

ORIGINAL ARTICLE

Impacts of the pandemic on children and adolescents with cancer: scoping review

Impactos da pandemia em crianças e adolescentes com doença oncológica: revisão de escopo

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DESCRIPTORES

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ABSTRACT

Objective: To identify the impacts of the COVID-19 pandemic on the health care of children and youth with oncological diseases. **Method:** Scoping review based on the Joanna Briggs Institute (JBI) methodological framework. To describe the research question, the population, concept, and context (PCC) strategy was used. The searches occurred in September 2022 in the BVS, Cinahl, Scopus, Lilacs, and PubMed databases, with the following descriptors: cancer; children; teenagers; pandemic; Covid; oncology; child; adolescent; and neoplasia. Rayyan software was used to select the studies, following the PRISMA recommendations. The content analysis method proposed by Bardin was used. **Result:** There were several impacts of the pandemic on care for children and adolescents' oncology, related to daily life, the need to (re) organize health services, and, in this context, barriers were identified in maintaining treatment, postponing/reducing the offer of care, which impacted the reduction of specialized professionals and the supply of surgeries, and reduction of inputs and medicines. In the emotional sphere, the impacts were related to the intensification of feelings of fear and anxiety. **Conclusion:** In addition to the impacts caused by the pandemic, the need for awareness raising and support work for children and their families by primary care and specialized care teams became evident when they could not be assisted by other services, in addition to continued care at home.

RESUMO

Objetivo: Identificar os impactos da pandemia de Covid-19 no cuidado à saúde da população infantojuvenil com doença oncológica. **Método:** Revisão de escopo, com base no referencial metodológico do Joanna Briggs Institute (JBI). Para a formulação da questão de pesquisa, foi utilizada a estratégia Population, Concept e Context (PCC). As buscas ocorreram em setembro de 2022, nas bases de dados BVS, Cinahl, Scopus, Lilacs e Pubmed, com os descritores: câncer; children; adolescents; pandemia; Covid; oncologia; criança; adolescente; e neoplasia. O software Rayyan foi utilizado para a seleção dos estudos, seguindo as recomendações do PRISMA. Para a análise, utilizou-se o método de Análise de Conteúdo proposto por Bardin. **Resultado:** Constatou-se diversos impactos da pandemia nos atendimentos ao público

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oncológico infantojuvenil, relacionados ao cotidiano, a necessidade de (re)organização dos serviços de saúde e, nesse contexto, identificaram-se barreiras na manutenção do tratamento, adiamento/redução da oferta de atendimentos, que impactou na redução de profissionais especializados e na oferta de cirurgias, redução de insumos e medicamentos. No âmbito emocional, os impactos foram relacionados a intensificação dos sentimentos de medo e ansiedade. **Conclusão:** Além dos impactos causados pela pandemia, ficou evidente a necessidade de sensibilização e de um trabalho de suporte às crianças e suas famílias pelas equipes de atenção primária e atenção especializada, quando essas não podem ser assistidas por outros serviços, além de um cuidado continuado no domicílio.

INTRODUCTION

In March 2020, the World Health Organization (WHO) officially declared the COVID-19 pandemic due to SARS-CoV-2, a rapidly spreading virus capable of causing severe respiratory symptoms¹. Among its ramifications, the pandemic has wrought havoc in the healthcare system, obliging it to reorganize the offered services, which has impacted the management of patients, notably those undergoing cancer treatment.

Cancer can occur across all age ranges and population groups and is related to lifestyle and exposure to cancerous agents as much as to inherited factors². Regarding cancer in children and adolescents, according to the Brazilian National Cancer Institute (INCA) and the International Classification of Childhood Cancer (ICCC), the corresponding age range is 0-19 years old. The Brazilian Society of Pediatrics (SBP) emphasizes that although cancer in children and adolescents is rare, it is also the leading cause of death in this age group^{3,4}.

The refinement of cancer treatments through immunotherapy and targeted therapy has resulted in a significant increase in the survival rate of these patients. However, the estimate of cancer for Brazil from 2023 to 2025, released by Inca in 2023², indicates 7,930 new cases of pediatric and adolescent cancer, representing a risk of 134.81 occurrences per million children and adolescents.

Pediatric and adolescent cancer continues to be a disease of significant concern for public health because it is the leading cause of death in this age range, corresponding to 8% of deaths in children and adolescents and 2% of all malignant neoplasia cases in Brazil^{2,5}.

It is worth noting that oncological treatment has made considerable progress in the last four decades. This evolution in the treatment of childhood and adolescent cancer has led to an estimated cure rate of approximately 80% when diagnosed early and treated in specialized centers^{2,5}.

Considering the scenario presented, to reduce the causes of death due to cancer in the pediatric and adolescent population, it is vital to seek an early diagnosis and refer patients to specialized treatment in a timely manner. In this regard, the reality since the end of 2019, as the evolution of SARS-CoV-2 cases worldwide was monitored alongside the protective measures and distancing adopted at the time, revealed a chaos in global healthcare assistance, resulting in impacts on diagnosis and undergoing treatment of children and adolescents with cancer.

Therefore, the following question arises: What are the impacts of the COVID-19 pandemic on healthcare for the

pediatric and adolescent population with cancer? Thus, it becomes essential to comprehend this scenario in order to anticipate which actions are and will be necessary to minimize possible negative impacts caused by this period, which could also have repercussions in the short, medium, and long terms regarding the care of this population.

METHODS

This is a scoping review of the impacts of the pandemic on the care and attention of pediatric and adolescent patients diagnosed with oncological diseases. This study was based on the methodological framework of the Joanna Briggs Institute (JBI) and the PRISMA-SCR⁶ checklist.

For the formulation of the research question, the PCC strategy was used, which stands for the acronym Population, Concept, and Context. Thus, P (Population): pediatric and adolescent patients diagnosed with oncological diseases; C (Concept): impact on care; and C (Context): the pandemic period caused by COVID-19.

The inclusion criteria for the research included primary studies, available in full, in an online database that addressed the topic and the research question. For this review, publications in any language were considered. The exclusion criteria comprised studies such as thesis, dissertations and monographs, editorials, expert opinions, recommendations or review studies, research protocols, technical notes, and studies involving young adult populations, due to the age range selected for this study.

The search strategy occurred in three stages, following the JBI recommendations. The first one consisted of an initial search limited to the BVS and Portal Capes databases using the following search equations in Portuguese: (“assistência ao paciente”) AND (oncologia) AND (criança) AND (Covid-19) – BVS assistência AND oncol* AND criança AND “Covid-19”, in order to perform an initial testing with the following descriptors: cancer, children, adolescents, pandemics, and Covid (and its counterparts in Portuguese).

The search was conducted in September 2022, and thereafter, a search equation was elaborated for the databases included in the research, with the assistance of a librarian from the Universidade Federal da Fronteira Sul (UFFS) (Table 1).

The studies were extracted from the databases in the Riss file format and exported to the Rayyan study management platform, where the initial selection of studies was conducted on the basis of title and abstract: (553+31+23+314+114) out of a total of 1,035 articles. Of these, 215 were excluded by Rayyan software due to

duplication, leaving 820 for analysis. These 820 articles were evaluated by reviewer No. 1, who, at this stage, analyzed the title and abstract to determine whether they corresponded to the study's topic. At this point, 606 articles were excluded, leaving 214 that met the proposed objective.

Next, a new folder with 214 pre-selected articles was created on the Rayyan platform. Subsequently, two researchers conducted a blind reading of these studies

using the 'blindagem' tool, including and excluding them independently. A third researcher resolved conflicts, resulting in the selection of 16 articles for the final analysis (Figure 1).

Studies in foreign languages were translated using the Doc Translator website⁷. They were then saved in a Drive to allow simultaneous access from the researchers involved in the study.

Table 1 – Search equations in the databases

Database	Descriptors and boolean operators (Equation)	Filter/delimiter used	Results
BVS	((tw:(cancer)) OR (tw:(oncol\$)) OR (tw:(neoplasia\$))) AND ((tw:(“SARS-COV-2”) OR (tw:(“COVID-19”))) AND ((tw:(criança)) OR (tw:(adolescente))))	Bases filter used: Excluded Lilacs e Medline databases	31
CINAHL	(oncology or cancer or neoplasm) AND (sars-cov-2 or COVID-19) AND (children or adolescents or youth or child or teenager)	Delimiter AB abstract	114
LILACS	((tw:(cancer)) OR (tw:(oncol\$)) OR (tw:(neoplasia\$))) AND ((tw:(“SARS-COV-2”) OR (tw:(“COVID-19”))) AND ((tw:(criança)) OR (tw:(adolescente))))	Not used	23
PUBMED	((oncology [Title]) OR (oncology [MeSH Terms]) OR (neoplasm [Title]) OR (neoplasm [MeSH Terms]) OR (cancer [Title]) OR (cancer [MeSH Terms])) AND ((child [Title]) OR (child [MeSH Terms]) OR (adolescent [Title]) OR (adolescent [MeSH Terms])) AND ((sars-cov-2[Title]) OR (sars-cov-2[MeSH Terms]) OR (COVID-19[Title]) OR (COVID-19[MeSH Terms]))	Title and abstract	553
SCOPUS	((oncology) OR (neoplasm) OR (cancer)) AND ((“sars-cov-2”) OR (“COVID-19”)) AND ((child) OR (adolescent))	Title and abstract	314
Total identified studies			1,035

PRISMA 2009 Flow Diagram

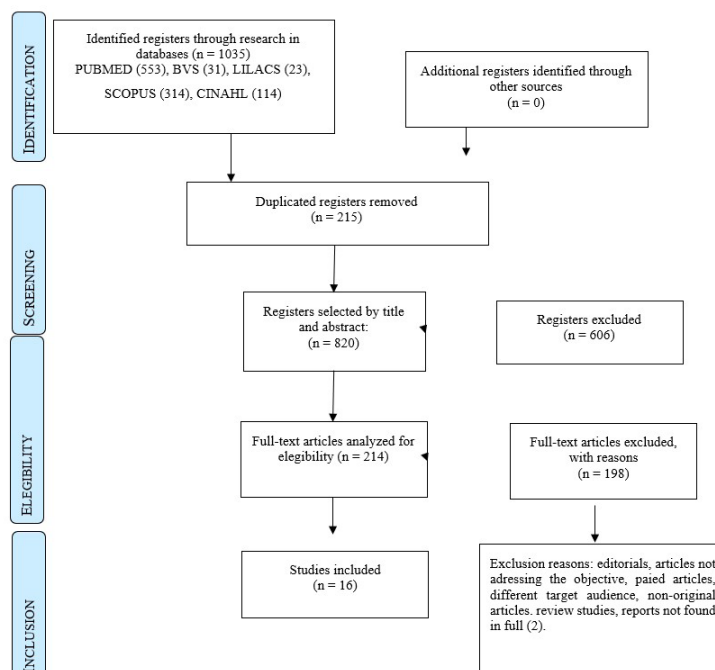


Figure 1 – Prisma 2009 Flow Diagram.

For data extraction, the researchers used a board they had developed to extract information that characterized the studies and addressed the research objective. Such information was as follows: country where the study was conducted; type of study; identification of patients; scenario; and impact of the COVID-19 pandemic in children with cancer.

For the data analysis, the Content Analysis method proposed by Laurence Bardin⁸ was utilized, which consists of pre-analysis, exploration of the material and treatment of the results, inference, and interpretation.

The pre-analysis phase consisted of organizing the material to be analyzed, systematizing the ideas, and composing the research corpus. During this stage, data were extracted from the articles to characterize them and address the research question⁸.

The second phase, referred to as exploration of the material, was characterized by the identification of categories and units of records (themes) corresponding to the content segment, which is considered the basic unit for categorization. The category is, in general, a form of thought that reflects reality and is summarized at certain moments.

Finally, with the thematic categories defined, the treatment of the obtained results began to identify answers for the research question, followed by the interpretation of the findings through current scientific literature.

This study was conducted from September 2022 to February 2023.

RESULTS

When seeking to identify the impact of the COVID-19 pandemic on the care and attention of pediatric and adolescent patients diagnosed with oncological diseases without concomitant COVID-19 diagnosis, 16 studies were found⁹⁻²⁴. For a better understanding, these studies will be presented with a legend formed by the letter E, followed by a corresponding study number, as follows: Article Letter E + Number [1...16], for example, E1, E2... E16. Table 2 presents the codes and their respective references.

Regarding the publication year, two articles were published in 2010, 11 articles in 2021, and three articles in 2022. Regarding the type and approach of the studies, it is possible to mention the following: phenomenological

Table 2 – List of articles selected in the scoping review, including information on authors, type of study, journal of publication, and their objectives.

Article Summary Data (Author/Year/Country)	Type of Study	Journal of Publication	Objectives
(E1) Sharma J et al. ⁹ 2022/India	Prospective mixed quantitative methods	<i>Cancer</i>	To explore the impact of the pandemic on the accessibility of care for children with cancer and visualize the strategies adopted by hospitals for service provision.
(E2) Gopalakrishnan V et al. ¹⁰ 2022/India	Cross-sectional study	<i>Psycho-Oncology</i>	To understand the psychosocial problems faced by pediatric patients (under 18 years old) with cancer during the pandemic lockdown in India.
(E3) Atout M et al. ¹¹ 2021/Jordan	Descriptive qualitative study	<i>Journal of Pediatric Nursing</i>	To investigate the experiences of parents caring for children diagnosed with leukemia. To report the results of interviews with participating mothers about the challenges of caring for children with leukemia in the context of COVID-19
(E4) Madhusoodhan PP et al. ¹² 2021/United States	Multicenter and retrospective	<i>Pediatric Blood & Cancer</i>	To describe the characteristics of Coronavirus Disease 2019 (COVID-19) in oncologic patients under 21 years of age and its impact on pediatric cancer treatment in the New York region during the peak of the pandemic.
(E5) Dvori M et al. ¹³ 2021/Israel	Documental study	<i>International Journal of Clinical Oncology</i>	To describe the indirect effects of the pandemic on the diagnosis and treatment of children with cancer.
(E6) Dotto C et al. ¹⁴ 2022/Italy	Observational clinical trial	<i>Children (Basel) Journal</i>	To explore the interaction between symptoms of separation anxiety and concerns related to COVID-19 in pediatric patients (7 to 15 years old) with cancer and their mothers, compared to a group of healthy children and their mothers, during the pandemic.
(E7) Graetz D et al. ¹⁵ 2021/multicenter (79 countries)	Cross-section study	<i>The Lancet Child & Adolescent Health</i>	To assess the effect of the COVID-19 pandemic on pediatric cancer treatment worldwide.
(E8) Sindhu II et al. ¹⁶ 2021/Pakistan	Retrospective descriptive	<i>Journal of the College of Physicians and Surgeons Pakistan</i>	To determine how COVID-19 pandemic has impacted effective management and outcomes of pediatric oncology patients at the Shaukat Khanum Memorial Cancer Hospital & Research Centre, Lahore.

Table 2 – Continued...

Article Summary Data (Author/Year/Country)	Type of Study	Journal of Publication	Objectives
(E9) Saab R et al. ¹⁷ 2020/multicenter (19 countries)	Multicenter cross-section cohort study	<i>Cancer</i>	To investigate the impact of the pandemic and its associated response on the care of children with cancer in the Middle East, North Africa, and Western Asia region.
(E10) Erdmann F et al. ¹⁸ 2021/Germany	Qualitative/quantitative	<i>The Lancet Regional Health-Europe</i>	To investigate the impact of the COVID-19 pandemic on the incidence, time to diagnosis, and provision of healthcare among pediatric oncology patients in Germany in 2020.
(E11) Global Health Research Group on Children's Non-Communicable Diseases Collaborative ¹⁹ 2022/multicenter	Multicenter, international and collaborative cohort study	<i>BMJ Open</i> .	To test the hypothesis that COVID-19 pandemic has affected healthcare delivery worldwide and exacerbated disparities in pediatric cancer outcomes between low- and middle-income countries and high-income countries.
(E12) Wimberly CE et al. ²⁰ 2021/United States	Cohort study	<i>Pediatric Blood & Cancer</i>	To assess the impact of interruptions due to Coronavirus Disease (COVID-19) on caregivers of pediatric cancer survivors.
(E13) Davies J et al. ²¹ 2021/Australia	Phenomenological approach with qualitative design	<i>Journal of Pediatric Psychology</i>	To explore the experiences of parents of children undergoing cancer treatment during the COVID-19 pandemic.
(E14) Van Gorp M et al. ²² 2022/Holland	Population-based study	<i>Pediatric Blood & Cancer published by Wiley Periodicals LLC</i>	To compare the psychosocial functioning of children with cancer and their caregivers across various stages of life before and during the Coronavirus (COVID-19) pandemic.
(E15) Alshahrani M et al. ²³ 2020/Saudi Arabia	Cross-sectional observational study	<i>Health Services Insights</i>	To assess the impact of COVID-19 on children with cancer across all aspects of life, including medical services provided, specific precautions to prevent spread in cancer patients, mental and psychological effects, and its effect on quality of life
(E16) Mirlashari J et al. ²⁴ 2021/Iran	Qualitative study	<i>Journal of Pediatric Nursing</i>	To investigate the perspectives of children with cancer and their families in the COVID-19 pandemic period.

approach with qualitative design study (1), cross-sectional study (2), multicenter study (3), qualitative (2), documental (1), prospective mixed quantitative methods (1), mixed qualitative/quantitative (1), cross-sectional observational (1), cohort study (1), observational clinical trial (1), retrospective descriptive (1), and population-based study (1). In relation to the country in which the studies were conducted, there are: Germany (1); Saudi Arabia (1); Australia (1); USA (2); Holland (1); India (2); Israel (1); Italy (1); Iran (1); Jordan (1); Pakistan (1); and multicenter studies (3).

When performing an analysis of the selected articles, it was possible to determine whether the pandemic had a significant impact on the healthcare of children and adolescents with oncological disease. The findings are in the studies of Sharma et al.⁹, Dvori et al.¹³, Graetz et al.¹⁵, Saab et al.¹⁷, Erdmann et al.¹⁸, Wimberly et al.²⁰, Alshahrani et al.²³ and Mirlashari et al.²⁴.

The need for immediate reorganization of healthcare institutions in response to the pandemic has affected the care provided to the population under analysis.

Among the findings regarding the impact on service due to the pandemic, according to Graetz et al.¹⁵, the prioritization of hospital institutions toward treating COVID-19 patients, combined with border closures and restrictions on public transportation, effectively contributed to delays in the diagnosis of pediatric cancer.

Alshahrani et al.²³ emphasize that the pandemic limited population mobility. There was also a delay in the treatment due to hospital cancelation due to reduced capacity, town closure, and curfew. As an endorsement, Dvori et al.¹³ present in their study that the leading cause for the delay noticed in treatments was related to the fear of exposure to COVID-19, both from the patients, their families, and medical professionals.

The impact on the daily life of children, adolescents, and their families was related to the sanitary lockdown, the prohibition of visits during hospitalization, and the weakening of the family support system during this period. Studies on this matter have been conducted by Gopalakrishnan et al.¹⁰, Atout et al.¹¹, Dotto et al.¹⁴, Global Health Research Group on Children's Non-Communicable Diseases Collaborative¹⁹, Sindhu et al.¹⁶, Davies et al.²¹ and Van Gorp et al.²².

Regarding the impacts on the organization of healthcare specialized institutions, the authors who expressed their findings were Sharma et al.⁹, Madhusoodhan et al.¹², Graetz et al.¹⁵ and Sindhu et al.¹⁶. It is worth noting that some articles have a broader approach and encompass more than one theme, which is why they may be seen in more than one category.

The findings of the review on the impacts of the pandemic on the care and attention of children and

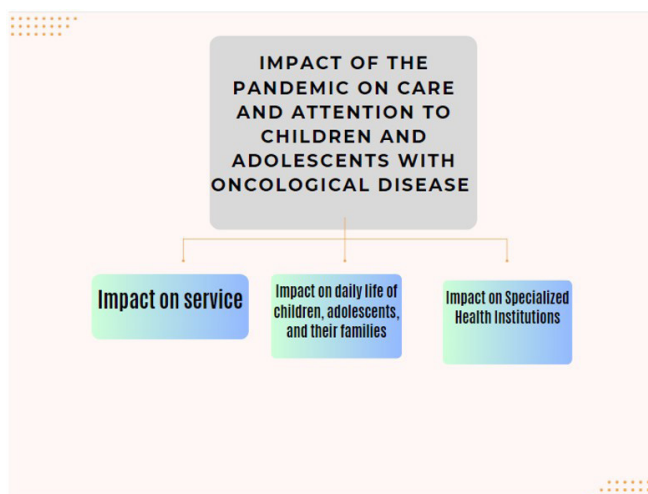


Figure 2 – Impact of the pandemic on care and attention to children and adolescents with oncological disease without COVID-19 diagnosis.

adolescents with oncological diseases without a COVID-19 diagnosis are illustrated in Figure 2.

DISCUSSION

To address the COVID-19 pandemic, there was a reorganization of healthcare services, aiming to follow, on a daily basis, the guidelines suggested by regulatory bodies to minimize the impacts. Therefore, the impacts on service, the everyday life of children, adolescents, and their families, and healthcare specialized institutions were identified.

The measures imposed in response to the pandemic affected pediatric and adolescent oncological patients, and according to Ribeiro et al.²⁵, delays in cancer diagnosis and treatment may occur due to numerous factors; however, in 2020, these factors were added to the effects of the COVID-19 pandemic. In addition to the delay in diagnosis, there were also delays related to the scheduled treatment modalities, such as chemotherapy, surgeries, and radiotherapy, as indicated by Sharma et al.⁹.

Among the impacts, Saab et al.¹⁷ mention changes in hospital politics that affect the units of pediatric oncology: the restriction of visits outside of treatment, delay in chemotherapy visits, delays in radiotherapy surgeries or visits, restrictions in acceptance of new oncological patients, and patients refusing to attend the appointments.

Regarding healthcare professionals, the study of Magalhães et al.²⁶ concluded that the COVID-19 pandemic altered the routine of surgeons worldwide. On the other hand, Ribeiro, Correa e Migowski²⁴ demonstrated that, in Brazil, when performing a comparison between 2019 (pre-pandemic) and 2020 (during pandemic), there was a 15% reduction in oncological surgeries.

Mirlashari et al.²⁴ pointed out the decrease in the quality of service, family overload, anxiety/fear of the disease, lack of basic hygiene and protection materials; lack of contact with relatives, restriction of social interactions, and mental disorders (agitated and disturbed) as consequences of the pandemic period.

In addition, Wimberly et al.²⁰ emphasized that there was also an impact on the conduct of appointments, considering that 50% of the caregivers reported delayed or canceled appointments, 19% reported delay in image exams (19%), and 26% reported the conduct of appointments through telehealth.

Horta et al.²⁷ conducted a study in 133 Brazilian cities, in which the participants were asked whether, since the beginning of the COVID-19 pandemic in March 2020, they had experienced any health issue and if they had refrained from seeking medical care for appointments or exams during this period. Among the participants, 11% answered that even when sick, they refrained from seeking medical care. The reasons cited for this were fear of infection by COVID-19 and the closure of services. The authors emphasize that the consequences of this scenario on the health sector impact the delay of service and diagnosis and may increase social and health inequalities in the near future.

Regarding the impact of the pandemic on the daily life of children/adolescents and their families, Gopalakrishnan et al.¹⁰ pointed out that pediatric patients suffered psychological impacts due to changes in medical care during the COVID-19 pandemic lockdown in India.

In addition, high levels of anxiety in children with oncological disease, psychological suffering, fear (because of the need to be away from their relatives), and concern with the possibility of COVID-19¹⁴ were also noted.

In addition to delayed surgical, chemotherapeutic, and radiotherapeutic treatments, very early relapse in acute lymphoblastic leukemia was observed in patients whose treatment was delayed. Similarly, late resumption of chemotherapy after local control also affected the outcome of nonmetastatic sarcoma and increased the risk of recurrence.

Atout et al.¹¹ referred to the impacts of the pandemic from the parents' point of view, who reported the difficulty of children adhering to mask use and the suffering due to isolation. According to the Global Health Research Group on

Children's Non-Communicable Diseases Collaborative¹⁹, the major impact occurred because of delays and alterations in treatments, as well as reductions in chemotherapy cycles, which disrupted the routines of children and adolescents and their families.

On the contrary, Davis et al.²¹ presented positive impacts of the pandemic, including social distancing. The parents of the immunosuppressed children indicated that they did not feel strange about wearing masks. A similar conclusion was achieved by Van Gorp et al.²² in their study, where the positive highlight is the fact that children did not feel different for constantly sanitizing themselves and wearing masks.

In summary, Van Gorp et al.²² concluded that pediatric patients perceived a reduced negative impact due to the COVID-19 pandemic restrictions, as children undergoing oncological treatment already experience situations of isolation, use of masks, and a constant habit of hand sanitizing, which reduced the sense of difference, as the entire population adopted these measures during the pandemic.

With the advance of COVID-19 cases, some measures were imposed, including social distancing/isolation and lockdown. The findings showed that social distancing was effective, especially when combined with the isolation of patients and cases in quarantine²⁸.

On the other hand, the impacts related to the specialized institutions encompass the reduction in specialized professionals, who were dimensioned to address the pandemic, in addition to a reduction in the availability of surgeries, supplies, and medication.

Regarding the impact of the pandemic on healthcare specialized institutions, Sharma et al.⁹ identified a reduction in specialized services due to a decrease in the professional workforce (considering that many professionals were reassigned to the treatment of COVID-19 patients), reduction in surgeries, and financial consequences that directly affected the care of children and adolescents with cancer.

In addition, several care centers diverted resources to address the pandemic and faced staff shortages, resulting in the discontinuation of clinical research. In addition, pediatric cancer care centers had to close and convert to COVID-19 hospitals. Moreover, 36.1% of patients scheduled for oncological treatment experienced a delay in one or more scheduled treatment modalities during lockdown⁹.

Delay in chemotherapy, surgery, transplant, and radiotherapy, alteration in treatment management (before hospitalization, during the pandemic, outpatient basis), and greater need for ICU and oxygen therapy in oncological patients than in general pediatric patients¹¹.

Considering the impact of the pandemic on care and attention to pediatric and adolescent patients diagnosed with cancer without a COVID-19 diagnosis, Quarello et al.²⁹ emphasized that the pandemic prevented early cancer diagnosis. In a retrospective analysis from 2015 to 2019, compared with the first lockdown caused by the pandemic from March to May 2020, there was a 20.8% reduction in the total number of cases in the population aged 0-19 years.

In their study, Virnig and Nikpay³⁰ stated that it will take years until there are reliable data regarding the delays in cancer treatments due to the COVID-19 pandemic. Just as they led to an increase in the mortality rate, the restrictions will have a high cost for patients with cancer. A similar understanding was presented by Lee et al.³¹, who concluded that the reduction in treatments against cancer causes a much greater risk of increasing morbidity and mortality than COVID-19 infection itself.

Supporting these findings, Ganguly and Bakhshi³² emphasized that the lockdowns due to the COVID-19 pandemic have had an impact on pediatric oncological treatment, with significant interruptions in treatments worldwide.

At the beginning of the pandemic, there were many concerns regarding how to address it. Among the measures taken, institutions reassigned professionals and redirected resources for assistance. There was also a need to adapt healthcare services, a situation that may increase the risk of disease recurrence in the pediatric and adolescent population undergoing cancer treatment³³.

This possibility was also mentioned by Sindhu et al.¹⁶, who confirmed that an early recurrence in patients with acute lymphoblastic leukemia, whose treatments were delayed and/or chemotherapy, had a late resume, which affected the outcomes of non-metastatic sarcomas.

Another finding in this category is related to the lack of supplies and hemoderivatives that affected healthcare services. According to Graetz et al.¹⁵ it was possible to notice that surgical care was reduced (72%), there was a shortage of hemoderivatives (60%), modifications in chemotherapy (57%), and interruptions in radiotherapy (28%). A reality that is consistent with the study by Vasquez et al.³⁴, in which 79% of the interviewed professionals reported a lack of blood products, as well as a scarcity of materials and personal protective equipment (PPEs), was also highlighted in the study by Sniderman et al.³⁵, in which 50% of the providers did not have the necessary PPE.

Regarding children's care, the risk of exposure to COVID-19, both in the hospital and in the community, resulted in generalized anxiety among them and their families. Due to the need to adhere to the sanitary measures imposed, it was necessary to limit visits in the oncology departments, with postponing appointments and using telemedicine being methods used in this period³⁶.

In Brazil, to mitigate the negative effects of this scenario, telemedicine and telehealth were increasingly incorporated by the Health Ministry as monitoring methods. Considered so far merely as support services, both assumed a leading role in access to health services during the pandemic³⁷, with resources redirected to facet it.

A study developed in Brazil³⁸ presents similar data, resulting in three analytical categories: "the care of children and adolescent undergoing oncological treatment in the COVID-19 pandemic"; "the oncological treatment during the COVID-19 pandemic"; and "concerns and feeling despite the COVID-19 pandemic". The results demonstrated the changes that occurred in the organization of healthcare services during the pandemic period to support children with oncological disease, including postponements and cancellations of appointments, intensification of feelings

like fear and anxiety, closure of borders, and alterations in family dynamics.

The delay in the initiation of oncological treatment for the pediatric and adolescent population was also described in a study by Rymysa et al.³⁹. In this study, the number of diagnoses for malignant neoplasms of the eye in 2019 (pre-pandemic), 2020 (peak of the pandemic), and 2021 (flexibilization phase) was 186, 145, and 162, respectively. Of this total, 27 initiated treatment 60 days after the diagnosis, contrary to what is recommended by Brazilian law.

Although the presented data are current and the search was widely conducted in the database, the limitations imposed by the low level of scientific evidence (mostly qualitative studies with small samples) are understood, along with the difficulty in identifying significant patterns. Such a fact is comprehensible given the scenario in which the research was conducted: pandemic moment, social distancing, with reduced possibility of developing more robust studies.

However, despite limitations in generalizing the findings, they describe the resulting impacts in different countries, with different cultures, across different continents (European, American, Asian, African, Oceanic). Thus, it is possible to understand that such findings may orientate actions in terms of strategies perspective, public projects, or policies to monitor and improve the care provided to this population, which was deprived of adequate and effective attention in some situations.

The effects of these interruptions in healthcare for children and adolescents with cancer in the medium and long term have not yet been fully understood, but they are expected to become more evident over the years following the pandemic. Longitudinal studies and epidemiological data analysis will be essential to assess the full impact of the pandemic on this group of patients and to inform mitigation and intervention strategies to minimize health and well-being damage to these individuals.

The limitations of the study are mostly due to the quantity of articles behind paywalls, which prevented their inclusion in this article. However, regarding nursing practice, this study shows that the reorganization of services occurs continuously, always aiming to improve care practices, requiring professionals to promptly adapt to various situations. It was noted that continuous research related to the impact of COVID-19 on the oncological treatment of children and adolescents is necessary to generate data regarding the impact on the survival of this population.

In addition, sensitizing primary care teams seems to be necessary so that, together with specialized care, they can develop joint healthcare strategies to support children with oncological disease and their families, especially when they are not supported by other services, which also allows continuous homecare.

The findings of this study reveal several possibilities and implications for caring practices for the studied population, encompassing the family, institutional, and political spheres. In the family sphere, it is necessary to strengthen the family support system for children and adolescents with the assistance of social services, remote

psychosocial support, the adoption of telehealth and telemedicine strategies, and even the creation of a support system between families facing the same situation. In the institutional/organizational sphere, establishing protocols and systems to maintain minimal care, even in pandemic situations, are strategies that could facilitate the work of healthcare teams and endorse service maintenance.

In the political sphere, some strategies can be developed and implemented, namely, service prioritizing policies, investments in telemedicine and information technology, encouragement of research and innovation in care and strategies for professional sensitization, and public education regarding the needs and care of pediatric and adolescent populations with oncological disease.

CONCLUSION

It became evident that the COVID-19 pandemic had numerous impacts on the diagnosis, oncological treatment, and (re)organization of family dynamics in pediatric and adolescent patients. The delay in treatment, the occurring modifications, the damaged family support, the reorganization of institutions, and the lack of specialized care due to the demands of COVID-19, which required specialized professionals to treat patients with this disease, were all factors of extreme importance that contributed to the outcomes for oncological patients.

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