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Assessment of quality of scientific evidence on musical interventions in caring for cancer patients

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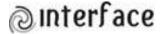
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This integrative review aimed to assess the quality of scientific evidence on musical interventions in caring for cancer patients. The search strategy was conducted in July 2013, using descriptors indexed in the Bireme, Cochrane Library, Medline, Embase, Web of Science, CINAHL and Scopus databases. We selected four randomized clinical trials (two of high and two of low methodological quality) and two systematic reviews (both of high methodological quality). The greatest limitations of the clinical trials were in the descriptions of the resources and musical structures used; and of the systematic reviews, in their focus on the methodological designs. Most of the studies had high methodological quality, but the resources and musical structures used were neither described nor discussed, thereby trivializing the therapeutic potential of music and limiting replication of the studies and incorporation of evidence into clinical practice.

Keywords: Medical oncology. Oncologic nursing. Neoplasms. Music. Music therapy.

Introduction

Given the multidimensional complexity that permeates cancer diagnosis, treatment and prognosis, many initiatives structured around a variety of theoretical-philosophical reference points such as complementary holistic therapies, palliative care, anthroposophy and music therapy have used music as a care resource for cancer patients.



The constant contribution of nursing towards comprehension of the mechanisms that music uses when it triggers physiological reactions in human beings, along with its indications and limitations, can be emphasized¹. Within this perspective, musical interventions "presuppose an intricate network of sensations, emotions, feelings and symbolic and cultural meanings", which are intrinsic to each human being and capable of resonating and producing various therapeutic effects² such as pain, stress and anxiety reduction, promotion of comfort, muscle relaxation and dignity among hospitalized people, and retrieval of institutionalized elderly individuals' reminiscences and identity, among other effects¹.

Regarding emotions, six psychological mechanisms for decoding information that induce emotions through listening to music are proposed: brain reflexes (interpretation of auditory perceptions through consonant and dissonant frequencies that determine sensations of pleasure or displeasure and excitement or relaxation); evaluative conditioning (repetitive pairing of music with other stimuli); emotional contagion (influenced by the emotional expressivity of the composition); visual imagination (interaction between music and mental images evoked while listening to music); episodic memory (evocation of affective memories linked to important moments of life); musical expectation (violation – unexpected or expected – of an essential specific characteristic of the music, linked to past experiences with the musical genre in question)³.

The importance of musical experiences for oncological or palliative care patients, or for those who experienced significant existential anguish and suffering, can be highlighted². Regarding palliative care, which is an interdisciplinary care philosophy that aims towards quality of life and prevention and relief of suffering among patients and their families who live with life-threatening diseases, a bibliographic review study concluded that, when used competently and sensitively, music converges with its philosophical assumptions, given that it acts therapeutically on all human dimensions, especially through promoting an atmosphere which supports emotional and affective expression⁴.

In this context, encounters mediated by music constitute a resource within nursing care that inspires life during patients' days, imprinting in them the sensation of care and giving new meaning to their existence in the world with cancer. Music can support the sharing of experiences, expectations and coping strategies, i.e. being with other people in their existential fatefulness⁵.

Despite this, experimental studies that have built the "state of the art" regarding musical interventions seem to have ignored the complexity of the musical stimuli that exist, as well as the mechanisms through which they induce therapeutic effects in human beings, when describing their interventions. In this light, the present study had the objective of evaluating the quality of the scientific evidence on musical interventions for caring for cancer patients as well as the quality of reports regarding resources and musical structures used.



Methods

The present work was an integrative review of the literature conducted in July 2013, structured into six stages: 1) identification of the topic and elaboration of the research question; 2) definition of the inclusion and exclusion criteria; 3) categorization of the selected studies; 4) evaluation of the studies included in the review; 5) interpretation of the results; and 6) summarized presentation of the knowledge⁶. The research question was: what are the therapeutic effects of music on the human dimensions in caring for cancer patients?

The inclusion criteria were that the studies should be randomized clinical trials and systematic reviews on musical interventions in caring for adult cancer patients, without restrictions on language or time of publication. The exclusion criteria were: musical interventions among children, adolescents or caregivers; interventions performed during clinical treatments (chemotherapy, radiotherapy or brachytherapy) or surgical, invasive and/or diagnostic procedures (biopsy, mammography or colonoscopy), since these would involving psycho-emotional issues (fear or anxiety) relating to the treatments and procedures and not to the disease itself.

The search strategy ("oncology" [MeSH Terms] OR "oncologic nursing" [MeSH Terms] OR "medical oncology" [MeSH Terms] OR "neoplasm" [MeSH Terms] OR "neoplasms" [MeSH Terms] OR "cancer" [MeSH Terms] AND "music" [MeSH Terms] OR "music therapy" [MeSH Terms]) resulted in 228 studies in the following databases: Bireme (1), *The Cochrane Library* (3), *Medline* (35), *Embase* (21), *Web of Science* (57), *CINAHL* (6) and *Scopus* (105).

However, only six studies were selected through reading their titles and abstracts and, subsequently, complete reading guided by the inclusion criteria. The following were excluded: 89 duplicated studies, 63 studies that encompassed other topics (geriatrics, palliative care and alternative and complementary practices), 20 studies on children, adolescents or caregivers, 12 studies performed during clinical treatments, 10 studies performed during surgical treatments, 10 studies performed during invasive and/or diagnostic procedures, 11 studies that used other methodologies, six studies without abstracts available and one study that was not found to be complete.

In addition to the data commonly gathered in review studies (reference point for the study, country, language, methodological design and outcome), the researchers used the guidelines for musical intervention reports proposed by Robb et al.⁷. The randomized clinical trials underwent the methodological quality analysis proposed by Jadad et al.⁸. This scale consists of five criteria and ranges from 0 to 5 points, in which scores lower than 3 indicate that the study has low methodological quality and that it would be difficult to extrapolate its results to other scenarios⁹.

The systematic reviews underwent the AMSTAR¹⁰ quality assessment and were classified in accordance with the classification system used by the Canadian Agency for Drugs and Technologies in Health (CADTH). The scores in this system, which range from 0 to 11, correspond to high (9-



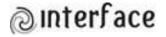
11), medium (5-8) or low (0-4) quality¹¹. The descriptions of the musical interventions were evaluated based on the abovementioned guidelines.

Results

Out of the six studies selected, four (S1, S3, S5 and S6) were randomized clinical trials (RCTs) and two (S2 and S4) were systematic reviews. Regarding the musical intervention, three RCTs (S1, S5 and S6) were conducted in the United States by music therapists and one (S3) was performed in Taiwan, by nurses. The systematic reviews encompassed interventions performed both by music therapists and by healthcare professionals and were developed by American researchers, one (S2) in a partnership with Chinese researchers. The methodological designs of the studies are presented in Box 1.

Box 1. Characteristics of the studies according to country, year of publication, methodological design and outcome. Brazil, 2013.

| Study Countr | | Methodological design | Outcome |
|------------------|-------|--|---|
| | year | | |
| S1 ¹² | USA | Randomized clinical trial – mixed methods approach. | The experimental group presented |
| | 2013 | N = 17 patients (experimental group: 10 and control | higher scores on the peace and faith |
| | | group: 7). | subscales of the Spiritual Wellbeing |
| | | Comparison intervention: waiting list. | Scale — Therapy and Functional |
| | | Sex: experimental group – 6 women and 4 men; | Evaluation of Chronic Diseases in the |
| | | control group – 3 women and 4 men. | post-test than shown by the control |
| | | Mena age: 59.85 years old. | group. |
| | | Ethnicity: American. | |
| | | Diagnostic: leukemia, not specified or others. | |
| | | Stage of the disease: not described. | |
| | | Scenario: Oncology-hematology unit of a hospital. | |
| | | Inclusion criteria: to be able to read and understand | |
| | | English, to be hospitalized at the oncology unit, to | |
| | | have completed 3 sessions with the researchers, to be | |
| | | 18 years old or older. | |
| | | Instruments: Spiritual Wellbeing Scale – Therapy and | |
| | | Functional Evaluation of Chronic Diseases (FACIT-Sp) | |
| | | Semi-structured interview (thematic analysis). | |
| S2 ¹³ | USA/ | Systematic review and meta-analysis. | Seven high-quality studies indicated |
| | China | N = 3,181 patients – 32 randomized clinical trials (10 | that music had positive effects on |
| | 2012 | in English and 22 in Chinese). | coping with anxiety, evaluated through |
| | | Nine databases (6 in English and 3 in Chinese – | the Self-evaluation Anxiety Scale; 2 |
| | | Cochrane, Medline, PsychINFO, AMED, CINAHL and | moderate-quality studies suggested that |
| | | EMBASE; CNKI, Wangfang and CBM, respectively). | music reduces anxiety, evaluated |
| | | Sex: not described. | through Hamilton's Anxiety Scale; 8 |



Age: not described. moderate-quality studies showed that Ethnicity: English and Chinese. music reduces anxiety, evaluated Diagnosis: the majority of the studies included various through the Trace-State Anxiety types of cancer (breast, lungs, maxillofacial cancers; Inventory (IDATE); 7 moderate-quality nasopharyngeal carcinoma, leukemia and malignant studies showed that music improves tumors). depression; 7 moderate-quality studies Stage of the disease: not described. observed that music had positive effects Scenario: not described. on pain management; 2 moderate-Inclusion criteria: randomized controlled studies on quality studies suggested that music the effects of musical interventions on physical and worsened fatigue; 4 moderate-quality psychological outcomes in cancer patients; published studies indicated that music reduces in English or Chinese from 1966 onwards or the heart rate; 3 low-quality studies beginning of the database up to March 2011; the suggested that music can reduce research terms (and their variations): "music" or "music respiratory frequency; 2 moderatetherapy" or "musical intervention" or "medicinal music" quality studies indicated that music and "cancer" and "pain" and improves quality of life. Individual "radiotherapy" and "chemotherapy" and "oncology"; randomized clinical trials suggested that there were no restrictions regarding age, sex, ethnicity musical intervention is accepted by or type of scenario. patients and is associated with better Instruments used: GRADE (Grading of psychological results. The effects of Recommendations Assessment, Development and music on vital signs were small, especially regarding blood pressure. Evaluation). Comparison intervention: standard treatment alone, High-quality trials are necessary to standard treatment with other therapies, standard continue to determine the effects of treatment plus placebo. Studies using placebo musical intervention. involved the use of headphones without music or any other type of hearing stimulus provided to the participants. S3¹⁴ Taiwan Randomized clinical trial. To provide culturally appropriate and 2010 N = 126 patients (experimental group: 62 and control familiar music was a key element of the intervention. The findings corroborated group: 64). Comparison intervention: resting in bed. the theory for oncological pain of Good Sex: 88 men (70%) and 38 women (30%). and Moore (1996), which states that Age: ranged from 18 to 85 years, with mean of 54 soft music was considered safe, effective and appreciated by the years. participants; the study provided Ethnicity: Taiwanese. Cancer diagnosis: 51 head or neck (41%); 25 significantly (p < 0.001) greater relief gastrointestinal (20%); 16 hematological (13%); 15 of oncological pain than painkillers genitourinary (12%); 7 lung (6%); 1 bone (1%); 11 alone. Thus, nurses should provide calm other types (9%). and familiar music to complement Stage of the disease: 2 in stage I (2%); 3 in stage II analgesia for people with oncological (2%); 10 in stage III (8%); 68 in stage VI (54%); 33 pain. provided insufficient information about the stage (26%); 2 recurrences (2%); 8 could not be measured (for example, leukemia) (6%). Scenario: oncology unit, palliative care and



| | | T , , , , , | T |
|------------------|------|--|---|
| | | gastroenterology and pneumology units. | |
| | | Inclusion criteria: to have cancer diagnosis; habitual | |
| | | pain reported during the previous 24 h; to be 18 years | |
| | | old or older; to be able to speak Chinese and/or | |
| | | Taiwanese; to be willing and able to consent. Patients | |
| | | who underwent major surgical procedures during the | |
| | | previous month were excluded. | |
| | | Instruments: VAS – verbal numerical scale – use of | |
| | | opioid painkillers and interview. | |
| E4 ¹⁵ | USA | Systematic review. | The results suggested that musical |
| | 2008 | Sample size: 1,891 cancer patients (30 randomized | interventions can have a positive effect |
| | | quasi-experimental clinical trials). | on oncological patients' anxiety, with |
| | | Diagnosis: cancer patients. Patients who underwent | reduction of 11.20 units in the IDATE |
| | | biopsy and aspiration for the diagnosis were excluded. | scores and -0.61 on other anxiety |
| | | Stage of the disease: various. | scales. The results suggested that there |
| | | Scenario: various. | was a positive impact on mood, but no |
| | | Scenario, various. | · |
| | | | evidence was found regarding |
| | | | depression. |
| | | | Positive effects were observed |
| | | | regarding anxiety, pain, mood and |
| | | | quality of life among cancer patients |
| | | | and small effects on heart rate, |
| | | | respiratory frequency and blood |
| | | | pressure. |
| | | | The quality of the scientific evidence of |
| | | | the studies was low. |
| | | | It was not possible to compare the |
| | | | effectiveness between the interventions |
| | | | provided by music therapists and by |
| | | | other healthcare professionals. |
| S5 ¹⁶ | USA | Randomized clinical trial (pre-test and post-test). | The experimental group presented |
| J | | · · · | |
| | 2001 | N = 8 patients (experimental group: 4 and control | better mood and quality of life in the |
| | | group: 4). | post-test (one week after the last |
| | | Comparison intervention: waiting list. | session) and in the follow-up (6 weeks |
| | | Sex: women. | after the intervention), compared with |
| | | Mean age: 48 years, standard deviation 6.56 years. | the control group. However, the |
| | | Ethnicity: American. | subscores of the quality of life scale – |
| | | Diagnosis: 7 with breast cancer and 1 with ovary | depression and confusion – showed a |
| | | cancer. | slight increase in the follow-up of the |
| | | Stage of the disease: not described. | experimental group. |
| | | Scenario: therapeutic consultation office. | |
| | | Inclusion criteria: cancer diagnosis relating to the | |
| | | endocrine or immunological system (ovary, breast, | |
| | | prostate, endometrium, leukemia or lymphoma); age | |
| | | group from 30 to 65 years old; conclusion or absence | |
| | | of chemotherapy and/or radiotherapy treatment; | |
| | | abstinence from drugs, absence of smoking habits and | |
| | | abstilled from drugs, absence of silloking flabits and | |

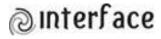


| | | limited alcohol consumption (≤ 10 doses per week); | |
|------------------|------|--|--|
| | | absence of therapy with prednisone; absence of | |
| | | history of acute psychiatric disease; preserved | |
| | | cognitive/mental function. | |
| | | Instruments: Quality of Life Scale – cancer (QOL-CA); | |
| | | Profile of mood states (POMS) (1971) – answered in | |
| | | the pre-test, in the post-test and during the 6 th week | |
| | | of follow-up. | |
| S6 ¹⁷ | USA | Randomized clinical trial. | The experimental group presented |
| | 2003 | N = 80 patients (experimental group: 40 and control | better quality of life than the control |
| | | group: 40) | group. The quality of life in the |
| | | Comparison intervention: routine hospice care. | experimental group increased over the |
| | | Sex: male and female. | course of the period during which they |
| | | Mean age: experimental group – 66 years old and | received more music therapy sessions. |
| | | control group – 65 years old. | Without music, the quality of life in the |
| | | Ethnicity: American – 25% black and 75% Caucasian | control group diminished. There was no |
| | | in each group. | significant difference between the |
| | | Diagnosis: various types of cancer. | groups regarding the functional state of |
| | | Stage of the disease: cancer in terminal stage with | the subjects, duration of life, or time of |
| | | prognosis of 6 months of life or less. | death, in relation to the last visit |
| | | Scenario: home environment. | scheduled by the music therapist or |
| | | Inclusion criteria: cancer diagnosis in terminal stage; | family support adviser. |
| | | adults; living in their homes; prognosis of life of at | |
| | | least 2 weeks according to the nursing evaluation on | |
| | | admission; to be able to answer questions regarding | |
| | | their perception of quality of life; to consent to be part | |
| | | of the research. | |
| | | Instruments: Hospice Quality of Life Index-Revised | |
| | | (HQOLI-R), which was a self-report measurement | |
| | | provided during each visit; Palliative Performance | |
| | | Scale for evaluating the subjects' functional state. | |
| | 1 | | I . |

According to the methodological quality analysis proposed by Jadad et al.⁸, although two RCTs (S1 and S3) were not described as double-blind studies, they presented high quality. On the other hand, the others (S5 and S6) were considered to be low-quality studies because they did not describe the randomization sequence properly, as observed in Table 1.

Table 1. Evaluation of the quality of reports on randomized clinical trials, according to Jadad et al.⁸. Brazil, 2013.

| Items | Studies selected | | | |
|---|------------------|-----|-----|-----|
| | S1 | S3 | S5 | S6 |
| Was the study described as randomized? | Yes | Yes | Yes | Yes |
| Was the study described as double-blind? | No | No | No | No |
| Was there a description of exclusions and losses? | Yes | Yes | No | No |



| Was the method to generate the randomization sequence described and | Yes | Yes | No | No |
|---|-----|-----|----|----|
| appropriate? | | | | |
| Was the double-blind method described and appropriate? | No | No | No | No |
| Points | 3 | 3 | 1 | 1 |

Based on the AMSTAR¹⁰ quality evaluation and in conformity with the classification system used by CADTH¹¹, studies S2 and S4 obtained scores of 10 and 11 respectively and therefore presented high quality, although S2 did not provide a list of studies excluded (Table 2).

Table 2. Evaluation of the methodological quality of systematic reviews, according to Shea et al.¹⁰. Brazil, 2013.

| Items | Studies sele | Studies selected | |
|---|--------------|------------------|--|
| | S2 | S4 | |
| 1. Was a project provided "a priori"? | Yes | Yes | |
| 2. Was there duplication in the selection of studies and data extraction? | Yes | Yes | |
| 3. Was a comprehensive bibliographic investigation/search performed? | Yes | Yes | |
| 4. Was the publication status (in other words, gray literature) used as an inclusion criterion? | Yes | Yes | |
| 5. Was a list of studies (included and excluded) provided? | No | Yes | |
| 6. Were the characteristics of the included studies provided? | Yes | Yes | |
| 7. Was the scientific quality of the included studies evaluated and documented? | Yes | Yes | |
| 8. Was the scientific quality of the included studies used properly in formulating the conclusions? | Yes | Yes | |
| 9. Were the methods used to match the results from the studies appropriate? | Yes | Yes | |
| 10. Was the likelihood of publication bias evaluated? | Yes | Yes | |
| 11. Were conflicts of interest informed? | Yes | Yes | |
| Quality | 10 | 11 | |

Regarding the evaluation of the quality of the musical intervention reports of the RCTs, conducted using the checklist proposed by Robb et al.⁷ (Box 2), deficient description of the musical resources and structures used can be seen. Apart from the song *Amazing Grace*, which was superficially mentioned, the study S1 neither described the other songs used nor their overall structure. The study S3 only referred to the musical styles used, and did not describe the sound resources and structures used. Although the study S5 reported the album used in the intervention, it mentions that other complementary classical selections were used, but does not describe them. In the study E6, the researcher does not describe the songs and material used, or the duration of the music therapy sessions.

Box 2. Methodological description of musical interventions relating to the RCTs, in accordance with the checklist proposed by Robb et al. ⁷. Brazil, 2013.

| Checklist | Randomized clinical trials | | | |
|-----------|----------------------------|----|----|--|
| | S1 | S5 | S6 | |



| A. Theoretical | Musical preference of | Soothing music, 60- | Bonny method of | Cognitive-behavioral |
|-------------------------------|---------------------------------|-------------------------------|--------------------------------|------------------------|
| framework: rationale for | the patient. The music | 80 beats per minute | guided images and | approach in which |
| the song selected; to | therapy interventions | (bpm), without | music | the music therapy |
| specify how the musical | should be based on | lyrics, with sustained | | interventions are |
| qualities can trigger the | three context-support | melodic quality, and | | projected to treat the |
| desired outcomes. | elements: structure, | with controlled | | problems identified |
| | support for autonomy | volume and tuning). | | and allow expression |
| | and active | | | of emotions |
| | participation). Live | | | respecting the |
| | song of the patient's | | | process inherent to |
| | preference can | | | the live musical |
| | express his | | | dialogue. |
| | individuality and work | | | |
| | as a method for | | | |
| | analyzing particular | | | |
| | events. | | | |
| | | | | |
| B. Content of the interve | ntion: details of the music | :al intervention and desc | ription of the interventio | n procedures |
| constructed with individual | | | , | |
| B.1 Person who selects | Patient selects from a | Patient selects from | Pre-selected by the | Researcher, based on |
| the song: to specify who | pre-determined set | a pre-determined set | researcher. | the patient's |
| selects the song – pre- | list. | list. | | evaluation. |
| selected by the | | | | |
| researcher; the | | | | |
| participant selects a pre- | | | | |
| determined set list; the | | | | |
| participant selects from | | | | |
| his own collection; based | | | | |
| on the participant's | | | | |
| evaluation. | | | | |
| B.2 Song: when it is a | Amazing Grace (the | Taiwanese folkloric | Collection of songs | Not described. |
| recording, indicate the | others were not | songs, Buddhist | for imagination and | |
| reference (album), | described). | hymns, instrumental | other classical | |
| musical score and | described). | music – harp and | selections (not | |
| musical analysis; when | | piano. | described) to | |
| the song is improvised or | | piano. | complement the | |
| original, describe the | | | collection, when | |
| overall structure of the | | | considered clinically | |
| song (shape, elements, | | | - | |
| instruments etc.). | | | appropriate. | |
| B.3 Method (musical | Live music. | Musical | Guided images and | Various music |
| | LIVE IIIUSIC. | | music (GIM) – | |
| reproduction - live): | | reproduction. | | therapy techniques |
| equipment used, | | | musical | (music of choice, |
| headphones, who | | | reproduction. | music that evokes |
| determines the volume, | | | | reminiscence, |
| decibel limit; size and | | | | singing, listening, |
| performance of the | | | | listening to live |



| group. | | | | music, analysis of |
|---|-------------------------|----------------------|----------------------|-----------------------|
| | | | | lyrics, playing an |
| | | | | instrument, parody, |
| | | | | singing with |
| | | | | accompaniment |
| | | | | using the iso- |
| | | | | principle, planning |
| | | | | memorial service |
| | | | | funerals, presenting |
| | | | | music, and assisted |
| | | | | music for support |
| | | | | counseling. |
| B.4 Material of the | Fender FA 100 | Audio tapes and | Sound system with | Not described. |
| intervention: specify | acoustic guitar and | headphones. | CD-player (Sony | |
| musical and non-musical | musical set list. | | CDF 363); chair; | |
| material. | | | sofa; recorder with | |
| | | | lapel microphone | |
| | | | (Sony Wm D6C). | |
| | | | | |
| B.5 Intervention | Listening to music. | Listening to music. | Listening to music. | Music therapy visits. |
| strategies: write the | Each session included | The participants | Discussion of issues | Listening to music. |
| strategies under | 3 to 8 songs of the | from both groups | that encompass the | 3 |
| investigation (listening to | patient's preference or | were firstly invited | disease and current | |
| music, song writing, | suggested by the | to listen to a brief | mood, and definition | |
| improvisation, analysis of | researcher. | introductory tape | of session goals (15 | |
| lyrics, rhythmic | | and choose the type | min.); Relaxation | |
| stimulation of listening). | | of music they | and images: | |
| 54 | | thought would best | transition to the | |
| | | relax or distract | music (15 min.); | |
| | | them. | listening to music | |
| | | uleili. | (30 to 40 min.); The | |
| | | | patient commented | |
| | | | on the imagistic | |
| | | | experience and | |
| | | | correlated the | |
| | | | images with the | |
| | | | · · | |
| | | | personal process. | |
| | | | POMS and QV-CA | |
| | | | were filled out (30 | |
| C Internati | Th | 0 | to 40 min.). | A+1+ 2 |
| C. Intervention | Three sessions on | One session with | Ten weekly sessions, | At least 2 sessions |
| framework: number of | consecutive days, with | duration of 30 min. | with duration of 90 | (without description |
| sessions, duration, | duration of 15 to 30 | | to 120 min. | of duration). |
| frequency. | min. | | | |
| | | | | |
| D. Performer of the intervention: specify | Music therapist. | Nurse. | Accredited music | Three accredited |
| | | i | therapist with | music therapists and |

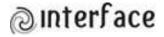


| qualifications and | | | experience of the | 2 music therapy |
|----------------------------|---------------------|----------------------|----------------------|------------------------|
| credentials of the | | | Bonny method. | interns under clinical |
| professional who | | | | supervision by the |
| performs the | | | | researcher, both |
| intervention; specify how | | | | trained by the |
| many professionals | | | | researcher. |
| participate in the study. | | | | |
| E. Fidelity of the | Monitoring. | Monitoring. | Protocol. | Training. |
| treatment: describe the | | | | |
| strategies used to ensure | | | | |
| that the treatment | | | | |
| and/or control conditions | | | | |
| are conducted as desired | | | | |
| (training, protocols, | | | | |
| monitoring). | | | | |
| F. Scenario: describe | Oncology-hematology | Oncology, palliative | Therapy consultation | Home environment. |
| where the interventions | unit of a hospital. | care and clinical | office. | |
| were performed, | | units. | | |
| including place, level of | | | | |
| privacy and sound | | | | |
| environment. | | | | |
| G. Target-population: | Cancer patients. | Cancer patients. | Cancer patients. | Cancer patients. |
| specify whether the | | | | |
| interventions were | | | | |
| performed with | | | | |
| individuals or groups | | | | |
| (including the size of the | | | | |
| group). | | | | |

Regarding the systematic reviews, it was seen that the researchers focused their evaluations on the methodological quality of the studies. However, the descriptions of the musical interventions were limited, insufficient, diversified and inconclusive, thus hampering comparative analysis. The studies S2 and S4 indicated that there is a need to develop new investigations with detailed descriptions of the musical stimuli used. The study S4 suggested that the relationship between frequency and duration of the sessions and the effects of the treatment should be evaluated.

Discussion

The first point that drew our attention was the small number of clinical trials and systematic reviews relating to human dimensions of oncological patients, thus showing that the reasoning of procedures and management of complications from the disease is still the tonic in our environment.



We recognize the emphasis given to the hierarchical model, which assigns levels of evidence according to the methodology used in various studies. Exactly because they are so valued, it is crucial that when healthcare professionals read a clinical trial, they should be able to evaluate its quality and understand its limitations. The idea induced is that if, when caring for patients, a professional does not behave in accordance with what was "demonstrated" in one clinical trial or another, or in systematic reviews and meta-analyses, he will be out-of-date regarding his knowledge and will be instituting care "without scientific evidence". Clinical trials are a useful tool for clinical practice, but cannot be used simplistically and en-masse. They should be regarded as a source of evidence for guiding decision-making, but cannot be used as if they were unquestionable dogma¹⁸.

On the other hand, although good clinical studies conducted by researchers have led to advances in science, methodological rigor is still needed even when more integrative healthcare resources are used. In this regard, essential aspects of musical interventions have been neglected.

There is no doubt that musical interventions within the field of healthcare field have shown the therapeutic effects of music, irrespective of which professionals have implemented them. However, the great challenge of reflecting on why this happens and how music acts to produce these effects on human beings² has been little questioned, investigated or discussed.

This task becomes particularly hard in the light of the way in which the methodological description of musical interventions has been presented. Because of the complexity of musical stimuli and other intervening factors such as the choice of music, means of delivery or combination of music with other intervention strategies, the methodological descriptions of various musical interventions have been insufficient to allow generalizations, comparisons, replications and execution⁷. Like in the systematic reviews (S2 and S4) evaluated here, the present study also showed that the descriptions of the musical interventions of the clinical trials evaluated present limitations.

This reflection relates to the four basic principles that govern the use of music in nursing care, which are consequent to its universal characteristics. The ontological principle refers to experiences of sound and music and to the essence of human beings as musical beings. The physical principle translates the way that human beings perceive and are affected by music, i.e. how sound and musical stimuli that are conducted through the auditory nerve to the cortex produce physiological, mental and emotional sensory responses¹.

The musical principle is shown through the musical elements inherent to the intervention. Some of these are coupled to the physical dimension, such as the rhythm, while others are coupled to emotions, such as the melody. The social dimension is taken into account through the historical-cultural context in which the music originated, which enables the sensation of belonging to a group, a place, a history and a time. In the spiritual dimension, which has been little understood and investigated, the musical elements converge to articulate all human dimensions, thus enabling



profound contact with human beings' own essence, the universe, God, or any other conception of spirituality¹.

The relational principle translates the interpersonal relationship mediated by music: a phenomenon created by human beings. As a care resource, music emerges from the intentionality of care, through facilitating the encounter between the caregiver and the care receiver, and providing support for expressions of affection, compassion and solidarity, through the gestures, looks, smiles and smooth touches inherent to producing music¹.

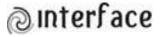
However, the instrument that evaluated the quality of the reports on musical interventions⁷ showed how deficient the description of the resources used is, especially with regard to those of the musical structures involved (i.e. musical principles): tone, mode (major or minor), rhythm (two, three or four beats to the bar, and so on), tempo (bpm), genre (European classical, popular, religious, etc) and timbre (instrumental and/or vocal grouping). The use of various music therapy techniques, in different contexts, can also hamper control over the underlying variables and consequently interfere in the evaluation of the therapeutic effects of the music.

The systematic reviews also focused on evaluating the methodological designs, to the detriment of evaluating the quality of the reports regarding the sound resources and musical structures used. Taking evidence-based practice into consideration, the following question arises: regarding the properties of the music, what was shown? Thus, its limitations are displayed and the validity/reliability of the evidence and inferences published can be questioned, along with its replication and incorporation in the clinical practice.

On the other hand, there are many reports that have highlighted the therapeutic effects of music, such as:

Music managed to make three gigantic contributions to my rescue: the first was as a powerful anesthetic. A buffer for pain and suffering. Going from my mother's lullaby songs and the games of improvised singing, to 'the challenge' of my father, the hit parades of portable transistor radios and a permanent companion in hospitals. Music represented the beginning of a train of thought for hope.¹⁹ (p.7)

These effects relate to people's experiences of long treatments and long hospital stays, through their recognition of music as a natural "anesthetic" that held their hopes during hard times, with a physical principle. Every case study or experience is unique and has unquestionable value. These reports describe individual strategies in which the elements proposed for analyzing musical interventions may even be described, but are not usually the focus of the description and have a very limited "n". In this regard, musicians with links to teaching and the use of music within the field of healthcare recognize the difficulty of indicating a specific song because both the instrument and the musician interfere with the result.



Singing therapy is an intervention with an anthroposophical approach and, although it is structured from the patient's musical history, it is attentive to musical structures, i.e. melodies that alternate between major and minor modes; songs constructed on pentatonic scales; or liturgical modes such as the Gregorian singing or canons. Regarding children, it is adapted to their stages of affective/cognitive development. It also retrieves the professional/patient relationship – the relational principle – as the most important aspect to be considered²⁰. The unity of each relationship comprises an extra "ingredient" in the analysis of the final results.

It is important to highlight a study on music therapy interventions that was conducted with the aim of contributing towards the reception in the waiting room of a primary healthcare unit, where users can interact by suggesting songs, singing, composing or playing a musical instrument, as well as through body movements and emotional expressiveness. The results showed the appreciation and integration of professionals and users, expression of feelings, harmonization of the soundscape, users' autonomy, protagonist role and self-assurance, and also discovery of new potentials and overcoming of limits, thereby bringing the benefits established through hospital humanization to primary care²¹. Although the distinction and articulation of the abovementioned four basic principles aforementioned can be seen, the importance of qualified listening and the feeling of belonging inherent to the intervention is paramount, i.e. meeting with other people, through the relational principle.

Despite this, the feelings and emotions expressed through music, through the ontological principle, constitute an enigma that, by itself, is susceptible to risks and ambiguities. The secret of success or failure of the musical project may be hidden in knowing how to deal with equivocation of the component structures. This vulnerability may be presented at several levels. According to the musicologist Carl Dahlhaus, the expression of feelings is genuinely more related to musical interpretation than to composition²². In discussing sound language, the responsibility that healthcare professionals should have when proposing to use a sound resource or "compound sound" with therapeutic purposes should be emphasized, because inadequate use of music can lead to undesired effects²³.

The polysemic nature of music is responsible for the difficulty that we found in explaining it and using it in a desirable manner for different clinical situations or when we thought about the human dimensions that we wanted to address.

Although the musical experience is individual, which often favors using an individualized musical set list, neuroscience studies have indicated that the brain's processing of music is more physiological than what is determined by individual preferences.

The elements that comprise the music, whatever the pitch (different intonation of notes from bass to treble), the duration (time interval over which the sound lasts), the intensity (the same as volume) and the timbre (characteristic that qualifies and differs the sounds), are processed by the human brain. This means that musical preference can determine specific behavior (individual or even collective, and it is learned), but it does not necessarily have an intrinsic relationship with the



psychological-physiological effects that are observed and reported in the literature. Before the current idea that music can be a therapeutic resource, evolutive issues originally existed (which therefore had nothing to do with preferences).

The perceptual basis of music derives from auditory mechanisms. Their syntactic components may have been co-opted from the language and its effects on our emotions might have been triggered by acoustic similarity with other sounds of greater biological relevance, such as vocalizations or animal sounds. Thus, it would be an evolutionary history of the language, directed towards social cohesion (as in group activities relating to war or religion) or even through its pacifying effect on babies²⁴. On the other hand, the harmonic structures and tone scales depend on learning, which leads to the existence of cultural differences in the musical universes of different populations. However, when related to emotions, as the main path of human response to music, they are not enough to block its effects.

Studies increasingly indicate that the human response is intrinsically connected to the sound material offered. A study conducted on a native African population that did not know the western music system, presented similar results regarding the recognition of basic emotions (happiness or sadness, for example), in comparison with the ability of Western listeners who were familiar with this tonal system, in this same task²⁵. This, once again, emphasizes that mastery of music and its constituents is needed by professionals who aim to make it a therapeutic resource, as well as the need for detailed descriptions of the musical interventions used in scientific studies.

Musical experience is therefore founded on a trio: the listener, the sound material and the context. Thus, it is important for therapists who conduct such interventions to create the context needed for using sound material that best applies to the therapeutic objectives, which are determined jointly with their patients².

Conclusion

Because of the complexity and multi-dimensionality inherent to caring for cancer patients, many studies on musical interventions have been developed. However, these have often focused on the adverse effects of anti-neoplastic treatments and diagnostic procedures and have not addressed the human dimensions of those who experience diseases (in this case, oncological conditions). This explains the small sample of the present study. The absence of randomized clinical trials and systematic reviews within this context, conducted in Brazil, can be highlighted.

According to the evaluation instruments used, four studies presented high methodological quality and, although the majority of the items of the checklist for intervention reports were referenced, the resources and musical structures (which place value on the therapeutic potential) were not described, nor were they analyzed and discussed. This shows the complexity of the "music" strategy as a therapeutic resource.



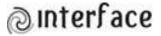
A tendency not to describe the resources and musical structures used in musical interventions was observed, even after the publication of the guidelines that were used for analyses in this study. Without mastery of pharmacokinetics and pharmacodynamics, healthcare professionals would not prescribe or administer a drug. However, this kind of care has not been implemented regarding musical interventions. Within this perspective, in order to systematize the use of music as a care resource, through evidence-based practice, and to avoid its trivialization, it is essential to draw up projects and reports for future research on musical interventions using these guidelines.

Collaborators

Vladimir Araujo da Silva was responsible for the conception, design, analysis and data interpretation, and for writing the manuscript. Eliseth Ribeiro Leão was responsible for the conception, design, data analysis, critical review and approval of the version to be published. Maria Júlia Paes da Silva was responsible for the conception, data interpretation, writing, critical review and approval of the version to be published.

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