

**Table 2. Randomised controlled trials of music therapy for cancer**

Source: Ava Lorenc, Joke Bradt, CAM-Cancer Consortium. Music therapy [online document]. <http://cam-cancer.org/en/music-therapy>, October 2020

<b>First author (year)</b>	<b>Study design Participants (number, diagnosis)</b>	<b>Interventions (experimental treatments, control)</b>	<b>Main outcome measures</b>	<b>Main results</b>	<b>Comments</b>
Alam (2016)	RCT  Skin cancer patients undergoing cutaneous surgical procedures (n = 151)	During surgery: 1) Music listening (researcher's choice) 2) Guided imagery 3) Control (standard care)	1) Pain (VAS) 2) Anxiety (Spielberger State-Trait Anxiety – short form, STAI-SF)	No statistically significant differences between the treatment arms.	Randomisation method was adequate (block randomisation) and allocation concealment was used.  Failure to demonstrate treatment benefits may be due to the fact that patients were undergoing surgery under local anesthesia and were able to hear sounds of surgical instruments, smell the odor of cautery, and feel physical pressure associated with skin incision and suturing. Listening to pre-recorded music may not be effective as a distractor or relaxation experience under these circumstances. The researchers suggest that the use of patient-selected music rather than researcher-selected music may have been more effective.
Bro (2019)	RCT  Lymphoma adult patients undergoing chemotherapy (n=143)	During chemotherapy sessions: 1) Live music (patient-preferred) 2) Pre-recorded music (patient-preferred) 3) Control (standard care)	1) Anxiety (Spielberger's State Anxiety Inventory) 2) Secondary measures (blood pressure, pulse rate, nausea & vomiting, catecholamine, quality of life)	Statistically significant reduction in anxiety for live music compared to control (p = 0.05), but not for recorded music.  No effects for secondary outcomes.	Powered sample and adequate randomization. Baseline anxiety scores were lower than anticipated so potential floor and ceiling effects.

<p>Cheung 2019</p>	<p>RCT  Paediatric brain tumour survivors with higher depression scores (n=60)</p>	<p>1) Music training sessions learning an instrument (45mins weekly for a year) 2) Placebo (45mins visit from researcher doing leisure activities).</p>	<p>1) Depression (Center for Epidemiological Studies Depression Scale for Children) 2) Secondary outcomes (self-esteem, quality of life)</p>	<p>Music intervention groups showed statistically significant fewer depressive symptoms (<math>p &lt; 0.001</math>), higher levels of self-esteem (<math>p &lt; 0.001</math>), and better quality of life (<math>p &lt; 0.001</math>) than the control group at 12-month follow-up.</p>	<p>Sample size based on availability of patients rather than powered. Randomisation adequate. Long follow-up period and intervention.</p>
<p>Chirico (2019)</p>	<p>RCT  Breast cancer patients undergoing chemotherapy (n=94)</p>	<p>During chemotherapy sessions: 1) Virtual reality (VR; relaxing landscapes) 2) Music therapy (listening to recorded relaxing music) 3) Control group (standard care)</p>	<p>1) Anxiety (State Anxiety Inventory) 2) Mood (Profile of Mood States) 3) Cybersickness (VR group only)</p>	<p>Significant reductions in anxiety and improvements in mood for both intervention groups compared to control (for music therapy group <math>p = 0.049</math> for anxiety and <math>p &lt; 0.05</math> for depression and tension).</p>	<p>Low quality RCT as process of group allocation to intervention groups is not clear, and control group was non-concurrently recruited/randomised. Some results reported as significant had very borderline significance (<math>p=0.049</math>). Baseline differences in mood states between groups.</p>
<p>Hunter (2020)</p>	<p>RCT  Cancer patients receiving chemotherapy (n=474)</p>	<p>During chemotherapy and at home: 1) Nurse-administered mindfulness relaxation 2) Listening to relaxing music 3) Control (standard care)</p>	<p>1) Anticipatory nausea and vomiting (Morrow Assessment of Nausea and Emesis)</p>	<p>Reduced anticipatory nausea at midpoint of chemotherapy for music intervention compared to control (OR 0.40, 95% CI 0.20-0.93), but not at end of chemotherapy. No difference between two intervention groups. No difference in vomiting incidence or severity.</p>	<p>Large study and powered sample size. Adequate randomization. Lack of effect on vomiting likely due to good control of vomiting by medication. High loss to follow-up (although similar in all groups).</p>

<p>Karadag (2019)</p>	<p>RCT  Early stage breast cancer patients receiving radiation therapy (n=60)</p>	<p>1) Music therapy during radiation therapy (recorded music listening; not patient-selected) 2) Control (standard care)</p>	<p>1) Anxiety and Depression (Hospital Anxiety and Depression Scale) 2) Radiation comfort (Radiation Therapy Comfort Questionnaire)</p>	<p>Significant difference between groups on all scores (p&lt;0.001)</p>	<p>Powered sample size and no loss to follow-up. Possible selection bias from sequential group allocation. Music was the same for all patients.</p>
<p>Mische (2017)</p>	<p>RCT  Adult cancer patients receiving blood and marrow transplantation (n = 39)</p>	<p>1) Art making 2) Diversional music (patient selected through use of Spotify) 3) Control (standard care)</p>	<p>1) Therapy-related symptoms (Therapy-Related Symptom Checklist) 2) State anxiety (State Anxiety Inventory) 3) Physiological distress (vital signs)</p>	<p>No statistical differences were found between groups on all measures</p>	<p>Authors state that participants were randomly assigned to study arms but randomisation method is not specified. Allocation concealment is not described. The study was underpowered. Art and music interventions were not delivered by a trained creative arts therapist. Authors state that they wanted to examine the effect of a low cost option by not involving trained professionals. it is not clear the intervention was definitely given during transplant or not. The authors report that many patients selected spiritual and gospel music and suggest that this may have evoked reflections on their cancer experience and may have temporarily increased their anxiety. The presence of a music therapist could have helped address patients' reflections and feelings in response to the music. The music was offered via a tablet computer. The use of a computer and the Spotify interface may have increased anxiety in some patients unfamiliar with this technology.</p>

Mou (2020)	RCT  Lung cancer patients undergoing their first peripherally inserted central catheter placement (n=304)	1) Passive music therapy (researcher-selected list of music) during and after insertion 2) Control (standard care)	1) Anxiety (Numeric Visual Analog Anxiety Scale) 2) Vital signs (systolic blood pressure, diastolic blood pressure, heart rate, respiratory rate)	Patients in experimental group had a statistically significant decrease in anxiety ( $p < 0.001$ ) and heart rate ( $p = 0.007$ ) over time compared to the control group, but no significant difference was identified in systolic blood pressure or respiratory rate.	Randomisation was adequate and study was large and powered, with good follow-up rates. The authors cite the limited choice of music (selected by the researcher) as a limitation of the study. Data collection was limited with just one outcome measure and vital signs.
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AME – active music engagement

RCT – randomised controlled trial

VAS – visual analogue scale