Music therapy for end-of-life care: an updated systematic review


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Music therapy for end-of-life care: an updated systematic review

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Telephone 0044 2890 972434

Word Count 1380

Abstract

Background: Music therapy during palliative and end-of-life care is well established and positive benefits for patients have been reported.

Aim: Assess the effectiveness of music therapy versus standard care alone or standard care in combination with other therapies for improving psychological, physiological and social outcomes among adult patients in any palliative care setting.

Data sources: In order to update an existing Cochrane systematic review, we searched MEDLINE, CINAHL, EMBASE, PsycINFO, CENTRAL, ClinicalTrials.gov register, and Current Controlled Trials register to identify randomised or quasi-randomised controlled trials published between 2009 and April 2015. Nine electronic music therapy journals were searched from 2009 until April 2015, along with reference lists and contact was made with key experts in music therapy. Only studies published in English were eligible for inclusion. Two reviewers independently screened titles, abstracts, assessed relevant studies for eligibility, extracted data and judged risk of bias for included studies. Disagreements were resolved through
discussion with a third reviewer. Data were synthesised in Revman using the random
effects model. Heterogeneity was assessed using I².

Results: Three studies were included in the review. Findings suggest music therapy
may be effective for helping to reduce pain in palliative care patients (standard mean
deviation (SMD) = -0.42, 95% CI -0.68 to -0.17, P = 0.001).

Conclusions: Available evidence did not support the use of music therapy to improve
overall quality-of-life in palliative care. While this review suggests music therapy may
be effective for reducing pain, this is based on studies with a high risk of bias.
Further high quality research is required.

Keywords
Palliative care, music therapy, quality of life, pain, systematic review

Introduction
Music therapy has been defined as the use of music and sounds to facilitate the
development of a relationship between patients and professionally trained therapists
with the aim of supporting relaxation and improving both physical and emotional well-
being.¹ Music therapy has been employed in palliative and end-of-life care for more
than a decade to help address the associated psychological and spiritual issues,²
which often lie beyond the remit of traditional healthcare.³

Although music therapy has been widely implemented in palliative and end-of-life
care settings both in the United Kingdom³ and the United States,⁵ evidence to
support its effectiveness with this client group is equivocal⁶ and there is a need to
examine the current state of the evidence to ensure that ongoing service
developments are evidence based.
This systematic review will examine recent developments in the field by updating an existing Cochrane Systematic review originally conducted in 2009.

Similar to the previous study, the questions addressed will include: (a) is music therapy and standard care more effective than standard care alone or standard care combined with other therapies; (b) are different types of music therapy (e.g. improvisation, music listening, lyric writing) more effective?

Methods

Searches were based on the strategy employed in Bradt and Dileo’s previous Cochrane review. We searched seven databases, trials registers, and key electronic journals from 2009 until April 2015 (See Appendix 1). Reference lists of relevant studies were also checked to identify further studies. Titles and abstracts of all retrieved articles were screened for eligibility using pre-defined criteria (see Appendix 2). Full text articles were retrieved when the title or abstract could not be rejected with confidence. A record was kept of all excluded studies along with the reason for exclusion. Data were extracted using a standardized coding form. Any discrepancies in data extraction were discussed and resolved by all three review authors. Risk of bias was assessed using the Cochrane Handbook’s risk of bias tool.

Main outcomes were presented as continuous variables. Standardised mean differences (SMDs) were calculated for continuous data using available mean values and their standard deviations (SD), together with 95% confidence intervals (CIs). We estimated the treatment effects of individual trials and examined heterogeneity between trials by inspecting the forest plots and quantifying the impact of heterogeneity using the $I^2$ statistic: low (> 25% and < 50%), moderate (≥ 50% and <
75%) and high heterogeneity (≥ 75%). Where heterogeneity was suspected we investigated possible causes, such as differences in study quality and participants.

To measure the impact of heterogeneity on the meta-analysis, the I² was used to describe the percentage of variability in effect estimates due to heterogeneity rather than chance. No heterogeneity was indicated with I² = 0%. We planned to use funnel plots in order to examine potential bias from selective publication, but were unable to do so as only two published studies were included.

Meta-analysis employing a random effects model was performed using Review Manager Software version 5.2. Subgroup analyses were planned to explore: a) different types of music therapy interventions; b) different duration and frequency of music therapy. However, because of the small numbers of studies included, these analyses were not completed. Again, sensitivity analyses were planned to examine the influence of study quality by comparing results with and without low-quality studies. However, all included studies were rated as containing a high risk of bias.

Results
Figure 1 summarises the review process and results. Only one study completed since the previous Cochrane review\(^7\) was deemed eligible to be added for this review update.

Figure 1. Flow diagram of systematic review update process

Bradt and Dileo’s review\(^7\) identified five eligible studies examining the effect of music therapy on end-of-life care in a range of outcomes such as: pain, depression, quality of life, functional well-being, psychological well-being and, social/spiritual well-being. The authors concluded that there was insufficient evidence to support the use of music therapy in end-of-life care. Our searches identified one additional paper\(^{11}\) which examined the effect of music therapy on pain amongst this client population and we sought to combine these findings with two relevant papers included in the
original review. Combining these studies provided a total of 245 participants randomised to music therapy and 243 participants completing the studies. Two studies were conducted in the United States and one in Australia. All patients were adults with a mean age of 64.7. Participants had a range of diagnoses including cancer, congestive heart failure and renal failure. Characteristics of the included studies from both the 2009 and the current review are presented in table 1. All studies were rated as having a high risk of bias due to the studies failure to blind assessors to outcomes.
<table>
<thead>
<tr>
<th>Author, Year, Country</th>
<th>Study design</th>
<th>Participants</th>
<th>Intervention</th>
<th>Outcome Measures</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gutgsell et al. (2013), USA</td>
<td>Randomised Controlled Trial (RCT)</td>
<td>198 hospital inpatients with a diagnosis of advanced, potentially life-limiting illness. Patients were 18 years or older, able to understand English, alert enough to be able to rate pain on a numeric scale, and have pain on a numeric rating scale of three or more (on a scale of Zero to 10). Patients mean age was 56 years.</td>
<td>Music therapy: (n = 99) a professional music therapist delivered individual music therapy sessions focused on lowering pain levels. A standard protocol was used for all patients. Comfort measures included placing a 'Do not disturb' notice on the door, adjusting lights, providing a blanket and turning off any phones. This was followed by verbal instructions for autogenic relaxation which included focusing on relaxing muscles from the head to the feet; imagining a safe place of the patient’s own choice, and what they imagined seeing, smelling, hearing, tasting and feeling on their skin in this safe place. The therapist used the ocean drum, followed by the harp while the patient continued to focus on their safe place. The music, played at a low volume in a slow tempo, was chosen by the therapist based on clinical experience. Control: (n = 99) The same comfort measures as for the intervention group. Number of sessions: 1 Length of session: 20 minutes</td>
<td>1. The Numeric Rating Scale (NRS) 2. The Face, Legs, Activity, Cry, Consolability Scale (FLACC) 3. The Functional Pain Scale (FPS)</td>
<td>Pain was significantly lowered for the music therapy group compared to the control group for NRS and FPS. No significant improvement was observed for FLACC. Difference in means between music therapy and control group for pain  - Numeric Rating Scale (NRS) -1.39 (1.99) (p &lt; 0.0001),  - The Face, Legs, Activity, Cry, Consolability Scale (FLACC) -0.34 (1.68) (p&gt; 0.05)  - The Functional Pain Scale (FPS) - 0.52 (0.95) (p&lt; 0.0001)</td>
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<tr>
<td>Study</td>
<td>Design</td>
<td>Power (%)</td>
<td>Sample Size</td>
<td>Description</td>
<td>Results</td>
</tr>
<tr>
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<td>--------</td>
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<td>-------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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<tr>
<td>Horne-Thompson et al.</td>
<td>RCT</td>
<td>80</td>
<td>25</td>
<td>25 hospice inpatients receiving palliative care for a diagnosis of a terminal illness. Patients who were referred to music therapy for anxiety, passed a routine cognitive functioning test, and able to speak English were eligible. Patients mean age was 73.9 years.</td>
<td>Music therapy: (n=13) a registered music therapist provided a range of techniques which included singing, playing familiar live or recorded music, music and relaxation, music and imagery, improvisation, and music assisted counselling. The technique used was chosen based on consultation with the participant. Control: (n=12) a single volunteer session consisting of conversation, reading or offering emotional support to the participant. Number of sessions: 1 Length of session: 20-40 minutes</td>
</tr>
<tr>
<td>Nguyen (2003) United States</td>
<td>RCT</td>
<td>No power calculation</td>
<td>20</td>
<td>20 adult hospice inpatients receiving palliative care for end of life. Patients were eligible if they had 2 or more: no DNR (do not resuscitate) poor or grave prognosis, prescribed terminally ill and receiving comfort measures only. Patients mean age was 64.5 years.</td>
<td>Music therapy: (n = 10) the first session involved singing music chosen by the patient, finding out the patient's favourite songs, and assessing the patient and family's coping levels. The second session involved an end of life celebration. Control: (n= 10) standard care only Number of sessions: 2 Length of session: not reported</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Anxiety was significantly reduced for the experimental group. No significant difference was found for quality of life between the two groups. (no statistical results provided for pain; posttest scores calculated</td>
</tr>
</tbody>
</table>
from raw data within Appendix).
Table 2 shows the results of a meta-analysis examining the impact of music therapy for palliative patients on pain. Overall, a statistically significant difference was shown in pain reduction favouring the intervention group when compared to those who received comfort measures, a volunteer visit, or standard care only (three studies, n=243; SMD -0.42, 95% CI -0.68, -0.17, P=0.001) (Table 2). Overall, the test for homogeneity passed with an I² value of 0%.

Table 2. Efficacy: Music therapy versus active control and standard care only for pain

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Music therapy</th>
<th>Control</th>
<th>Std. Mean Difference</th>
<th>Std. Mean Difference</th>
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<td>Mean</td>
<td>Total</td>
<td>Total</td>
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<td></td>
<td>SD</td>
<td>SD</td>
<td></td>
<td>Weight</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IV, Random, 95% CI</td>
</tr>
<tr>
<td>Gutsgell</td>
<td>4.74</td>
<td>2.59</td>
<td>99</td>
<td>2.42</td>
</tr>
<tr>
<td>Horne-Thompson</td>
<td>1.77</td>
<td>2.39</td>
<td>13</td>
<td>2.25</td>
</tr>
<tr>
<td>Nguyen</td>
<td>23</td>
<td>33.31</td>
<td>10</td>
<td>42.9</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>122</td>
<td></td>
<td>121</td>
<td>100.0%</td>
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</table>

Heterogeneity: Tau² = 0.00; CH² = 0.44, df = 2 (P = 0.80); I² = 0%
Test for overall effect: Z = 3.27 (P = 0.001)

Discussion

The previous systematic review\(^7\) established no strong evidence of music therapy’s effectiveness for reducing pain based on a meta-analysis of two small studies (n=45). However, the addition of Gutsgell et al.’s study\(^11\) to this updated review suggests that there is a significant effect for music therapy in reducing pain among palliative care patients. This is an important finding given that pain is a common symptom reported by palliative care patients in a wide range of life-limiting illnesses such as cancer, heart disease, chronic obstructive pulmonary disease, renal disease and acquired immunodeficiency disease.\(^14\) Furthermore, a recent review examining the utilisation of music therapy for palliative care indicated that most referrals were made to alleviate pain.\(^2\)
Like the previous systematic review, we were unable to verify music therapy’s effectiveness for improving communication or social outcomes for palliative care patients due to the lack of evidence.

However, RCTs may not be the only appropriate way to assess the benefits of music therapy. Other methodologies, which seek to elucidate its processual and qualitative aspects, also have an important contribution to make. Qualitative research suggests that music therapy is beneficial to palliative care patients such as helping them express difficult emotions, helping patients and families find closure at the end of life, and improving staff mood and resilience.

A strength of this review is that we built upon existing work and conducted a comprehensive search of several databases and music therapy journals, checked reference lists of all considered studies, and used strict eligibility criteria for reviewed publications. However, due to resource limitations we were only able to consider articles in the English language.

In addition, due to the nature and quality of studies identified it was not possible to carry out subgroup analysis to investigate type of music therapy or duration as moderator variables. Further large scale RCTs are required to inform the development of music therapy interventions for palliative patients.

**Conclusion**

One advantage of synthesizing the available evidence is that it illustrates clearly the limited extent of our knowledge in this area and highlights the ongoing need for good quality research to guide policy makers and service planners. A key finding in this study was that, during a five-year period, only one new study had been conducted to help inform the development of music therapy services amongst this client group.
This review indicates that music therapy may be effective for reducing pain in palliative care patients. This adds to the previous review’s finding that it may be effective for improving quality of life. However, these results are based on findings from studies with a high risk of bias.

The findings of this systematic review, whilst encouraging, demonstrate that, at present, the beneficial therapeutic effects of music therapy for the palliative care population have not been fully demonstrated. This lack of evidence highlights an urgent need for methodologically rigorous trials of clearly defined music therapy interventions with common outcome measures. Such a strategy would enable healthcare policy makers and commissioners to make fully informed decisions about the role that music therapy should play in palliative care.

Contributions

TM: developed the protocol for the review, identified and screened articles for inclusion, data extraction, data analysis, and drafted the article. DS identified and screened articles for inclusion, data extraction, data analysis and critically revised the article. SP supervised the review, developed the protocol, data extraction, and critically revised the article. All authors approved the final version.

Acknowledgements

We would like to acknowledge Joke Bradt and Cheryl Dileo’s work ‘Music therapy for end-of-life care’ which provided the foundation for this updated systematic review. Special thanks also to the Information Scientist at Queen’s University Belfast for helping to refine the search strategies.

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Declaration of conflicting interests

The authors declare that there is no conflict of interest.

References


**Appendix 1**

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<td>7       (animals not humans).sh. (3987869)</td>
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</tr>
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**Database:** PsycINFO (http://www.apa.org/pubs/databases/psychinfo/index.aspx)

**Date:** 2009 to April 2015

**Total:** 87

**Strategy:**

1. palliative care/ or terminal care/ or hospice care/ or terminally ill/ (10479)
2. hospice$.tw. (3700)
3. (palliate$ or (terminal$ adj6 ill$) or (terminal$ adj3 care) or (end adj3 life)).tw. (14773)
4. ((care adj5 dying) or (caring adj5 dying) or (support$ adj5 dying) or (dying adj5 patient$)).tw. (2634)
5. ((advanced adj6 cancer) or (advanced adj6 carcinoma$) or (advanced adj6 neoplasm$) or (terminal$ adj6 cancer$) or (terminal$ adj6 carcinoma$) or (metastatic adj6 cancer) or (metastas$ adj6 cancer$) or (metastat$ adj6 carcinoma$) or (metastatic adj6 neoplasm$) or (metastas$ adj6 neoplasm$)).tw. (3484)
6. Congestive heart failure.mp. (673)
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11. chronic obstructive pulmonary disease.mp. (1521)
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13. Or /1-12 (63321)
14. music therapy/ (3402)
15. music/ (11593)
16. (music$ or melod$).tw. (28925)
17. (sing or sings or singer$ or singing or song$).tw. (10716)
18. Or/14-17 (37203)
19. empirical study.md. (1789879)
20. followup study.md. (50543)
21. longitudinal study.md. (110025)
22. prospective study.md. (26739)
23. quantitative study.md. (950976)
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24 “2000”.md. (28109)
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30 random$.ti,ab. (134926)
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32 ((singl$ or doubl$ or trebl$ or tripl$) adj (blind$ or mask$)).ti,ab. (20080)
33 Or/19-32 (1858542)
34 13 and 18 and 33 (216)

limit 34 to (human and yr="2009 -Current") (87)

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Date: 2009 to April 2015
Total: 138

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2 (MH “singing”) OR “sing” (1,839)
3 “singer*” (573)
4 “song*” (1,050)
5 “music*” (10,064)
6 “melod*” (243)
7 “music therapy” (3,164)
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10 advanced N6 carcinoma* (1,443)
11 advanced N6 neoplasm* (43)
12 terminal* N6 cancer* (1,100)
13 terminal* N6 carcinoma* (27)
14 metastas* N6 cancer* (3,404)
15 metastat* N6 carcinoma* (1,688)
16 metastas* N6 carcinoma* (1,474)
17 metastas* N6 neoplasm* (18,632)
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19 metastat* N6 cancer* (5,686)
20 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 (34,051)
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23 care N5 dying (1,976)
24 caring N5 dying (500)
25 support* N5 dying (263)
26 dying N5 patient* (2,531)
27 palliat* N6 ill* (527)
28 terminal* N6 ill* (9,817)
29 terminal* N3 care (12,698)
30 end N3 life (10,499)
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MeSH descriptor HEART FAILURE explode all trees
MeSH descriptor LIVER FAILURE explode all trees
MeSH descriptor RENAL INSUFFICIENCY explode all trees
MeSH descriptor NEURODEGENERATIVE DISEASES explode all trees
MeSH descriptor ACQUIRED IMMUNODEFICIENCY SYNDROME this term only
(heart next failure in Title, Abstract or Keywords or liver next failure in Title, Abstract or Keywords or kidney next failure in Title, Abstract or Keywords)
“AIDS” in Title, Abstract or Keywords
neurodegenerative in Title, Abstract or Keywords
(#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15)
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melod* in Title, Abstract or Keywords
(sing in Title, Abstract or Keywords or sings in Title, Abstract or Keywords or singer* in Title, Abstract or Keywords or singing in Title, Abstract or Keywords or song* in Title, Abstract or Keywords)
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Strategy:
1 randomized controlled trial/ (353243)
2 exp controlled clinical trial/ (487963)
3 exp randomization/ (63967)
4 double blind procedure/ (116034)
5 single blind procedure/ (19033)
6 1 or 2 or 3 or 4 or 5 (564138)
7 clinical trial/ (834048)
8 (clin* adj25 trial*).ti,ab. (360497)
9 singl*.ti,ab. (1290854)
10 doubl*.ti,ab. (485029)
11 trebl*.ti,ab. (432)
12 tripl*.ti,ab. (94904)
13 blind*.ti,ab. (270928)
14 mask*.ti,ab. (62531)
15 9 or 10 or 11 or 12 (1760700)
16 13 or 14 (331358)
17 15 and 16 (179646)
18 placebo*.ti,ab. (204147)
19 random*.ti,ab. (913640)
20 18 or 19 (991352)
21 placebo.sh. (247319)
22 methodology.sh. (1384991)
23 21 or 22 (1627002)
24 7 or 8 or 17 or 20 or 23 (3053428)
25 comparative study.sh. (646554)
26 follow up.sh. (852227)
27 prospective study.sh. (266630)
28 25 or 26 or 27 (1654016)
29 exp evaluation study/ (10112)
30 control*.ti,ab. (3167675)
31 prospectiv*.ti,ab. (615132)
32 volunteer.ti,ab. (21212)
33 30 or 31 or 32 (3651252)
34 8 or 29 or 33 (4807148)
35 palliative care/ (52118)
36 terminal care/ (24222)
37 hospice care/ (6239)
38 terminally ill/ (5952)
39 35 or 36 or 37 or 38 (76523)
40 "hospice*".tw. (11247)
41 palliat*.tw. (68820)
42 (terminal* adj3 ill).tw. (7150)
43 (terminal* adj3 care).tw. (2779)
44 (end adj3 life).tw. (17891)
45 41 or 42 or 43 or 44 (86652)
46 (care adj5 dying).tw. (2767)
47 (caring adj5 dying).tw. (568)
48 (support$ adj5 dying).tw. (371)
49 (dying adj5 patient$).tw. (6975)
50 46 or 47 or 48 or 49 (8746)
51 (advanced adj6 cancer).tw. (74962)
52 (advanced adj6 carcinoma$).tw. (22234)
53 (advanced adj6 neoplasm$).tw. (962)
54 (terminal* adj6 cancer$).tw. (3681)
55 (terminal$ adj6 carcinoma$).tw. (428)
56 (metastatic adj6 cancer).tw. (56002)
57 (metastas$ adj6 cancer$).tw. (62979)
58 (metastat$ adj6 carcinoma$).tw. (27923)
59 (metastas$ adj6 carcinoma$).tw. (31691)
60 (metastatic adj6 neoplasm$).tw. (1923)
61 (metastas$ adj6 neoplasm$).tw. (2182)
62 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 (242279)
63 exp congestive heart failure/ (76337)
64 exp liver failure/ (46318)
65 exp kidney failure/ (226546)
66 amyotrophic lateral sclerosis/ (22979)
67 exp acquired immune deficiency syndrome/ (128659)
68 pulmonary disease, chronic obstructive.mp. or exp chronic obstructive lung disease (72504)
69 39 or 40 or 45 50 or 62 or 63 or 64 or 65 or 66 or 67 or 68 (897665)
70 music therapy/ (4347)
71 music$.tw. (15698)
72 melod$.tw. (1949)
73 sing.tw. (1170)
74 sings.tw. (940)
75 singer$.tw. (2022)
76 singing.tw. (2235)
77 song$.tw. (7879)
78 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77 (29348)
79 69 or 78 (781)
80 6 or 24 or 34 (6847533)
81 79 and 80 (325)
82 limit 81 to yr= “2009-Current” (172)

Database: ClinicalTrials.gov (https://clinicaltrials.gov/)
Date: 2009 to April 2015
Total: 765
Strategy:
Music OR (music therapy) OR singing OR song OR songs OR melody

Database: Current Controlled Trials (www.webcitation.org)
Date: April 2015
Total: 58
Strategy:
Music OR music therapy
Sing OR sings OR singing OR song OR songs OR melody OR melodies

Electronic Databases
Date: 2009 to April 2015
### Appendix 2

**Inclusion criteria for systematic review of music therapy for end-of-life care**

<table>
<thead>
<tr>
<th>Study Type</th>
<th>Randomised Controlled Trials (published or unpublished)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study Type</td>
<td>Quasi-randomised or systematic methods of treatment allocation (e.g. alternate allocation of treatment)</td>
</tr>
<tr>
<td>Participants</td>
<td>Specialist Palliative care or hospice settings (inpatient or community)</td>
</tr>
<tr>
<td>Study Type</td>
<td>Any setting with a diagnosis of advanced life-limiting illness being treated with palliative intent and with life expectancy of less than two years</td>
</tr>
<tr>
<td>Type of intervention</td>
<td>Standard care combined with music therapy compared to:</td>
</tr>
<tr>
<td>Study Type</td>
<td>1. standard care alone</td>
</tr>
<tr>
<td>Study Type</td>
<td>2. standard care combined with other therapies</td>
</tr>
<tr>
<td>Delivered by</td>
<td>1. Formally trained music therapist or by trainees in a formal music therapy program</td>
</tr>
<tr>
<td>Delivered by</td>
<td>2. Therapeutic process present</td>
</tr>
<tr>
<td>Personally tailored music therapy interventions</td>
<td>1. Listening to live, therapist-composed, patient-composed, therapist and patient-composed, improvised, or pre-recorded music</td>
</tr>
<tr>
<td>interventions used in an individual or group setting</td>
<td>2. Performing music on an instrument</td>
</tr>
<tr>
<td>interventions used in an individual or group setting</td>
<td>3. Improvising music spontaneously using voice or instruments, or both.</td>
</tr>
<tr>
<td>Outcome measures for patient</td>
<td>1. Symptom relief (e.g. of nausea, fatigue, pain)</td>
</tr>
<tr>
<td>Outcome measures for patient</td>
<td>2. Psychological outcomes (anxiety, depression, fear)</td>
</tr>
<tr>
<td>Outcome measures for patient</td>
<td>3. Physiological outcomes (e.g. respiratory rate, heart rate, IgA levels)</td>
</tr>
<tr>
<td>Outcome measures for patient</td>
<td>4. Relationship ad social support (e.g. family support, isolation)</td>
</tr>
<tr>
<td>Outcome measures for patient</td>
<td>5. Communication (e.g. verbilization, facial affect, gestures)</td>
</tr>
<tr>
<td>Outcome measures for patient</td>
<td>6. Quality of life</td>
</tr>
<tr>
<td>Outcome measures for patient</td>
<td>7. Spirituality</td>
</tr>
<tr>
<td>Outcome measures for patient</td>
<td>8. Participant satisfaction</td>
</tr>
<tr>
<td>Outcome measures for family members/caregivers</td>
<td>1. Psychological outcomes (e.g. depression, distress, coping, grief)</td>
</tr>
<tr>
<td>Outcome measures for family members/caregivers</td>
<td>2. Relationship and social support</td>
</tr>
<tr>
<td>Outcome measures for family members/caregivers</td>
<td>3. Communication with participant</td>
</tr>
<tr>
<td>4. Quality of life</td>
<td></td>
</tr>
</tbody>
</table>