

Perception of oncologists on the practice of physical activity by children and adolescents during cancer treatment

Percepção dos médicos oncologistas sobre a prática de atividade física por pacientes infantojuvenis durante o tratamento oncológico

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Abstract – Currently, the evidence on the effectiveness of physical exercise as a complement to cancer treatment is unquestionable. Studies demonstrate that the persuasive role of the oncologist contributes significantly to patient adherence to physical activity (PA) practice. However, in the field of pediatric and adolescent oncology, as well as in defining the role of physical education professionals (PEPs) within the multidisciplinary team, further research is still required. The objective of this work was to establish the opinion of oncologists on the presence and relevance of PEPs as members of the multidisciplinary team in the oncological treatment of children and adolescents. All the oncologists (n=7) on the clinical staff of a public hospital in Florianópolis/SC participated in this research. Through an online questionnaire, professionals answered 21 questions about their opinion of the importance of PA and PEPs during cancer treatment. A frequency analysis of the responses was performed. In total, 100% of physicians (n=7) declared that they did not have a PEP on their team. However, 100% (n=7) of the doctors answered that they consider the performance of PEPs as relevant. Regarding the importance of implementing a PA program (remote or face-to-face) in the hospital environment, for patients undergoing treatment, 100% (n=7) of physicians classified this implementation as very relevant. Although the benefits of PA and physical exercise are consolidated in the literature as effective in the oncological treatment of children and adolescents, and considered relevant by the medical team, the opening for PEPs to work together with a multidisciplinary team does not yet exist.

Key words: Medical oncology; Pediatrics; Physical activity.

Resumo – Atualmente, são inquestionáveis as evidências sobre a efetividade do exercício físico como complemento do tratamento oncológico. Estudos apontam que o papel persuasivo do oncologista contribui significativamente para a adesão à prática de atividade física (AF) pelo paciente. Entretanto, com relação à oncologia infantojuvenil, assim como a atuação do profissional de educação física (PEF) junto da equipe multidisciplinar, ainda são necessários mais estudos. O objetivo deste trabalho é conhecer o posicionamento dos médicos oncologistas em relação à presença e relevância do PEF como integrante da equipe multidisciplinar no tratamento oncológico infantojuvenil. Participaram desta pesquisa todos os médicos oncologistas (n=7), pertencentes ao quadro clínico de um hospital Público de Florianópolis/SC. Através de um questionário Online, os profissionais responderam 21 perguntas sobre seu posicionamento acerca da importância da AF e do PEF durante o tratamento oncológico. Foi realizada a análise de frequência das respostas do questionário. No total, 100% dos médicos (n=7) relataram não haver a participação do PEF na sua equipe. Entretanto, 100% (n=7) dos médicos responderam que consideram a atuação do PEF relevante. Em relação à importância da implementação de um programa de AF (remoto ou presencial) no ambiente hospitalar, para os pacientes em tratamento, 100% (n=7) dos médicos classificaram esta implementação como muito relevante. Apesar dos benefícios da AF e do exercício físico estarem consolidados na literatura como eficazes no auxílio do tratamento oncológico de pacientes infantojuvenis, o espaço para atuação do PEF juntamente com a equipe multidisciplinar ainda não existe, embora esta tenha sido considerada relevante pela equipe médica.

Palavras-chave: Oncologia; Pediatria; Atividade física.

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INTRODUCTION

Childhood cancer is related to a group of various diseases that can occur in any part of the body¹. After diagnosis, a combination of more than one type of treatment is performed, varying among chemotherapy, radiotherapy, surgery, Bone Marrow Transplantation (BMT), targeted drug therapy, and immunotherapy². Although these therapeutic strategies present potentially significant results in the cure and survival rate, they come with numerous acute, chronic, and late side effects caused by the intensity of drug approaches³.

The effects of the treatment are responsible for reducing the quality of life⁴, level of physical activity, and capacity to produce force^{5,6}, not only in the child but in anyone who undergoes treatment². Thus, physical activity (PA) has been identified as a non-pharmacological strategy for treating cancer⁷, and it is recommended to alleviate the collateral effects of the therapies used to combat the disease⁸. Studies indicate that a physical exercise program performed during the weeks of treatment has positive effects on psychological and physical well-being, as well as on the relief of symptoms such as fatigue and nausea^{4,9}.

However, it is common for child and adolescent oncology patients to be reluctant to practice physical exercises during treatment and also after its completion, mainly due to the adverse conditions caused by the disease, excessive caution on the part of parents and caregivers, and bad habits acquired as a result of the neoplasm⁸.

In adults, the role of physicians and other professionals who work in primary health care is internationally recognized, being considered fundamental for raising awareness and persuading sedentary patients to implement behavior changes¹⁰. Considering cancer patients, a Canadian survey⁹ was developed on the opinion of oncologists regarding the recommendation of exercises for cancer patients. The physicians were generally favorable to exercise for cancer patients.

However, little is known about the opinion and role of the oncologist in adherence and practice of PA for children and adolescents undergoing cancer treatment. Therefore, the general objective of the current study was to evaluate the perception of oncologists about the practice of PA and/or exercise in children and adolescents during cancer treatment. As secondary objectives, we sought to: (a) investigate the opinion of oncologists about the role of the PEP during cancer treatment; (b) identify the opinion of oncologists about the inclusion of PA/physical exercises in the treatment of children and adolescent cancer patients; (c) verify the assessments related to physical fitness applied in patients during cancer treatment.

METHOD

Study design

Applied descriptive field survey-type research.

Participants

Medical oncologists who work in the oncology sector of a public hospital of reference in childhood oncology care in the state of Santa Catarina (n=7) took part in this research.

Ethical aspects

This project was approved by the Ethics Committee for Research with Human Beings at UFSC (4,881,077).

Data collection instrument

The instrument used consisted of a semi-structured questionnaire, prepared by the authors themselves in electronic Google Docs form, containing 21 questions. The questions addressed aspects related to demography, professional teams, cancer treatment, PA, and means of assessment. The questionnaire was submitted for content and clarity validation.

Data collection procedures

Contact was made with the hospital's oncology sector responsible, and, after authorization, the physicians were invited to participate in the research.

The Free and Informed Consent Form (FICF), which contained information about the research, was emailed to the physicians. After the FICF was duly signed and returned to the researchers, the participants also received the questionnaire via e-mail.

Data analysis

A descriptive analysis of the results presented the absolute numbers, frequency, and percentage of questionnaire responses.

RESULTS

Demography

Seven oncologists answered the questionnaire, totaling 100% of the responses (n=7). The demographic data of the oncology team are presented in Table 1.

Table 1. Demographic characteristics.

Variable	Total (n)	Total (%)
State where work		
Santa Catarina	7	100
Other	0	
Sex		
Female	6	85.7
Male	1	14.3
Age (years)		
< 50	5	71.4
≥ 50	2	28.5
Number of years of practice in medicine		
< 10	0	
≥ 10	7	100
Number of years of practice in childhood and adolescent oncology		
< 10	2	28.5
≥ 10	5	71.4

Professional team

Table 2 presents the area of expertise of the professionals the oncology team.

Table 2. Characteristics of the professional team.

Variable	Total (n)
Professional team	
Medical oncologist	7
Pediatric surgeon	1
Social worker	6
Nurse	6
Speech therapist	4
Psychologist	6
Anesthetist	3
Physiotherapist	4
Nutritionist	6
Physical Education Professional	0
Others	1
Total number of professionals	44
Total number of physicians	11
Total number of other health professionals	33

Cancer treatment and PA

Table 3 presents the questions elaborated to establish oncologists' opinions about patients' involvement in PA programs during treatment.

Table 3. Opinion of the oncologists on the role of physical education professionals and the practice of physical activity during cancer treatment.

Research item	Yes (%)	Yes, in specific cases (%)	No (%)
Do you consider the role of the physical education professional during cancer treatment to be relevant?	100	NA	0
Have you ever worked together with a physical education professional in the field of childhood oncology?	14.33	NA	85.7
Are you in favor of your patients undergoing cancer treatment practicing physical activity?	57.1	42.9	0
Is there a space designated for physical and/or recreational activities in your hospital unit for children and adolescents undergoing cancer treatment?	28.6	NA	71.4
In your opinion, can regular physical activity contribute positively to the prognosis of the disease?	85.7	14.3	0

Note. NA: Not Applicable.

In addition to the questions in Table 3, for positive answers about working together with a PEP, the physicians classified the experience using a linear scale, on which one (1) was attributed to the classification "I did not like it," and five (5) as "excellent." One participant gave a score of four (33.3%) and two of five (66.7%).

Professionals who were favorable to the practice of PA during cancer treatment answered (open question), which types of PA they considered

appropriate in this situation. The main activities highlighted were walks, *games*, recreational activities, dancing, interactive games, shuttlecock, yoga, low-impact aerobic activity, and sports in general. However, the physicians emphasized that the type of exercise should be based on the patient's condition, considering laboratory tests, especially the number of platelets, and avoiding activity during severe thrombocytopenia (exceptionally low level of platelets in the blood). In addition, low-impact exercises with a low risk of falls or trauma were also considered the best option for the child and adolescent cancer population.

In the question that addressed the practice of PA as a contributing factor to the prognosis of the disease, a justification for the answer was allowed in addition to answering yes or no. However, only two participants (28.3%) used this resource, emphasizing that PA can contribute through the release of cytokines, contributing to well-being and self-esteem, and that, depending on the type of cancer, the practice of PA might not change the final event, but could help promote quality of life.

The answers to the question of the relevance of implementing a remote or face-to-face PA promotion program for children undergoing cancer treatment within the hospital unit were obtained using a linear scale in which one (1) was classified as irrelevant and five (5) as very relevant. One physician rated the question four (14.3%), and six physicians rated it five (85.7%).

Still, regarding the relevance of practicing physical activity, the participants answered, using a linear scale, on how relevant they considered the assessment of the level of PA in children undergoing cancer treatment. In the interval in which "not at all relevant" was classified as zero (0) and "very relevant" as five (5), 28.6% of the participants classified the question with a score of four ($n = 2$) and 71.4% of the participants with a score of five ($n = 5$).

Finally, through an open question, the participants answered about which complications could keep the child and/or adolescent away from the regular practice of PA during cancer treatment. Although the answers varied, Thrombocytopenia (exceptionally low level of platelets in the blood) was listed by 71.4% ($n = 5$) of the participants. The other complications cited were debilitation, post-surgical patients, Neutropenia (reduction in the neutrophil count in the blood), pain, Pancytopenia (reduction in the number of erythrocytes, leukocytes, and platelets in the peripheral blood), infections, amputations, depression, and hospitalization.

Means of assessment

The final questions of the questionnaire sought to identify which assessments related to physical fitness were performed or known about by the medical team (Table 4);

Regarding the fatigue test, an open question was offered for participants to name which fatigue test they were aware of or had already used; however, none answered the question.

Regarding peripheral neuropathy, participants were asked to specify how this evaluation procedure was carried out, and only two participants responded (28.6%). The responses mentioned a neurological evaluation with a physiotherapist, in addition to using the assessment scale of neuropathic pain, added to the clinical review.

Table 4. Assessments related to physical fitness.

Item	Total (%)
Are you aware of tests/questionnaires that assess cancer-related fatigue?	
Yes, and I have already used them	0
Yes, but I have never used them	28.6
No	71.4
In your hospital unit, is there an assessment procedure for peripheral neuropathy?	
Yes	57.1
No	42.9
Regarding the decline in muscle strength during cancer treatment, on a scale of 1 to 5, how much would you rate the loss of muscle strength in children and adolescents?	
1	0
2	0
3	71.4
4	28.6
5	0

DISCUSSION

This study aimed to evaluate oncologists' perceptions about the practice of activity and/or physical exercise in children and adolescents during cancer treatment. The main results indicated that the oncologists are in favor of the role of the PEP and the practice of PA/exercise during cancer treatment; consider the implementation of a PA promotion program relevant for children undergoing cancer treatment within the hospital unit; indicate the importance of assessing the level of physical activity in childhood cancer patients; and the majority are unaware of tests and questionnaires related to the assessment of patient's physical fitness, especially those that assess cancer-related fatigue.

Although all the oncologists in this study consider the role of the PEP during treatment relevant, most of them have never worked with these professionals in their child oncology teams. In March 1997, the PEP was added to the group of health professionals through Resolution nº 218 to promote and recover the health of the beneficiary¹¹. In March 2022, the Ministry of Labor, through the Brazilian Classification of Occupations (CBP)¹², started to classify the PEP in a specific way for their role in the SUS through the code (2241-40), foreseeing the integration of the professional into the basic care provided by the SUS more clearly and objectively, to carry out actions to promote health through bodily practices, and physical and leisure activities in primary, secondary, and tertiary care. Therefore, considering the legal support for acting in the health area and given the evidence that physical exercise programs during treatment have positive effects on psychological and physical well-being, as well as on the relief of symptoms such as fatigue and nausea in patients during cancer treatment^{4,9}, we emphasize the importance of the PEP as an integral part of the multidisciplinary team in the oncological treatment of children and adolescents.

In this study, all oncologists were in favor of their patients practicing PA, with some of them (42.9%) agreeing with the practice in specific cases. The majority also consider that the regular practice of PA can positively contribute to the prognosis of the disease, as it promotes the release of cytokines, helping with well-being and self-esteem and promoting quality of life. Equally, studies have

pointed out that the practice of PA in cancer patients promotes benefits in physical and mental well-being, suggesting that patients engage in some PA during treatment, seeking to reduce sedentary behavior^{2,5}.

A survey on the opinion of oncologists regarding the recommendation of exercise for cancer patients was developed in Canada⁹ and the results showed that these physicians are in favor of exercise for cancer patients. However, important barriers may prevent them from recommending exercise to their patients. In this research, one of the main barriers identified for the practice of PA by patients was the absence of a space intended for this purpose, as all physicians reported that such a space does not exist in the hospital. Bearing in mind that both the practice of PA and the involvement of the PEP were considered necessary by the oncologists, we believe that a space dedicated to PA would be interesting in the process of encouraging these patients.

The physicians in this study highlighted that some conditions could keep the patient away from the regular practice of PA during cancer treatment, with thrombocytopenia pointed out by 71.4% of the participants, in addition to other complications such as debilitated patients, post-surgical patients, Neutropenia, pain, pancytopenia, infections, amputations, depression, and hospitalization. This evidence has already been raised in the literature, highlighting that the involvement of child and adolescent cancer patients in PA should be encouraged, considering the age, type of treatment, type of cancer, and stage of the disease, as well as the limitations that the patient may have as a result of the disease. In addition, the fragility of patients due to osteopenia, immunosuppression, and low cardiorespiratory fitness should also be observed and considered, prioritizing the prescription of a low intensity, volume, and frequency of activities in these cases².

Regarding assessments for the physical fitness of patients, the majority of the oncologists reported not knowing about tests/questionnaires that assess cancer-related fatigue (71.4%), and those who are aware of them (28.6%) have never used these tools. As the treatment of patients in pediatric oncology is aggressive and focused on healing, side effects such as fatigue can be ignored by health professionals¹³ or considered unavoidable symptoms that need to be endured¹⁴. Thus, fatigue is often underestimated due to the absence of a well-established concept, lack of adequate symptom assessment and quantification instruments, insufficient reporting of patient discomfort, and low priority by professionals¹⁵.

Cancer patients who experience severe fatigue during treatment remain fatigued after the therapy ends or the disease is resolved⁵. Therefore, there is an urgent need for research, including recommendations for studies on cancer-related fatigue in the child and adolescent population. More longitudinal research is suggested to examine biobehavioral mechanisms (including demographic, biological, medical, functional, and behavioral factors) involved in cancer-related fatigue¹⁶.

In addition to fatigue, the impaired sensory and motor function of patients, called peripheral neuropathy, is also one of the common adverse musculoskeletal effects in patients undergoing cancer treatment. Concerning to motor impairment, patients present deficits in balance and muscle weakness¹⁷ and may interfere with the development process of the child and youth population, compromising activities from the most basic to the most complex, required in each phase of life. Therefore, the evaluation of peripheral neuropathy in patients

undergoing treatment should be carried out to inform clinical programs about the attention needed regarding the deficits presented by these patients¹⁸. Some of the physicians participating in the study consider that there is a standard method for this evaluation (51.7%), while the remainder consider that it does not exist (41.9%). Furthermore, the results indicated in this study corroborate the literature, highlighting the difficulty of finding the best way to assess peripheral neuropathy in cancer patients despite the relevance of the assessment¹⁹.

In addition to peripheral neuropathy, neuromuscular changes like loss of balance, sarcopenia, fatigue, and muscle weakness can be observed during treatment²⁰. These, in turn, compromise the quality of life and, consequently, the level of PA, which may result in the deterioration of physical function, with the degradation of muscle strength being an important negative effect of this process²¹. All physicians highlighted the loss of muscle strength in cancer patients. The significant reduction in this physical variable is related to a decrease in functional capacity, balance, etc., keeping children and adolescents away from activities that are important for their physical and psychomotor development. Thus, actions aimed at reducing these neuromuscular losses are also important in the treatment process⁶.

Considering some of the effects of oncological treatment evidenced by the physicians participating in this study, such as cancer-related fatigue, the occurrence of peripheral neuropathy, and the reduction in muscle strength, the inclusion of PEP in the oncology teams of hospital institutions is understood as fundamental. This professional, along with the multidisciplinary team, can bring advances to the treatment of patients by implementing adequate programs that allow the practice of PA, which can preserve or mitigate the losses generated by the treatment.

CONCLUSION

The results of this study indicate that pediatric oncologists at a children's hospital recognize the importance of a PEP and PA in treating these patients.

COMPLIANCE WITH ETHICAL STANDARDS

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Ethical approval

Ethical approval was obtained from the local Human Research Ethics Committee – Federal University of Santa Catarina, and the protocol (no. 4,881,077) was written following the standards set by the Declaration of Helsinki.

Conflict of interest statement

The authors have no conflict of interest to declare.

Author Contributions

Conceived and designed experiments: BCRES, CRF, LAC; Performed experiments: BCRES, CRF, LAC; Analyzed data: BCRES, CRF; Contributed with reagents/materials/analysis tools: BCRES, CRF, GST; Wrote the paper: BCRES, CRF.

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