

QUALITY OF LIFE IN ADULTS WITH SARCOMAS UNDER CONSERVATIVE SURGERY OR AMPUTATION

QUALIDADE DE VIDA EM ADULTOS COM SARCOMAS EM CIRURGIA CONSERVADORA OU AMPUTAÇÃO

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ABSTRACT

Objective: To understand the perception of quality of life, functionality, and psychological aspects of adults with lower limb sarcoma who underwent conservative surgery or amputation. **Methods:** Sociodemographic data were collected, and the following questionnaires were used: EORTC QLQ – C30 for quality of life, the Functional Assessment System (MSTS) for functionality and the Beck Depression Inventory (BDI) for depression symptoms. **Results:** The sample consisted of 45 young adults with sarcoma, divided into two groups: amputation (29) and conservative surgery (16). Most were male, single and students. Average family income before and after the disease did not differ, but those that were employed had a better perception of general quality of life, as well as those with higher family income after the disease. Regarding the type of surgery, there was a predominance of amputation; osteosarcoma was the most common histological type and the most affected region was the femur. All participants participated in social, cultural, sporting or religious activities. MSTS and Beck scale values did not differ between procedures. **Conclusion:** Given the scarcity of studies on the subject at the national level, further investigations are suggested to explore aspects related to quality of life for patients with sarcomas. **Level of Evidence III, Retrospective comparative study.**

Keywords: Quality of Life. Surgical Oncology. Limb Salvage. Amputation.

RESUMO

Objetivo: Conhecer a percepção da qualidade de vida, funcionalidade e aspectos psicológicos de adultos com sarcoma de membros inferiores, submetidos à cirurgia conservadora ou amputação. **Métodos:** Foram coletados dados sociodemográficos, e utilizados os questionários: EORTC QLQ-C30 para a qualidade de vida; o Sistema de Avaliação Funcional (MSTS) para a funcionalidade; e o Inventário de Depressão de Beck (BDI) para sintomas de depressão. **Resultados:** A amostra foi constituída por 45 adultos jovens com sarcoma, divididos em dois grupos: amputação (29) e cirurgia conservadora (16). Predominaram jovens do sexo masculino, solteiros e estudantes. A média da renda familiar antes e após a doença não diferiu, porém os que estavam trabalhando apresentaram melhor percepção de qualidade de vida global, assim como os com maior renda familiar após a doença. Quanto ao tipo de cirurgia, houve predomínio da amputação, o osteossarcoma foi o tipo histológico mais comum e a região do fêmur a mais acometida. Todos os participantes participavam de atividades sociais, culturais, esportivas ou religiosas. Os valores do MSTS e da escala de Beck não diferiram entre os procedimentos. **Conclusão:** Visto a escassez de estudos sobre o tema em nível nacional, sugerem-se novas investigações, a fim de explorar aspectos relacionados com a qualidade de vida para pacientes com sarcomas. **Nível de Evidência III, Estudo retrospectivo comparativo.**

Descritores: Qualidade de Vida. Cirurgia Oncológica. Salvamento de Membro. Amputação.

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INTRODUCTION

Sarcomas are solid malignant tumors, with rare occurrence (< 1%), highly aggressive, with a higher incidence in childhood, adolescence and young adults (accounting for the 5th cause of death in this population).¹ They are more frequent in the extremities (60%), especially in the lower limbs (three times more than the upper limbs).

The most common histological types are osteosarcoma, Ewing's sarcoma and chondrosarcoma.¹

Until the 1970s, survival was limited (mortality of 80% in the first year), mainly due to pulmonary metastases. In 90% of cases, limb amputation was necessary.² Currently, with advances in diagnostic tests, staging, chemotherapy protocols and surgeries, five-year disease-free survival can be achieved in 70% of cases.³

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The study was conducted at Rede SARAH de Hospitais de Reabilitação

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Treatment of sarcoma is multimodal, with surgery (amputation or conservative limb surgery), chemotherapy, and radiotherapy in some cases. Much is discussed about which type of surgical procedure is most appropriate for tumor resection with wide margins together with healthy tissues.^{2,4} Due to complexity, the patient may present physical, functional limitations, psychological and emotional alterations.⁵

As such, this study is justified by the impact that sarcoma can have on the quality of life of affected people and their families. There is still a gap in the literature on how these people experience the process of coping with sarcomas in the Brazilian population. Therefore, the study aims to understand the perception of the quality of life of adults with sarcomas in the lower limbs, after either amputation or conservative surgery; in addition to analyzing functional and psychological aspects that may interfere with their quality of life.

MATERIALS AND METHODS

The study has a cross-sectional design (quantitative approach) of adults with lower limb sarcoma, on the oncology program of the Rede SARAH de Hospitais de Reabilitação – Brasília, who underwent amputation or conservative surgery. Inclusion criteria: diagnosis of lower limb sarcoma, referral to amputation or conservative surgery at least six months before the study, and at least 18 years or older. Exclusion criteria: cognitive impairment to the understanding of the assessment instruments (no participant was excluded). Data collection was carried out between September 2017 and February 2019. We opted for the face-to-face interviews, ensuring not only the understanding of the questions but also the obtaining of the answers. All of them signed the free and informed consent form. For the research, we analyzed the data of interest from the clinical records of each participant, as well as sociodemographic information. Instruments were used to assess quality of life, functionality and psychological aspects. To assess quality of life, the EORTC QLQ-C30 instrument was used,⁶ which includes thirty questions divided into: 1. General health status, 2. Symptoms (fatigue, pain and nausea/vomiting) and 3. Additional items related to dyspnea, insomnia, loss of appetite, constipation, diarrhea and financial difficulties. The MSTS scoring system for functional evaluation was used to assess postoperative functioning,⁷ divided into two parts:

1. Pain, function and emotional acceptance and, 2. Specific factors for the studied limb. For the evaluation of psychological aspects, the Beck Depression Inventory (BDI) was used,⁸ in which the participant performs a self-assessment of depressive symptoms.

The data obtained through the questionnaires were analyzed according to criteria established by the instruments themselves and statistically analyzed for the comparison between the two groups (amputation versus conservative). To compare the two groups, Student's t-test was used for variables with normal distribution and Mann-Whitney Test for variables with non-normal distribution. The percentages between the procedures were compared using the chi-square test. To determine the factors associated with quality of life, simple and multiple linear regression models were adjusted. The following possible predictive factors for quality of life were considered: gender, age, occupation, histological type of sarcoma, chemotherapy, prosthesis or orthotic devices, social, cultural, sporting, or religious activities, family income before and after the disease and type of surgery. All variables with $p < 0.05$ remained in the final model. This research was approved by the Ethics Committee of the Association of Social Pioneers (CAAE: 63724217.5.0000.0022).

RESULTS

The sample consisted of 45 participants, divided into two groups: 29 in group 1 (amputation) and 16 in group 2 (conservative surgery). The sociodemographic characteristics by type of surgery are described in Table 1. Amputation was the most common method (64.5%). Mean age was homogeneous; 32.2 years in group 1 and 27.8 years in group 2. Most participants were male and single. The students were expressively represented in both groups. Only 27.5% of group 1 and 18.7% of group 2 reported working, contributing to family income, and few were retired. Mean family income before and after the disease did not show significant changes. None of the sociodemographic variables was significantly associated with the type of surgery. Association between religious activity and type of surgery was statistically significant. Of the 16 who underwent conservative surgery, 93.7% participated in religious activities, a percentage significantly higher when compared to 44.8% among those that underwent amputation ($p = 0.0012$).

Table 1. Sociodemographic variables by type of surgery.

Variable	Amputation – Group 1		Conservative – Group 2		P-value
	N (%)	mean (SD)	N (%)	mean (SD)	
Sample	29	(100%)	16	(100%)	
Age (years)	32	(12.8)	27	(12)	
Sex					0.7993
Female	12	(41.38)	6	(37.50)	
Male	17	(58.62)	10	(62.50)	
Marital status					0.319
Single	16	(55.17)	10	(62.50)	
Married	13	(44.83)	5	(31.25)	
Other	0		1	(6.25)	
Schooling level					0.4652
Did not complete elementary school	4	(13.79)	1	(6.25)	
Elementary school	5	(17.24)	5	(31.25)	
High school	16	(55.17)	6	(37.50)	
Higher education	4	(13.79)	4	(25.00)	

Table 1. Sociodemographic variables by type of surgery.

Variable	Amputation – Group 1		Conservative – Group 2		P-value
	N (%)	mean (SD)	N (%)	mean (SD)	
Occupation					0.3096
On social security leave	1	(3.45)	3	(18.75)	
Currently under employ	8	(27.59)	3	(18.75)	
Student	9	(31.03)	7	(43.75)	
Unemployed	9	(31.03)	2	(12.50)	
Retired	2	(6.90)	1	(6.25)	
Social Welfare					0.2446
Yes	4	(13.79)	5	(31.25)	
No	25	(86.21)	11	(68.75)	
Household income (minimum-wages)					
Before the disease	4.31	(2.16)	5.75	(3.94)	0.6884
After the disease	4.03	(2.58)	5.94	(3.84)	0.1711
Type of practiced activity (if any)					
Social					0.6596
No	9	(31.03)	6	(37.50)	
Yes	20	(68.97)	10	(62.50)	
Sporting					0.1891
No	16	(55.17)	12	(75.00)	
Yes	13	(44.83)	4	(25.00)	
Cultural					0.9118
No	14	(48.28)	8	(50.00)	
Yes	15	(51.72)	8	(50.00)	
Religious					0.0012*
No	16	(55.17)	1	(6.25)	
Yes	13	(44.83)	15	(93.75)	

* p < 0.05

Table 2 describes the variables related to sarcoma by type of surgery. Osteosarcoma predominated in both groups, and the femur was the most affected region. Regarding cancer treatment,

95.5% underwent chemotherapy, and of these, 88.8% had already completed chemotherapy. One participant, in addition to chemotherapy, underwent adjuvant radiotherapy.

Table 2. Sarcoma-related variables by type of surgery.

Pathological Variable	Type of surgery		P-value
	Amputation – Group 1	Conservative surgery – Group 2	
	N (%) mean (SD)	N (%) mean (SD)	
Type of cancer			0.6338
Osteosarcoma	16 (55.1)	10 (62.5)	
Others	13 (44.8)	6 (37.5)	
Tumor Site			1.0000
Femur	24 (82.76)	14 (87.50)	
Fibula/Tibia	4 (13.79)	2 (12.50)	
Feet	1 (3.45)	0 (0.00)	

Table 2. Sarcoma-related variables by type of surgery.

Pathological Variable	Type of surgery		P-value
	Amputation – Group 1 N (%) mean (SD)	Conservative surgery – Group 2 N (%) mean (SD)	
Cancer Treatment			0.2738
Chemotherapy	27 (93.10)	15 (93,75)	
Chemo/Radiotherapy	0 (0.00)	1 (6.25)	
Surgery Only	2 (6.90)	0 (0.00)	
On Chemotherapy Treatment			1.0000
Yes	3 (10.34)	2 (12.50)	
No	26 (89.66)	14 (87.50)	
Use of Prosthesis/Orthotic Devices			< 0,0001*
Yes	26 (89.66)	1 (6.25)	
No	3 (10.34)	15 (93,75)	

* p < 0.05

Amputees used prostheses or orthotic devices for locomotion more often than those submitted to conservative surgery ($p < 0.0001$). The other variables related to sarcoma did not present a statistically significant association with the type of surgery.

At the time of the interview, the mean follow-up in years of the participants undergoing conservative surgery was 7.1 (SD = 3.21) and of amputees 10.6 (SD = 2.25). Of the 16 participants submitted to conservative surgery, only 3 (18.7%) had been discharged from cancer follow-up and the others were still in reviews with the oncology team. Two participants in this group (conservative surgery) were still undergoing chemotherapy. In relation to the 29 amputees, 17 (58.6%) had already been discharged and the others remained under follow-up. Still in relation to this group, three participants were on chemotherapy. It is noteworthy that the participants who were undergoing chemotherapy were not free of cancer (sarcoma). None of the participants in both groups presented local tumor recurrence and there was no need for a new surgical approach for this purpose. Among postoperative complications, only one participant (6.2%) submitted to conservative surgery (knee endoprosthesis), presented infection, which required a new surgical approach and use of antibiotic therapy. Also at the time of the postoperative period, the occurrence of healing difficulties of the surgical wound occurred in five non-amputated participants (31.2%) and in three (10.3%) amputees, without the need for surgical reapproach.

Regarding pulmonary metastases, 26 (58%) among the 45 participants presented it, 18 in the amputation group and eight in the conservative surgery group. All patients underwent thoracotomy for resection of pulmonary metastases. In the amputation group, of the 29 participants, 18 (62%) were submitted to thoracotomy for metastectomy (44.5% in the right hemithorax, 11% in the left hemithorax and 44.5% bilateral). The mean number of surgeries was 1.6 (minimum of 1 and maximum of 6 surgeries in the same patient). In the conservative surgery group, of the 16 participants, 8 (50%) required metatectomy (18.75% in the right hemithorax, 6.25% in the left and 25% had bilateral thoracotomy). The mean number of surgeries was also 1.6 (minimum of one and maximum of six surgeries in the same patient).

The linear regression models of possible predictors of overall quality of life are set out in Table 3. Only occupation and family income after the disease were considered significant predictors for better perception of quality of life and overall health. Participants who were currently employed had an average perception of general quality of life 28% better than participants that were either retired or on social security leave ($p = 0.0053$). Participants with higher family income after the disease had a higher perception of overall quality of life; for each increase in one minimum wage in family income, the perception of overall quality of life increased by an average of 3.17% ($p = 0.0063$).

Table 3. Linear Regression Models of possible predictors of General Quality of Life.

Explanatory variables	Simple Linear Regression		Multiple Linear Regression	
	Estimated Parameter (β)	p-value	Estimated Parameter (β)	p-value
Gender				
Male x Female	7.41	0.2969	-	-
Age	-0.19	0.503	-	-
Occupation				
Employed x Retired	21.64	0.038	28.23	0.0053*
Student x Retired	2.23	0.8147	12.62	0.1884
Unemployed x Retired	-9.41	0.3566	7.84	0.4825
Type of cancer				
Osteosarcoma x Others	-2.34	0.7407	-	-

Table 3. Linear Regression Models of possible predictors of General Quality of Life.

Explanatory variables	Simple Linear Regression		Multiple Linear Regression	
	Estimated Parameter (β)	p-value	Estimated Parameter (β)	p-value
Social Welfare				
Yes x No	-10.18	0.2408	-	-
Tumor Site				
Distal Femur Extremity x Other	4.45	0.6497	-	-
Proximal Femur Extremity x Other	4.37	0.6737	-	-
On Chemotherapy Treatment				
No x Yes	16.04	0.1449	-	-
Use of Prosthesis/Orthotic Devices				
Yes x No	-3.39	0.6343	-	-
Social Activity				
Yes x No	7.22	0.3281	-	-
Sporting Activity				
Yes x No	17.89	0.01	-	-
Religious Activity				
Yes x No	-13.95	0.0481	-	-
Cultural Activity				
Yes x No	13.97	0.041	-	-
Family Income After Disease	3.22	0.0023	3.17	0.0063*
Group				
Amputation x Conservative Surgery	-0.83	0.9101	-	-

* p < 0.05

The results obtained via the Instruments EORTC QLQ-C30, MSTS and BDI are presented in Table 4. The mean values of the EORTC QLQ-C30 did not differ for all dimensions, except constipation,

higher in the amputation group than in conservative surgery (p = 0.0116). The mean MSTS values did not differ between the procedures (p = 0.2135), as well as the BDI levels (p = 0.3179).

Table 4. Distribution of the mean scores of the Functional Assessment System, questionnaires, EORTC QLQ-C30 and the Beck Depression Inventory.

Indicators	Procedure				P-value
	Amputation – Group 1		Conservative Surgery – Group 2		
	Mean	SD	Mean	SD	
MSTS (%) – Functioning	59.31	26.52	68.75	18.41	0.2135
EORTC (%) – QoL					
General Health	68.97	23.98	69.79	22.13	0.9522
Physical function	28.05	21.26	25.83	20.35	0.7737
Functional Performance	27.01	34.33	32.29	34.68	0.5418
Emotional function	33.05	24.95	28.13	24.13	0.4962
Cognitive function	15.52	19.89	18.75	23.47	0.7486
Social function	17.82	27.07	27.08	23.47	0.0799
Fatigue	24.14	22.82	28.47	22.58	0.492
Nausea/Vomiting	4.60	11.70	4.17	12.91	0.7208
Pain	22.41	26.46	23.96	21.92	0.6123
Dyspnea	13.79	26.00	18.75	24.25	0.3398
Insomnia	19.54	28.89	22.92	35.94	0.9236
Loss of appetite	10.34	25.36	18.75	36.45	0.4863
Constipation	25.29	34.10	4.17	16.67	0.0116*
Diarrhea	3.45	13.64	4.17	16.67	0.9781

Table 4. Distribution of the mean scores of the Functional Assessment System, questionnaires, EORTC QLQ-C30 and the Beck Depression Inventory.

Financial difficulty	18.39 35.17	35.42 42.98	0.1029
Beck – Depression			0.3179
No Depression	19 (65.52)	9 (56.25)	
Mild to moderate	9 (31.03)	4 (25.00)	
Moderate to severe	1 (3.45)	1 (6.25)	
Severe	0 (0.00)	2 (12.50)	

**p* < 0.05

DISCUSSION

The study describes a series of 45 adults with lower limb sarcoma undergoing conservative amputation or surgery, their sociodemographic and clinical aspects, and their quality of life. In clinical practice, conservative surgery has been the preferred indication and amputation is performed only for cases when it is not possible to preserve the limb.⁹ Oftentimes, patients are admitted to health services already with large tumors and/or advanced disease, and limb amputation in these cases is indicated.⁹

The scientific production on quality of life of patients with sarcoma is small. Silva et al.¹⁰ in an integrative review on quality of life in sarcoma patients undergoing different types of surgery (amputation versus conservative) found only ten studies in the main databases (LILACS, SciELO, Pepsic, EMBASE and PubMed). No Brazilian studies had been published. The country with the highest number of publications on the subject was the United States, and the studies were predominantly quantitative (90%).^{3,9,11-18}

Regarding the sociodemographic data of the present study, the results were similar to those in the literature, with prevalence of young adults, mostly male, single and students. In this phase, corresponding to the period of high school or college, self-esteem is valued, as well as personal/professional interests and/or relationships, with the beginning of productive life, which, in most cases, is interrupted due to prolonged cancer treatment. Schooling did not influence the perception of better quality of life among the groups. Some studies in the field of oncology have identified that low schooling decreases access to specialized health services, delays the diagnosis of cancer, decreases adherence to treatment and, consequently, reduces the chances of cure.¹⁹

The low occupational rate may also be explained by the low level of education. Few participants reported changes in relation to work after the disease, an event that could be related to the fact that they were not working at the beginning of treatment, probably due to the young age at diagnosis. Regardless of the type of surgery performed, the participants who were working and those with higher family income presented better perception of overall quality of life. New cancer therapies have increased patient survival and, in many cases, led to the cure of the disease. However, many face difficulties to return to the workforce or stay in it. In recent years, national and international studies have sought to understand the obstacles involved in this return to work, which is important not only financially, but also from the emotional point of view, because it symbolizes the overcoming of the disease as well as the return of routine and social life.²⁰ Teston et al.²¹ reported that diseases such as cancer also compromise family financial power, especially if the patient is primarily responsible for the family's income, given the additional expenses related to the disease and treatment.

In the present study, amputation surgery was more common. Silva et al.,¹⁰ in their integrative review, observed that the number of patients undergoing amputation was similar to conservative surgery; however, in the last publications, there was a tendency to prioritize conservative surgery when possible.^{12,21}

All participants reported participating in some type of social, cultural, sporting or religious activity. In the amputation group, social and

cultural activities stood out and, in the conservative surgery group, religious activity stood out. There are reports in the literature that coping through religion provides cognitive/behavioral strategies for stressful events. Health-related religiosity has been increasingly investigated, with a positive relationship between religious involvement and mental health. Religious coping can be presented as an element that contributes to treatment adherence, reduction of stress/anxiety, and in the search for meaning in the patient's current situation.²² Femoral osteosarcoma was the most prevalent in both groups, corroborating the findings in the literature regarding the high prevalence in long bones, especially the femur, as the most common site.¹² In relation to chemotherapy, the literature shows worse quality of life during chemotherapy treatment.²³ In our sample, as the most participants in both groups had already completed chemotherapy at the time of the interview, it was not possible to compare our data with those in the literature.

Regarding the presence of pulmonary metastases and the need for thoracotomy for metastectomy, 62% of the participants in the amputation group and 50% of the conservative surgery group required the surgical procedure. There was no significant difference between the groups regarding the mean number of surgeries per patient. Thoracotomies were performed after resection of the primary tumor and no patient underwent pneumectomy. In addition, no patient required surgical reapproach or presented severe complications that led to the need for intubation and the use of invasive mechanical ventilation. At the time of the interview, no participant was in the recent postoperative period of the surgery (thoracotomy), which probably led the surgical approach not influencing our results.

Of the 29 amputated participants, 26 used prostheses for functional locomotion. The others reported greater functionality without the use of the prosthesis, using only locomotion aids. The evaluation of functionality was not different between surgical procedures, suggesting that amputees have functional capacity similar to those submitted to conservative surgery. Our results may be related to the fact that all patients were followed by a multidisciplinary team since their admission. In the postoperative period, patients participate in rehabilitation programs aimed at restoring gait functionality, activities of daily living, return to work, as well as educational, social and sporting activities. In addition, most amputation patients use prostheses for locomotion, which provides greater functionality for walking and performing daily activities. The studies by Rougraff et al.¹⁴ and Alan et al.¹¹ observed the importance of preserving anatomical structures necessary for better functionality and the rehabilitation program in an interdisciplinary team, regardless of the type of surgery (amputation or conservative), in patients with sarcoma.¹¹ Yonemoto et al.¹⁷ observed that amputee and non-amputee patients did not present differences in functionality for gait or activities of daily living, as in the present study.

We know that the association between cancer, depressive conditions and other mood disorders is frequent and may be related to lower adherence to treatment, worse clinical evolution and decreased quality of life. In our study, only two participants presented symptoms of severe depression in the conservative surgery group, and were already being treated with specialists. In the review by Silva et al.,¹⁰

among the ten studies found, only two investigated the association of psychological aspects using specific instruments. Ottaviani et al.³ in a study with osteosarcoma survivors, did not observe differences related to psychological or depressive aspects between groups (amputated and non-amputated). The same results were found in the study by Rougraff et al.¹⁴

In the perception of quality of life, only constipation was higher in amputees than in those undergoing conservative surgery. According to data by Silva et al.,¹⁰ there are no publications so far in patients with sarcoma, which may justify such findings. Wickham²⁴ in a review study concluded that constipation is common in cancer patients and its frequency is high in those with advanced disease and using opiate drugs to treat pain. Considering that data collection for the research was performed at least six months after the surgical procedure to control the primary tumor (amputation or conservative surgery), none of them at the time of the interview reported the presence of pain that required the use of opioids.

The perception of the overall health status and quality of life did not differ between the groups, and the results were similar to those in the literature, where most do not find differences in quality of life in participants amputated or submitted to conservative surgery.^{3,9,11-18}

Only two studies concluded that participants undergoing conservative surgery had a higher quality of life than amputees.^{16,17}

Patients submitted to amputation initially undergo a painful process, and may present psychological alterations, related to self-image

and temporary loss of locomotion. Depending on the level of lower limb amputation, prosthetization can provide the resumption of functional locomotion. On the other hand, patients undergoing conservative surgery may chronically present a reduction in the potential for locomotion due to the procedure (e.g., joint arthrodesis). In addition, more than 50% of patients that underwent conservative limb surgery also undergo a second surgical procedure after ten years due to failure of the initial surgery (surgical rods or stents).²⁵ Thus, the multiprofessional approach in patient care is essential, regardless of the type of surgery.

CONCLUSION

In this study, quality of life, functionality and psychological aspects did not differ between the procedures performed. Occupation and family income after the disease were associated with the perception of better quality of life and general health in both groups. Therefore, productive social participation had a positive and significant impact on the quality of life of these participants. In addition, participation in religious activities was also relevant in adherence and coping with treatment, and reduction of stress and anxiety.

Given the scarcity of studies on the subject, especially at the national level, further studies are suggested in order to explore subjective aspects related to the meaning of quality of life for patients with sarcomas.

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REFERENCES

1. Shreyaskumar RP, Robert SB. Soft tissue and bone sarcomas and bone metastases. In: Jameson JL, Fauci AS, Kasper DL, Hauser SL, Longo DL, Loscalzo J. Harrison's Principles of Internal Medicine. New York: McGraw-Hill Education; 2015. p. 1-14.
2. Garcia Filho RJ. Tumores ósseos e sarcomas dos tecidos moles. Einstein. 2008;6(1):S102-19.
3. Ottaviani G, Jaffe N. The epidemiology of osteosarcoma. In: Jaffe N, Bruland OS, Bielack S. Pediatric and adolescent osteosarcoma: cancer treatment and research. Chicago: Springer; 2010. p. 573-5.
4. Puri A. Limb salvage in musculoskeletal oncology: recent advances. Indian J Plast Surg. 2014;47(2):175-84.
5. Machado SM, Sawada NO. Avaliação da qualidade de vida de pacientes oncológicos em tratamento quimioterápico adjuvante. Texto Contexto Enferm. 2008;17(4):750-7.
6. Aaronson NK, Ahmedzai S, Bergman B, Bullinger M, Cull A, Duez NJ, et al. The European organization for research and treatment of cancer QLQ-C30: a quality-of-life instrument for use in international clinical trials in oncology. J Natl Cancer Inst. 1993;85(5):365-76.
7. Rebolledo DCS. Tradução e validação do instrumento Musculoskeletal Tumor Society Rating Scale (MSTS) para avaliação da função em pacientes com sarcomas ósseos dos membros inferiores [dissertation]. São Paulo: Universidade de São Paulo; 2012. 94 p.
8. Gorenstein C, Andrade L. Validation of a Portuguese version of the Beck Depression Inventory and the State-Trait Anxiety Inventory in Brazilian subjects. Brazilian J Med Biol Res. 1996;29(4):453-7.
9. Aksnes LH, Bauer HCF, Jebesen NL, Follerås G, Allert C, Haugen GS, et al. Limb-sparing surgery preserves more function than amputation: a Scandinavian sarcoma group study of 118 patients. J Bone Joint Surg Br. 2008;90(6):786-94.
10. Silva RS, Guilhem DB, Batista KT, Tabet LP. Quality of life of patients with sarcoma after conservative surgery or amputation of limbs. Acta Ortop Bras. 2019;27(5):276-80.
11. Yasko AW, Reece GP, Gillis TA, Pollock RE. Limb-salvage strategies to optimize quality of life: the M.D. Anderson Cancer Center experience. CA Cancer J Clin. 1997;47(4):226-38.
12. Beck LA, Einertson MJ, Winemiller MH, DePompolo RW, Hoppe KM, Sim FF. Functional outcomes and quality of life after tumor-related hemipelvectomy. Phys Ther. 2008;88(8):916-27.
13. Zahlten-Hinguranage A, Bernd L, Ewerbeck V, Sabo D. Equal quality of life after limb-sparing or ablative surgery for lower extremity sarcomas. Br J Cancer. 2004;91:1012-4.
14. Rougraff BT, Simon MA, Kneisl JS, Greenberg DB, Mankin HJ. Limb salvage compared with amputation for osteosarcoma of the distal end of the femur: a long-term oncological, functional, and quality-of-life study. J Bone Joint Surg Am. 1994;76(5):649-56.
15. Barr RD, Wunder JS. Bone and soft tissue sarcomas are often curable: but at what cost? A call to arms (and legs). Cancer. 2009;115(18):4046-54.
16. Mason GE, Aung L, Gall S, Meyers PA, Butler R, Krüg S, et al. Quality of life following amputation or limb preservation in patients with lower extremity bone sarcoma. Front Oncol. 2013;3:210.
17. Yonemoto T, Ishii T, Takeuchi Y, Kimura K, Hagiwara Y, Iwata S, et al. Evaluation of quality of life (QOL) in long-term survivors of high-grade osteosarcoma: a Japanese single center experience. Anticancer Res. 2007;27(5B):3621-4.
18. Griesser MJ, Gillette B, Crist M, Pan X, Muscarella P, Scharschmidt T, et al. Internal and external hemipelvectomy or flail hip in patients with sarcomas: quality-of-life and functional outcomes. Am J Phys Med Rehabil. 2012;91(1):24-32.
19. Mascarello KC, Silva NF, Piske MT, Viana KCG, Zandonade E, Amorim MHC. Perfil sociodemográfico e clínico de mulheres com câncer do colo do útero associado ao estadiamento inicial. Rev Bras Cancerol. 2012;58(3):417-26.
20. Blinder V, Patil S, Eberle C, Griggs J, Maly RC. Early predictors of not returning to work in low-income breast cancer survivors: a 5-year longitudinal study. Breast Cancer Res Treat. 2013;140(2):407-16.
21. Teston EF, Fukumori EFC, Benedetti GMS, Spigolon DN, Costa MAR, Marcon SS. Feelings and difficulties experienced by cancer patients along the diagnostic and therapeutic itineraries. Esc Anna Nery. 2018;22(4):e20180017.
22. Matos TDS, Meneguim S, Ferreira MLS, Miot HA. Quality of life and religious-spiritual coping in palliative cancer care patients. Rev Lat Am Enferm. 2017;25:e2910.
23. Sawada NO, Nicolussi AC, Paula JM, Garcia-Caro MP, Marti-Garcia C, Cruz-Quintana F, et al. Quality of life of Brazilian and Spanish cancer patients undergoing chemotherapy: an integrative literature review. Rev Lat Am Enferm. 2016;24:e2688.
24. Wickham RJ. Managing constipation in adults with cancer. J Adv Pract Oncol. 2017;8(2):149-61.
25. Nagarajan R, Clohisy DR, Neglia JP, Yasui Y, Mitby PA, Sklar C, et al. Function and quality-of life of survivors of pelvic and lower extremity osteosarcoma and Ewing's sarcoma: the Childhood Cancer Survivor Study. Br J Cancer. 2004;91(11):1858-65.