIETIC STEM CELL TRANSPLANTATIONS (HSCTs) were performed in the United States in 2015, a rate that continues to increase (D'Souza & Zhu, 2016). This figure includes recipients of autologous and allogeneic HSCTs. The preparatory regimens used in conjunction with HSCT frequently result in a wide range of acute and chronic side effects, such as infection, thrombocytopenia, and fatigue (Copelan, 2006). Recipients of allogeneic HSCT are at risk for additional complications, including graft-versus-host disease.

The adverse effects of the high-dose chemotherapy may be severe and highly distressing, negatively affecting the recipient's quality of life (Cohen et al., 2012). Although many side effects are temporary and resolve within three to six months, others are long-term and develop months or years after HSCT (Morrison et al., 2016). For example, moderate to severe persistent fatigue has been documented during the early recovery period and years after HSCT (Gielissen et al., 2007; Hacker, Fink, et al., 2017; Jim et al., 2016). Interventions to address these distressing symptoms are needed to improve the long-term outcomes of HSCT recipients.

Strong interest exists in the development of effective exercise interventions for patients receiving intensive cancer therapy, including those undergoing HSCT. Fewer than 20 randomized, controlled trials (RCTs) testing exercise interventions have been conducted in this population (Hacker, Collins, et al., 2017; Jacobsen et al., 2014; Persoon et al., 2013). Although the general evidence supports the use of exercise in this population, implementation varies across studies, such as timing of exercise initiation and the exercise modality, intensity, and duration. Because of the challenges associated with conducting exercise studies and then translating these findings into clinical practice, multiple additional pragmatic factors need to be fully assessed prior to implementing exercise interventions in the general population of patients undergoing HSCT. These study factors include the following:

- Patient attrition (number of patients leaving the study prior to completion)
- Exercise compliance (ability to complete the prescribed number of exercise sessions)
- Exercise adherence (ability to complete the specific exercises as detailed in the exercise prescription)
- Exercise progression (ability to advance the exercise prescription)