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MUSIC IN THE CARE OF CHILDREN AND ADOLESCENTS WITH CANCER: INTEGRATIVE REVIEW

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ABSTRACT: Integrative review which goal was to identify the scientific production published about the use of music in the care in health of children and adolescents with cancer from 2004 to 2014. The search was conducted in SciELO, LILACS, BDENF, MEDLINE, PubMed and The Cochrane Library databases. Seven studies were selected, which showed positive effects in the use of the music such as decrease of pain, anxiety, depression and showed that the music can bring benefits to the patient and their families. Two categories were defined on the use and effects of music and the patients' perspective, parents and professionals about this practice were elaborated. It was concluded that the use of music as a complementary therapy can improve child and adolescent's physical and mental well-being in face of serious illness and its treatment, and helps to strengthen the bond between the patient and his family, as well as the health care team.

DESCRIPTORS: Music. Nursing. Oncology. Child. Adolescent.

A MÚSICA NO CUIDADO ÀS CRIANÇAS E ADOLESCENTES COM CÂNCER: REVISÃO INTEGRATIVA

RESUMO: Revisão integrativa com objetivo de identificar a produção científica publicada acerca da utilização da música no cuidado em saúde de crianças e adolescentes com câncer no período de 2004 a 2014. Realizou-se a busca nas bases de dados SciELO, LILACS, BDENF, MEDLINE, PubMed e *Cochrane Library*. Foram selecionados sete estudos, que apresentaram efeitos positivos no uso da música, como a diminuição da dor, ansiedade, depressão e evidenciaram que a música traz benefícios ao paciente e seus familiares. Elaborou-se duas categorias que abrangeram a utilização e efeitos da música e a perspectiva dos pacientes, pais e profissionais sobre esta prática. Concluiu-se que o uso da música como terapia complementar pode melhorar o bem-estar físico e mental da criança e adolescente, diante de uma doença grave e seu tratamento, e contribui para fortalecer o vínculo entre o paciente e sua família, bem como com a equipe de saúde.

DESCRIPTORIOS: Música. Enfermagem. Oncologia. Criança. Adolescente.

LA MÚSICA EN EL CUIDADO DE NIÑOS Y ADOLESCENTES CON CÁNCER: UNA REVISIÓN INTEGRATIVA

RESUMEN: Revisión integrativa que objetivó identificar la producción científica publicada sobre el uso de música en el cuidado de salud de los niños y adolescentes con cáncer entre 2004 y 2014. Se realizó una búsqueda en las bases de datos SciELO, LILACS, BDENF, MEDLINE, PubMed y *Cochrane Library*. Fueron seleccionados siete estudios, que demostraron efectos positivos, como la disminución del dolor, la ansiedad y la depresión. Fueron elaboradas dos categorías sobre el uso y los efectos de la música en la perspectiva de los pacientes, de padres y profesionales. Los estudios demostraron además que la música puede traer beneficios a los pacientes y sus familias. Se concluyó que la música como terapia complementar, puede mejorar el bienestar físico y mental de niños y adolescentes, de frente a una enfermedad grave y su tratamiento y, contribuye a fortalecer el vínculo entre el paciente, familia y equipo de salud.

DESCRIPTORIOS: Música. Enfermería. Oncología. Niño. Adolescente.

INTRODUCTION

In recent time, health professionals have discussed the physical, mental and emotional manifestations brought about by music and its influences in patients with various diseases, and with it, many health services are taking music inside their departments, with the objective of providing complementary therapy for the patient, associated with therapies and conventional practices, to promote humane care and promote worker health.¹⁻²

The literature presents studies on the effects of music, proving that they can act directly on the human body, promoting changes in blood pressure, heart rate and respiratory rate,^{1,3} as well as the coordination of patients with degenerative diseases.⁴ It is used in treating disorders of speech and language,⁴ and can act on the discomfort and pain tolerance, helps in reducing emotional stress in cases of terminal illness and in cases of hospitalization, among others.^{3,5}

The use of music has significance when used therapeutically in order to reduce stress levels, anxiety and discomfort, especially in hospitals, because of stressors generated and experienced by patients during treatment or determined by the actual hospitalization. The hospitalization process alters the patient's daily life with the experience of unusual moments and situations in their daily activities, emerging feelings of insecurity, loneliness, fear, especially pain, and the limitations resulting from the pathology, changes in lifestyle and death.⁵⁻⁶

For children and adolescents, hospitalization can cause detachment and disruption of family ties, friends and school.⁶ In pediatric oncology patients these factors may be aggravated due to the occurrence of side effects of drug therapy, primarily due to chemotherapy, the prolonged periods of hospitalization, expectations in alternative treatment and cure of the disease, the physical and psychological changes caused by cancer itself and its treatment that greatly impacts routine and the life of patients.⁷

The incidence of childhood cancer has been growing in Brazil and is the leading cause of death for children and adolescents between one and 19 years of age.⁸ Survival is influenced by several factors, among them the delay in seeking medical care from the onset of the first signs and symptoms, poor health services and the delay in diagnosis.⁷ The

changes and resulting impacts due to cancer deserve special attention from health professionals and family members, given that the child must receive full care and is facing a shocking and frightening condition, who will go and live together with unknown people and services.⁹

It is in this context that the application of music in care practices is recommended, such as care strategies that provide cognitive, sensory and motor stimulation, helping children and adolescents effectively cope with stressors and the disease process. Music and its expressions facilitate a playful environment, moments of relaxation and joy, softening the pain and suffering of hospitalized children and adolescents.

Thus, considering the benefits and positive aspects already highlighted and presented in the literature, it is necessary to deepen the reflection and discussion on the inclusion of music in the process of caring for a complete and more humanized care. Thus, in order to contribute to this reflection, this study aimed to identify the scientific literature published about the use of music in the health care of children and adolescents with cancer.

METHOD

This is an integrative review of literature, a method used for relevant research analysis, which allows the synthesis of important studies for a particular theme and allows, in addition to general conclusions that support decision-making in clinical practice, the pointing out of the gaps of knowledge indicating the need for further studies.¹⁰

For construction of this review the following steps were followed: preparing the guiding question of the research and objective; development of criteria for inclusion of studies in the review; search and selection of studies in databases; systematical data analysis; and discussion, interpretation of results and summary of the review, with the presentation of clear, objective and the most complete possible.¹⁰

The review was conducted in January 2015 using the guiding question: what are the effects of music when applied in health care to children and adolescents with cancer?

For the selection of the studies the following were considered as inclusion criteria: be a national or international article; to have been published between the years 2004 and 2014; be available online for consultation in journals indexed in consulted

electronic databases; and that would meet the purpose of the study. Studies that did not meet the pre-established criteria were excluded.

The search took place in journals, using the Boolean operator *AND* for the combination of descriptors: music, music therapy, pediatrics, child, adolescent, oncology, cancer, cancer, music, music therapy, pediatrics, child, adolescent, medical oncology, cancer, neoplasms. A total of 300 studies were found which were identified in the databases SciELO (52), LILACS (09), BDNF (03), MEDLINE (52), PubMed (47) and *Cochrane Library* (137). Starting with this search, reading of all the titles and abstracts was concluded, excluding duplicate studies in databases and those that did not meet the inclusion criteria, selecting only those that met the proposed objective, with reading in full, which totaled seven studies (Figure 1). The publications screening process was developed independently by two reviewers.

The studies were evaluated according to the data collection instrument developed by the authors, consisting of the following information: identification, country of origin, language and year of publication, methodological approach and central theme, that is, the use and effects of music in the care of children and adolescents with cancer. Next, the data were analyzed and grouped considering the identified similarities between them.

To assist in this evaluation phase and interpretation of the quantitative studies results, guidelines for reporting musical intervention were used.¹¹ These guidelines were developed based on the recommendations of the *Consolidated Standards of Reporting Trials* (CONSORT) for randomized controlled trials, in order to improve the quality of studies, considering the complexity and particularities of musical interventions. The authors recommend that researchers include the following in their studies: the intervention theory or theoretical framework; the content of the intervention (details that make up the intervention: the selected song, the person who selected the music, the method, strategies and materials used for intervention); organizing of the intervention (number of sessions, duration and frequency); the person who performed the intervention and their qualifications; the strategies used to ensure the fidelity of treatment (protocols, monitoring, training); the scene where the intervention was carried out; and the target audience, participants with individual or group interventions.¹¹

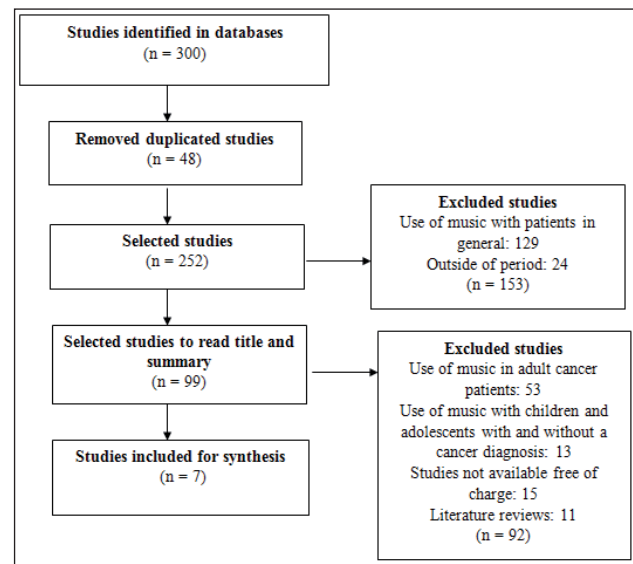


Figure 1 - Flow diagram for study selection

RESULTS

Characterization studies

The selected studies were located in MEDLINE, PubMed, and *Cochrane Library*. Of the seven studies included in this review, three are available in the three consulted databases. The systematic reviews of studies based on *Cochrane Library* were not included. Of the seven studies analyzed, four were conducted in Australia, one in the United States, one in Vietnam and one in Mexico. Regarding the year of publication, they ranged from between 2008 and 2014, one being in 2008, two in 2010, one in 2011, one in 2013 and two in 2014. As for the type of study, three were qualitative with methodological design in the Grounded Theory, four quantitative studies, three randomized controlled trials and prospective cohort, were identified. The studies were conducted by music therapists (four), nurses (one), doctors (two) and professionals from other areas (one).

The level of evidence of the studies was rated according to the categorization of the *Agency for Healthcare Research and Quality* (AHRQ) of the United States of America, from 2005. The quality of evidence is classified into seven levels; Level 1 - publications from systematic review or meta-analysis of randomized controlled trials, clinical guidelines based on systematic reviews of randomized controlled clinical trials; Level 2 - at least one well defined randomized clinical trial; Level 3 - Well-designed

clinical trials without randomization; Level 4 - cohort studies and well-designed case-control; Level 5 - systematic review of descriptive and qualitative studies; Level 6 - publications of a single descriptive or qualitative study; Level 7 - authorities opinions and / or report specialists committees.¹²

From the analysis of the studies two categories were identified: "Use and effects of music in the care of children and adolescents with cancer" and "Use of music in the care of children and adolescents with cancer from the perspective of patients, parents and professionals" .

Table 1 - Title, level of evidence, journal, authors, year of publication, methods and results of the analyzed articles, Curitiba, PR, Brazil, 2015

Reference	Objective/Method/Results	Evidence Level
Nguyen TN, Nilsson S, Hellström AL, Bengtson A. Music therapy to reduce pain and anxiety in children with cancer undergoing lumbar puncture: a randomized clinical trial. <i>J Pediatr Oncol Nurs.</i> 2010; 27(3):146-55. ³	Objective: to evaluate whether therapy with music influence on pain and anxiety in children undergoing lumbar puncture. Method: randomized clinical trial with 40 children (seven to 12 years of age) with leukemia, randomly assigned to a music group (n=20) or control group (n=20). After intervention interviews were conducted with 20 of these participants. Results: decrease in pain scores, heart rate and breathing in the group that listened to music during and after lumbar puncture. Anxiety was also reduced, before and after the procedure. The interviews confirmed a positive experience for children, including less pain and fear.	III
Sepúlveda-Vildósola AC, Herrera-Zaragoza OR, Jaramillo-Villanueva L, Anaya-Segurab A. La musicoterapia para disminuir la ansiedad: su empleo en pacientes pediátricos con cáncer. <i>Rev Med Inst Mex Seguro Soc.</i> 2014; 52 Supl(2):S50-4. ⁵	Objective: to investigate whether music is effective in reducing the level of anxiety of cancer patients receiving outpatient chemotherapy. Method: semi longitudinal experimental clinical trial with patients between eight and 16 years of age, who received ambulatory chemotherapy. Two sessions were done, the first without the musical intervention and the second with the intervention. A visual analogue scale was used to evaluate the anxiety level at the beginning and end of the procedure at both sessions. Results: the study included 22 patients. In patients treated for outpatient chemotherapy, the anxiety level was moderate. The level of anxiety decreased after the intervention. It was concluded that music is beneficial in reducing anxiety in pediatric patients during outpatient chemotherapy.	III
Barry P, O'Callaghan C, Wheeler G, Grocke D. Music therapy CD creation for initial pediatric radiation therapy: a mixed methods analysis. <i>J Music Ther.</i> 2010; 47(3):233-63. ¹³	Objective: to investigate the effects of an intervention with a music CD on pediatric cancer patients during radiotherapy treatment. Method: controlled and randomized study. A music CD by the participants was created so that they could listen to it during radiotherapy. Results: the study included 11 patients having radiotherapy, aged between six and 13, randomly selected and divided into two groups: control (n=6) and experimental (n=5). In the control group, 67% of patients had social withdrawal as a coping strategy. The preparation of the CD and listening to music were considered fun, engaging and appropriate.	III
Kemper KJ, Hamilton CA, McLean TW, Lovato J. Impact of music on pediatric oncology outpatients. <i>Pediatr Res.</i> 2008 Jul; 64(1): 105-9. ¹⁴	Objective: to evaluate the effect of music on heart rate variability and visual analog scale in children and adolescents in a pediatric outpatient oncology. Method: prospective cohort study. Two visits were made in the first there was no intervention; in the second, the children listened to music for 20 minutes. Results: the study included 47 patients with leukemia in the maintenance phase or consolidation in outpatient treatment. The relaxation was greater with music than with the rest and the parasympathetic parameter of heart rate variability (HRV) was significantly lower with music.	IV
O'Callaghan C, Baron A, Barry P, Dun B. Music's relevance for pediatric cancer patients: a constructivist and mosaic research approach. <i>Support Care Cancer.</i> 2011; 19(6):779-88. ¹⁵	Objective: to analyze prospects for pediatric cancer patients and parents about the role of music and music therapy in the lives of children. Method: qualitative research, Grounded Theory. Data collection technique: semi-structured interview. Participants: pediatric patients and their parents. Location of the study: three pediatric oncology hospitals in Australia. Results: participants included 26 patients with a mean age of 5.7, and 28 parents. The music reduced stressors and decreased resistance to hospitalization of patients with cancer.	V

Reference	Objective/Method/Results	Evidence Level
O'Callaghan C, Dun B, Baron A, Barry P. Music's relevance for children with cancer: music therapists' qualitative clinical data-mining research. <i>Soc Work Health Care</i> . 2013; 52(2-3):125-43. ¹⁶	<p>Objective: to identify the relevance of music in the lives of children from birth to 14 years of age with cancer.</p> <p>Method: qualitative research, Grounded Theory. Data collection technique: focus group conducted by therapists who worked in three Australian children's hospitals. Participants: children with cancer.</p> <p>Results: the music offered children a safe haven for internalizing a healthy self-image. Soothed, relieved distress, promoted and supports relations, enabled self-care and inspired playful creativity</p>	V
Tucquet B, Leung M. Music therapy services in pediatric oncology: a national clinical practice review. <i>J Pediatr Oncol Nurs</i> . 2014; 31(6):327-38. ¹⁷	<p>Objective: to present the results of an evaluation of a clinical practice carried out in Australia, of music therapy services in pediatric oncology hospitals.</p> <p>Method: qualitative research, Grounded Theory. Data collection technique: application questionnaires. Content analysis. Participants: children and adolescents between zero and 16 years of age and parents of children who had no ability to respond to the questionnaire.</p> <p>Results: of the participants, 84% indicated music as a valuable tool. Parents expressed that it played a significant role in supporting children during procedures, distracting them from the pain and anxiety. The music has been described as a consistent, professional and positive service that directly benefits the patient and family.</p>	V

Use and effects of music in the care of children and adolescents with cancer

The studies showed that the use of music in the care of children and adolescents with cancer, resulted in positive effects, such as decreased pain, levels of stress, anxiety and depression.

In three clinical trials and prospective cohort study, although the application of musical interventions and scenarios were different, the results were similar, highlighting the significant reduction of vital parameters and anxiety levels.^{3,5,13-14}

In order to evaluate the influence of music on pain and anxiety in children undergoing lumbar puncture a randomized clinical trial³ with 40 children aged between seven and 12 years of age with leukemia was performed. Participants were randomly assigned to a music group (n=20) or control group (n=20). The intervention used was listening to music with headphones. It was found that the vital signs that may indicate pain and anxiety, such as cardiac and respiratory frequency, decreased after the musical intervention. For the measurement of pain a numerical assessment scale was used, and for measurement of anxiety levels, an instrument for adults and adapted for this study was used before and after the procedure. In addition, interviews were conducted with ten participants in each group after the procedure. The results showed lower respiratory rate, heart and pain scores in the group who listened to music during and after lumbar puncture. The anxiety scores were also lower both before and

after the procedure. The results of the interviews confirmed a positive experience for children, including less pain and fear.³

To investigate whether therapy with music was effective in reducing the level of anxiety of cancer patients receiving outpatient chemotherapy, Mexican researchers conducted a longitudinal quasi-experimental clinical trial with 22 patients aged between eight and 16 with two sessions: the first without the intervention of the music and the second with the intervention, which consisted of listening to music with headphones. A visual analog scale was applied to determine the level of anxiety in the beginning and end of the procedure of both sessions. The anxiety level was lower after the intervention with music listening, as 95.5% of the participants had levels of low anxiety.⁵

In a prospective cohort study conducted between May 2004 and May 2007, with the participation of 47 patients, an investigation on the effect of a kind of music on heart rate variability in children and adolescents with leukemia who were in maintenance or consolidation treatment in a pediatric outpatient oncology in North Carolina, USA, was performed. Two visits were carried out; in the first, children rested for 20 minutes and the second, listened to music designed to increase vitality and improve the heart rate variability (HRV) for 20 min. It is concluded that greater relaxation was achieved with music than with the rest and the HRV parasympathetic parameter was significantly lower with music.¹⁴

The recommendations of a guideline¹¹ were found in it can be seen that in Table four quantitative studies (Table 2) showed the recommended items, such as the theoretical framework of musical intervention that explains and specifies how musical qualities can trigger the desired results. Regarding the content of the intervention, which refers to the method itself and materials for the

development of intervention, the description was insufficient, for example, one study did not show how selection of songs was held or who made the selection and or the songs used. Moreover, although they said that the music was selected by patients participating in the research and that the music chosen was their favorite, none of the authors listed the songs used.

Table 2 - Description of quantitative studies on the recommendations for the use of musical intervention, proposed by guideline¹¹

Reference	Intervention Theory or Referential Theory	Intervention Content	Fidelity strategy treatment Executer/Scene Target Audience
Nguyen TN, Nilsson S, Hellström AL, Bengtson A. Music therapy to reduce pain and anxiety in children with cancer undergoing lumbar puncture: a randomized clinical trial. <i>J Pediatr Oncol Nurs.</i> 2010; 27(3):146-55. ³	Music used as a distraction agent, focusing the patient's attention away from negative stimuli to something pleasant and stimulating, relieving pain and reducing anxiety. Music for relaxation and pain reduction by modifying mechanisms of cognitive states, moods and emotions.	Who selects the music: patient. Songs: according to patient preference. Application method: music playback with portable media device. Material: portable media player and headphones. Intervention: listening session 10 minutes before the lumbar puncture procedure.	Fidelity treatment: monitoring. Executer: nurses. Scenario: oncological hospital ward. Target audience: children and adolescents with cancer.
Sepúlveda-Vildósola AC, Herrera-Zaragoza OR, Jaramillo-Villanueva L, Anaya-Segurab A. La musicoterapia para disminuir la ansiedad: su empleo em pacientes pediátricos com câncer. <i>Rev Med Inst Mex Seguro Soc.</i> 2014; 52 Supl(2):S50-4. ⁵	The musical structure (tone, rhythm, harmony and time) is a determining factor in the perception and processing by the body and may have neurophysiological processes that reduce anxiety, pain and promote relaxation.	Who selects the music: not mentioned. Songs: not mentioned. Application method: music playback with portable media device. Material: portable media player and headphones. Intervention: music listening with an average duration of 20 minutes during chemotherapy.	Fidelity treatment: monitoring. Executer: Medical. Scenario: chemotherapy clinic. Target audience: children and adolescents with cancer.
Kemper KJ, Hamilton CA, McLean TW, Lovato J. Impact of music on pediatric oncology outpatients. <i>Pediatr Res.</i> 2008 Jul; 64(1):105-9. ¹⁴	Music for relaxation to enhance the feeling of vitality and heart rate variability and to reduce stress	Who selects the music: researchers. Songs: Heart Zones (Doc Childre), New Age music genre. Application method: music playback with electronic device Material: electronic device (CD player). Intervention: listening session for 20 minutes with ideal volume set in an exclusive session for the musical intervention.	Fidelity treatment: monitoring. Executer: Doctors. Scenario: clinic. Target audience: children and adolescents with cancer.

<p>Barry P, O'Callaghan C, Wheeler G, Grocke D. Music therapy CD creation for initial pediatric radiation therapy: a mixed methods analysis. <i>J Music Ther.</i> 2010; 47(3):233-63.¹³</p>	<p>Music preference as a coping strategy and reducing the suffering of pediatric patients during treatment with radiotherapy.</p>	<p>Who selects the music: patient. Songs: according to patient preference. Application method: music playback with electronic device. Material: PC with software for mixing and recording of the songs on the CD and electronic device (CD player) for listening to in the radiotherapy room. Intervention: development of a music CD for listening, ideally adjusted volume during radiotherapy treatment lasting according to plan for the session.</p>	<p>Fidelity treatment: monitoring. Executer: music therapists. Scenario: radiotherapy clinic. Target audience: children and adolescents with cancer.</p>
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Use of music in the care of children and adolescents with cancer from the perspective of patients, parents and professionals

Complementary therapy can be defined as a set or group of medical and health practices or products that are not generally considered part of conventional medicine.¹⁷⁻¹⁸ The use of music as a therapeutic resource includes this set of practices and has shown positive results from the perception of patients, families and professionals, when caring for children and adolescents with cancer. Three qualitative studies by Australian music therapists showed that music brings benefits to patients and to their families.

A study was conducted in three pediatric oncology hospitals in Australia, with the aim of analyzing the perspective of pediatric cancer patients and parents about the role of music and music therapy on children's lives through semi-structured interviews. Participated, in the study 26 patients aged between zero and 14, and 28 parents participated. The study was based on theoretical grounds that adverse experiences arising with childhood cancer are often alleviated with the use of music. It was concluded that children and adolescents and their parents perceived the benefits that music provides during hospitalization or during outpatient treatment in order to alleviate the stressors diagnosed with cancer. The study recommended that health professionals help parents through the use of music and that hospitals can reduce the resistance of pediatric cancer treatment and the hospitalization process, providing support services based on the use of music.¹⁵

Similar results were found in another study, developed by Australian researchers, who evaluated the clinical practice of music therapy services in pediatric oncology hospitals. The participants

were children and adolescents between zero and 16 years and parents of children who did not have conditions to respond to the questionnaire. Family members and patients indicated that music therapy is a valuable tool, playing a significant role during the proceedings, distracting them from the pain and anxiety, and helped to bring the family closer in the coping process of their children.¹⁷

Regarding the perception of professionals, a study was published in 2013, in order to identify the importance of music in the lives of children from birth to 14 years with cancer, through thematic analysis, based on the transcripts of focus groups with two active groups with therapists in three Australian hospitals. It was concluded that music can offer children a safe haven for internalizing a healthy self-image and their own identity, and also music can soothe, relieve distress, promote supportive relationships, allowing self-care and inspiring playful creativity and hope.¹⁶

DISCUSSION

Studies have indicated possibilities and advantages of using music in the care of children and adolescents with cancer that can be included as a complementary therapy to treatment and conventional care, to offer hope in relieving the symptoms arising from the treatment and the medical condition. However, the authors recommend the extension of studies with the theme of music. There is concern in research regarding the use of music due to the complexity of the mechanisms and physiological reactions triggered by it. Methodological rigor is essential so that the studies are not inconclusive and incomplete and not to trivialize the therapeutic potential of music by restricting the replication of this research and limiting the incorporation of evidence into clinical practice.^{11,19}

Quantitative studies have shown methodological limitations, as well as recommended¹¹ items: intervention theory or theoretical framework, the executor of the interventions and their qualifications, the strategies used to ensure fidelity (protocols, monitoring, training), the scene where the intervention was held and the target audience; the four studies met the guidelines, but with regard to the content of the intervention - the selected music, professional selected music, method, strategies and materials used for intervention - and also on the number of sessions, duration and frequency three studies showed the recommended information and one did not.

Regarding the musical selection, two studies used the musical preference of participants.^{3,14} The musical composition may have constant rhythmic variations in its structure, melody and harmony in its progress, intensity and dynamics, and these components influence the patient with benefits and also with the occurrence of discomfort, as antipathies of style.³

Hospitalization and hospital routine can cause physical and intense emotional distress.⁶ For children and adolescents with cancer, freedom for the choice of music and respect for their musical styles and selection of music is associated with pleasant situations contributing to the experience of feelings of a less hostile environment and being close to family.³

In order to standardize the intervention and evaluate a specific musical type, researchers from a prospective cohort study in a hospital in North Carolina selected an unknown music by all participants. The choice was justified by being a song used in other studies with positive results, such as: decreased stress, sense of vitality and improvement in heart rate variability, encouraging relaxation, effects expected by the researchers.¹³

Regarding the music, the recommended music to provide sensations of comfort and tranquility are those structured with slow rhythms, melodies with bass and gentle intensity that promote the reduction of heart and respiratory rate, while music with high tones and fast rhythms increase vital parameters and influence the individual's alertness.²⁰

However, in the American study in a hospital in North Carolina, the researchers observed that some participants did not achieve the expected result because they reacted with discontent due to the fact that they were listening to unknown music. Thus, corroborating studies that address the

importance of musical preference, the researchers suggested that pediatric patients should choose the music for their well-being and for positive effects in musical intervention.¹³

The studies also showed limitations in musical intervention, methods and the materials used. Although they have identified the measures and how the music was played, there are situations that directly interfere with the effects generated by the music, for example, the use of headphones. They isolate ambient noise by reducing the distraction of the participants and focusing attention on the intervention, but volume which is not adequately regulated leads to discomfort. Only in one study¹⁴ researchers mentioned adjusting the volume of the music. The adjustment of the reproduced sound volume and decibel setting prevents the negative and unpleasant effect when the music is played too loud and outside the acceptable decibel levels for humans.¹¹ However, even with the limitations and difficulties identified, the results shown in studies demonstrate the contribution of music to the care of children and adolescents in cancer treatment.

Qualitative studies showed that music helps children and teenagers to cope better with the hospital environment and the therapy to which they are subjected to. Access to your favorite music activates creativity, fun and laughter, whose value is incalculable, especially when cancer becomes a limiting life factor.¹⁵⁻¹⁶

FINAL CONSIDERATIONS

The use of music as a complementary therapy is a strategy or a care intervention, considering the complexity of the process of caring for children and adolescents with cancer. Music helps to strengthen ties, being a facilitating resource in communication between the patient and its family as well as with the health team, providing comprehensive, individualized and humanized care. Music is a resource without large financial costs for healthcare institutions and there is a substantial return on the quality of care offered. In addition to its use to improve the physical and mental well-being of children and adolescents facing a serious illness and its treatment.

Despite the progress and evolution of conventional therapies, including pharmacological advances and technological innovation in invasive treatments, music, when properly used, is a resource that studies have shown to have the potential to minimize and alleviate signs and symptoms caused by both therapy, and by the disease progression, for

example, pain, nausea, fatigue, anxiety, among others. However, further research are needed, deepening the existing knowledge on the subject and seeking new dimensions and applicability of music, with representative samples. This work, contributes to the expansion of knowledge in relation to the use of music in the clinical practice of health professionals, especially as a resource to be used in nursing care.

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