



## REVISIONES

### **Distraction results for pediatric oncology care from nursing evidence: integrative review**

Resultados de distracción para el cuidado en oncología pediátrica desde la evidencia de enfermería: revisión integrativa

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#### **ABSTRACT:**

**Introduction:** pediatric cancer causes a radical change in the external and internal environment of the child or adolescent affecting their development and growth.

**Objective:** to synthesize the findings of nursing studies that published results in physical, psychological, social and immune health through the use of distraction strategies for care.

**Methodology:** integrative literature review, qualitative descriptive and retrospective based on parameters established by Whittemore and Knafl with five stages. Inclusion criteria: scientific articles with results in physical, psychological, social and immune health through the use of distraction from nursing to pediatric population with oncological diagnosis, published in 15 scientific databases, languages: English, Portuguese and Spanish, between the years 2011-2020, with level of evidence according to Lobiondo Level I, II and III, randomized studies, with independent and separate control group, based on critical evaluation of the Joanna Briggs Institute.

**Results:** the distraction strategies used in children and adolescents with oncological diagnosis included: exercise, play, massage, music and complementary therapies performed in different scenarios that obtained significant results in physical, psychological, social and immune health.

**Conclusions:** with the use of distraction in the hospital or non-hospital setting, health benefits are achieved, proving to be an innovative and important intervention for nursing care in the pediatric oncological population.

**Keywords:** neoplasms, child, health, distraction, cancer nursing.

#### **RESUMEN:**

**Introducción:** el cáncer pediátrico provoca un cambio radical en el entorno externo e interno del niño o adolescente afectando su desarrollo y crecimiento.

**Objetivo:** sintetizar los hallazgos de estudios de Enfermería que publicaron resultados en la salud física, psicológica, social e inmunitaria mediante el uso de estrategias de distracción para el cuidado.

**Metodología:** revisión integrativa de literatura, cualitativa de alcance descriptivo y retrospectivo fundamentada en parámetros establecidos por Whittemore y Knafl con cinco etapas. Criterios de inclusión: artículos científicos con resultados en salud física, psicológica, social e inmunitaria mediante uso de la distracción desde enfermería a población pediátrica con diagnóstico oncológico, publicados en 15 bases de datos científicas, idiomas: inglés, portugués y español, entre los años 2011-2020, con nivel de evidencia según Lobiondo Nivel I, II y III, estudios con asignación al azar, con grupo control independiente y separado, basados en evaluación crítica del Instituto Joanna Briggs.

**Resultados:** las estrategias de distracción usadas en niños y adolescentes con diagnóstico oncológico incluyeron: ejercicio, juego, masaje, música y terapias complementarias realizadas en diferentes escenarios que obtuvieron resultados significativos en la salud física, psicológica, social e inmunitaria.

**Conclusiones:** con el uso de la distracción en el ámbito hospitalario o no hospitalario se logran beneficios en la salud demostrando ser intervención innovadora e importante para el cuidado de enfermería en población pediátrica oncológica.

**Palabras claves:** neoplasias, niño, salud, distracción, enfermería oncológica.

## INTRODUCTION

The adaptation of children and adolescents with oncological diagnosis is a goal of oncology nursing, this is through interventions that can facilitate coping during the health-disease process. For the WHO, cancer is one of the main causes of mortality among children and adolescents. In 2018, the cure in high-income countries was 80%, while in others of medium and low income only 20%. Annually there are 300,000 new cancer diagnoses <sup>(1)</sup>.

In pediatric cancer, the patient experiences changes in their external and internal environment with different sensations that affect them and generate specific needs in 4 dimensions of health: physical, psychological, social and immune <sup>(2)</sup>. On a physical level it presents: fatigue, pain, cardiorespiratory dysfunctions, disorders in psychomotor development, osteonecrosis, osteoporosis, amputations, visual alterations, coordination problems, xerostomia, dental agenesis, malocclusion, speech and language disorders, swallowing disorders and malnutrition due to excess and / or deficiency; at the psychological level: depression, anxiety, stress, development, learning and functionality are affected; at the social level: maladaptation of the environment that impacts on the quality of life (QoL) of the patient and his family, school performance and social and labor inclusion; at the immune level: decrease in the body's defense system, mucositis and neutropenia <sup>(2)</sup>.

Distraction is a nursing intervention (Nursing Intervention Classification NIC) of NANDA conceptualized as the intentional approach to care to move it away from undesirable sensations. Aimed at encouraging the individual to choose the desired distraction strategy, such as: music, participating in a conversation or telling in detail an event or story, directed imagination or humor, games, activity therapy, reading stories, singing or rhythmic activities <sup>(3)</sup>. From a nursing reference, Callista Roy's adaptation model is articulated to distraction as a contextual stimulus that is directly related to the coping processes in the face of changes in cancer patients, which are related both directly and indirectly to the modes of adaptation <sup>(4)</sup>. In addition, distraction is a cost-effective and accessible intervention for anyone, and has minimal side effects, if any <sup>(5)</sup>.

Therefore, in the child or adolescent with cancer, nursing care must address the dimensions of health by incorporating advanced practice roles, which allow innovative nursing interventions such as distraction that is supported by the results for the benefit of the dimensions named, but without a publication that evidences it. The objective was: to synthesize the findings of studies from the evidence of Nursing that published results in physical, psychological, social and immune health through the use of distraction strategies.

## METHOD

An integrative review of the literature, qualitative descriptive and retrospective was carried out based on the QUESTION PICOT: What are the results in physical, psychological, social and immune health of the use of distraction in children and adolescents with oncological diagnosis, according to the evidence of studies published from nursing between the years 2011 to 2020? Coleen E. Toronto and Ruth Remington, based on Whittemore and Knafl parameters, were used as a theoretical reference for the integrative review<sup>(6)</sup>.

The search included keywords (DeCS and MeSH: games, exercise, massage, music therapy, complementary therapies, play therapy, play and playthings, laughter therapy, recreation therapy, neoplasm, oncology nursing, health, child and adolescent; with AND and OR boolean connectors in English, Spanish and Portuguese, in 15 databases: PubMed, Dialnet, SciELO, EBSCOhost, ScienceDirect, Web of Science, Ovid Nursing, LILACS, Biblioteca Virtual en Salud (BVS), Medline, Cuiden, Cochrane, Wiley Online Library, Academic Search Complete, Trip Medical Database.

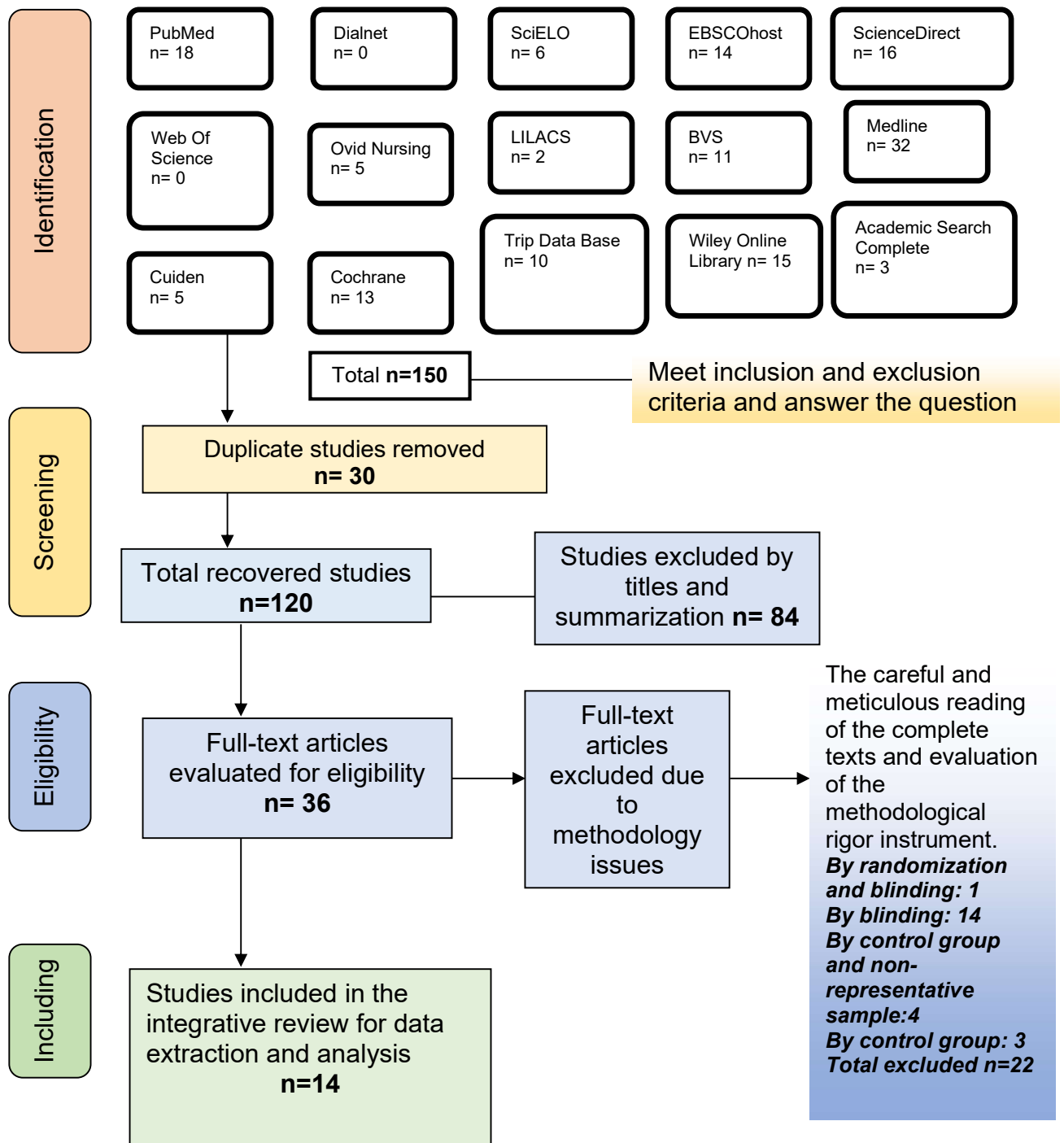
*Inclusion criteria:* nursing studies with physical, psychological, social and immune health outcomes with the use of distraction in children and adolescents between 0 and 18 years with oncological diagnosis, published between 2011 and 2020, research articles with Levels I, II and III of evidence according to Lobiondo<sup>(7)</sup>, with randomization, with independent and separate control group, with critical evaluation using tools of the Joanna Briggs Institute (JBI)<sup>(8)</sup>.

*Exclusion criteria:* studies with a sample of less than 30 for pilot studies, studies without blinding participants to treatment assignment, or without blinding of those administering treatment, or without blinding of outcome assessors, articles without access to full text and degree papers, book chapters, or other documents in the selected databases.

The methodology included 5 stages<sup>(6)</sup>: first: problem formulation, purpose, interest categories and PICOT question; second: literature search, where a comprehensive and replicable strategy was used to collect data and identify database studies; Figure 1 presents the PRISMA; third: in which the methodological quality and relevance of the literature were evaluated; in addition, the publications were ordered, classified and coded in the ATLAS software. ti V9.0; fourth stage: data analysis that included abstraction, comparison and synthesis of data in matrices, similarities and differences in relation to the purpose of the review were analyzed and then these patterns were synthesized; fifth: presentation, in which the results derived from the synthesis of scientific evidence in the dimensions of physical, psychological, social and immune health were visualized through the use of distraction strategies in children and

adolescents with oncological diagnosis with the use of ATLAS software. ti V9.0 and SPSS V27.0.

**Figure 1: PRISMA literature search and selection process**



**Source:** authorship, based on PRISMA declaration <sup>(9)</sup>

## RESULTS

Table 1 presents the characterization and results of the articles included in the integrative review that met the inclusion criteria.

**Table 1: Research articles included in the integrative review by year, journal, country, level of evidence, methodological design and their results in the different dimensions with the use of distraction strategies.**

<i>N°</i>	<i>Article</i>	<i>Magazine</i>	<i>Country</i>	<i>Level of Evidence (Lobiondo, 2014)</i>	<i>Methodological Design</i>	<i>Results in the physical, psychological, social and immune health dimensions</i>
1	Systematic review and meta-analysis of non-pharmacological interventions for fatigue in children and adolescents with cancer. <b>Year:</b> 2013 <sup>(10)</sup> .	Worldviews on Evidence-Based Nursing	China	Level I	Systematic review and meta-analysis	<ul style="list-style-type: none"> <li>• Decreased general fatigue with exercise.</li> <li>• Greater effectiveness of exercise combined with educational intervention.</li> </ul>
2	Effective pain management during painful procedures in children with cancer: an integrative review. <b>Year:</b> 2014 <sup>(11)</sup> .	Journal of Evidence-Based Practice & Implementation Reports	Singapore	Level I	Integrative review	<ul style="list-style-type: none"> <li>• Decreased pain with music.</li> <li>• Decreased pain, anxiety, distress with hypnosis.</li> </ul>
3	Non-pharmacological interventions to manage fatigue and psychological stress in children and adolescents with cancer: an integrative review. <b>Year:</b> 2015 <sup>(12)</sup> .	European Journal of Cancer Care	Brazil	Level I	Integrative review	<ul style="list-style-type: none"> <li>• Decreased heart rate and anxiety with massage.</li> <li>• Decreased pain and stress with music.</li> <li>• Decreased fatigue with exercise.</li> <li>• Decreased pain, general fatigue and stress with the healing touch.</li> <li>• Decreased general fatigue with exercise.</li> </ul>
4	Music in the Care of Children and Adolescents with Cancer: An Integrative Review <b>Year:</b> 2016 <sup>(13)</sup> .	Text & context sick	Brazil.	Level I	Integrative review	<ul style="list-style-type: none"> <li>• Decreased anxiety, depression, distress, stress, fear, vital parameters, heart rate and respiratory pain with music.</li> <li>• Greater relaxation and decreased stressors with music.</li> <li>• Greater creativity and playful hope</li> </ul>

						<p>with music.</p> <ul style="list-style-type: none"> <li>• Benefits during inpatient or outpatient treatment.</li> <li>• A healthy self-image and self-identity with music.</li> </ul>
5	Effects of the application of therapeutic massage in children with cancer: a systematic review. <b>Year:</b> 2017 <sup>(14)</sup> .	Revista Latino-Americana de Enfermagem	Spain	Level I	Systematic review	<ul style="list-style-type: none"> <li>• Increase in white blood cells and neutrophils with massage.</li> <li>• Decreased anxiety, depression, pain, nausea and heart rate with massage.</li> <li>• Decreased pain with massage and mood therapy.</li> <li>• Decrease in post-traumatic stress syndrome with massage.</li> </ul>
6	Interventions that minimize fatigue in children/adolescents with cancer: an integrative review. <b>Year:</b> 2018 <sup>(15)</sup> .	Journal of Child Health Care	Brazil	Level I	Integrative review	<ul style="list-style-type: none"> <li>• Adaptation to the hospital environment, increased energy levels, greater relaxation and well-being with yoga.</li> <li>• Decreased painkillers, agitation and nausea with yoga.</li> <li>• Decreased anxiety with massage and yoga.</li> <li>• Decreased fatigue with acupressure, exercise, or healing touch.</li> <li>• Decreased fatigue with exercise plus leisure activities.</li> <li>• Decreased heart rate with massage.</li> <li>• Decrease in pain and stress with the healing touch.</li> </ul>
7	Non-pharmacological interventions in improving quality of life in children and adolescents with cancer. <b>Year:</b> 2020 <sup>(16)</sup> .	Acta Paulista de Enfermagem	Brazil.	Level I	Integrative review	<ul style="list-style-type: none"> <li>• Better quality of life, improved communication, decreased anxiety, worries and cognitive problems with music.</li> <li>• Improves school functioning, quality of life, greater emotional, spiritual and social well-being, decreased muscle injuries and pain with exercise.</li> <li>• Improves physical functioning, quality of life, school and greater emotional, psychosocial well-being with yoga.</li> <li>• Decreased pain, nausea and anxiety with exercise plus psychosocial training.</li> </ul>
8	New technologies to improve pain, anxiety and depression in children and	International Journal of Environmental	Spain.	Level I	Systematic review	<ul style="list-style-type: none"> <li>• Better quality of life, adherence to treatment, decreased anxiety, depression, anger, pain through technological games.</li> </ul>

	adolescents with cancer. <b>Year:</b> 2020 <sup>(17)</sup> .	Research and Public Health				
<b>9</b>	Use of the humanoid robot MEDiPORT to reduce pain and distress from procedures in children with cancer. <b>Year:</b> 2018 <sup>(18)</sup> .	Pediatric Blood & Cancer	Canada	Level II	Randomized clinical pilot trial	<ul style="list-style-type: none"> <li>Decreased pain and distress through technological games.</li> <li>Adaptation to the hospital environment through technological games.</li> </ul>
<b>10</b>	Effectiveness and feasibility of using the computerized interactive virtual space to reduce depressive symptoms in Hong Kong Chinese children hospitalized with cancer. <b>Year:</b> 2011 <sup>(19)</sup> .	Journal for Specialists in Pediatric Nursing	China	Level III	Quasi-experimental	<ul style="list-style-type: none"> <li>Decrease depression through technological games.</li> </ul>
<b>11</b>	Effects of massage therapy on pain and anxiety arising from intrathecal therapy or bone marrow aspiration in children with cancer. <b>Year:</b> 2014 <sup>(20)</sup> .	International Journal of Nursing Practice	Turkey	Level III	Quasi-experimental	<ul style="list-style-type: none"> <li>Decreased pain and anxiety with massage.</li> <li>Greater physical and emotional well-being with massage</li> </ul>
<b>12</b>	Effects of a Group Physical Activity Program for Pediatric Cancer Patients on Physical Activity and Symptom Experience: A Quasi-Experimental Study. <b>Year:</b> 2019 <sup>(21)</sup> .	Pediatric Blood & Cancer	China	Level III	Quasi-experimental	<ul style="list-style-type: none"> <li>Acceptance of body image, increase in moderate to vigorous physical activity, increased energy, better ability to concentrate and improved sleep with exercise plus educational intervention.</li> <li>Decreased psychological symptoms, distress, sadness, irritability, nervousness and hair loss with exercise plus educational intervention.</li> <li>Decreased physical symptoms: such as nausea, change in the taste of food and skin, constipation with exercise plus educational intervention.</li> </ul>



13	The effects of the COMMASH-E intervention on fatigue, sleep quality and functional status of children with cancer in Indonesia. <b>Year:</b> 2019 <sup>(22)</sup> .	COMP REHE NSIVE CHILD AND ADOLE SCENT NURSI NG	Indone sia.	Level III	Quasi-experim ental	<ul style="list-style-type: none"> <li>Improves sleep and decreases fatigue with music plus educational intervention.</li> <li>Improves functional capacity with music plus educational intervention.</li> </ul>
14	"AeRop exercise" may improve the quality of sleep in Indonesian pediatric cancer patients. <b>Year:</b> 2019 <sup>(23)</sup> .	Clinical Nursin g	Indone sia	Level III	Quasi-experim ental	<ul style="list-style-type: none"> <li>Decreased fatigue with exercise.</li> <li>Improves sleep with exercise.</li> </ul>

**Elaboration:** the authors, 2021

### Physical health

Distraction strategies are use such as exercise, play, massage, music and complementary therapies with physical health outcomes.

*Exercise in physical health:* with respect to exercise there was a reduction in general fatigue ( $p=0.01$ ), with a program of progressive aerobic exercises 2 to 3 times a week with a duration of 20 to 40 minutes over the course of 6 to 16 weeks in children and adolescents aged 14 to 18 years with a diagnosis of solid and liquid tumors <sup>(10)</sup>. Another study showed decreased fatigue ( $p=0.05$ ), with aerobic exercise and progressive muscle relaxation for 15 minutes for 5 days, in children aged 8 to 18 years with a diagnosis of solid or liquid tumors <sup>(23)</sup>. Another study implemented the use of exercise alone or combined with leisure activities in sessions of 45 to 60 minutes for 7 days, in children and adolescents aged 3 to 18 years with solid and fluid tumors <sup>(15)</sup>. Other activities in this exercise strategy that were used were playing, brisk walking at intervals of 3 times a week combined with educational intervention <sup>(21)</sup>. Walking, running, jumping, and playing over the course of 12 weeks resulted in significant long-term decrease in nausea using exercise combined with psychosocial training in addition to decreased pain using exercise alone or combined <sup>(16)</sup>.

*Games in physical health:* pain was reduced with the use of a mobile application in children and adolescents aged 12 to 18 years with a diagnosis of solid and liquid tumors <sup>(17)</sup>. Another study with the intervention of a robot that sings and dances while a nurse performed needle insertion in children and adolescents aged 4 to 9 years with acute lymphoblastic leukemia, lymphoma and brain tumor <sup>(18)</sup>.

*Massage in physical health:* decreased heart rate ( $p=0.02$ ) in children and adolescents under 14 years <sup>(12)</sup>. Another study that was used was massage therapy of 4 weekly sessions <sup>(15)</sup>. The respiratory rate was also decreased with four sessions of effleurage massage, petrissage, compressions and frictions for 30 minutes <sup>(14)</sup>. Fatigue was decreased with the use of acupressure at the ST3 point traditionally associated with "energy" for 3 minutes <sup>(15)</sup>. Pain was minimized ( $p<0.05$ ) with massage session for 10 to 15 minutes <sup>(20)</sup>.



*Music in physical health:* studies showed decreased pain, during ( $p < 0.001$ ) and after ( $p = 0.003$ ) lumbar puncture, traditional Vietnamese songs were used using a portable music player with headphones 10 minutes before the procedure <sup>(11-13)</sup>. As well as decreased fatigue and increased functional status ( $p < 0.05$ ) with instrumental music played on an MP3 player with headphones, 15 minutes before bedtime combined with the sleep hygiene educational intervention <sup>(22)</sup>.

*Complementary therapies in physical health:* pain reduction ( $p < 0.002$ ) was found with the use of direct hypnosis or self-hypnosis training and the use of topical anesthesia in venipuncture <sup>(11)</sup>. It was identified that it minimized fatigue and pain with the use of healing touch by laying on hands with a duration of 40 minutes, a theory that states that, if an energy field is present, balanced and flowing properly it produces well-being <sup>(12)</sup>. Other results showed that with the use of yoga, there was greater physical well-being, increased energy, decreased analgesics, decreased nausea, with moderate and high intensity regimens 4 to 5 times per week <sup>(15)</sup>. Physical functioning has also been increased with supervised yoga sessions 2 times a week lasting 12 weeks <sup>(16)</sup>.

### Psychological health

In this dimension, the use of exercise, play, massage, music and complementary therapies have shown results in the benefit of psychological health.

*Exercise in psychological health:* better emotional well-being has been shown with the use of running, longitudinal jumping and lateral jumping, also when combining exercise and educational intervention with sessions of three times a week, anguish ( $p < 0.001$ ), sadness ( $p < 0.001$ ), irritability ( $p < 0.001$ ), nervousness ( $p = 0.002$ ) acceptance of body image ( $p = 0.008$ ), improves the ability to concentrate ( $p < 0.001$ ) and improves sleep ( $p = 0.020$ ) <sup>(21)</sup>.

*Games in psychological health:* there was a decrease in venous puncture distress with the use of the technology robot games <sup>(18)</sup>. Other studies used (robot, video games, virtual reality) found decreased anxiety, anger, stress, fear and depression. In another study, depression was decreased with computerized interactive virtual space in children ( $p = 0.02$ ) on day 7 <sup>(19)</sup>.

*Massage in psychological health:* Anxiety reduction identification ( $P < 0.05$ ) <sup>(12),(15)</sup>. With the use of Swedish massage and acupressure in sessions of 20 to 40 minutes between 4 and 6 weeks, a decrease in depression was shown <sup>(14)</sup>. Other research showed the use of massage, decreased anxiety ( $p < 0.05$ ) and greater emotional well-being after intrathecal therapy or bone marrow aspiration <sup>(20)</sup>.

*Music in psychological health:* the use of the music strategy produced decreased levels of stress, anxiety, fear, anguish, and depression; it allows self-care, greater relaxation, greater creativity and lucid hope; and anxiety was lower both before and after the procedures <sup>(12)</sup>. In addition, with the use of music there was an improvement in treatment anxiety, worries and cognitive problems <sup>(16)</sup>. Another study showed differences in sleep quality before and after the intervention ( $p < 0.05$ ) <sup>(22)</sup>.

*Complementary therapies in psychological health:* hypnosis produced a decrease in anxiety and anguish during venipuncture; and when using hypnosis combined with a topical analgesic, anxiety was lower ( $p < 0.001$ ) in venipuncture <sup>(11)</sup>. With the use of

yoga 4 to 5 times a week, anxiety, agitation, cognitive fatigue were minimized, there was greater quality of sleep and relaxation <sup>(15)</sup>. Emotional function improves with yoga <sup>(16)</sup>. In addition, the healing touch helped to reduce stress ( $p = 0.0001$ ) <sup>(12,15)</sup>.

### **Social health**

In this dimension, the use of exercise, play, music and complementary therapies have shown results for the benefit of social health.

**Exercise in social health:** The use of various physical exercise programs showed increased quality of life, when using physical activity of walking. Also with aerobic exercise (walking, running and playing) for 12 weeks increases quality of life and school functioning <sup>(16)</sup>. This exercise distraction strategy increased quality of life levels by combining physical exercises based on adventure activities in conjunction with educational activities <sup>(16)</sup>.

**Games in social health:** the use of games with technology showed increased adaptive behaviors during the nurse's approach to the child ( $P = 0.012$ ), palpation of the subcutaneous port by the nurse ( $P = 0.006$ ) and the steps of "needle insertion" ( $P = 0.02$ ) <sup>(18)</sup>. Similarly, greater adherence to treatment and quality of life were found when using the technology game <sup>(17)</sup>.

**Music in social health:** Music during hospitalization or outpatient treatment promotes supportive relationships and helped bring the family closer together in their children's coping process <sup>(13)</sup>. Another study using music therapy during and after hematopoietic stem cell transplantation showed increased generic quality of life score and communication <sup>(16)</sup>.

**Complementary therapies in social health:** yoga promoted adaptation to the hospital environment <sup>(15)</sup> and significant increase in total quality of life score, psychosocial, school functioning and social function <sup>(16)</sup>.

### **Immune health**

Immune health is one of the fundamental aspects in the child and adolescent with oncological diagnosis. Using the strategy of therapeutic massage throughout the body with the techniques of effleurage, petrissage and circular movements in supine and prone position, there was an increase in white blood cells and neutrophils remaining for 30 days <sup>(14)</sup>.

## **DISCUSSION**

Oncological children and adolescents face physical, psychological, social and immune changes. Evidence shows that to address these effects distraction strategies are an alternative care for nursing. Therefore, active or passive distraction is used as a contextual stimulus and coping processes are promoted in the two cognitive and regulatory subsystems which is evidenced in the health results in the physical, psychological, social and immune dimensions, achieving the fullness of the person, that is, the adaptation of the child and adolescent to the disease process is achieved.

Callista Roy's Nursing adaptation model allows us to understand the phenomenon of distraction in the care of children and adolescents with an oncological diagnosis. This Model has as its central concept the adaptation that is achieved with the distraction strategy (contextual stimulus) which is an action and effect that translates into modifying and benefiting the environment. It changes the undesirable sensations of pediatric cancer patients to favor adaptation to the disease process, whether hospital or non-hospital <sup>(4)</sup>.

### **Exercise and its results in physical, psychological and social health**

In physical activity, any movement produced by skeletal muscles that requires energy expenditure is associated with physiological and psychological health benefits. The Canadian Society of Exercise Physiology (CSEP), the American College of Sports Medicine (ACSM) and the World Health Organization (WHO) have published guidelines for physical activity and its link to health benefits. Physical exercise is a nursing NIC (0200) to maintain or improve physical condition and level of health <sup>(3)</sup>. exercise. It is a distraction strategy because it directs the attention of children and adolescents with an oncological diagnosis towards something more pleasant, fun and that encourages them to perform physical activities such as running, walking, cycling, swimming, gymnastics, among others; moving it away from undesirable situations typical of its diagnosis, procedures and oncological treatments <sup>(24)</sup>.

The exercise linked to Roy's Adaptation model acts as a contextual stimulus that favors the coping processes reflected in the results for the benefit of physical, psychological and social health, that is, when using the exercise, adaptation is generated to the oncological diagnosis as a focal stimulus. For the same reason, this distraction strategy must be promoted and used in daily practice by nursing to achieve the fullness of the pediatric oncological patient.

### **Games and its results in physical, psychological and social health**

Games are a very rewarding and important activity for the child's development that allows him to experiment with his social and behavioral repertoire by practicing his physical and communication skills. Games facilitates the development of social competence, emotional abilities, resilience, creativity, and problem-solving skills <sup>(25)</sup>. Games are NIC (4430), and are the intentional use of toys or other equipment to help the patient communicate their perception of the world and help their interaction with the environment <sup>(3)</sup>. It is a distraction strategy because it diverts the focus of attention from children and adolescents with an oncological diagnosis, allowing the reduction of the perception of pain, anxiety and improve their comfort in the oncological environment <sup>(24)</sup>.

Seus, A and their collaborators in their study mentioned that pediatric nurses can use games as a strategy because of their numerous advantages in hospitalization. The relief of anxiety, facilitates the care of the child in the hospital and becomes familiar with the unit and with the health professionals who assist him <sup>(26)</sup>.

### **Massage and its results in physical, psychological, social and immune health**

Massage is a non-invasive therapeutic modality to control the side effects associated with cancer treatment in children and adolescents <sup>(27)</sup> and is considered as a distraction strategy because it helps connect the body, mind and spirit as a natural

healing process, because it produces therapeutic effects on multiple organ systems<sup>(28)</sup>. causes an increase in skin temperature, promotes relaxation, metabolic activity, the release of tissue adhesions and increased threshold of uptake of the nociceptive message<sup>(29)</sup>. Massage is a NIC (1480), defined as stimulation of the skin and underlying tissues with varying degrees of manual pressure to decrease pain, induce relaxation and/or improve circulation<sup>(3)</sup>.

These effects are related to the findings of a randomized controlled trial design study, conducted in 2013 in Portugal by Da Cunha and Mota where massage was used as a strategy by nurses who used almond oil, in sessions of 20 to 30 minutes for 1 week, resulting in the decrease of pain interference with gait ( $p < 0.05$ ) and decrease in pain intensity ( $p < 0.001$ ) in children and adolescents aged 10 to 18 years with a diagnosis of leukemias, lymphomas and sarcomas<sup>(29)</sup>. Another important aspect before an oncological diagnosis is immune health. According to the evidence found in a study, it showed an increase in white blood cells and neutrophils remaining for 30 days; it was observed from the first day of the intervention, with the use of the therapeutic massage strategy throughout the body<sup>(14)</sup>.

### **Music and its results in physical, psychological and social health**

Oncology is usually accompanied by other non-pharmacological therapeutic options such as music therapy that offers a multimodal and holistic approach, which allows to provide results in favor of health<sup>(30)</sup>. The first therapeutic use of music as a way to humanize health care was carried out in 1859 by nurse Florence Nightingale<sup>(31)</sup>. In 1978, Munro and Mount described the application and efficacy of music therapy in oncology; those and other studies have described music therapy in this context<sup>(30)</sup>. In nursing it is a NIC (4400), which helps to change behaviors, feelings or physiological condition, at the same time it has been described as an important distraction strategy<sup>(3)</sup>. In the present study we found 5 articles made by nursing that show results with the use of music for the benefit of physical, psychological and social health in oncological children and adolescents with a diagnosis of solid or liquid tumor in different stages; this is because music when occupying the channels of attention in the brain using significant auditory stimuli causes distraction. In addition, the use of music provides a comforting family stimulus to the patient, which can evoke pleasurable sensations while redirecting the focus of the individual's attention from stressful thoughts or other environmental stimuli, to music<sup>(28)</sup>.

Similar results show this distraction strategy in a study published in 2019 in China by Haizhi Liu and collaborators who used music therapy for 30 minutes in children aged 10 to 21 years with a diagnosis of osteosarcoma evidencing decrease of pain, anxiety and higher sleep quality<sup>(32)</sup>.

### **Complementary therapies and their results in physical, psychological and social health**

Complementary therapies as a distraction strategy help to manage the side effects derived from diagnosis, treatments and oncological procedures constituting an important part of nursing care, invite the stimulation of the senses and sensory integration, which allows to correctly process sensory stimuli and generate adaptive responses<sup>(33)</sup>. In this research we found results of strategies that are also NIC such as hypnosis (5920), healing touch (5465) and yoga (6040)<sup>(3)</sup>. According to E. Loeffen

and collaborators, the use of hypnosis generates a state of consciousness similar to trance, which allows it to be very focused on images or ideas suggested or created; presenting results in the reduction of pain, anguish and fear <sup>(34)</sup>.

The use of distraction and its results articulated with nursing knowledge from Callista Roy's Adaptation model, allow us to understand the phenomenon of distraction from its three abstract concepts, which contributes to the human adaptive system, reaching the goal or perspective of nursing in the process of promoting adaptation to different situations that arise with the oncological diagnosis.

According to the above, Callista Roy's conceptual model of nursing allows linking the concept of distraction with some of its concepts: stimuli, coping processes and adaptive modes, which are permanently interrelated. In the distraction we start from the fact that the nurse oncologist before an oncological diagnosis as a focal stimulus, seeks to promote adaptation through a contextual stimulus through the use of distraction strategies in children and adolescents with an oncological diagnosis, because Roy mentions that they have the ability to adjust effectively to changes in the environment. Therefore, with distraction as a stimulus, coping processes are promoted in the two cognitive and regulatory subsystems, which is evidenced in the health outcomes in the physical, psychological, social and immune dimensions, and thus, the adaptation of the child and adolescent to the disease process <sup>(4)</sup>." Therefore, distraction strategies should be promoted and used in daily practice by nursing to achieve the well-being of pediatric cancer patients in undesirable situations.

### **Implications for practice, teaching and research**

*For practice*, the nursing professional must take into account the results in the dimensions of health, to visualize them in the care identifying preferences and clinical condition of the pediatric patient, the duration, intensity, interval and follow-up of the diverse strategies of distraction. *For teaching*, the articulation of Roy's conceptual model with distraction strategies and their results in physical, psychological, social and immune health, evidences innovation and use of nursing knowledge in postgraduate training in the pediatric oncology area. *For research*, it provides useful results in practice. Future research should be oriented to the study of the effects of distraction strategies on immune health, due to the immunosuppression produced by the oncological diagnosis and its treatments bringing with it complications in health, long hospital stays and greater costs for the family and for the health system.

### **Limitations**

One limitation was access to full text of some articles, so they were excluded from the research. Additionally, some articles included young adults and adults in the sample despite having a clear title and summary with populations of children between 0 and 18 years old, so they were excluded for this integrative review.

## **CONCLUSION**

The included evidence supports the use of distraction strategies from nursing to present beneficial health outcomes in the physical, psychological, social and immune dimensions, through the use of distraction strategies such as exercise, games,



massage, music and complementary therapies such as the use of hypnosis, healing touch and yoga. Therefore, distraction strategies allow the comprehensive, holistic, different and innovative care that characterizes nursing, with a comprehensive vision of the child and adolescent to direct contextual stimuli through the use of distraction strategies and thus encourage responses in coping, leading to the adaptation of the child and adolescent to their oncological environment.

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