

Effects of Cancer Treatment on the Comfort of Children and Adolescents with Cancer: A Scoping Review

✉ **Vagner José Lopes**

<https://orcid.org/0000-0002-6635-4325>
Universidade Federal do Paraná, Brazil.
Centro Universitário Unidombosco, Brazil
vagner.lopes@ufpr.br

Nen Nalú Alves das Mercês

<https://orcid.org/0000-0001-5843-8329>
Universidade Federal do Paraná, Brazil.
nennalu@ufpr.br

Silvia Francine Sartor

<https://orcid.org/0000-0002-3270-5916>
Universidade Federal do Paraná, Brazil.
silviasartor@ufpr.br

Marli Aparecida Rocha de Souza

<https://orcid.org/0000-0003-3032-9619>
Centro Universitário Unidombosco, Brazil.
marlisouza@unidombosco.edu.br

Lara Adrienne Garcia Paiano da Silva

<https://orcid.org/0000-0003-4419-6984>
Prefeitura Municipal de Cascavel, Brazil.
laraagps@gmail.com

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Subject: Chronic care.

Contribution to the subject: This scoping review allowed mapping the scientific evidence on the effects of cancer treatment on the comfort of children and adolescents with cancer. The collection of articles from informational resources enables nurses and health-care professionals to access knowledge through up-to-date literature of the main effects of cancer treatment and how these events affect the comfort of children and adolescents with cancer. Thus, the knowledge of the impacts of treatment is a resource for these professionals to develop care measures, reducing aggravations and improving the comfort of these patients.

Abstract

Objectives: To map and examine the scientific evidence concerning the effects of cancer treatment on the comfort of children and adolescents with cancer. **Materials and Methods:** This scoping review was carried out in the following electronic information resources: BVS, PubMed, Cinahl, SciVerse Scopus, Lilacs, Web of Science, and Google Scholar. Two independent reviewers analyzed the studies' relevance. **Results:** The search yielded 4,295 publications, of which 20 comprised the final sample. Following evidence mapping, the effects (20; 100 %) on comfort were found, and the most prevalent were pain (12; 60 %), fear (9; 45 %), nausea (5; 25 %), difficulty eating (4; 20 %), and distress (4; 20 %). Regarding the oncologic treatment modality, antineoplastic therapy prevailed in 11 (55 %) of the selected articles. **Conclusions:** Cancer treatment affects the comfort of children and adolescents with cancer, causing suffering and changing their well-being. It indicates the need to evaluate its impact and take nursing care measures to reduce complications and improve these patients' adaptation to treatment.

Keywords (Fonte: DeCS)

Child; adolescent; patient comfort; medical oncology; nursing.

4 Efectos del tratamiento oncológico en la comodidad de niños y adolescentes con cáncer: revisión de alcance

Resumen

Objetivos: mapear y examinar las evidencias científicas acerca de los efectos del tratamiento oncológico en la comodidad de niños y adolescente con cáncer. **Materiales y método:** se realizó una revisión de alcance en los siguientes recursos informativos electrónicos: BVS, PubMed, Cinahl, SciVerse Scopus, Lilacs, Web of Science y Google Scholar. Dos pares independientes analizaron la relevancia de los estudios. **Resultados:** la búsqueda dio como resultado 4295 publicaciones, de las que 20 conformaron la muestra final. Luego de mapear las evidencias, se hallaron efectos (20; 100 %) en la comodidad, y los de mayor prevalencia fueron dolor (12; 60%), miedo (9; 45%), náuseas (5; 25%), dificultad en la ingesta de alimentos (4; 20%) y angustia (4; 20%). En relación con la modalidad del tratamiento oncológico, prevaleció entre los estudios la terapia antineoplásica en 11 (55%) de los artículos seleccionados. **Conclusiones:** se evidenció que el tratamiento oncológico afecta la comodidad de los niños y adolescentes con cáncer, llevándolos al sufrimiento y alterando su bienestar, lo que señala la necesidad de evaluar su impacto y el desarrollo de acciones de cuidado por parte de los profesionales de enfermería para reducir las complicaciones y mejorar la adaptación de estos pacientes al tratamiento.

Palabras clave (Fuente: DeCS)

Niño; adolescente; comodidad del paciente; oncología médica; enfermería.

Efeitos do tratamento oncológico no conforto de crianças e adolescentes com câncer: scoping review

Resumo

Objetivos: mapear e examinar as evidências científicas acerca dos efeitos do tratamento oncológico no conforto da criança e do adolescente com câncer. **Materiais e método:** realizou-se uma *scoping review* nos seguintes recursos informacionais eletrônicos: BVS, PubMed, Cinahl, SciVerse Scopus, Lilacs, Web of Science e Google Scholar. Dois revisores independentes analisaram a relevância dos estudos. **Resultados:** a busca resultou em 4295 publicações, das quais 20 compuseram a amostra final. Após o mapeamento de evidências, foram achados efeitos (20; 100%) no conforto, e os de maior prevalência foram dor (12; 60%), medo (9; 45%), náusea (5; 25%), dificuldade na ingestão alimentar (4; 20%) e angústia (4; 20%). Quanto à modalidade do tratamento oncológico, prevaleceu, entre os estudos, a terapia antineoplásica em 11 (55%) dos artigos selecionados. **Conclusões:** evidenciou-se que o tratamento oncológico afeta o conforto da criança e do adolescente com câncer, acarretando sofrimento e alterando seu bem-estar, o que indica a necessidade de avaliar o seu impacto e o desenvolvimento de ações de cuidado por parte dos enfermeiros para reduzir os agravos e melhorar a adaptação desses pacientes ao tratamento.

Palavras-chave (Fonte: DeCS)

Criança; adolescente; conforto do paciente; oncologia; enfermagem.

Introduction

“Comfort” is defined as a living being’s immediate experience augmented by the need for relief, calm, and transcendence in the four contexts of experience, namely, physical, psychospiritual, sociocultural, and environmental. Furthermore, it is in line with the holistic theory, where human beings have global responses to complex stimuli, and the physical body relates to mind, spirit, emotion, environment, and society (1, 2).

Studies indicate that healthcare professionals’ knowledge of comfort is essential when monitoring children and adolescents undergoing cancer treatment (3). Its evaluation provides resources for managing these patients during treatment, aiming to improve their comfort and quality of life (4, 5).

“Childhood and adolescence cancer” corresponds to a group of diseases that have in common the uncontrolled proliferation of abnormal cells, anywhere in the body, among children and adolescents, in the age group from 0 to 19 years (6, 7). The most frequent types of cancer in childhood and adolescence are leukemia, followed by central nervous system tumors, and lymphomas. It is estimated that in Brazil, for each year from 2020 to 2022, approximately 8460 new cases of childhood and adolescence cancer will occur (4310 in males and 4150 in females) (7). Worldwide, it is estimated that approximately 400,000 new cases per year will be diagnosed among children and adolescents aged 0 to 19 years (8).

In addition, childhood and adolescence cancer causes harmful physiological changes to the body, which leads to difficulties in physical activities, functional performance, and social interaction. Even when treated successfully, it may have unfavorable physical and psychological consequences for the development of children and adolescents according to their age (9, 10).

Surgery, chemotherapy, and radiotherapy, which are frequent modalities in oncologic therapy for children and adolescents (6, 11-13), besides their expected benefits for the management and potential cure of the disease, may lead to adverse effects, such as clinical, functional, and labor changes in biopsychosocial aspects. These effects may result in difficulty sleeping and eating, nausea, pain, diarrhea, preoccupation, and sadness (10, 14). These changes trigger distress and can escalate to impact comfort and lead to negative outcomes in the adaptation of children and adolescents to oncologic treatment (3).

Additionally, the evaluation of comfort provides healthcare professionals with more effective assistance by prioritizing health activities in patient care and improving the provision of individualized and comprehensive care within the clinical process (15). Therefore, in the face of the effects that the oncologic treatment can have on the comfort of children and adolescents with cancer, the search for knowl-

edge of this fact becomes relevant in the hope of developing strategies to promote the comfort of this population during therapy (3-5).

Thus, the following research question emerged: What is the scientific evidence available regarding the effects of cancer treatment on the comfort of children and adolescents with cancer? Therefore, this study aimed to map and examine the scientific evidence regarding the effects of cancer treatment on the comfort of children and adolescents with cancer.

Materials and Methods

This scoping review revolves around the effects of cancer treatment on the comfort of children and adolescents with cancer. For this study, a protocol was created and registered in the Open Science Framework (OSF) under the code OSF.IO/DWYgF. The OSF is an online tool that promotes workflow for researchers, promoting improvements in replicability, transparency, and research data management practices (16).

The methodological reference used was the Joanna Briggs Institute (JBI) to map the evidence that supports a certain research area. In other words it enables the possibility of describing, summarizing, and synthesizing knowledge based on the systematic selection and condensation of the health literature, in addition to identifying gaps in existing research (17). To identify scoping reviews with an objective similar to this study's, a search was carried out in the following databases: JBI Clinical Online Network of Evidence for Care and Therapeutics (CONNECT+), Database of Abstracts of Reviews of Effects (Dare), and The Cochrane Library. The results indicated that no scoping reviews on the subject existed.

This report has been revised according to the Preferred Reporting Items for Systematic Reviews-Extension for Scoping Reviews (PRISMA-ScR) checklist and operationalized in six phases, namely: 1. Research question development; 2. Inclusion and exclusion criteria definition; 3. Keyword identification and Article search strategy design; 4. Database selection; 5. A screening and selection; 6. Article mapping and result synthesis (18, 19).

The PCC strategy, a mnemonic acronym that helps identify the key topics, where "P" stands for population, "C" for concept, and "C" for context, was used to develop the review question (17). In this study, the following definitions were used: P – children and adolescents with cancer; C – comfort; C – cancer treatment. For the study search and selection, the following question was established: What is the scientific evidence regarding the effects of cancer treatment on the comfort of children and adolescents with cancer?

Regarding the article inclusion criteria, abstracts and objectives should correspond to the proposed subject—the effects of cancer

treatment on the comfort of children and adolescents with cancer—, national and international studies, with qualitative, quantitative, and mixed methods approaches.

The exclusion criteria were literature review articles for being secondary studies, studies that included young adults in the sample, and articles that described the opinion of healthcare professionals, that is, children and adolescents were not included. No time cut was applied to the research to provide the largest number of studies on the subject.

The PCC strategy was used to search for results using controlled terms from the Medical Subject Headings (MeSH) of the Health Sciences Descriptors (DeCS), along with uncontrolled terms: “*criança*”/“child”; “*adolescente*”/“adolescent”; “*neoplasias*”/“neoplasms”; “*câncer*”/“cancer”; “*oncologia*”/“medical oncology”; “*tumor*”/“tumor”; “*conforto do paciente*”/“patient comfort”; “*bem-estar da criança*”/“child welfare”; “*bem-estar do adolescente*”/“adolescent welfare”.

The search strategy was developed using the Boolean operators “AND” and “OR”, as follows: (*criança* OR *adolescente*) AND (*conforto do paciente* OR *bem-estar da criança* OR *bem-estar do adolescente*) AND (*neoplasias* OR *oncologia* OR *câncer* OR *tumor*); (child OR adolescent) AND (patient comfort OR child welfare OR adolescent welfare) AND (neoplasms OR medical oncology OR cancer OR tumor).

The literature research was conducted in the following electronic information resources: Virtual Health Library (VHL); National Institutes of Health’s National Library of Medicine (PubMed); Cumulative Index to Nursing & Allied Health Literature (Cinahl); SciVerse Scopus; Latin American and Caribbean Literature on Health Sciences (Lilacs); Web of Science; Google Scholar, and references in the gray literature, available at greylit.org. This a website provides a list of recognized sources for this type of search and reference lists of selected relevant studies. The JBI recommends searching all reference lists of selected studies to identify any potential additional studies not mapped in the strategy used (17).

The searches were performed from September to October 2021, by two reviewers in a paired and independent process. The search results of both were compared in the electronic information resources, verifying the differences among the findings to encompass the largest number of information relevant to the subject. To verify if there were subsequent publications in the chronological period, a new search was performed in January 2022. After checking the studies and analyzing the results, the reviewers reached a consensus and listed the studies that comprised the final sample of this review. It was not necessary to request additional information or data from the authors of the selected studies.

The screening and selection process of evidence sources used was based on PRISMA-ScR (18), considering the four proposed steps

namely: Identification, screening, eligibility, and inclusion, which aim to contribute to the quality of results in the generation of knowledge. The selected articles were read in full, identifying more precisely their relevance to the research, which resulted in the final number of texts included in the review.

The final extraction and delimitation steps of key information from the evidence were followed based on numerical descriptive analysis to categorize the studies and the selected evidence for thematic analysis. The aim was to summarize the information and align it to the study objective and guiding question.

The data from the selected articles were extracted with a tool developed by the researchers according to the JBI guidelines (17, 19), which included authors, year of publication, study country, language, design, participants, treatment and the effects of cancer treatment on the comfort of children and adolescents with cancer. The studies were grouped and the synthesized data were discussed with the literature.

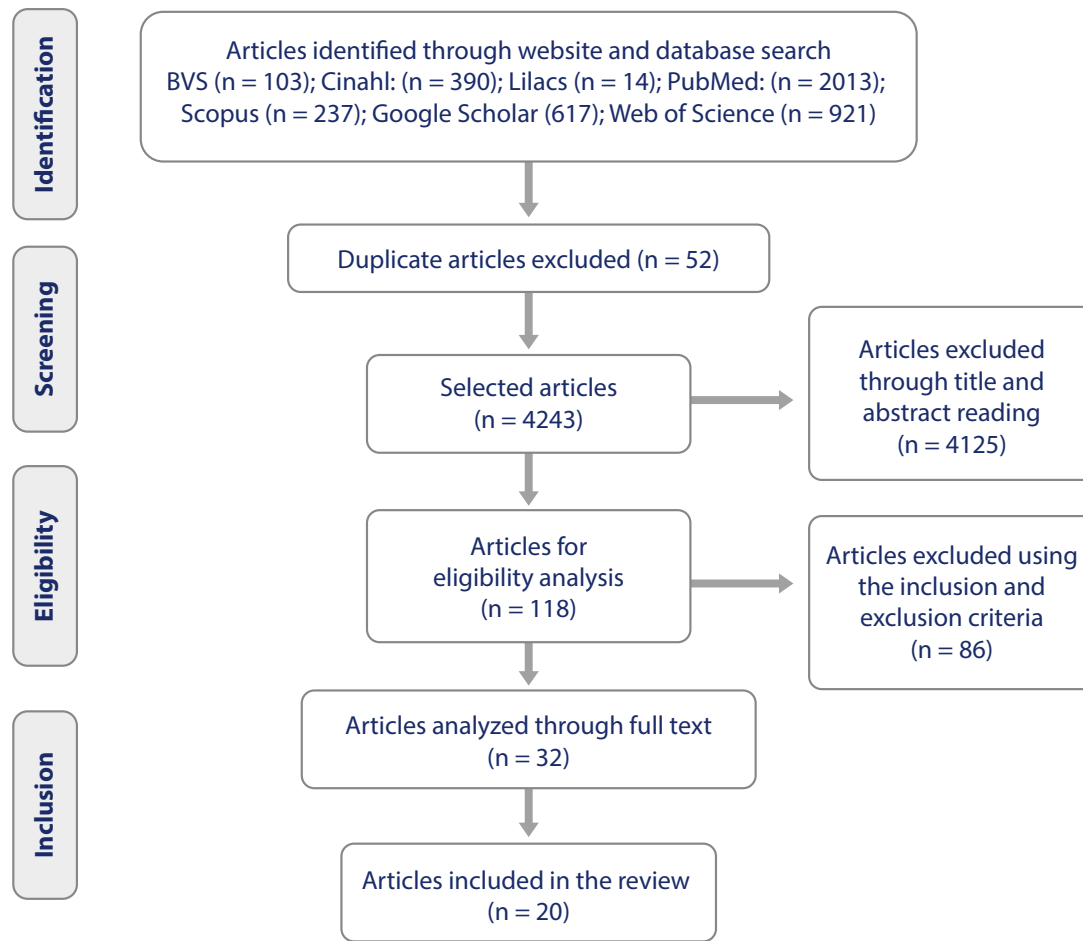
All ethical and scientific requirements for the research were respected based on legal regulations. We ensured methodological rigor in the data treatment and presentation and faithfulness of the information contained in the original documents that supported the results.

Results

The search resulted in 4295 articles selected, of which 52 were discarded for being duplicates in the information resources, and 4243 articles remained for title and abstract reading. In this new step, 4125 articles were excluded, which resulted in a total of 118 articles for selection regarding the inclusion and exclusion criteria. Of these, 32 articles were selected for reading in full, excluding 12 for not specifying the effects of cancer treatment on the comfort of children and adolescents with cancer. Thus, in the final sample, 20 articles were obtained to map evidence according to this study's objective, as shown in Figure 1.

In this review, the selected studies were published between 2007 and 2020. Of the 20 (100 %) published, nine (45 %) were Brazilian studies published in Portuguese and carried out between 2009 and 2020 (3, 20-27). The remaining 11 (55 %) studies are international articles published in English, with a prevalence of two (10 %) in Sweden (28, 29), five (25 %) in the United States (30-34), one (5 %) in Indonesia (35), one (5 %) in Australia (36), one (5 %) in Turkey (4), and one (5 %) in Canada (37).

Regarding study design, 12 (60 %) were qualitative (4, 20-28, 33, 35) studies, and the remaining eight (40 %) were identified as follows: Two (10 %) were retrospective studies (31, 32), three (15 %) were cross-sectional studies (3, 36, 37), one (5 %) was a mixed methods study (29), one (5 %) was a case-control study (34), and one (5 %) was a case study (30). Table 1 presents the characteristics of the selected studies.



Source: Research data and adapted from (18).

Table 1. Characterization of the selected studies according to authors, year, country of publication and language, and design. Curitiba, Paraná, Brazil, 2021

Article	Authors	Country/year/language	Design
I (27)	Guimarães TM, Pacheco STA, Nunes MDR, Silva LF	Brazil/2020/Portuguese	Qualitative
II (30)	Levy K, Grant PC, Kerr CW	The United States/2020/ English	Case study
III (4)	Bicakli DH, Sari HY, Yilmaz M, Cetingul N, Kantar M	Turkey/2019/English	Qualitative
IV (31)	Chen EL, Yoo CH, Gutkin PM, Merriot DJ, Avedian RS, Steffner RJ, <i>et al.</i>	The United States/2019/ English	Retrospective
V (3)	Leandro TA, Silva VM, Lopes MVO, Guedes NG, Nunes MM, Sousa TM, <i>et al.</i>	Brazil/2018/Portuguese	Cross-sectional
VI (25)	Sá-França JFR, Costa SFG, Lopes MEL, Nóbrega MML, Batista PSS, Oliveira RC	Brazil/2018/Portuguese	Qualitative
VII (35)	Mahayati SL, Allenidekania, Happy H	Indonesia/2018/English	Qualitative

Article	Authors	Country/year/language	Design
VIII (32)	Warma S, Friedman DL, Stavas MJ	The United States/2017/ English	Retrospective
IX (20)	Freitas NBC, Santos JLF, Estanislau AM, Palitot RM, Fonsêca PN	Brazil/2016/Portuguese	Qualitative
X (33)	Jacobs S, Perez J, Cheng YI, Sill A, Wang J, Lyon ME	The United States/2015/ English	Quantitative
XI (21)	Silva GM, Kameo SY, Sawada NO	Brazil/2014/Portuguese	Qualitative
XII (28)	Ångström-Brännström C, Norberg A	Sweden/2014/English	Qualitative
XIII (22)	Gomes IP, Lima KA, Rodrigues LV, Lima RAG, Collet N	Brazil/2013/Portuguese	Qualitative
XIV (36)	McCarthy M, Glick R, Green J, Plummer K, Peters K, Johnsey L, <i>et al.</i>	Australia/2012/English	Cross-sectional
XV (26)	Lombardo MS, Popim RC, Suman A	Brazil/2011/Portuguese	Qualitative
XVI (23)	Cicogna EC, Nascimento LC, Lima RAG	Brazil/2010/Portuguese	Qualitative
XVII (37)	Zupanec S, Jones H, Stremler R	Canada/2010/English	Cross-sectional
XVIII (24)	Ribeiro AC, Coutinho RM, Araújo TF, Souza VS	Brazil/2009/Portuguese	Qualitative
XIX (29)	Nilsson S, Finnström B, Kokinsky E, Enskär K	Sweden/2009/ English	Mixed methods
XX (34)	Windich-Biermeier A, Sjoberg I, Dale JC, Eshelman D, Guzzetta CE	The United States/2007/ English	Case-control

Source: Own elaboration based on the research data.

Based on the selected studies, a prevalence of participants was found in 11 (55 %) studies with children and adolescents (3, 20-25, 29, 31, 32, 34). The other nine studies (45 %) were carried out with three (15 %) family members, children, and adolescents (4, 36, 37), three (15 %) with adolescents (26, 27, 35), two (10 %) with adolescents and family members (30, 33), and one (5 %) with children and their family members (28).

Regarding the treatment modality provided to the children and adolescents in each study, of the 20 (100 %) articles, 11 (55 %) addressed antineoplastic treatment (3, 4, 20, 22, 23, 26, 28, 34-37), three (15 %) general oncology (21, 24, 29) and did not specify the treatment modality; two (10 %) radiotherapy (31, 32), three (15 %) palliative care (27, 30, 33), and one (5 %) antineoplastic treatment, surgery, and radiotherapy (25). Regarding the effects of cancer treatment that affect the comfort of children and adolescents with cancer, 20 manifestations were evidenced in this population. Table 2 presents the synthesis of the evidence mapped in the selected studies.

Table 2. Synthesis of the evidence regarding the participants and the effects of cancer treatment on the comfort of children and adolescents with cancer. Curitiba, Paraná, Brazil, 2021

Article	Participants/study sample	Treatment	Treatment effects
I (27)	Nine adolescents, aged 12 to 20 years	Palliative care	Nausea, difficulty eating, emesis, modified body image, suffering, withdrawal from formal education, withdrawal from family and friends
II (30)	One adolescent aged 15 and their family member	Palliative care	Fear
III (4)	Fourteen mothers and three children and adolescents aged 11 months to 18 years	Antineoplastic	Difficulty eating, anxiety, fear, and modified body image
IV (31)	Twenty children and adolescents aged 17.9 years on average	Radiotherapy	Pain and dyspnea
V (3)	One hundred ninety-two children and adolescents aged 11 years on average	Antineoplastic	Crying, feeling cold, fear, and not feeling at ease with the situation
VI (25)	Eleven children and adolescents aged 7 to 11 years	Antineoplastic, surgery, and radiotherapy	Fear, sadness, distress, pain, and suffering
VII (35)	Nine adolescents aged 14 to 18 years	Antineoplastic	Withdrawal from family and friends, nausea
VIII (32)	Fifty children and adolescents aged 0 to 18 years	Radiotherapy	Pain and dyspnea
IX (20)	Four children and adolescents aged 9 to 13 years	Antineoplastic	Shame and sadness
X (33)	Seventeen adolescents aged 14 to 21 years and their family members	Palliative care	Fear and pain
XI (21)	Forty children and adolescents aged 10 to 18 years	*General cancer treatment	Withdrawal from formal education
XII (28)	Nine children aged 3 to 9 years and their family members	Antineoplastic	Fear, withdrawal from family and friends, and pain
XIII (22)	Seven children and adolescents aged 6 to 11 years	Antineoplastic	Difficulty eating and length of hospitalization
XIV (36)	One hundred thirty-five children and adolescents aged 5 months to 19 years and their family members	Antineoplastic	Distress, pain, and suffering
XV (26)	Seven adolescents aged 11 to 18 years	Antineoplastic	Pain, alopecia, and nausea
XVI (23)	Ten children and adolescents aged 8 to 18 years	Antineoplastic	Pain, nausea, alopecia, and modified body image
XVII (37)	Sixty-four children and adolescents aged 4 to 18 years and their family members	Antineoplastic	Pain, difficulty eating, nausea, emesis, and fear

Article	Participants/study sample	Treatment	Treatment effects
XVIII (24)	Seven children and adolescents aged 6 to 14 years	*General cancer treatment	Pain, fear, and preoccupation
XIX (29)	Forty-two children and adolescents aged 5 to 18 years	*General cancer treatment	Distress and pain
XX (34)	Fifty children and adolescents aged 5 to 18 years	Antineoplastic	Distress, pain, and fear

Note. *Studies that did not specify the treatment provided to the participants.

Source: Own elaboration based on the research data, 2021.

After mapping the evidence related to the effects of cancer treatment, we grouped them by citation frequency of the selected studies to analyze the prevalence of these events in the comfort of children and adolescents with cancer. It was found that, of the 20 (100 %) manifestations evidenced, the ones that became more prevalent among the studies were pain (n = 12; 60 % [23-26, 28, 29, 31-34, 36, 37]), fear (n = 9; 45 % [3, 4, 24, 25, 28, 30, 33, 34, 37]), nausea (n = 5; 25 % [23, 26, 27, 35, 37]), difficulty eating (n = 4; 20 % [4, 22, 27, 37]), and distress (n = 4; 20 % [25, 29, 34, 36]), according to the data presented in Table 3.

Table 3. Frequency and percentage of the prevalence of the effects of cancer treatment on the comfort of children and adolescents with cancer in the selected studies. Curitiba, Paraná, Brazil, 2021

The effects of cancer treatment	Frequency (n = 20)	
	Absolute (f)	Relative (%)
Pain (23-26, 28, 29, 31-34, 36, 37)	12	60
Fear (3, 4, 24, 25, 28, 30, 33, 34, 37)	9	45
Nausea (23, 26, 27, 35, 37)	5	25
Difficulty eating (4, 22, 27, 37)	4	20
Distress (25, 29, 34, 36)	4	20
Modified body image (4, 23, 27)	3	15
Suffering (25-27)	3	15
Withdrawal from family and friends (27, 28, 35)	3	15
Withdrawal from formal education (21, 27)	2	10
Sadness (20, 25)	2	10
Dyspnea (31, 32)	2	10
Alopecia (23, 26)	2	10
Emesis (27, 37)	2	10
Crying (3)	1	5
Preoccupation (24)	1	5
Feeling cold (3)	1	5
Shame (20)	1	5
Hospitalization time (22)	1	5
Anxiety (4)	1	5
Not feeling at ease with the situation (3)	1	5

Source: Own elaboration based on the research data, 2021.

Discussion

The objective of this scoping review was to map and examine the scientific evidence regarding the effects of cancer treatment on the comfort of children and adolescents with cancer. For this purpose, 20 primary studies published in various national and international settings were selected through informational resources, which indicates that nurses need to analyze the evidence presented. Moreover, it is important to relate them to the impact of changes on the comfort of children and adolescents with cancer undergoing treatment to obtain input for treatment strategies to manage the manifestations in the aforementioned population and improve the adaptation of patients throughout the cancer treatment.

Of all the articles, 12 (60 %) reported pain as the most prevalent effect of cancer treatment in children and adolescents with cancer (23-26, 28, 29, 31-34, 36, 37). These frequencies can be compared with the results of a study in Lebanon (38), in which pain was the most frequent and debilitating symptom. Thus, this symptom may lead to changes in the well-being of this population and in their adaptation to treatment.

Likewise, other evidence reports that the pain experienced by children and adolescents with cancer causes an unpleasant sensation, of a multi-factor origin, which is difficult to manage, and may lead to physical and emotional changes (11, 12, 39). Thus, the management of pain represents a challenge for professionals who work in the area, especially in its identification and management prior to the cancer treatment to which this population is submitted (13-15, 39).

In addition to pain, in nine (45 %) mapped studies, fear had a significant frequency in the effects of cancer treatment on the comfort of children and adolescents (3, 4, 24, 25, 28, 30, 33, 34, 37). Fear means, for this population, the daily overload of negative feelings and emotions, uncertainties, and insecurity of being in an unknown world, where suffering emerges in their lives unexpectedly and with no prospect of coming to an end (5, 14).

It is highlighted that the findings related to fear coincide with those of a review study, which investigated the change in the comfort of children and adolescents in critical conditions (15). The authors stated that intensive treatment in the hospital environment, the absence of close family members, and invasive procedures trigger the feeling of fear in these patients (15).

Another effect of cancer treatment that prevailed in the selected and mapped articles was nausea, which reached a citation frequency in five (25 %) of the studies (23, 26, 27, 35, 37). Nausea is one of the signs and symptoms that cause increased discomfort to patients in cancer treatment, specifically secondary to gastrointestinal toxicities stemming from antineoplastic therapy. They can affect the nu-

tritional status, hydro-electrolyte balance, well-being, and quality of life of children and adolescents with cancer (40).

These findings corroborate the results of a symptom management study conducted with family caregivers of children and adolescents with cancer undergoing antineoplastic treatment (41). The authors stated that nausea was one of the most prevalent symptoms in the pediatric population, leading to changes in eating patterns, inappetence, and weight loss (41).

In addition, difficulty eating was present in four (20 %) of the studies (4, 22, 27, 37). In this context, difficulty eating is understood as any problem that negatively affects the process of healthcare professionals, parents, or caregivers to supply food or nutrients to their children or patients (42).

Children and adolescents are used to a particular type of food at home, which regards their wishes and desires, unlike what happens in the hospital environment. The supply of inappropriate food by the family and the hospital rules regarding meals are the main difficulties, often becoming a limiting factor for accepting adequate meals (43).

Therefore, these findings corroborate a study conducted on the evaluation of the perception of parents of children diagnosed with cancer regarding the food provided in the hospital environment (44). The authors demonstrated that 76.5 % of children did not like the food taste, and 52.9 % did not like the appearance of the food plating. It has been demonstrated that an unbalanced diet can cause discomfort to patients and increase the risk of malnutrition (44).

In addition to the difficulty eating, another effect on treatment that prevailed in the selected and mapped articles was distress, which had a citation frequency in four (20 %) of the studies (25, 29, 34, 36). Distress is triggered because children and adolescents with cancer often experience a severe and uncertain process of illness, which represents the unknown, especially because of the treatment and separation from their parents and siblings when hospitalization is necessary (25, 45).

Thus, these findings are consistent with a pilot intervention study conducted in Brazil with children and adolescents with type 1 diabetes mellitus, which used a therapy toy versus standard guidelines for administering insulin (46). The authors identified that decreased parental involvement with children and adolescents in diabetes management may cause psychosocial issues such as depression symptoms and distress (46).

Finally, regarding the cancer treatment modality 11 (55 %) of the articles addressed antineoplastic therapy (3, 4, 20, 22, 23, 26, 28, 34-37). This therapy is the most prevalent treatment modality for childhood and adolescence cancer, leading to immediate responses, since pedi-

atric tumor cells are sensitive to antineoplastic therapy (47, 48). The child or adolescent with cancer receives antineoplastic therapy at the hospital level—inpatient or outpatient— or at home under the supervision and close monitoring of healthcare professionals (47-50).

Evidence is consistent with a retrospective study that analyzed the clinical and epidemiological profile of children and adolescents with cancer (51). From the 146 medical records analyzed, 65 (45%) of the patients were specifically on cancer treatment. Thus, the authors stated that antineoplastic therapy was the most prevalent therapy in this study, compared with other treatment modalities for this population, such as radiotherapy, surgery, and hematopoietic stem cell transplantation (51).

Finally, this research has as a limitation the search in seven electronic informational resources with the selected descriptors and keywords. They may not have expanded the number of eligible studies for this research, even though the terms selected cover the universe of the effects of cancer treatment on the comfort of children and adolescents with cancer.

Therefore, this review highlights the need for studies that develop indicators of the effects of cancer treatment on this population to operationalize the evaluation of the effectiveness of care provided in clinical practice. Enabling adaptation and coping by children and adolescents with cancer undergoing treatment, based on the involvement of these patients' healthcare professionals, family members, and close friends will provide them with well-being.

Conclusions

This study's findings provided scientific evidence regarding the effects of cancer treatment on the comfort of children and adolescents with cancer. Pain, fear, nausea, difficulty eating, and distress were prevalent. These effects lead to suffering, low adherence to cancer treatment, and worsened quality of life in this population. Regarding the treatment, it was found that the one with the highest prevalence among the analyzed studies was antineoplastic therapy.

For this reason, the results presented in this study may raise nurses, awareness of the effects on the comfort of children and adolescents with cancer during cancer treatment, as they are vulnerable in the care settings. Therefore, comfort is an aspect that should be routinely evaluated in clinical practice to promote the well-being of children and adolescents with cancer.

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References

1. Kolcaba KY. A taxonomic structure for the concept comfort. *Image J Nurs Sch.* 1991;23(4):237-40. DOI: <https://doi.org/10.1111/j.1547-5069.1991.tb00678.x>
2. Kolcaba KY. *Comfort theory and practice: a vision for holistic health care and research.* New York: Springer; 2003.
3. Leandro TA, Silva VM, Lopes MVO, Guedes NG, Nunes MM, Sousa TM *et al.* Conforto prejudicado em crianças e adolescentes com câncer. *Rev Bras Enferm.* 2018;71(3):995-1002. DOI: <https://doi.org/10.1590/0034-7167-2017-0050>
4. Bicakli DH, Sari HY, Yilmaz M, Cetingul N, Kantar M. Nasogastric tube feeding experiences in pediatric oncology patients and their mothers: A qualitative study. *Gastroenterol Nurs.* 2019;42(3):286-93. DOI: <https://doi.org/10.1097/SGA.000000000000385>
5. Bice AA, Pond RS, Lutz BJ. The Pediatric procedural holistic comfort assessment: A feasibility study. *J Pediatr Health Care.* 2019;33(2):509-19. DOI: <https://doi.org/10.1016/j.pedhc.2019.01.006>
6. World Health Organization (WHO). Cancer in children [Internet]. 2021. Available from: <https://www.who.int/news-room/fact-sheets/detail/cancer-in-children>
7. Brasil. Ministério da Saúde. Instituto Nacional de Câncer José Alencar Gomes da Silva. Estimativa 2020: incidência de câncer no Brasil. Câncer infantojuvenil [Internet]. Rio de Janeiro (RJ); 2019. Disponível em: <https://www.inca.gov.br/sites/ufu.sti.inca.local/files/media/document/estimativa-2020-incidencia-de-cancer-no-brasil.pdf>
8. World Health Organization (WHO). Cancer [Internet]. 2022. Available from: https://www.who.int/health-topics/cancer#tab=tab_1
9. Hartley H, Pizer B, Lane S, Sneade C, Williams R, Mallucci C *et al.* Incidence and prognostic factors of ataxia in children with posterior fossa tumors. *Neurooncol Pract.* 2019;6(3):185-93. DOI: <https://doi.org/10.1093/nop/npy033>
10. Cadamuro SDA, Franco JO, Paiva CE, Oliveira CZ, Paiva BSR. Symptom screening in paediatrics tool for screening multiple symptoms in Brazilian patients with cancer: A cross-sectional validation study. *BMJ Open.* 2019;9(8):e028149. DOI: <https://doi.org/10.1136/bmjopen-2018-028149>
11. Lima FFS, Hora SS, Lage CRS, Chaves ARM, Rodrigues AM, Santana BA *et al.* Intervention strategies for adherence to the treatment of childhood cancer: case report. *Rev. Bras. Cancerol.* [Online]. 2018;64(3):409-13. DOI: <https://doi.org/10.32635/2176-9745.RBC.2018v64n3.49>
12. Welter AP, Cericato GO, Paranhos LR, Santos TML, Rigo L. Oral complications in hospitalized children during antineoplastic treatment. *J. Hum. Growth Dev.* 2019;29(1):93-101. DOI: <https://doi.org/10.7322/jhgd.137142>
13. Burgess L, Pulsifer MB, Grieco JA, Weinstein ER, Gallotto S, Weyman E *et al.* Estimated IQ systematically underestimates neurocognitive sequelae in irradiated pediatric brain tumor survivors. *Int J Radiat Oncol Biol Phys.* 2018;101(3):541-9. DOI: <https://doi.org/10.1016/j.ijrobp.2018.03.012>
14. Torres V, Nunes MDR, Rodrigues FMS, Bravo L, Adlard K, Secola R *et al.* Frequency, severity, and distress associated with physical and psychosocial symptoms at home in children and adolescents with cancer. *J Pediatr Health Care.* 2019;33(4):404-14. DOI: <https://doi.org/10.1016/j.pedhc.2018.11.007>
15. Bosch-Alcaraz A, Falcó-Pegueroles A, Jordan I. A literature review of comfort in the paediatric critical care patient. *J Clin Nurs.* 2018;27:2546-57. DOI: <https://doi.org/10.1111/jocn.14345>
16. Open Science Framework (OSF) [Internet]. 2022. Available from: <https://osf.io/tvxyz/wiki/home/>
17. Peters MDJ, Godfrey C, McInerney P, Munn Z, Tricco AC, Khalil H. Chapter 11: Scoping Reviews (2020 version). In: Aromataris E, Munn Z, eds. *JBIM Manual for Evidence Synthesis.* JBI [Internet]; 2020. DOI: <https://doi.org/10.46658/JBIMES-20-12>
18. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D *et al.* PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Ann Intern Med.* 2018;169(7):467-73. DOI: <https://doi.org/10.7326/M18-0850>
19. Peters MDJ, Marnie C, Colquhoun H, Garritty CM, Hempel S, Horsley T *et al.* Scoping reviews: reinforcing and advancing the methodology and application. *Syst Rev.* 2021;10(1):263. DOI: <https://doi.org/10.1186/s13643-021-01821-3>
20. Freitas NBC, Santos JLF, Estanislau AM, Palitot RM, Fonsêca PN. As percepções das crianças e adolescentes com câncer sobre a reinserção escolar. *Psicopedagogia.* 2016;33(101):175-83. Disponível em: http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S0103-84862016000200007
21. Silva GM, Kameo SY, Sawada NO. Percepções da criança e do adolescente com câncer frente ao diagnóstico e tratamento da doença. *Rev. iberoam. educ. invest. enferm.* [Internet]. 2014;4(4):15-24. Disponível em: <https://www.enfermeria21.com/revistas/aladefe/articulo/138/percepcoes-da-crianca-e-do-adolescente-com-cancer-frente-ao-diagnostico-e-tratamento-da-doenca/#>
22. Gomes IP, Lima KA, Rodrigues LV, Lima RAG, Collet N. Do diagnóstico à sobrevivência do câncer infantil: perspectiva de crianças. *Texto & contexto enferm.* 2013;22(3):671-9. DOI: <https://doi.org/10.1590/S0104-07072013000300013>
23. Cicogna EC, Nascimento LC, Lima RAG. Crianças e adolescentes com câncer: experiências com a quimioterapia. *Rev Lat Am Enfermagem.* 2010;18(5):[9 telas]. DOI: <https://doi.org/10.1590/S0104-11692010000500005>
24. Ribeiro AC, Coutinho RM, Araújo TF, Souza VS. Vivenciando um mundo de procedimentos e preocupações: experiência da criança com Port-a-Cath. *Acta Paul. Enferm.* [Online]. 2009;22(esp.):935-41. DOI: <https://doi.org/10.1590/S0103-21002009000700017>
25. Sá-França JFR, Costa SFG, Lopes MEL, Nóbrega MML, Batista PSS, Oliveira RC. Experiência existencial de crianças com câncer sob cuidados paliativos. *Rev Bras Enferm.* 2018;71(supl. 3):1400-7. DOI: <https://doi.org/10.1590/0034-7167-2016-0493>
26. Lombardo MS, Popim RC, Suman A. Da onipotência ao desgaste: as perspectivas do adolescente em quimioterapia. *Rev Lat Am Enfermagem.* 2011;19(3):[9 telas]. DOI: <https://doi.org/10.1590/S0104-11692011000300012>
27. Guimarães TM, Pacheco STA, Nunes MDR, Silva LF. Percepções do adolescente com câncer em cuidados paliativos quanto ao seu processo de adoecimento. *Rev. gaúch. enferm.* 2020;41:e20190223. DOI: <https://doi.org/10.1590/1983-1447.2020.20190223>
28. Ångström-Brännström C, Norberg A. Children undergoing cancer treatment describe their experiences of comfort in interviews and drawings. *J Pediatr Oncol Nurs.* 2014;31(3):135-46. DOI: <https://doi.org/10.1177/1043454214521693>
29. Nilsson S, Finnström B, Kokinsky E, Enskär K. The use of Virtual Reality for needle-related procedural pain and distress in children and adolescents in a paediatric oncology unit. *Eur J Oncol Nurs.* 2009;13(2):102-9. DOI: <https://doi.org/10.1016/j.ejon.2009.01.003>

30. Levy K, Grant PC, Kerr CW. End-of-life dreams and visions in pediatric patients: A case study. *J Palliat Med.* 2020;23(11):1549-52. DOI: <https://doi.org/10.1089/jpm.2019.0547>
31. Chen EL, Yoo CH, Gutkin PM, Merriot DJ, Avedian RS, Steffner RJ et al. Outcomes for pediatric patients with osteosarcoma treated with palliative radiotherapy. *Pediatr Blood Cancer.* 2019;67(1):e27967. DOI: <https://doi.org/10.1002/pbc.27967>
32. Warma S, Friedman DL, Stavas MJ. The role of radiation therapy in palliative care of children with advanced cancer: Clinical outcomes and patterns of care. *Pediatr Blood Cancer.* 2017;64(5):e26359. DOI: <https://doi.org/10.1002/pbc.26359>
33. Jacobs S, Perez J, Cheng YI, Sill A, Wang J, Lyon ME. Adolescent end of life preferences and congruence with their parents' preferences: Results of a survey of adolescents with cancer. *Pediatr Blood Cancer.* 2015;62(4):710-4. DOI: <https://doi.org/10.1002/pbc.25358>
34. Windich-Biermeier A, Sjoberg I, Dale JC, Eshelman D, Guzzetta CE. Effects of distraction on pain, fear, and distress during venous port access and venipuncture in children and adolescents with cancer. *J Pediatr Oncol Nurs.* 2007;24(1):8-19. DOI: <https://doi.org/10.1177/1043454206296018>
35. Mahayati SL, Allenidekania, Happy H. Spirituality in adolescents with cancer. *Enferm Clin.* 2018;28(supl. 1):31-5. DOI: [https://doi.org/10.1016/S1130-8621\(18\)30032-9](https://doi.org/10.1016/S1130-8621(18)30032-9)
36. McCarthy M, Glick R, Green J, Plummer K, Peters K, Johnsey L et al. Comfort first: An evaluation of a procedural pain management programme for children with cancer. *Psycho-oncology (Holland).* 2012;22(4):775-82. DOI: <https://doi.org/10.1002/pon.3061>
37. Zupanec S, Jones H, Stremler R. Sleep habits and fatigue of children receiving maintenance chemotherapy for all and their parents. *J Pediatr Oncol Nurs.* 2010;27(4):217-28. DOI: <https://doi.org/10.1177/1043454209358890>
38. Madi D, Clinton M. Pain and its impact on the functional ability in children treated at the children's cancer center of Lebanon. *J Pediatr Nurs.* 2018;39E11-E20. DOI: <https://doi.org/10.1016/j.pedn.2017.12.004>
39. Sousa GCC, Mercês NNA, Silva LAGP, Macedo A. Gerenciamento da dor de crianças e adolescentes no período pós-transplante de células-tronco hematopoéticas: revisão integrativa. *Enferm. glob.* 2019;18(1):551-6. DOI: <https://doi.org/10.6018/eglobal.18.1.302991>
40. Gomes IP, Collet N. Sintomas desconfortáveis relacionados à quimioterapia sob a ótica das crianças: pesquisa qualitativa. *Online braz. j. nurs.* [Online]. 2010;9(2). Disponível em: DOI: <https://doi.org/10.5935/1676-4285.20103045>
41. Silva-Rodrigues FM, Lucca M, Leite ACAB, Alvarenga WA, Nunes MDR, Nascimento LC. Gerenciamento dos sintomas relacionados à quimioterapia em crianças e adolescentes: perspectivas de cuidadores familiares. *Rev Esc Enferm USP.* 2021;55:e20200484. DOI: <https://doi.org/10.1590/1980-220x-reuusp-2020-0484>
42. Maranhão HS, Aguiar RC, Lira DTJ, Sales MUF, Nóbrega NAN. Dificuldades alimentares em pré-escolares, práticas alimentares pregressas e estado nutricional. *Rev. Paul. Pediatr.* [Ed. Port., Online]. 2018;36(1):45-51. DOI: <https://doi.org/10.1590/1984-0462;2018;36;1;00004>
43. Sueiro IM, Góes FGB, Martins AS, Moraes JRMM, Silva LJ, Silva LF. Fatores intervenientes para o cuidado de enfermagem na alimentação da criança hospitalizada em quimioterapia. *Rev. enferm. UFSM.* 2019;9(e25):1-19. DOI: <https://doi.org/10.5902/2179769231138>
44. Fernandes RCS, Spinelli MGN. Percepção de pais e responsáveis por crianças diagnosticadas com câncer: a gastronomia hospitalar em foco. *Nutr. clín. diet. hosp.* 2020;40(1):20-4. DOI: <https://doi.org/10.12873/401fernandes>
45. Loureiro FM, Araújo BR, Charepe ZB. Adaptação e validação do instrumento Children Care Quality at Hospital para o português. *Aquichan.* 2019;19(4):e1947. DOI: <https://doi.org/10.5294/aqui.2019.19.4.7>
46. La Banca RO, Laffel LMB, Volkening LK, Sparapani VC, Carvalho EC, Nascimento LC. Therapeutic play to teach children with type 1 diabetes insulin self-injection: A pilot trial in a developing country. *J Spec Pediatr Nurs.* 2021;26:e12309. DOI: <https://doi.org/10.1111/jspn.12309>
47. Neuss MN, Gilmore TR, Belderson KM, Billett AL, Conti-Kalchik T, Harvey BE et al. 2016 Updated American Society of Clinical Oncology/Oncology Nursing Society chemotherapy administration safety standards, including standards for pediatric oncology. *Oncol Nurs Forum.* 2017;44(1):[13 telas]. DOI: <https://doi.org/10.1188/17.ONF.31-43>
48. Iuchno CW, Carvalho GP. Toxicidade e efeitos adversos decorrente do tratamento quimioterápico antineoplásico em pacientes pediátricos: revisão integrativa. *Ciência & Saúde.* 2019;12(1):e30329. DOI: <https://doi.org/10.15448/1983-652X.2019.1.30329>
49. Kuntz SR, Gerhardt LM, Ferreira AM, Santos MT, Ludwig MCF, Wegner W. Primeira transição do cuidado hospitalar para domiciliar da criança com câncer: orientações da equipe multiprofissional. *Esc. Anna Nery Rev. Enferm.* 2021;25(2):e20200239. Disponível em: DOI: <https://doi.org/10.1590/2177-9465-ean-2020-0239>
50. Silva-Rodrigues FM, Silva JK, Nunes MDR, Cardoso LGS, Nascimento LC. Nurses' attitudes in the administration of chemotherapy in pediatric oncology. *Rev. enferm. UERJ.* 2019;27:e37458. DOI: <https://doi.org/10.12957/reuerj.2019.37458>
51. Mutti CF, Cruz VG, Santos LF, Araújo D, Cogo SB, Neves ET. Perfil clínico-epidemiológico de crianças e adolescentes com câncer em um serviço de oncologia. *Rev. Bras. Cancerol.* [Online]. 2018;64(3):293-30. DOI: <https://doi.org/10.32635/2176-9745.RBC.2018v64n3.26>