Table 2. Randomized controlled trials of music interventions for cancer (not included in summary)

Source: Ava Lorenc, CAM Cancer Collaboration. Music interventions [online document]. March 2024.

First author year	Study design Participants (number, diagnosis)	Interventions (experimental treatments, control)	Main outcome measures	Main results	Comments
Psychological outcomes in general cancer populations					
Al-Jubouri 2021	RCT Adult cancer patients scheduled to receive chemotherapy (n=238)	1)Music listening (researcher selected music; 20mins) 2)Spiritual therapy: listening to Quran (20mins)3) Control (no intervention)	1) State Anxiety Inventory (Arabic)	In all groups, the level of anxiety was reduced (control, t = 3.500, p =.001; Quran, t = 13.125, p = .000; music, t = 14.714, p = .000). Comparing the effect size between the control group and the two intervention groups, listening to Quran or music can reduce the anxiety level significantly.	Excluded non-Muslims, those having radiotherapy and with lower than sixth-grade education. Only one outcome measure. Very short timescale (only 20mins intervention) with no longer term follow up.
Harper 2023	RCT Adult cancer patients receiving chemotherapy (n=750)	1) Music listening (patient-selected music; up to 60 mins) during chemo infusion 2) Control (no intervention)	1) Distress thermometer 2) Pain (VAS) 3) Positive mood and 4) Negative mood (Positive and Negative Affect Scale)	Significant difference in change between the groups for three of the four outcomes (positive and negative mood and distress; p=0.001; p=0.004; p=0.016) but not for pain.	Large sample, but high loss to follow up. Group allocation was done by day of the week rather than randomly. Doesn't seem to be registered. Didn't assess safety but concludes music therapy is 'low-risk'.

continued

Hohneck 2023	RCT (although also mentions being a pilot) Adult cancer patients (n=73)	1) Active music playing with a body monochord 2) Passive sound intervention (researcher-selected music on headphones) Both at least 15mins every evening for 4 weeks.	1) Quality of Life (EORTC QLQ-C30) 2) Sleep (PSQI) 3) Fatigue (VAS) 4) Pain (VAS) 5) Fear of Progression (FoP)	The only outcome that differed between groups was VAS fatigue (p = 0.049). No effect on pain. In terms of the primary endpoint, more patients in the passive group showed a response and exhibited an improvement in at least one dimension without worsening of any other: n = 15 (39%) versus n = 9 (27%). But not significant.	Small sample and high dropouts including 8/42 in active group, and quite a lot of missing data. Lack of a no intervention control group. No details of randomization process. Report primary endpoint improvement without any test of significance. Long duration of intervention (4 weeks). Conclude it is safe but unclear what safety data were collected ("We also did not notice any worsening of emotional or physical symptoms")
Merry 2021	RCT Adult cancer patients hospitalised post-surgery (n=44)	1) Patient preferred live music (1 20-30min session; singing and guitar) 2) Wait list control	1) Mood (global mood scale) 2) Pain (11 point Likert scale)	Results indicated significant between-group differences in posttest measures of positive (p=0.028) and negative affect (p=0.012), with the experimental group having more favorable scores. No significant difference in posttest pain	Presents a theory for the intervention. Small sample and did not achieve required size (54) due to time constraints. Short single intervention. Limited information on randomization process. Doesn't seem to be registered. Intervention not transferable. No safety data.
Psychological outcomes in breast cancer					
Lagattolla 2023	RCT Patients hospitalised for breast cancer surgery (n=151)	1) Individualised receptive music therapy (48 sessions of 60 mins) 2) Group active-receptive integrated music therapy (25 sessions of 90mins) e.g. playing instruments, improvisation, visualization.	1) Emotional thermometer to measure a) Depression b) Stress c) Anger d) Anxiety e) Need for help 2) State anxiety (STAI)	Both types of MT interventions were effective in reducing all the variables: stress, depression, anger, and anxiety (T Student p‹0.01)	Lack of no intervention control. Data missing for a number of areas: withdrawals/missing data unclear, no details of randomsation process, doesn't mention safety, unclear if registered. Long intervention duration.

Henneghan 2021	RCT (but also described as a feasibility study) Breast cancer survivors who had had chemotherapy (n=31)	1) Music listening (patient selected from a selection of classical music) 2) Mantra meditation Both 12 mins/day for 8 weeks.	1) Cognitive performance: a) Memory (Hopkins Verbal Learning Test) b) Verbal reasoning (controlled oral word association test) c) Attention and executive functioning (trail making test). d) Cognitive impairment (FACT-Cog) e) Quality of life (FACT-Cog) 2) Anxiety , depression, fatigue (PROMIS) 3) Stress (PSS) 4) Pain (PROMIS)	Verbal fluency (p < .001, ηp2 = 0.58), attention (p = .002, ηp2 = 0.33), immediate memory recall (p < .001, ηp2 = 0.38), perceived cognitive impairment (p < .001, ηp2 = 0.39), and quality of life (p = .001, ηp2 = 0.35) improved significantly across time for both groups. The two conditions did not differ significantly in changes across time. No adverse effects.	Major issues: Very small sample and 5/31 dropped out. Research question is unclear – mentions feasibility but conclusions relate to efficacy. Lack of no intervention control. Long intervention duration.
Paediatric cancer					
Cheung 2019	RCT Paediatric brain tumour survivors with higher depression scores (n=60)	1) Music training sessions learning an instrument (45mins weekly for a year) 2) Placebo (45mins visit from researcher doing leisure activities).	1) Depression (Center for Epidemiological Studies Depression Scale for Children) 2) Secondary outcomes (self-esteem, quality of life)	Music intervention groups showed statistically significantly fewer depressive symptoms (p < 0.001), higher levels of self-esteem (p < 0.001), and better quality of life (p < 0.001) than the control group at 12-month follow-up.	Sample size based on availability of patients rather than powered. Randomisation adequate. Long follow-up period and intervention.

Other

O'Steen 2021	RCT Women receiving radiotherapy for cancer (n=102)	1) Music listening (patient-selected) during first radiotherapy session. 2) Control (no intervention)	1) Anxiety (STAI) 2) Distress (symptom distress thermometer)	The percent decrease in mean STAI score was 16% with music versus 10% without music (P = 0.2197).	Sample small and possibly underpowered. No participant flowchart. Only a single session of music therapy/radiotherapy (out of 20-35 radiotherapy treatments usually).
Pozhhan 2023	RCT Women with breast cancer requiring chemotherapy (n=60)	1) Music listening (patient-selected; five sessions in one day) 2) Control (no intervention)	1) VAS for severity of CINV	The difference between music therapy and control groups was statistically significant with regard to the median of the frequency of nausea (5.92 versus 12.34), frequency of vomiting (4.55 versus 9.95), the severity of nausea (1.26 versus 3.27), and severity of vomiting (1.06 versus 2.53).	No details of randomization process. No participant flowchart or details of dropout or missing data. Small sample. Only one day of intervention.
Miladinia 2021	RCT Patients with leukaemia undergoing chemotherapy (n=104)	1) Slow stroke back massage 2) Music therapy 3) Control communication sessions with nurse (also could have intervention after study) All 3x week for 4 weeks.	1) Pain (VAS) 2) Fatigue (VAS)	Pain intensity decreased more in the massage therapy group than music (p=0.001), but fatigue did not.	Long intervention period. Well reported. High loss to follow up intervention groups.

AME – active music engagement
RCT – randomised controlled trial
VAS – visual analogue scale
CINV – chemotherapy induced nausea and vomiting

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