Received: 23 August 2021 | Revised: 29 July 2022 | Accepted: 5 August 2022

DOI: 10.1111/jocn.16512

Journal of Clinical Nursing WILEY

REVIEW

Psychosocial interventions with art and music during stem cell transplantation: An integrative review

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Funding information
ICA NIHR/HEE Clinical Academic Internship, Grant/Award Number: ICA-CL-2015-01-003

Abstract

Objectives: The objective of this study is to systematically review the literature with the following aims: to survey the art and music interventions offered to the stem cell transplant population; to define the interventions' beneficial properties by conceptualising themes; to analyse these themes using behavioural activation principles as a lens and explore their value in alleviating isolation-related distress.

Background: Patients undergoing stem cell transplant are at great risk of psychological morbidity, partly on account of prolonged hospital stays in protective isolation. This risk extends beyond discharge and into ambulatory care, negatively affecting quality-of-life and survival rates of the transplant recipients.

Design: Integrative review methodology.

Methods: A systematic search of 10 bibliographic databases was undertaken using terms relating to art, music and stem cell transplantation for the years 2012 to 2019. Records were assessed for quality and risk-of-bias using a critical appraisal tool and following the PRISMA Systematic Review checklist to guide reporting. Studies were analysed narratively and thematically.

Results: The 16 papers were of mixed quality. Findings and treatment effects differed between and within studies. The beneficial attributes of the treatments were clustered and divided into two groups. The first consisted of intrinsic, patient-focussed factors: (1) Creative outlet or acquisition of a new skill; (2) achievement of normality; (3) mutual or peer-support; (4) relationship-building and (5) meaningful recreation, distraction and diversion. The second group considered extrinsic factors: (6) Improved communication; (7) enhanced spiritual care and (8) better healthcare experience.

Conclusions: Several art and music interventions have been attempted which were beneficial to patients and generated a sense of *achievement*, *connection* and *enjoyment*. The interventions appear to uphold the principles of person-centred holistic care and have potential to generate a high-quality, supportive healthcare and working environment.

Relevance to Clinical Practice: Psychosocial interventions with art and music have improved the care and experience of patients undergoing stem cell transplant.

KEYWORDS
art, behavioural activation, haematopoietic stem cell transplant, music, protective isolation

1 | INTRODUCTION

In this integrative review, we will explore which hospital-based art and music interventions have been trialled with stem cell transplant recipients, during periods of protective isolation. We intend to analyse the available literature in the light of Behavioural Activation principles to consider how these interventions are helpful to patients in reducing their distress and enhancing coping.

Haematopoietic stem cell transplantation (HSCT) offers patients hope of a complete remission of their disease with more than 50,000 such procedures taking place annually (World Health Organisation, 2018). As survival rates increase, so numbers of HSCT survivors increase by tens of thousands each year (World Health Organisation, 2018). These survivors face relatively high levels of distress compared with other patients with cancer, and the emotional and psychological sequalae of HSCT (Cooke et al., 2009; Mosher et al., 2009) is negatively associated with survival rates (Tecchio et al., 2013). Awareness of these risks can lower patients' expectations of hospital treatment, having further negative impact on their well-being (Laferton et al., 2017).

Patients undergoing transplantation typically receive hospital care in strict protective isolation until full neutrophil recovery and beyond (e.g., British Society of Blood and Marrow Transplantation, 2022). Although the aim of protective isolation is to minimise risk of infection, it can result in isolation-related distress, loss of control and limited access to social support (Annibali et al., 2017).

What does this paper contribute to the wider global clinical community?

- Haematopoietic stem cell transplant recipients have unique psychological challenges on account of long hospital admissions in protective isolation.
- Psychosocial interventions with art and music, administered in protective isolation, have many intrinsic and extrinsic benefits. Crucially, they have improved the care and experience of patients undergoing stem cell transplant.
- Principles of Behavioural Activation therapy, in particular the scheduling of activities which generate a sense of achievement, connection and enjoyment, have been used to reframe these benefits

2 | BACKGROUND

2.1 | Peritransplant interventions

While individual difference must be appreciated, patient distress typically peaks around the time of transplant and then declines gradually over the following 12 months (Rini et al., 2011). Therefore, this period of hospitalisation appears to be a key moment for addressing patient distress since Grundy and Ghazi (2009) identified that individuals who were distressed at the pre-transplant phase tend to remain distressed throughout hospitalisation and beyond discharge. The peritransplant phase is intensive and often stressful, yet much research and psychological intervention for HSCT recipients has focussed on the post-transplant phase (Anderson-Reitz, 2018).

Despite the dearth of research into interventions which target distress during the peritransplant phase, such interventions appear to be feasible, beneficial and necessary for patients. Annibali et al. (2017) found that measures of boredom and isolation-related distress were strongly associated, while leukaemia survivors have articulated the need to "keep [one's] mind off negative things" in hospital (Ghodraty-Jabloo et al., 2016).

Çuhadar et al. (2016) proposed psychosocial interventions in complementary modalities, citing the arts and music as a way to promote adaptive coping and enhance levels of resilience in patients undergoing HSCT. These activities have been associated with increased sense of control, meaning-making and post-traumatic growth (Biagioli et al., 2017; Ennis et al., 2018). They have potential to assist patients in addressing difficult thoughts and emotions or alternatively, in avoiding rumination through diverting their attention from unhelpful thoughts. Art and music may promote relaxation, which has been associated with decreases in anxiety, depression, fatigue, pain and with improvements in the QoL of HSCT survivors (Jarden et al., 2009).

Art and music are suggested self-support strategies for patients coping with protective isolation around the time of transplant (Anthony Nolan, 2018), though little is known about these interventions in a population-specific context. This review aims to address this gap in knowledge.

2.2 | Behavioural activation

The Behavioural Activation framework (Ferster, 1973; Lewinsohn & Libet, 1972; Martell et al., 2022) asserts that a vulnerable

person's circumstances, and their behavioural response to those circumstances, could reduce their chances of experiencing reward from their environment. For example, when a person is depressed, they tend to engage less in pleasant or meaningful activities, resulting in them experiencing less pleasure, which perpetuates a cycle of worsening mood. Conversely, as Lewinsohn and Graf (1973) found, there is a significant positive correlation between the number of pleasant activities a person undertakes in a day and their mood.

Informed by this framework, 'activity homework' is prescribed as a part of Behaviour Therapy (Martell et al., 2022). Therapy assumes an 'outside-in' approach so that patients act according to a plan or goal, rather than to a feeling or internal state: they do not need to feel better before they engage in an activity. Once 'activated', their behaviour and experience will effect a positive change in mood through reinforcing positive context contingencies. For example, "when I do my physio (behaviour), my partner is proud of me (reinforcement) and I tend to feel better (consequent improvement in mood and helpful thoughts)". However, the importance of 'environmental rewards' (such as encouragement from other people) in reinforcement has been contested, whereas neurobiological elements (neurotransmitters such as dopamine, serotonin and oxytocin), likely play a role in driving motivation and improving the mood of a person undergoing therapy (Janssen et al., 2021). Despite the limits of the theory, Behavioural Activation therapy has been found to be effective and superior to pharmacotherapy and wait-list control (Ekers et al., 2014; Stein et al., 2021).

A scheduled activity may or may not be intrinsically enjoyable. However, if it brings about a sense of achievement on completion or satisfaction through a developing mastery, or if it brings about a sense of connection, collaboration or closeness with other people, the activities may result in improvements in mood and well-being. Such activities have been termed *ACE activities* in popular psychology (Beck, 2020; King, 2020; Vivyan, 2019), the acronym denoting the *achievement*, *connection* and *enjoyment* which the activities generate. These properties will be used in our data analysis to consider the aspects of art and music interventions that were helpful to patients during hospitalisation for HSCT.

3 | AIMS

The aim of this integrative review is to:

1. survey the art and music interventions offered to the stem cell transplant population, from the available literature;
2. define the interventions' beneficial properties by synthesising primary research and conceptualising recurrent themes and
3. analyse these themes using Behavioural Activation principles as a lens and explore their value in alleviating isolation-related distress.

4 | METHODS

4.1 | Design

Preliminary searches uncovered very few high-quality randomised control trials (RCTs) in art and music. Therefore, integrative review methodology was chosen to answer the research question since it is the most inclusive review-type. The five-stage process as detailed in Whittemore and Knafl's integrative review methodology (Whittemore & Knafl, 2005, p.549) was followed but informed by recent norms in reporting (The PRISMA 2020 statement: An updated guideline for reporting systematic reviews, Page et al., 2021; Supplementary File S1).

4.2 | Search strategy

A comprehensive and systematic search of bibliographic databases was undertaken to gather all available literature from the Cochrane library, MEDLINE, CINAHL, SCOPUS, Web of Science, EMBASE, Pubmed, AHMED, PsychInfo and PsychArticles published between January 2012 and November 2019, when the last search was conducted.

All articles on the use of creative arts therapies and interventions in the haematopoietic stem cell transplantation setting were considered for review. The year 2012 was determined as a suitable threshold to capture studies not previously included in other systematic reviews and meta-analyses.

The search included MeSH heading population terms for "stem cell transplant" in adults and intervention terms including "art therapies", "art making", "music" and "music therapy".

4.3 | Screening

The searches resulted in 217 articles after duplicates had been removed (see Figure 1 for PRISMA flow diagram). The suitability of each article was assessed systematically to ensure articles answered the research question and met the inclusion criteria: (a) Adult stem cell transplant participants; (b) art and music-based interventions; (c) Full text available in English and (d) Years 2012–2019. HSCT is a rapidly emerging field (Zack, 2018) and studies need to be recent in order to be applicable. From an initial list of 23 papers, 16 articles met the criteria for the review.

4.4 | Analysis

The evaluation of methodological quality followed the John Hopkins Nursing Evidence-Based Practice Rating Scale (Dang & Dearholt, 2018). The scale has a dimension for ranking the level of evidence (I–V, where level I includes RCTs) and a quality rating scale (A–C where A indicates high quality research and low risk of

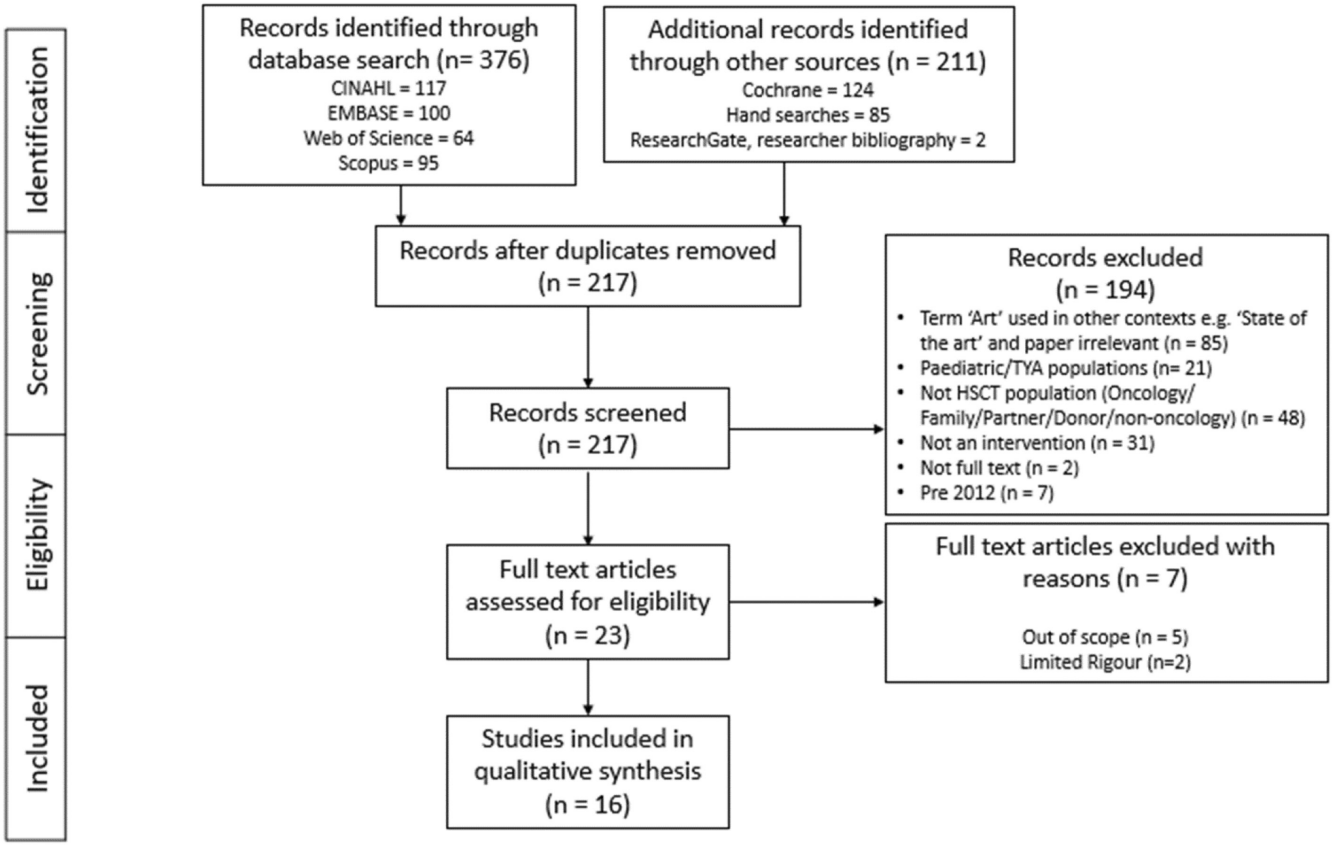

FIGURE 1 PRISMA diagram

bias). Papers were assessed and collected independently by one researcher. Levels of Evidence and Quality Appraisal for included papers are presented in Table 1.

Data were extracted in the form of interpreted quantitative findings, patient quotes and author comments from primary research. These were coded by attaching key words to extracted data and then clustered into themes using the constant-comparison method. The conceptualised themes communicate some of the benefits of art and music interventions for the HSCT population.

An innovative synthesis is the goal of the data analysis stage of an integrative review (Whittemore & Knafl, 2005). To this end, the intrinsic benefits were mapped alongside the properties *achievement*, *connection* and *enjoyment* (ACE) (Table 2) to explore the meaning and value of these beneficial attributes to patients within the Behavioural Activation framework.

5 | RESULTS

5.1 | Study characteristics

Searches uncovered very few studies within the population and setting of interest. Sixteen papers, reporting 13 studies were selected for analysis, with a total of 886 HSCT participants recruited. Five discrete art interventions were described and three music interventions. Study settings, methods and measures used were disparate. Research evidence was of mixed quality. Only three studies scored A at quality appraisal for consistent results, adequate control and sufficient sample size for the study design. Most studies recruited by outlining the intervention in order to gauge patient interest. Thus only patients interested in art and music were likely to participate in the studies. Agnese et al. (2012) however, used a medical referral system which appeared to lend credibility to the intervention. Attrition was exceptionally low and all 74 participants reported finding the intervention helpful.

Treatment effects differed between and within studies, making generalisability of findings tentative. Table 1 outlines the various, heterogenous art and music interventions and presents the Levels of Evidence and Quality Appraisal.

5.2 | Thematic synthesis

Eight themes were developed from the data. These themes indicate the ways HSCT patients use art and music interventions to cope during periods of protective isolation. They have been divided into intrinsic and extrinsic benefits and are presented in Tables 2 and 3.

TABLE 1 Summary of studies—creative arts interventions in the Haematopoietic stem cell transplant (HSCT) population

Study (nationality)	Intervention	Description – Design, process, dose, frequency	Outcomes measured (measure used)	Findings (positive associations in bold)	Level of evidence and quality appraisal
Agnese et al. (2012) (Italy)	Art-therapy employing a variety of techniques ($n = 74$).	Design: Non-experimental study. Questionnaire and case-report analysis. One session per week for the period of isolation. Most patients seen 6 times (range 4–24). Sessions lasted between 15 and 90 min.	Questionnaire with closed questions and section for free response. Responses analysed using qualitative methods (word repetition and emerging concepts/themes).	**All participants (100%) stated intervention was helpful.** Five concepts emerged from patients' comments. 1. "Feeling more peaceful"; 2. "Being helped to relax"; 3. "Feeling free to express myself"; 4. "Being able to share my state of mind and feeling understood"; 5. "Being helped to connect with my family".	Level III B
Bates et al. (2017) (USA)	Music Therapy (certified therapist) (MT) ($n = 55$) with patient-preferred music (PPM) versus standard care ($n = 53$) for autologous stem cell transplant recipients.	Design: RCT. 30-min MT sessions held between Day-1 and Day+5 with the first session as close to D + 1 as possible. Second session held at least 48 h later but no later than 96 h later.	Pain (Validated Visual Analogue) Nausea (Visual Analogue) Mood disturbance Narcotic pain medication use (Morphine-equivalent pain medication)	No significant difference between those who did receive MT and those who did not on measures of pain, nausea and mood. **Patients in the standard care arm used less pain medication over time.**	Level I B
Dóro et al. (2017) (Brazil)	Music Therapy ($n = 50$) with PPM were randomised to experimental group versus standard care group ($n = 50$).	Design: RCT Twice-weekly, 30-min MT sessions.	Pain Anxiety Mood (All measured with Visual Analogue Scale (VAS) Operating range (pain = 0, "no pain"; pain = 10, "extreme pain") measured before and after each session). Qualitative data from patient comments.	No significant difference in average post-session pain scores between control group and the experimental group. **However, highly significant improvement in anxiety levels and mood across all sessions.** Very positive qualitative feedback from patients.	Level I C

TABLE 1 (Continued)

Study (nationality)	Intervention	Description – Design, process, dose, frequency	Outcomes measured (measure used)	Findings (positive associations in bold)	Level of evidence and quality appraisal
Fletcher et al. (2013) (USA)	Art-Cart Programme A shopping trolley: Stocked with art media, puzzles and games. Approx. 200 patients passing through the unit. Avg. 1–2 uses of the cart per 4-h session.	Design: Non-experimental. Service Learning/Practice enquiry	An exercise, using Kolb's model of service learning, to increase suitability, usage and appeal of the art-cart. Intention—to use clinic wait-times for creative activity; that creating something might off-set the many losses experienced by HSCT patients.	Following service-learning, researchers determined that the 'cart' best served as a supply station but that a work space in a central reception area was a more suitable focal point for activities. Structured activities most popular. A bowl of sweets/chocolates increased appeal. Usage remained consistently at 12+ users per session after the project.	Level V B
Fredenburg & Silverman (2014a) (USA)	Music Therapy using patient-preferred live music (PPLM, voice and guitar, $n = 12$) versus wait-list controls ($n = 20$).	Design: Randomised, pre- and post-test design with wait-list controls. Single 30-min live patient preferred music.	Positive and Negative Affect Pain (Likert scale (1 – no pain; 10 – highest amount of pain)). Short participant comments also noted.	**Results were statistically significant for pain, positive affect and negative affect with the experimental group having more favourable post-test mean scores than the control group.** Short verbal feedback comments were generally positive and are consistent with previous research.	Level I C
Fredenburg & Silverman (2014b) (USA)	Music therapy, discussion and target-setting employed to target fatigue. PPLM with guitar and voice ($n = 7$) compared with controls ($n = 4$).	Design: Convergent parallel, mixed methods design. Random assignment to wait list and experimental group. Pre- and post-test measures taken plus pre-discharge semi-structured interviews. Variable number of therapy sessions, each lasting 30–45 min with a pre-test (at beginning of hospital stay) and post-test and interview administered pre-discharge.	Chemotherapy-related fatigue. Patient reports of benefits (4 questions in a semi-structured interview lasting 5–10 min).	Mean fatigue scores were improved pre-and post-test in the experimental group and worsened in the control group over time. These associations failed significance. Qualitative findings indicated that music (1) Cognitively influenced fatigue by increasing motivation and self-efficacy and (2) Affectively influenced fatigue by promoting relaxation and restful states and (3) that represented a meaningful, unique and holistic service.	Level I C (Pilot – quantitative) Level III B (qualitative)

(Continues)

TABLE 1 (Continued)

Study (nationality)	Intervention	Description – Design, process, dose, frequency	Outcomes measured (measure used)	Findings (positive associations in bold)	Level of evidence and quality appraisal
Hanson et al. (2013) (USA)	Hospitalised patients viewed photographic images via computer and completed an electronic survey. *N* = 80; (44 men, 36 women).	Design: Quantitative, exploratory, single-group post-test descriptive design incorporating qualitative survey questions. Patients clicked through 60 high-quality photographic images displayed on a computer screen. Then completed a survey electronically.	Performance Status: Eastern Co-operative Group (ECOG) Socioeconomic status: Hollingshead Four-Factor Index of Social Status Quality of Life: Linear Analogue Scale-Assessments (LASA) Fatigue: Fatigue intensity in last 3 days ranging from 0 (none) – 10 (worst fatigue imaginable). Visual Arts Research Survey: 35-point survey relating to personal preferences, emotional state, distraction and restoration.	96% of patients enjoyed looking at the images. Preferred images were natural landscapes: Lake sunset (76%); Rocky River (66%) and autumn waterfall (66%). Participants considered the images a good distraction and believed that looking at photographs is helpful. Qualitative data confirmed that patients thought photographic art could affect mood, reduce a feeling of institutionalisation, reduce pain and promote healing. Most participants had a performance status of 0–2 so there was very little information about preferences of patients with limited ability to self-care.	III B
McCabe et al. (2013) (Ireland)	Art intervention—"Open Window (OW) Project". Art, photographic and moving images projected onto patients' hospital walls with audio. Controlled by the patient (*n* = 96) compared with control group (*n* = 103).	Design: Prospective randomised control trial. OW used for duration of stay and 6 months follow-up. Data collected at 7 time points: T1—Admission, T2 Day −1; T3 Day +7; T4 Day +60 and T5 Day +100. 70% of patients using OW, watched OW for 3 or more days a week and 61% viewed for up to 1 h per day.	Anxiety and depression. Distress. Other non-validated Patient Outcome Measures (POMs) of patient experience of HSCT (the 'Expectations question' administered at D + 6, the OW Survey (11 items) for the intervention group) and qualitative data from semi-structured interviews.	Repeated measures did not show any significant differences at any time point for the groups. **Anxiety was significantly lower in the treatment group at T2, T3 and T5. Depression was lower in the OW group but only reached significance at T2.** **67% of OW group and 27% of the controls reported their experience was better or much better than expected.** **74% in OW group felt it offered a connection with the outside world. 64% said OW helped them deal with confinement/ isolation.**	Level I A

TABLE 1 (Continued)

Study (nationality)	Intervention	Description – Design, process, dose, frequency	Outcomes measured (measure used)	Findings (positive associations in bold)	Level of evidence and quality appraisal
Mische Lawson, Glennon, et al. (2012) (USA)	Art-making with ceramic tile-painting offered individually in treatment rooms to HSCT patients ($n = 20$). Organised on a voluntary basis by Occupational Therapy (OT) and students.	Design: Quasi Experiment, pilot study. "Pre- and post-test crossover design". One-off 1-h session. Cross-over after at least one day.	Symptom concerns Transient anxiety Physiologic stress (Salivary Cortisol Samples)	No changes in patient anxiety in both groups. No changes in therapy-related symptom scores before/after intervention. Cortisol levels were significantly lower in the post-test intervention and control group. **Concern over severity and occurrence of symptoms was lower at post-test in the intervention group and symptoms such as 'feeling sluggish' and 'difficulty concentrating' improved after intervention.**	Level II B (Pilot)
Mische Lawson, Will, et al. (2012) (USA)	Art-making with painting a 4×4 inch tile in a private room ($n = 20$). Facilitated by OT volunteers	Design: Semi-structured, in-depth interviews. Inductive content analysis. 5 meetings to establish inter-rater reliability using the 'constant comparative method'. 1 h tile-painting activity. The interview followed.	Patient perceptions of an art-making experience through open questioning. Patients were asked a common list of questions and then prompted to expand on their answers. Interviews were transcribed verbatim and analysed. Themes were coded independently by 6 researchers, then outcomes discussed to achieve agreement on themes.	The 12 themes emerged in order of prevalence: Occupying time Creative expression Reactions to tile painting Other themes included: Support Side-effects Other activities suggested BMT treatment process Shared painting experience Life outlook BMT life changes Spirituality Barriers	Level III B

(Continues)

TABLE 1 (Continued)

Study (nationality)	Intervention	Description – Design, process, dose, frequency	Outcomes measured (measure used)	Findings (positive associations in bold)	Level of evidence and quality appraisal
Mische, Chau et al. (2016) (USA)	Art-Making with tile painting ($n = 14$) vs. diversional music ($n = 11$) (comparison), and usual treatment ($n = 14$) incl. diversion by watching TV, using computer, talking with a care-giver (control).	Design: A randomised, three-group, pre/post-pilot design. 1 h intervention.	Self-reported symptoms Anxiety Physiologic stress (Vital signs pre/post-intervention)	No statistical differences were found between groups on all measures following the intervention. **Pre/post-test measures of sluggishness, pain and loss of appetite showed improvements in the music-listening group but this did not reach statistical significance.**	Level II B (Pilot)
Mische Lawson, Glennon, et al. (2016) (USA)	Art-making with a 'Tiles of hope' painting exercise ($n = 14$) or music listening exercise using Spotify ($n = 11$).	Design: Qualitative interview design; responses were transcribed and coded.	1 h art-making experience or 1 h music-listening experience. Interviews followed immediately and these were recorded, transcribed and coded using the 'constant comparative method'. Half transcripts were coded collaboratively.	9 themes emerged in order of prevalence: Engaging in activity Art and music in daily life Expressions Engaging with equipment Novelty BMT process Activity process Social Support Living situation	Level III B
Mische Lawson, Weden, et al. (2016) (USA)	Art-making with a 'Tiles of Hope' painting exercise. Analysis of 171 tiles.	Design: A retrospective inductive approach in the thematic analysis of anonymised visual data.	Tiles were analysed by 4 researchers through 6 phases resulting in a coding dictionary and a 'rich' description of each theme listed in order of prevalence based on the number of tiles in each category. Consensus on the themes was reached between researchers through discussion until agreement was reached.	Major themes identified in the study were: 1. Faith, 23.4% of tiles; 2. Hope, 19.3% of tiles; 3. Positive Attitude, 18.1%; 4. Nature, 12.9% and 5. Social Support, 12.2%. Other lesser-expressed themes: 6. Fighting, (3.5%); 7. Creative expression, (3.5%); 8. Appreciation, (2.9%); 9. Humour, (2.9%) and 10. Negative expression, (1.2%).	Level III B

TABLE 1 (Continued)

Study (nationality)	Intervention	Description – Design, process, dose, frequency	Outcomes measured (measure used)	Findings (positive associations in bold)	Level of evidence and quality appraisal
Ratcliff et al. (2014) (USA)	Creation of audio CDs designed to moderate mood using the ISO-principle with assistance from a music therapist pre-admission (MT; $n = 29$). Compared with CD-listening to unstructured music (UM; $n = 30$) and usual care (UC; $n = 31$).	Design: Randomised controlled trial. Pre/post-test measures. Music in the experimental arm was arranged to shift mood from a depressed to an energised state (one CD) and from a tense to a relaxed state (second CD) using the ISO-principle. The UM group chose music that made them feel energised (one CD) or relaxed (second CD). Participants could listen as often as they wanted. UM group could listen to tracks in any order that they wanted from day +28 post-transplant. Participants recorded their moods before and after listening to their CDs in a log. The other group used care as normal.	Mood QOL Cancer-related symptoms Relaxation/tension and happiness/sadness before and after listening (Likert scales in a listening log)	**MT and UM participants reported improved mood immediately after listening to CDs.** The within group effect was greater for UM compared with the MT group. Participant group was not associated with any long term QOL outcomes. There was a general improvement in patient QOL regardless of experimental group.	Level I A
Rosenow & Silverman (2014) (USA)	Live music (voice and guitar) $n = 50$; PPM selected utilising the ISO-principle, matching music qualities to patient's behaviour and requests.	Design: Quasi-experimental. Single arm, repeated measures. Measures from initial MT session 30–45 min were recorded, pre- and post-test.	Relaxation Anxiety Nausea Fatigue Pain (Likert scales 1–10, e.g., Score of 1 = feeling completely relaxed, free from anxiety, nausea, fatigue and pain-free. Score of 10 = complete lack of relaxation and highest levels of symptoms). Qualitative data from patient, carer, doctor and nurse comments.	No significant differences in scores for nausea and pain. **Pairwise differences in pre- and post-test scores were significant for relaxation, anxiety and fatigue.** Anecdotal support for music therapy reported: "noting the increase in enjoyable work atmosphere, the lack of additional workload for staff, and the emotional support and positive outcomes for patients" p.69.	Level II B

(Continues)

TABLE 1 (Continued)

Study (nationality)	Intervention	Description – Design, process, dose, frequency	Outcomes measured (measure used)	Findings (positive associations in bold)	Level of evidence and quality appraisal
Tuinmann et al. (2017) (Germany)	Music therapy in addition to supportive therapy and standard care (MT formed the intervention group, IG, $n = 33$) and standard care with no MT (control group, CG, $n = 33$).	Design: Randomised trial with no active control condition. Patients in the IG had an average of 8 sessions (min. 4, max. 17) lasting 50 mins. Measures were taken at baseline, weekly, at discharge and following an interval of 3 months. Adverse events (AE) and medication were assessed initially and throughout hospital stay.	Quality of Life Depression and Anxiety Adverse events Medication use (for pain and anti-sickness) Immunological parameters (immunoglobulin, Ig-A, Ig-G, lymphocyte sub-populations: T-helper cells (T4), T-suppressor cells (T8) and natural killer cells (NK))	No significant improvement in global QOL. **Perception of pain significantly improved in the IG.** Patients were neither depressed nor anxious on admission so no improvements were noted. **IG group had fewer toxicities.** **Aprepitant (anti-emetic) was administered significantly more in the CG.** **The IgA decline and T4 count was less in IG, T8, and NK count decreased most in IG.** These findings failed significance and regarded co-incidental.	Level I A

5.2.1 | Intrinsic benefits

Intrinsic, patient-focussed benefits pertain to personal growth, coping and adaption in adversity. Themes included:

1. Creative outlet or acquisition of a new skill.
2. Achievement of normality.
3. Mutual or peer support.
4. Relationship-building.
5. Meaningful recreation, distraction and diversion.

5.2.2 | Extrinsic benefits

Extrinsic factors relate to increased care quality. Themes include:

6. Improved communication.
7. Enhanced spiritual care.
8. Better healthcare experience.

5.2.3 | Intrinsic factors and ACE mapping

Integrative review methodology seeks to generate innovative synthesis and create new understanding (Whittemore & Knafl, 2005). Accordingly, the intrinsic benefits were mapped against 'ACE' (Table 2), the properties of '*achievement*, *connection* and *enjoyment*' that form a part of Behavioural Activation activity schedules. Themes 1 and 2 (*Creative outlet or acquisition of a new skill* and *Achievement of normality*, respectively) fittingly map to 'Achievement'; Themes 3 and 4 (*Mutual or peer support* and *Relationship-building*, respectively) map onto 'Connection'; and with theme 5, (*Recreation, distraction and diversion*) corresponding to 'Enjoyment' in the framework. Here, we will consider the synthesised themes in the light of ACE, in order to understand how art and music interventions are beneficial to HSCT patients.

Achievement: Participatory art interventions were deemed helpful through the *achievement of new skills and gaining a creative outlet* (theme 1). Fletcher et al. (2013) reasoned that "achievements such as creating something [with craft materials from an 'artcart'], might off-set the many losses patients experienced in the course of their illnesses". Some researchers concluded that it was the creative process in addition to completion of the final product (during a tile-painting exercise) that contributed to the patients' sense of accomplishment (Mische Lawson, Weden, et al., 2016).

Protective isolation precautions had stopped some patients from continuing their previous hobbies, and they were grateful for an opportunity to participate in the interventional art and music activities safely as an alternative (Mische Lawson, Glennon, et al., 2016). This contributed to the conceptualisation of theme 2, *achievement of normality*. Engaging in a patient's previous recreational activities and interests (a return to normal) or

TABLE 2 The beneficial elements of creative arts interventions in the Haematopoietic stem cell transplant (HSCT) population: Intrinsic factors pertaining to personal benefits such as growth, enhanced coping and adaptation in protective isolation and long in-patient stays. These themes are mapped alongside ACE for further analysis

	Themes	Subthemes	ACE Mapping
Intrinsic benefits – Personal growth, coping and adaptation in adversity	Creative Outlet or Acquisition of a New Skill	Meaningful activity Stimulates creativity, self-expression and imagination Accomplishment	Achievement
	Mutual or peer-support	Survivorship, communal support Camaraderie Contributing to research endeavours	Connection
	Relationship-building	Social support—family, friends and significant others Gift-making Positive shared experiences and making memories	Connection
	Achievement of normality	Returning to hobbies Establishing a new normal Contact with life outside hospital Decreasing 'sense of confinement' Contact with natural world	Achievement
	Meaningful recreation, distraction and diversion	Relaxation and pleasure Change in time perception Play and humour Novelty	Enjoyment

TABLE 3 The beneficial elements of creative arts interventions in the Haematopoietic stem cell transplant (HSCT) population: Extrinsic benefits pertain to care culture and quality

	Themes	Subthemes
Extrinsic benefits—Increased care quality	Improved communication	Overcomes the limits of language Uncovering and expressing difficult emotions "Giving form to something formless"
	Enhanced spiritual care	Faith and religiosity Acts of worship, prayer, contemplation Remembrance and tribute Enhancing hope and courage Gratitude
	Better healthcare experience	Providing choice, enhancing autonomy Total healing factor—Therapeutic alliance Holistic care—Integration of mind and body Humanising Supportive milieu for patients, families and healthcare professionals Increased 'well-being'

experimenting with a new one (adaptation to a new normal) maintains the patient's contact with a life lived outside the clinical setting (McCabe et al., 2013).

Achievement of normality (theme 2) extended to a desire for contact with the natural world, outside hospital. This was expressed through patients' preferences for hospital wall art. Hanson et al. (2013) found that landscapes and wildlife images are an art genre that patients in clinical settings most frequently prefer. The Open Window media art intervention featured projected images from landscapes onto patients' isolation room walls and were thought to decrease the patients' sense of confinement (McCabe et al., 2013). In another study, nature and wildlife was a recurring theme in the imagery depicted during a tile-painting exercise (Mische Lawson, Weden, et al., 2016).

Connection: Psychological interventions with art and music became a means of connecting with peers (theme 3, *Mutual or peer-support*) and significant people in the patient's life (theme 4, *Relationship-building*). Interventions were often experienced with family present and participating (Fredenburg & Silverman, 2014b; Mische Lawson, Glennon, et al., 2012; Mische Lawson, Glennon, et al., 2016). In some cases, the item crafted by the patient became a gift for family (Mische Lawson, Glennon, et al., 2016; Agnese et al., 2012). The theme, *mutual or peer-support*, in this review refers to the communal support patients gain by participating in psychological interventions with art and music, whilst still in protective isolation. Despite engaging in creative arts interventions in separate rooms, tile-painting bolstered patient morale and generated a sense of camaraderie (Mische Lawson, Will, et al., 2012). These tiles were painted by patients, knowing that they would be displayed in waiting-areas at the regional transplant centre and would be surveyed by their peers while attending for treatment. For this reason,

the supportive messages painted on the tiles became a vehicle for peer-helping, for example, "ENDURE", "It will be better", "Press forward" and "Think positive" (Mische Lawson, Weden, et al., 2016).

Enjoyment: Art and music are inherently enjoyable and the enjoyment they evoke can have a beneficial impact on well-being. The study interventions promoted *recreation* that could be meaningful or therapeutic (Fredenburg & Silverman, 2014a, 2014b; Mische Lawson, Glennon, et al., 2012; Mische Lawson, Weden, et al., 2016); *relaxation* (e.g., Fredenburg & Silverman, 2014a, 2014b; Mische Lawson, Glennon, et al., 2012); as well as *diversion* (McCabe et al., 2013) to positively affect time-perception with a novel, therapeutic activity (Mische Lawson, Weden, et al., 2016).

In Fredenburg and Silverman's study (2014b) of music therapy, relaxation was proposed as an antidote to fatigue through meaningful rest. Though qualitative findings did not indicate that patient activity increased in the short term after the intervention, patient frustration and anxiety about fatigue had been dissipated and their motivation increased for more activity later.

5.2.4 | Extrinsic factors and care

The interventions improved communication (theme 6, *Improved Communication*) since they enabled patients to overcome the limits of language through self-expression with art (Agnese et al., 2012; Mische Lawson, Weden, et al., 2016) thus enabling clinicians to have an insight into the patient's interior world (Dóro et al., 2017). Agnese et al. (2012) and Dóro et al. (2017) describe patients crying during music therapy sessions, where they had previously appeared 'blocked' and non-communicative, the assumption being that this emotional expression was beneficial to the patient.

The theme *Enhanced spiritual care* (theme 7) was prominent since several patients' verbalisations support the link between spiritual care and creative arts therapies. Some authors also appeared to have an awareness of a spiritual facet to their interventions (e.g., Tuinmann et al., 2017). Patient preferred music was often religious/spiritual (Fredenburg & Silverman, 2014a; Mische Lawson, Glennon, et al., 2016), and participants used religious imagery and scripture during the interventions (Mische Lawson, Weden, et al., 2016; Agnese et al., 2012). One patient indicated that it was the spiritual dimension of music therapy that he found helpful, describing music as "God's way of speaking to you" (Fredenburg & Silverman, 2014a).

Psychological interventions with art and music appeared to enhance healthcare experience for patients since it promoted a holistic approach to care (theme 8). One patient commented, "[…] music therapy heals me mentally, spiritually, and that all has to be part of the overall physical plan" (Fredenburg & Silverman, 2014b).

The interventions opened up conversations between patient and healthcare staff that directed the healthcare professional's focus towards the patient's personhood: "[the media art intervention] stimulated conversations with health-care staff and visitors on subjects other than the patients' medical problems" (McCabe et al., 2013).

The interventions were well received by patients and their families, and created a working environment that was regarded as supportive of staff (e.g., Fletcher et al., 2013; Rosenow & Silverman, 2014). Importantly, patient experience of transplant exceeded their expectations as the result of the interventions (Fredenburg & Silverman, 2014b; McCabe et al., 2013).

6 | DISCUSSION

In this integrative review, we have synthesised and presented the beneficial attributes of psychological interventions with art and music offered to stem cell transplant recipients.

The available quantitative studies favoured the intervention in many instances and the population and study settings in the reviewed articles were congruous. Relatively few subjects were involved however, and the quantitative evidence was not consistent. For example, anxiety was found to be reduced after the intervention in some studies (Dóro et al., 2017; McCabe et al., 2013; Rosenow & Silverman, 2014) but not others (Tuinmann et al., 2017; Mische, Chau et al., 2016; Mische Lawson, Will, et al., 2012), and varied across time-points (McCabe et al., 2013). Mood, as recorded by standardised measures, did not appear to improve after intervention in Ratcliff et al's study (2014) but the same patients reported feeling happier after listening to their 'energising' music on audio CD. These challenges have led some researchers to conclude that existing standardised measures are insufficient in capturing therapeutic benefits experienced by patients (Tuinmann et al., 2017). The qualitative evidence for the interventions is still compelling, revealing numerous benefits derived from using psychological interventions with art and music in the peritransplant phase.

HSCT is a complicated and psychologically challenging experience associated with significant symptom burden, morbidity and mortality. Patients are aware of these risks and this can lower their expectations and negatively affect their perception of hospital treatment and transplant. Expectations are a powerful reality which can influence health and well-being (Laferton et al., 2017), and studies from this review found that initial expectations of transplant were mediated by the use of art and music interventions, which positively transformed patient experience beyond expectations (Fredenburg & Silverman, 2014b; McCabe et al., 2013). Participants in the reviewed studies, had a better experience of the peritransplant period if they participated in art and music interventions in protective isolation, than those who did not.

We have attempted to understand these phenomena in the light of Behavioural Activation theory, using 'ACE' properties as a lens through which to organise and interpret these data. Behavioural Activation operates on the principle that we feel better when we do more ACE activities that promote a sense of *achievement*, *connection*, collaboration or closeness with other people and *enjoyment* (Beck, 2020). The art and music interventions in our review, appeared to function much like ACE activities do for the HSCT patients participating in them while in protective isolation. The five extrinsic

benefits, distilled via thematic analysis, have been mapped alongside ACE properties as related concepts. Following the study interventions with art and music, when participant mood improved (Dóro et al., 2017; Fredenburg & Silverman, 2014a; Ratcliff et al., 2014), we may surmise that positive effects resulted from the 'environmental rewards' associated with ACE. Cognitive behavioural strategies, such as 'ACE activity scheduling' have been subjected to rigorous testing with RCTs and found to be equally effective or superior to pharmacotherapy for anxiety and depression (Cuijpers et al., 2016). While art and music interventions are more frequently seen as alternative and complementary, our analysis infers a therapeutic mode of action that is psychological, cognitive-behavioural and therefore a mainstream approach to well-being and distress. In this light, art and music interventions may be better understood and gain greater research momentum.

Relaxation was another benefit of the art and music interventions, an outcome already associated with a positive impact on anxiety, depression, fatigue, pain and QoL among HSCT survivors (Jarden et al., 2009). In Fredenburg and Silverman (2014b), relaxation with music therapy was proposed as an antidote to fatigue through meaningful rest. Though qualitative findings did not indicate that patient activity increased in the short term after the intervention, patient frustration and anxiety about fatigue had been dissipated following the music intervention and their motivation increased for more activity later. Since fatigue is one of the most distressing symptoms which patients undergoing transplant face (Jafari et al., 2017) this inverse association with relaxation is noteworthy.

Protective isolation practices would typically preclude in-person mutual support among HSCT recipients in the peritransplant phase. However, art and music interventions were used by patients as a means of peer-helping and connection with others (Mische Lawson, Weden, et al., 2016; Mische Lawson, Will, et al., 2012). The positive effects on well-being derived from helping others often exceed the positive effects that peer-support can offer the recipient (Konrath & Brown, 2013). "Showing compassion for others" as a way of directing attention away from their own suffering, giving something back and fostering mutual support, has been identified as an effective coping strategy among HSCT patients in the Expressive Writing literature (Symes et al., 2018).

Psychological interventions with art and music contributed to care-quality since they enhanced a spiritual dimension to patient-care which is easily forgotten in a clinical context. Interview data showed that the interventions were employed to bolster positive religious/spiritual coping, often associated with better emotional outcomes in terms of reduced distress, adjustment and quality of life (Park & Carney, 2018). Researchers have found that religious coping is mediated by other factors, however. For example, low self-efficacy for coping with cancer was associated with negative religious coping and corresponding poor outcomes of physical, functional and social well-being (Pérez & Rex Smith, 2015). Therefore, interventions that promote spiritual care, like art and music, would complement chaplaincy services rather than replace them. Spiritual care would ideally feature alongside other supportive agencies and techniques such as motivational interviewing to address any low self-efficacy associated with negative religious coping (Rollnick & Miller, 1995; Spencer & Wheeler, 2016).

Further extrinsic benefits derive from the "supportive milieu" that art and music interventions created for nursing and medical staff, as well as patients (Fletcher et al., 2013). This is notable since the relationship between employee and service-user satisfaction has long been established, with nurses' physical and mental health affecting the quality and safety of patient care (Potter et al., 2010). However, this relationship is mediated by many other work-place factors (Jones & Johnston, 2013).

The current review has only examined art and music interventions but no other creative modalities like reading literature and writing creatively. It is conceivable that some beneficial attributes of the interventions such as distraction and diversion could be obtained from any engaging activity. For example, TV-watching could be equally effective in helping time pass quickly and relieving boredom. TV-watching is a common diversion strategy used by patients in isolation (McCabe et al., 2013), though with varying success (Annibali et al., 2017). Unlike TV-watching however, the benefits of art and music interventions extended beyond distraction and diversion to meaningful and 'serious' recreation, with opportunities for social-connectedness.

The deductive approach to data analysis using Behavioural Activation has offered some insights into the possible factors which contribute to the usefulness and value of art and music interventions. *Achievement*, *connection* and *enjoyment* could be aspects of the interventions which potentially give rise to positive changes in patient well-being. It is hoped that these findings can be used to inform the development of future interventions for in-hospital care of patients undergoing stem cell transplant.

7 | LIMITATIONS

This evidence was sourced from just 16 papers of variable quality. The systematic search revealed a number of heterogenous interventions. Combining these in a review may be seen as insufficiently respectful of the integrity of each approach.

The searches were conducted by a novice researcher as part of a Masters project. All searches were limited to English, thus excluding other potentially relevant studies.

8 | CONCLUSION

Psychological interventions with art and music have been offered to patients undergoing stem cell transplant to alleviate distress associated with isolation and treatment. Research into their effectiveness is in an incipient phase. However, the benefits of the interventions have potentially therapeutic dimensions: a creative outlet; a source of peer-support or a means for peer-helping; relaxation; diversion and a reduction in the sense of confinement.

Art, music and other interventions in creative modalities are frequently classified as complementary and alternative. However, the beneficial aspects of art and music interventions share similarities with Behavioural Activation, a psychological, mainstream approach to distress: Scheduling art and music interventions for patients in protective isolation, helped patients in the reviewed studies to access a rewarding sense of *achievement*, *connection* and/or *enjoyment* (ACE). HSCT patients enjoyed these sessions and reported improvements in mood, though standardised instruments did not consistently capture this.

Nevertheless, there is evidence that art and music interventions have helped to improve communication between patient and clinician. They were received as spiritual care and have potential to improve healthcare working environments. Crucially, they improved patient experience of stem cell transplant.

9 | RELEVANCE TO CLINICAL PRACTICE

Nurses are frequently 'first-responders' to patients experiencing isolation and treatment-related distress and need to accommodate this in their planning for care. Pre-admission checklists for stem cell transplant should include psychological preparation for hospital isolation. Together, patient and nurse specialist can compile a personalised treasury of self-management strategies for distress using Behavioural Activation principles. 'Activity scheduling' can then be based on the patient's interests and aptitudes. Strategies could include: a music playlist to lift mood or relax; a digital photo frame with images of familiar or beautiful landscapes; printed mandalas for colouring-in; craft items to make gifts for others. The value of ward-based creative arts activities, led by student occupational therapists, volunteer artists, or activity co-ordinators are also worthy of consideration. Endorsement of these strategies by the medical team can improve intervention outcomes since doctors can positively influence the uptake of, satisfaction with and success of psychological therapies.

Standardised guidance for best practice in supportive psychological care is still needed but would ideally feature immediate access to clinical psychology for patients in moderate distress and psychological crisis. Psychosocial interventions with art and music could be recommended to promote well-being, alleviate boredom and 'keep the mind from negative thinking' among patients struggling with isolation and sub-clinical levels of distress.

Research into psychosocial interventions with art and music is currently in its early stages and allocation of resources is restrictive. However, the effects of protective isolation on stem cell transplant recipients should not be disregarded and call for targeted service design and healthcare spending.

ACKNOWLEDGEMENTS

The authors wish to thank the ward managers and matrons of UHS Cancer Care who have supported KDH's Clinical Academic Internship.

FUNDING INFORMATION

This is independent research supported by the National Institute for Health Research (an NIHR/HEE Clinical Academic Internship held by Katherine Dantanus under HEE/NIHR ICA Programme Clinical Lectureship, Dr Naomi Farrington, ICA-CL-2015-01-003). The views expressed in this publication are those of the authors and not necessarily those of the NHS, the National Institute for Health Research, or the Department of Health.

CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Hickey, K. D., Farrington, N., & Townsend, K. (2023). Psychosocial interventions with art and music during stem cell transplantation: An integrative review. *Journal of Clinical Nursing*, *32*, 2998–3014. https://doi.org/10.1111/jocn.16512