Impact of Food Refusal on Cancer Patients: Integrative Literature Review

doi: https://doi.org/10.32635/2176-9745.RBC.2021v67n4.1372

Impacto da Recusa Alimentar em Pacientes com Câncer: Revisão Integrativa da Literatura

Impacto del Rechazo de Alimentos en Pacientes con Cáncer: Revisión Integrativa de la Literatura

Carolina Schmitz Tiezerin[1]; Daniely Hackbarth de Souza[2]; Laura Faustino Gonçalves[3]; Patrícia Haas[4]

ABSTRACT

Introduction: Cancer is one of the leading causes of death in the world and can be provoked by both external and internal factors. Food refusal is often associated with malnutrition in cancer patients and many times with cachexia, which can lead to increased mortality. **Objective:** To present scientific evidence, based on an integrative review, to assess the impact of food refusal on cancer patients. **Method:** For the selection of studies, a combination of terms indexed in the Medical Subject Heading Terms (MeSH) was used. The databases MEDLINE (PubMed), LILACS, SciELO, Scopus, Web of Science, Microsoft Academic Search, Cochrane, RCAAP and BIREME were utilized for the selection of manuscripts, without restriction of language, period of publication and geographical location. The scale that was used to evaluate the studies was the protocol of qualitative score. **Results:** 10 articles with potential for inclusion were retrieved, and 3 articles responded the research question that consisted in verifying the impact of food refusal in individuals with cancer. The selected studies scored higher than six in the protocol for assessing their quality. **Conclusion:** Studies have reported frequent indicators of food refusal in cancer patients, associated with malnutrition, fear of eating and limited appetite.

Key words: Neoplasms; Diet; Malnutrition; Cachexia; Anorexia.

RESUMO

Introdução: O câncer é uma das principais causas de morte no mundo, podendo ser motivado tanto por fatores externos como internos. A recusa alimentar está frequentemente associada à desnutrição em pacientes oncológicos e, muitas vezes, à caquexia, levando ao aumento da mortalidade. **Objetivo:** Apresentar evidências científicas, com base em uma revisão integrativa, para avaliar o impacto da recusa alimentar em pacientes oncológicos. **Método:** Para a seleção dos estudos, foi utilizada uma combinação de termos indexados no *Medical Subject Heading Terms* (MeSH). Foram utilizadas as bases de dados MEDLINE (PubMed), LILACS, SciELO, *Scopus, Web of Science*, *Microsoft Academic Search*, Cochrane, RCAAP e BIREME para a seleção de manuscritos, sem restrição de idioma, período de publicação e localização geográfica. A escala utilizada para avaliar os estudos foi o protocolo para pontuação qualitativa. **Resultados:** Foram recuperados dez artigos com potencial de inclusão, sendo que três responderam à pergunta norteadora que consistiu em verificar o impacto da recusa alimentar em indivíduos com câncer. Os estudos selecionados obtiveram pontuação maior do que seis no protocolo para avaliação da sua qualidade. **Conclusão:** Os estudos relataram indicadores frequentes de recusa alimentar em pacientes oncológicos associada à desnutrição, ao medo de se alimentar e ao apetite limitado.

Palavras-chave: Neoplasias; Dieta; Desnutrição; Caquexia; Anorexia.

RESUMEN

Introducción: El cáncer es una de las principales causas de muerte en el mundo y puede ser causado tanto por factores externos como internos. El rechazo de alimentos a menudo está relacionado con la desnutrición en pacientes con cáncer y, a menudo, también se asocia con la caquexia, que puede conducir a un aumento de la mortalidad. **Objetivo:** Presentar evidencia científica, basada en una revisión integradora, para evaluar el impacto del rechazo de alimentos en pacientes con cáncer. **Método:** Para la selección de estudios se utilizó una combinación de términos indexados en *Medical Subject Heading Terms* (MeSH). Para la selección de manuscritos se utilizaron las bases de datos MEDLINE (PubMed), LILACS, SciELO, *Scopus, Web of Science, Microsoft Academic Search,* Cochrane, RCAAP y BIREME, sin restricción de idioma, período de publicación y ubicación geográfica. La escala que se utilizó para evaluar los estudios fue el protocolo de puntuación cualitativa. **Resultados:** Se recuperaron diez artículos con potencial de inclusión y tres artículos respondieron a la pregunta orientadora que consistía en verificar el impacto del rechazo de alimentos en individuos con cáncer. Los estudios seleccionados obtuvieron una puntuación superior a seis en el protocolo para evaluar su calidad. **Conclusión:** Los estudios han reportado indicadores frecuentes de rechazo de alimentos en pacientes con cáncer, asociados con desnutrición, miedo a comer y apetito limitado.

Palabras clave: Neoplasms; Dieta; Desnutrición; Caquexia; Anorexia.

[1-4]Universidade Federal de Santa Catarina (UFSC). Florianópolis (SC), Brazil. E-mails: carolinatiezerin@gmail.com; danihacksouza@gmail.com; laurafaustinog@outlook.com; patrícia.haas@ufsc.br. Orcid iD: https://orcid.org/0000-0002-5524-1843; Orcid iD: https://orcid.org/0000-0002-9355-8403; Orcid iD: https://orcid.org/0000-0002-0043-4349; Orcid iD: https://orcid.org/0000-0001-9797-7755

Corresponding author: Patrícia Haas. Rua Engenheiro Agronômico Andrei Cristian Ferreira, s/n. Centro de Ciência da Saúde/UFSC/Campus Trindade – Trindade. Florianópolis (SC), Brazil. CEP 88040-900. E-mail: patricia.haas@ufsc.br

INTRODUCTION

Cancer is a group of diseases resulting from the fast growth of cells that can spread to other body structures and metastasize. Several identified internal factors as genetic heritage, hormones and immune issues and external factors – food habits, lifestyle, and exposure to chemicals among others can contribute for the onset of the disease[1].

Two factors are related with the high prevalence of death by cancer: ageing and population growth. A study developed by Bray et al.[2] showed that more than 18 million new cases of cancer occurred in the world, being lung cancer the most prevalent (2.1 million) followed by breast cancer (2.1 million), colorectal (1.8 million) and prostate (1.3 million)[2].

Cancer and its treatment can cause adverse effects interfering in the nutritional status, eating behavior and quality of life of the patients, among them, food disorders involving taste changes, food refusal, mucositis, xerostomia and dysphagia[3]. Unfortunately, malnutrition in patients with cancer is very common. The own disease and the treatments the patient are submitted to can cause malnourishment and impact the taste, smell, ability to swallow and absorb food nutrients Even with these disorders, it is relevant to highlight the importance of good food habits before, during and after the treatment because it will positively affect the treatment, prevention of infections and energy[4].

Malnutrition can be associated with cachexia, a syndrome characterized by weight loss, continuous loss of musculoskeletal mass, immune alterations, loss of appetite and metabolic variations[5]. This syndrome is present in average 50% of the patients with cancer, who may develop severe consequences and reduce the responses to the treatments and increase the rate of mortality[6].

The main objective of this study is to investigate the scientific evidences in order to respond to the following research question: What is the impact of food refusal by oncologic patients?

METHOD

Three independent investigators searched for scientific articles in the electronic databases MEDLINE (PubMed), LILACS, SciELO, Scopus, Web of Science, Microsoft Academic Search, Cochrane, RCAAP and BIREME for this integrative review in any language, period, and location. The study followed PICOS acronym for target-population, intervention, comparison, and outcomes. Population of interest or health problem (P): stands for oncologic patients; intervention (I): malnourishment, cachexia, or another type of food disorder; comparison (C): healthy individuals or not in oncologic treatment; outcome (O): quality of life; (S): cross-sectional, observational study, case reports, case-control studies, controlled clinical trials, cohort studies.

The descriptors were selected from Descriptors of Sciences of Health (DeCS) and Medical Subject Heading Terms (MeSH), as they are widely adopted by the scientific community for indexation of articles in the database PubMed. After the search of the descriptors, the adaptation to other databases was made. The following terms were proposed for the search with the respective Boolean operators: *food refusal* and *oncology* and *food* and *cancer*. The search occurred in November 2020.

Studies in any language, period and country were included. The methodological quality was reviewed with indication of the score reached through a protocol modified by Pithon et al.[7] for qualitative scoring of the studies selected, with scores between 13 and 11 points categorized as high quality, between 10 and 6, moderate quality and below 6, low quality. Studies ≥ 6 points were included.

Initially, the eligibility reviewer was calibrated for integrative review by three independent reviewers. Those with titles within the scope but the abstracts were unavailable were collected and analyzed in full. Studies out of the scope were excluded as: case reports, letters to the editor and/or editorial, reviews of the literature, indexes, abstracts, and studies with animals. Later, preliminarily eligible studies were evaluated in full. In specific cases, when incomplete data of the study potentially eligible were found, the authors were contacted by e-mail for further information, however, this procedure was not applied in this study.

The reviewer analyzed the quality of the methods utilized in the studies independently, with priority to clear description of the information. It as a blind review, hiding the names of the authors and journals, avoiding any potential bias and conflict of interests.

A proprietary form created by three investigators in Excel® was utilized to extract the data which were included by one of the investigators and checked by the other. Initially were selected by title, then the abstracts were reviewed and only the potentially eligible were analyzed. Based in the abstracts, the articles were selected for full reading and accepted all those that met the determined criteria.

After the screening, the text of the article selected was revised and extracted according to a standard by one author, identifying the year, country, language of publication, type of the study, sample, method, results, and conclusion.

The clinical result of interest consisted in verifying the impact of the food refusal specifically in patients with

cancer. The articles which did not follow the approach proposed were excluded from the sample.

RESULTS

From the descriptors selected, Table 1 shows the results of the databases investigated.

In all, 175 articles were identified initially. After the exclusion due to inadequate titles and duplicates, ten articles had their abstracts reviewed. Of these, seven were excluded for not responding the research question. Three articles were read in full and after the application of eligibility criteria, three about the impact of food refusal in patients with cancer remained to be investigated (Figure 1). The studies were cross-sectional and qualitative.

The study of Damasco-Ávila et al.[8] was carried out through the questionnaire Identification and Management of Feeding Difficulties (IMFeD), where parents and legal guardians of children hospitalized diagnosed with cancer were invited to respond to eating difficulties and their food

Table 1. Classification of the references obtained in MEDLINE (PubMed), LILACS, SciELO, Scopus, Web of Science, Microsoft Academic Search, Cochrane, RCAAP and Bireme

Descriptors	Number of articles	References excluded	Motive for exclusion	Selected	Databases
(Food refusal) and (oncology) and (food) and (cancer)	77	75	Excluded by title (72) Excluded by abstract (3)	2	PubMed
(Food refusal) and (oncology) and (food) and (cancer)	8	8	Duplicate articles (8)	0	LILACS
(Food refusal) and (oncology) and (food) and (cancer)	0	0	0	0	SciELO
(Food refusal) and (oncology) and (food) and (cancer)	14	13	Excluded by title (4) Excluded by abstract (2) Duplicate articles (7)	1	Web of Science
(Food refusal) and (oncology) and (food) and (cancer)	8	8	Excluded by title (4) Duplicate articles (4)	0	BIREME
(Food refusal) and (oncology) and (food) and (cancer)	9	9	Excluded by title (6) Excluded by abstract (1) Duplicate articles (2)	0	Scopus
(Food refusal) and (oncology) and (food) and (cancer)	46	45	Excluded by title (45)	1	Microsoft Academic Search
(Food refusal) and (oncology) and (food) and (cancer)	11	11	Excluded by title (11)	0	Cochrane
(Food refusal) and (oncology) and (food) and (cancer)	2	2	Excluded by title (2)	0	RCAAP
Total	175	170	Excluded by title (144) Excluded by abstract (7) Duplicate articles (21)	3	PubMed, Web of Science, Microsoft Academic Search

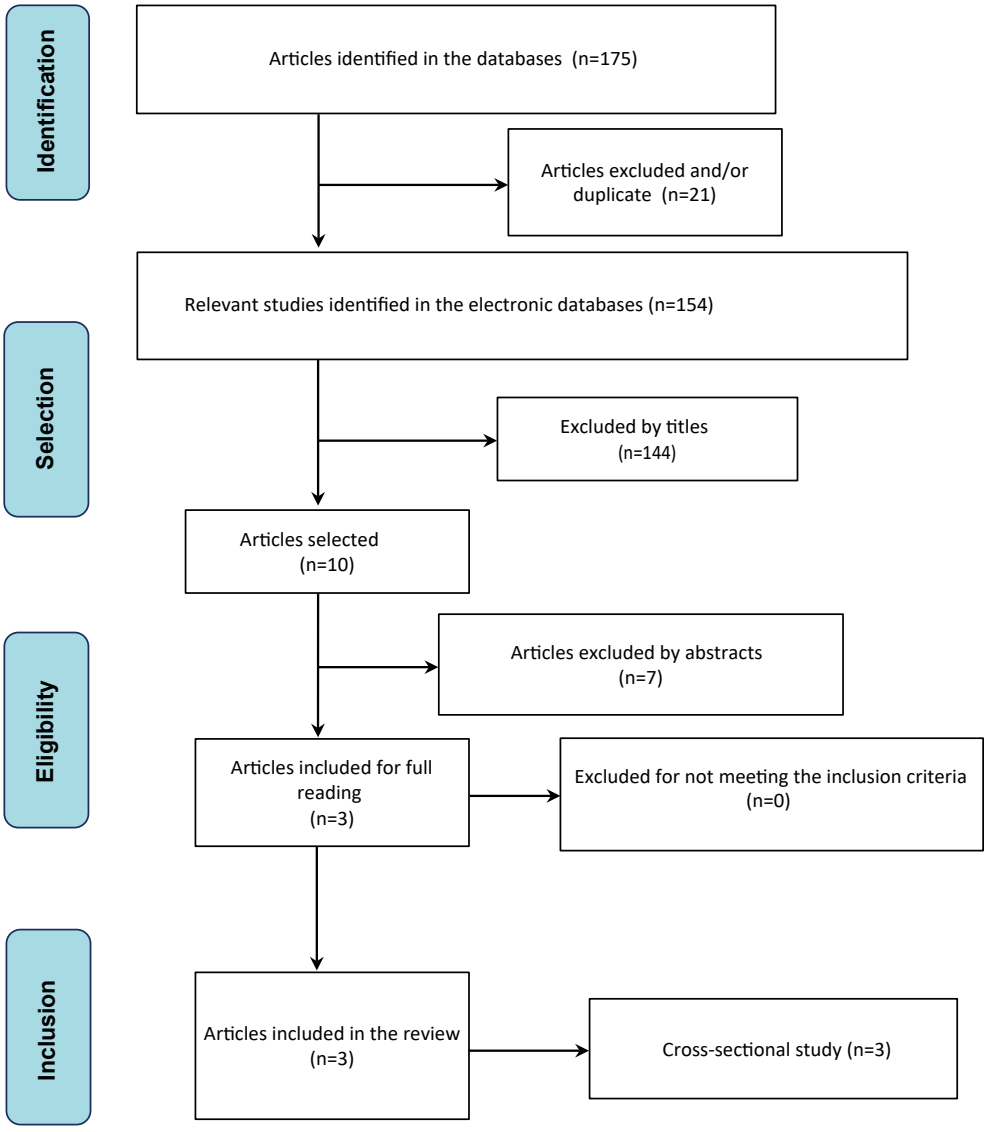

Figure 1. Flowchart of search and analysis of the articles

profile. The study enrolled 125 patients, of which 41.6% had correct nutritional profile. The authors reported that all the patients had at least one food disorder, the most common was poor appetite and fear of feeding was the next. The main symptoms included pain, dysgeusia, diarrhea, vomit among others. Patients with eating disorders associated with malnutrition complained of loss of appetite, intense resistance to feeding due to discomfort and fear of eating. The study demonstrated that children older than 11 years of age were more aware about the effects of the treatment and therefore, were afraid and this directly impacted their eating.

The study of Brinksma et al.[9] utilized the questionnaire Behavioral Pediatrics Feeding Assessment Scale (BPFAS) with parents of children admitted at oncology where 85 parents responded the research fully. BPFAS analyzes the food behavior of the child and parents, who were asked to classify their children eating profile before the disease as good, regular, or poor. The responses were obtained from 0-12 months after the diagnosis. Of the 85 patients, 37 were younger than 8 years and 48, older than 8 years. Nearly 38 (44.7%) children were fed through nasogastric tube, this percentage dropped along the time, reaching 10% after 12 months of diagnosis. The study concluded that one fourth of the patients had some eating disorder: reduced intake (17.5%) and excessive intake (8.6%). The prevalence of eating disorders in children younger than 8 years was bigger than in children older than 8 years of age and ranged from 29% at the diagnosis to 37% after 12 months of diagnosis. Eating frequency of children with cancer compared with

children with cystic fibrosis and diabetes was less expressive than if compared with healthy children, resulting in more eating problems. The study also revealed that children who had reduced or regular eating profile before the diagnosis had more prevalence of eating disorder (42% to 57%). Children eating excessively and refusing food consumed more energy (11.3 and 18.9, respectively).

In their study, Reid et. al.[6] interviewed eight patients with cancer who lost more than 10% of their weight in the last six months. The investigator interviewed the patients and asked about their feelings about weight loss and how it affected their routine; each interview was conducted differently, but the results indicated that eating became reason of conflict among the patient and the family. Patients reported that they lied about what they ate during the day or forced to eat to please the family and avoid stress. For the family, focus on food means love and concern and when the patient refused to eat, they believed the disease had progressed. The results are described in Table 2.

DISCUSSION

The treatments used to fight cancer as radiotherapy and chemotherapy can cause several side effects, including taste and smell changes, nausea, vomits, mucositis, diarrhea, pain and fatigue[10]. These effects impact feeding directly and can escalate to food refusal, malnutrition and cachexia[4].

The study of Brinksma et al.[9] concludes that 15.7% of the children had some type of food disorder associated with food intake reductions. The findings of the literature showed that malnutrition is quite common in oncologic patients because they eat less, present metabolic, morphologic, and functional alterations that the tumor eventually causes, in addition to high caloric demand because of the progress of the disease[11].

In addition, Brinksma et al.[9] emphasized that 44.7% of the children utilized nasogastric tube during the treatment and had more episodes of food refusal, however, they were not malnourished. According to Lee et al.[12], malnutrition is very common in oncologic patients and can lead to worse prognosis, quality of life and survival. The nasogastric tube is indicated for patients with deficit of less than 60% and without expectation of improvement with oral feeding[13]. Studies show that the use of nasogastric tube helps to fight malnourishment and is beneficial, improving the functionality of the patient, results of chemotherapy and strengthening of the immune system[14].

The study of Damasco-Ávila et al.[8] aimed to analyze the food behavior of 125 children and adolescents in the age-range from 1 to 19 years with cancer. The results indicated that one of the most recurrent eating disorders was fear of eating. It affected 40 children, for them the causes were fear of provoking diarrhea and vomit, pain in mastication and deglutition and abdominal extension. Kerzner et al.[15] affirmed that fear of eating results from a traumatic situation when children associated feeding with the symptoms described by Damasco-Ávila et al.[8]. Kerzner et al.[15] argue that it is important to calm down the children and reward them to succeed in overcoming fear but remind that a psychologist should be called to follow up.

Another result of the food disorders found in Damasco-Ávila et al.[8] is that the most common was limited appetite when children reported some symptoms of appetite reduction, among them, pain, early satiety and dysgeusia. Appetite imbalance according to Perboni et al.[16] is due to hypothalamic dysfunction and formation of cytokines associated with cancer. For Poole and Froggatt[17], limited appetite is one effect of anorexia and can lead the oncologic patient to malnourishment and the author explains that it is necessary to establish a criteria of distinction between lack of appetite and early satiety to help the multiprofessional team to improve the patient's nutritional condition.

Comparing the studies of Damasco-Ávila et al.[8] and Brinksma et al.[9], the first concluded that patients older than 11 years of age are more cognizant about the treatment of the disease and with this, have more fear, which impacts their eating habits. However, Brinksma et al.[9] concluded that patients younger than 8 years of age had more prevalence of food refusal, opposed to Damasco-Ávila et al.[8]. Caram et al.[18] investigated 31 pediatric oncologic patients where it was possible to classify the relation of weight per age, children between 3 and 6 years old had low weight because of malnourishment, confirming the findings of Brinksma et al.[9].

In the study of Reid et al.[6], oncologic patients with cachexia admitted they felt pressured by the family to eat well. For the family, food refusal was a sign of disease worsening as constant weight loss, even if aware that it is a consequence of cachexia. Some patients declared they lied to their family about being hungry or forced to eat to avoid conflicts, because the patients reported that after the disagreement, they felt irritated or bored due to their food refusal being the focus of the discussions. A study by Hawkins et al.[19] confirms that family members may unintentionally coerce the patient to eat because for them, to push the patient to feed is a way to express their anxiety and fears since refusal means hopelessness over disease improvement.

Table 2. Synthesis of the articles included

Author/ Year/ Country	Objective	N	Method	Results	Conclusion
Damasco-Ávila et al., 2019 Mexico	Describe the frequency of the difficulties or food disorders in pediatric oncologic patients	125	Prospective study with 125 children between 1-19 years of age. Diagnoses of food disorders were completed within 48 hours of admission	Children older than 11 years presented more difficulty to feed because of pain (fear of feeding) than the younger. The most frequent alteration associated with malnutrition was loss of appetite followed by fear of eating. The organic causes showed higher risk for malnutrition	90% of the study children had at least one eating disorder. Inadequate nutritional intake can lead to undernutrition. For this reason, the identification of alterations of food disorders should be included in the evaluation of patients with cancer
Reid et al., 2009 UK	To investigate tensions over food that exist between patients with advanced cancer with cachexia and their families	8 patients and 8 family members (16)	Singular unstructured interviews were recorded digitally, transcribed verbatim, and analyzed using thematic and interpretative phenomenological analysis	The investigation found conflicts between patients and their families. Some patients said they lied about what they ate in the day, others ate only to please the family. Family members believed that making the patient eat was an act of concern and love and when they did not eat was because the disease was progressing	The study attempted to highlight the anxiety that surrounds and the distress it causes to patients and their families
Brinksma et al., 2020 Europe	Determine the prevalence, causes and consequences of eating and feeding problems in children with cancer	85	Parents of 85 children with cancer completed the Behavioral Pediatrics Feeding Assessment Scale (BPFAS)	15.7% experienced problems related to diminished intake and 8.6% related to excessive intake Prevalence of feeding disorders related to parents' behavior was 21.1% In children <8 years prevalence of eating and feeding disorders was significantly higher Children with poor or moderate pre-illness eating behavior had higher frequencies of eating disorders (prevalence rates 42% - 57%) Parents were more concerned about refusal than excessive eating of their child	Younger children are at more risk of developing eating and feeding problems. Eating habits also determine whether the patient would have any disorder. The interventions should focus on diminishing side effects of treatment and instructing parents to be less demanding regarding their child's eating behavior

Caption: BPFAS = Behavioral Pediatrics Feeding Assessment Scale.

CONCLUSION

The analyses concluded that food refusal is frequent in oncologic patients and that patients fear to feed themselves because of the potential consequences as pain and episodes of diarrhea and vomit. Scientific studies are still quite recent, but it is important to continue the investigations to improve the quality of life of oncologic patients and offer better feeding options.

CONTRIBUTIONS

Patrícia Haas, Carolina Schmitz Tiezerin, Daniely Hackbarth de Souza and Laura Faustino Gonçalves contributed substantially for the study conception and design, collection, analysis and/or interpretation of the data, wording, and critical review. All the authors approved the final version to be published.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

FUNDING SOURCES

None.

REFERENCES

1. Instituto Nacional de Câncer José Alencar Gomes da Silva [Internet]. Rio de Janeiro: INCA; [data desconhecida]. Câncer: o que é câncer? [modificado 2020 nov 30; acesso 2020 nov 19]. Disponível em: https://www.inca.gov.br/o-que-e-cancer.
2. Bray F, Ferlay J, Soerjomataram I, et al. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2018;68(6):394-424. doi: https://doi.org/10.3322/caac.21492
3. Wagner J, Etge CL, Barbosa LR. Acompanhamento fonoaudiológico nas dificuldades alimentares no câncer infanto-juvenil: uma série de casos. Distúrbios Comun. 2020;32(4):529-38. doi: https://doi.org/10.23925/2176-2724.2020v32i4p529-538
4. PDQ®: Supportive and Palliative Care Editorial Board [Internet]. Bethesda (MD): National Cancer Institute (US); [date unknown]. PDQ Nutrition in Cancer Care; [update 2021 July 14; cited 2020 Nov 19]. Available from: https://www.cancer.gov/about-cancer/treatment/side-effects/appetite-loss/nutrition-hp-pdq
5. Silva AC, Pinheiro LS, Alves RC. As implicações da caquexia no câncer. e-Sci. 2012;5(2):49-56.
6. Reid J, Mckenna H, Fitzsimons D, et al. Fighting over food: patient and family understanding of cancer cachexia. Oncol Nurs Forum. 2009;36(4):439-45. doi: https://doi.org/10.1188/09.ONF.439-445
7. Pithon MM, Sant'Anna LI, Baião FCS, et al. Assessment of the effectiveness of mouthwashes in reducing cariogenic biofilm in orthodontic patients: a systematic review. J Dent. 2015;43(3):297-308. doi: https://doi.org/10.1016/j.jdent.2014.12.010
8. Damasco-Ávila E, Velasco-Hidalgo L, Zapata-Tarrés M, et al. Trastornos y dificultades en la alimentación en pacientes pediátricos con cáncer. Bol Med Hosp Infant Mex. 2019;76(3):113-9. doi: https://doi.org/10.24875/bmhim.19000072
9. Brinksma A, Sulkers E, Ijpma I, et al. Eating and feeding problems in children with cancer: prevalence, related factors, and consequences. Clin Nutr. 2020;39(10):3072-79. doi: https://doi.org/10.1016/j.clnu.2020.01.012
10. Miller E, Jacob E, Hockenberry MJ. Nausea, pain, fatigue, and multiple symptoms in hospitalized children with cancer. Oncol Nurs Forum. 2011;38(5):E382-93. doi: https://doi.org/10.1188/11.ONF.E382-E393
11. Maurício SF. Impacto nutricional no paciente oncológico. Rev Bras Ciênc Vida. 2014;2(Ed. Esp).
12. Lee JLC, Leong LP, Lim SL. Nutrition intervention approaches to reduce malnutrition in oncology patients: a systematic review. Support Care Cancer. 2016;24(1):469-80. doi: https://doi.org/10.1007/s00520-015-2958-4
13. Instituto Nacional de Câncer. Ações de enfermagem para o controle do câncer: uma proposta de integração ensino-serviço [Internet]. 3. ed. atual. e ampl. Rio de Janeiro: INCA; 2008 [acesso 2020 nov 19]. Disponível em: https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//acoes-enfermagem-controle-cancer.pdf
14. Szewczuk M, Gasiorowska E, Matysiak K, et al. The role of artificial nutrition in gynecological cancer therapy. Ginekol Pol. 2019;90(3):167-72. doi: https://doi.org/10.5603/GP.2019.0027
15. Kerzner B, Milano K, MacLean WC, et al. A practical approach to classifying and managing feeding difficulties. Pediatrics. 2015;135(2):344-53. doi: https://doi.org/10.1542/peds.2014-1630
16. Perboni S, Inui A. Anorexia in cancer: role of feeding-regulatory peptides. Phil Trans R Soc B. 2006;361(1471):1281-9. doi: https://doi.org/10.1098/rstb.2006.1863
17. Poole K, Froggatt K. Loss of weight and loss of appetite in advanced cancer: a problem for the patient, the carer, or the health professional? Palliat Med. 2002;16(6):499-506. doi: https://doi.org/10.1191/0269216302pm593oa
18. Caram ALA, Franciosi KTB, Pereira CM, et al. Desnutrição em crianças até 12 anos com leucemia atendidas no grupo em defesa de criança com câncer

no município de Jundiaí, SP. Revista Brasileira de Cancerologia. 2012;58(2):231-9. doi: https://doi.org/10.32635/2176-9745.RBC.2012v58n2.624

19. Hawkins C. Anorexia and anxiety in advanced malignancy: the relative problem. J Hum Nutr Diet. 2000;13(2):113-7. doi: https://doi.org/10.1046/j.1365-277x.2000.00219.x

Recebido em 17/12/2020
Aprovado em 26/4/2021

Scientific Editor: Anke Bergmann. Orcid iD: https://orcid.org/0000-0002-1972-8777