Association Between Symptoms and Quality of Life in Patients with Colorectal Cancer Undergoing Antineoplastic Treatment

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Associação entre Sintomas e Qualidade de Vida em Pacientes com Câncer Colorretal em Tratamento Antineoplásico

Asociación entre Síntomas y Calidad de Vida en Pacientes con Cáncer Colorrectal Sometidos a Tratamiento Antineoplásico

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ABSTRACT

Introduction: Colorectal cancer is associated with a high symptomatic burden, which can significantly impact patients' quality of life, especially during antineoplastic treatment. **Objective:** To evaluate the association between symptoms and quality of life domains in colorectal cancer patients undergoing antineoplastic treatment. **Method:** A cross-sectional, descriptive-analytical study was conducted with adult colorectal cancer patients undergoing treatment at an oncology hospital in Maranhão, Brazil, between October 2024 and January 2025. Sociodemographic and clinical data were collected. Pain was assessed using the visual analogue scale, and quality of life was assessed using the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire. Spearman's correlation coefficient was used to analyze the associations. **Results:** 60% of participants reported moderate-to-intense pain. The most significant symptoms were pain, fatigue, and insomnia. Social and cognitive functions showed higher scores, while the physical and emotional domains showed greater impairment. There was a significant positive correlation between pain and fatigue (ρ=0.555; p<0.001) and between pain and insomnia (ρ=0.347; p<0.05). **Conclusion:** Pain proved to be a prevalent symptom associated with functional and emotional impairment and could form part of a symptomatic cluster with fatigue and insomnia.

Key words: Colorectal Neoplasms; Antineoplastic Agents/adverse effects; Quality of Life.

RESUMO

Introdução: O câncer colorretal está associado à elevada carga sintomática, que pode gerar impacto significativo na qualidade de vida dos pacientes, especialmente durante o tratamento antineoplásico. **Objetivo:** Avaliar a associação entre sintomas e os domínios de qualidade de vida em pacientes com câncer colorretal submetidos a tratamento antineoplásico. **Método:** Estudo transversal, descritivo-analítico, realizado com pacientes adultos com câncer colorretal em tratamento atendidos em um hospital de oncologia do Maranhão entre outubro de 2024 e janeiro de 2025. Foram coletados dados sociodemográficos e clínicos. A dor foi avaliada pela escala visual analógica e a qualidade de vida pelo questionário de Qualidade de Vida da Organização Europeia para Pesquisa e Tratamento do Câncer. Utilizou-se o coeficiente de correlação de Spearman para análise das associações. **Resultados:** Dos participantes, 60% relataram dor moderada a intensa. Os sintomas mais expressivos foram dor, fadiga e insônia. As funções social e cognitiva apresentaram maiores escores, enquanto os domínios físico e emocional mostraram maior comprometimento. Houve correlação positiva significativa entre dor e fadiga (ρ=0,555; p<0,001) e entre dor e insônia (ρ=0,347; p<0,05). **Conclusão:** A dor mostrou-se sintoma prevalente e associada ao comprometimento funcional e emocional, além de integrar um possível *cluster* sintomático com fadiga e insônia.

Palavras-chave: Neoplasias Colorretais; Antineoplásicos/efeitos adversos; Qualidade de Vida.

RESUMEN

Introducción: El cáncer colorrectal se asocia con una alta carga sintomática, que puede afectar significativamente la calidad de vida de los pacientes, especialmente durante el tratamiento antineoplásico. **Objetivo:** Evaluar la asociación entre los síntomas y los dominios de calidad de vida en pacientes con cáncer colorrectal sometidos a tratamiento antineoplásico. **Método:** Se realizó un estudio transversal, descriptivo-analítico con pacientes adultos con cáncer colorrectal sometidos a tratamiento en un hospital oncológico en Maranhão, Brasil, entre octubre de 2024 y enero de 2025. Se recopilaron datos sociodemográficos y clínicos. El dolor se evaluó mediante la escala visual analógica y la calidad de vida se evaluó mediante el Cuestionario de Calidad de Vida de la Organización Europea para la Investigación y el Tratamiento del Cáncer. Se utilizó el coeficiente de correlación de Spearman para analizar las asociaciones. **Resultados:** El 60% de los participantes reportó dolor moderado a intenso. Los síntomas más significativos fueron dolor, fatiga e insomnio. Las funciones sociales y cognitivas mostraron puntuaciones más altas, mientras que los dominios físico y emocional mostraron un mayor deterioro. Se observó una correlación positiva significativa entre el dolor y la fatiga (ρ=0,555; p<0,001) y entre el dolor y el insomnio (ρ=0,347; p<0,05). **Conclusión:** El dolor resultó ser un síntoma prevalente asociado con el deterioro funcional y emocional, y podría formar parte de un grupo sintomático junto con la fatiga y el insomnio.

Palabras clave: Neoplasias Colorrectales; Antineoplásicos/efectos adversos; Calidad de Vida.

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INTRODUCTION

Colorectal cancer (CRC) is the second most prevalent in Brazil for both genders, often compromising quality of life (QoL) through physical, social, and psychological factors[1-4]. During clinical antineoplastic treatment, significant reductions can occur in emotional and social functions, in addition to symptoms such as pain, fatigue, dyspnea, nausea, vomiting, appetite loss, and diarrhea. Moreover, financial concerns and alterations to sexual activity can intensify across the treatment months, negatively impacting the experience of these patients[3,5-6].

Pain is one of the most prevalent symptoms in CRC, affecting approximately 70% of patients. However, it is often poorly managed due to imprecise assessments, inappropriate understanding of physiopathological mechanisms, and suboptimal administration of painkillers[7]. Furthermore, even before the diagnosis, these individuals can experience chronic pain and central sensitivity, influenced by factors such as psychological suffering, fear, anxiety, and the adverse effects from surgery treatments, such as nerve lesions, sexual dysfunction, and urinary complications, as well as radiotherapy and chemotherapy[8].

QoL is not just an essential factor for well-being, but it also influences the response to treatment and survival of patients[9]. In the context of CRC, having a good QoL can mean, for the patient, being able to manage pain and other symptoms, preserving minimal autonomy in daily activities, maintaining family and social bonds, and experiencing a feeling of well-being and hope, even in the face of a serious diagnosis and potentially grueling treatments. Therefore, assessing the QoL of these patients means considering not only clinical indicators but also the subjective experience of the illness and its treatment[1,9].

With advances in early diagnosis, customized treatment, and palliative care, there is an increase in the survival of these individuals. However, patients who undergo procedures such as permanent colostomy face additional challenges, including changes to their body image, fear of rejection, and difficulties performing daily activities, which can affect women more intensely[10 -12].

The use of a colostomy pouch causes significant changes to lifestyle, affecting the general well-being of patients. Issues such as changes in eating habits, fear of involuntary flatulence in public, cutaneous irritation, social difficulties, leakages, physical limitations, unpleasant odors, diarrhea, and sexual disturbances are frequent and can contribute to feelings of sadness and social isolation. Among these factors, pain stands out as one of the most relevant aspects in the experience of these patients[13-15].

Given the relevance of these symptoms as a limiting factor of QoL in patients with CRC, this study has the objective of assessing the association between symptoms and QoL domains in patients with CRC who are undergoing antineoplastic treatment cared for at a reference hospital, contributing to understanding the clinical impact of these symptoms and fostering patient-centered care strategies.

METHOD

Observational, analytical, cross-sectional study, with a quantitative approach. Composed of CRC patients undergoing antineoplastic treatment cared for at the infusion center of the *Hospital de Oncologia do Maranhão Dr. Tarquínio Lopes Filho*, during October 2024 and January 2025. As this is a convenience sample, the sample size was not previously calculated.

The inclusion criteria were patients aged 18 or over, with a CRC anatomopathological diagnosis, undergoing chemotherapy, immunotherapy, or radiotherapy treatment. In turn, the study excluded individuals with a diagnosis of other chronic or uncontrolled degenerative diseases who presented a history of pathologies associated with chronic pain.

The participants were consecutively approached in the infusion center, in a reserved environment, before the administration of the antineoplastic treatment cycle scheduled for the day. Data collection was conducted in a single session through a face-to-face interview conducted by a trained researcher, immediately after signing the Free and Informed Consent Form. Each patient answered only once to the sociodemographic and clinical questionnaire, the visual analogue scale, and the European Organization for Research and Treatment of Cancer (EORTC)[16] Quality of Life Questionnaire Core 30 (QLQ-C30), with no further reassessments at other points of the treatment. Most participants were in the second and fifth cycles of treatment, with a predominance of palliative or adjuvant purposes.

Data categorization followed a questionnaire elaborated to collect sociodemographic and clinical data, composed of sex, age, marital status, origin, family history, diagnosis, stage, chemotherapy protocol, in addition to pain characteristics: location, intensity, frequency, triggering, worsening, and improvement factors. The patients were asked to characterize the intensity of the pain in three categories over the past 7 days: weak pain (1 to 3), medium pain (4 to 6), and strong pain (7 to 10) using the pain visual analogue scale (VAS), which consists in assessing the sensitive components of pain in a 10 cm line, with zero being absence of pain and ten being maximum pain[17].

The QLQ-C30 form was used to assess QoL. Developed in 1986 by EORTC, it is composed of nine multi-item

scales: five functional scales (physical, role, cognitive, emotional, and social), three symptom scales (fatigue, pain, nausea, and vomiting), and one overall health and QoL scale. The scores were linearly transformed into a 0-100 scale, according to the EORTC manual, in which higher scores indicate better function in the functional scales and worse intensity in the symptom scales[18].

Data was described by median, interquartile range, mean, standard deviation, and percentage. Microsoft Excel 2013 was used for descriptive calculations, and inferential analyses were conducted in the Jamovi®[19] software. Considering the non-normal distribution of data, non-parametric tests were chosen. The association between QoL symptoms and domains was assessed by the Spearman (ρ) correlation coefficient test, appropriate for ordinal data and with no normality assumptions. Correlation strength was classified as weak (ρ=0.10–0.29), moderate(ρ=0.30–0.49), or strong (ρ≥0.50), considering a statistical significance of 5% (p<0.05).

This study has been approved by the Research Ethics Committee, report number 7,046,299 (CAAE (submission for ethical review): 80654024.0.0000.5084), according to ethical aspects related to research with human beings, following Resolution N. 466/12 of the National Health Council[20].

RESULTS

A total of 43 patients with CRC were interviewed, most of them female (53.5%), aged between 60 and 79 years (51.0%), married (54.0%), and self-declared brown (60.0%). Their main source of income was retirement pension (40.0%), with a predominance of high school education (44.0%), and origin in the municipality of São Luís (49.0%) (Table 1).

About risk factors, most patients, 23 (54%), reported alcohol intake before diagnosis, while 20 (46%) did not have this habit. Regarding smoking, most individuals, 29 (67%), did not smoke, but 14 (33%) reported a history of using tobacco. Regarding family history of CRC, most patients, 30 (70%), mentioned having at least one first-degree relative with cancer, while 13 (30%) did not have this precedent.

As to therapeutic modalities, among those who underwent surgical procedures, the highest proportion was submitted to rectosigmoidectomy, 17 (33%), followed by colectomy in 12 (24%), laparotomy in 6 (12%), and enterectomy in 1 (2%), while 5 (9%) patients were not submitted to surgery. Moreover, 10 patients (20%) underwent radiotherapy.

Regarding metastases, 19 (44%) presented metastatic dissemination. Regarding anatomical distribution, the most frequent location was the lung, targeting 9 individuals (39%), followed by the liver, with 8 cases (35%); in addition, 3 patients (13%) presented peritoneal metastases, while 2 (9%) had bone involvement.

Regarding histological diagnosis, all 43 patients (100%) were diagnosed with adenocarcinoma. Of those, most presented with disease in stage IV, with histological grade G2 and regional lymph node dissemination. Most individuals, 31 (72%), did not present with perineural invasion. Moreover, the most frequent location of the primary tumor was the rectum region, affecting 23 patients (54%). Twenty-eight individuals (65%) were not submitted to colostomy, while 15 (35%) were ostomized,

Table 1. Sociodemographic characterization of patients with colorectal cancer in antineoplastic treatment

Variable	n	%
Gender		
Female	23	53.5
Male	20	46.5
18-39	8	19.0
40-59	13	30.0
60-79	22	51.0
Marital status		
Married	23	54.0
Single	10	23.0
Widower	4	9.0
Divorced	6	14.0
Race		
Black	9	21.0
Brown	26	60.00
White	8	19.0
Income		
Retirement	17	40.0
Government social welfare program	10	23.0
Family help/third party	9	21.0
Autonomous	3	7.0
Wage labor	4	9.0
Education level		
Illiterate	3	7.0
Elementary school	4	9.0
Middle school	10	23.0
High school	19	44.0
Undergraduate degree	5	12.0
Post-graduate degree	2	5.0
City		
São Luís	21	49.0
Bacabal	2	5.0
Other cities	20	46.0

most of them with the stoma located in the descending colon, in 13 cases (30%).

Among the chemotherapy protocols, the combination of oxaliplatin and capecitabine was the most used, administered to 22 patients (51%). Most individuals (32%) were in the second cycle of treatment, predominantly with a palliative purpose in a little more than half the cases, and had been diagnosed for over a year (Table 2).

A total of 26 patients (60%) reported pain. In the assessment of pain intensity through VAS, patients presented variation, the weakest pain median was 5 (Q1–Q3: 3–5), with 69% of patients reporting moderate pain and 8%, intense pain. Medium intensity pain presented a median of 5 (Q1–Q3: 5–6), with the moderate category being predominant, reported by 88% of patients. The most intense pain presented a median of 6 (Q1–Q3: 5–8), with 69% of patients classifying pain as intense (Table 3).

Regarding pain location, there was a predominance of hands (31.0%), followed by abdomen (27.0%), feet (21.0%), sacral region (12.0%), and lumbar region (9.0%). Regarding pain irradiation, most patients (75.0%) did not present this phenomenon, while a smaller portion reported irradiation to the forearm (17.0%), lumbar region (4.0%), and lower limbs (4.0%).

Regarding the medication used for pain control, dipyrone was the most frequently administered drug (42.0%), followed by morphine (19.0%), paracetamol (15.0%), tramadol (8.0%), codeine (8.0%), methadone (4.0%), and pregabalin (4.0%). Regarding pain duration, a little over half the patients (69.0%) reported persistent pain for more than three months, while one part (31.0%) reported pain lasting less than that.

The main pain-triggering factors reported by patients were cold (53.0%), movement (12.0%), and heat

Table 2. Clinical characterization of patients in antineoplastic treatment

Characteristic	n	%
Disease stage		
I	0	0.0
II	10	23.0
III	13	30.0
IV	20	47.0
Histological grade		
Gx	4	9.0
G1	2	4.5
G2	30	70.0
G3	5	12.0
G4	2	4.5
Lymph node dissemination		
Local	3	7.0
Regional	20	47.0
Systemic	1	2.0
Absent	19	44.0
Perineural invasion		
No	31	72.0
Yes	7	16.0
No information	5	12.0
Location of primary tumor		
Ascending colon	6	14.0
Transverse colon	1	2.0
Descending colon	13	30.0
Rectum	23	54.0
Colostomy		
Yes	15	35.0
No	28	65.0
Location of stoma		
Ascending colon	4	27.0
Descending colon	11	73.0
Chemotherapy protocol		
XELOX	22	51.0
FOLFOX	13	30.0
QUASAR	4	10.0
FOLFIRI	3	7.0
MAYO CLINIC	1	2.0
Cycle		
1	6	14.0
2	14	32.0
3	11	26.0
4	3	7.0
>5	9	21.0
Treatment purpose		
Palliative	22	51.0
Adjuvant	19	44.0
Neoadjuvant	2	5.0
Time since diagnosis		
Up to 3 months	6	14.0
Up to 6 months	15	35.0
Up to 9 months	3	7.0
Up to 12 months	3	7.0
More than 1 year	16	37.0

Captions: XELOX = Oxaliplatin and capecitabine; FOLFIRI= Folinic acid, fluorouracil, and irinotecan; QUASAR = leucovorin, 5-fluorouracil; FOLFOX = Folinic acid, fluorouracil, and oxaliplatin; MAYO CLINIC = 5-fluorouracil and calcium folinate.

Table 3. Pain intensity over the past seven days assessed by VAS (0–10)

Pain intensity (VAS 0-10)	Median (Q1- Q3)	Mild n (%)	Moderate n (%)	Intense n (%)
Weakest	5 (3 – 5)	6 (23%)	18 (69%)	2 (8%)
Medium	5 (5 – 6)	1 (4%)	23 (88%)	2 (8%)
Strongest	6 (5 – 8)	1 (4%)	7 (27%)	18 (69%)

Captions: Q1-Q3 = interquartile range; VAS = pain visual analogue scale.

(4.0%). However, a significant portion (31.0%) denied the presence of triggering factors. Regarding factors that alleviate pain, a little over half the patients (54.0%) did not identify any specific factor. Among those who reported improvement, heat was the most mentioned factor (19.0%), followed by rest (15.0%), movement (8.0%), and cold (4.0%).

Regarding factors that increase pain, a little over half the patients (46.0%) did not identify any specific factor. Among those who reported worsened pain, cold was the most mentioned factor (35.0%), followed by movement (8.0%). A single patient (4.0%) mentioned both the heat and rest.

The descriptive analysis of symptoms revealed that fatigue and pain were more prevalent symptoms, with medians of 22 (Q1–Q3: 0–33) and 17 (0–33), respectively, indicating a frequent presence and significant variability between patients. Insomnia and changes in appetite presented lower medians, 0 (0–33) and 0 (0–16.5). Financial struggles also stood out, with a median of 33 (0–33). In functional domains, patients presented relatively high scores, such as cognitive function, median 100 (84–100), and social function, 100 (100–100). The emotional domain, in turn, 75 (67–92), and performance of roles, 100 (67–100), presented higher variability (Table 4).

The analysis of Spearman correlation identified specific statistically significant associations, including pain, fatigue, and insomnia, and certain functional and emotional domains of the EORTC QLQ-C30 QoL. There was a strong and significant positive correlation between pain and fatigue (ρ=0.555; p<0.001) and a moderate positive correlation between pain and insomnia (ρ=0.347; p<0.05). Correlation between fatigue and insomnia, despite being positive, was not statistically significant. Pain also presented a significant negative correlation with performance of roles (ρ=–0.395; p<0.01) and emotional domain (ρ=–0.312; p<0.05), while insomnia negatively correlated with cognitive domain (ρ=–0.410; p<0.01). Moreover, performance of roles presented significant positive correlations with emotional (ρ=0.382; p<0.05) and cognitive domains (ρ=0.408; p<0.01). Other associations, including those involving overall QoL and physical function, did not reach statistical significance. These results indicate that symptoms of pain, fatigue, and insomnia are associated with different functional and emotional aspects of the QoL of these patients (Table 5).

Table 4. EORTC QLQ-C30 scores for symptom, functional, and global health scales

Symptom scales	Median (Q1 – Q3)	Mean ± SD
Fatigue	22 (0-33)	18.67 ± 18.82
Nausea	0 (0-25)	16.25 ± 23.43
Pain	17 (0-33)	24.37 ± 25.58
Dyspnea	0 (0-0)	6.16 ± 18.13
Insomnia	0 (0-33)	16.97 ± 29.35
Appetite	0 (0-16.5)	13.11 ± 26.30
Constipation	0 (-0-0)	8.46 ± 19.25
Diarrhea	0 (0-0)	9.25 ± 19.63
Financial struggles		
Financial struggles	33 (0-33)	30.11 ± 33.13
Functional scale		
Physical function	74 (67-80)	74.09 ± 14.66
Performance of roles	100 (67-100)	79.62 ± 27.29
Emotional	75 (67-92)	72.93 ± 26.98
Cognitive	100 (84-100)	87.79 ± 17.72
Social	100 (100-100)	94.30 ± 16.53
Overall health	86 (75-100)	82.95 ± 18.39

Captions: Q1-Q3 = interquartile range; SD = standard deviation; EORTC QLQ-C30 = European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30.

DISCUSSION

The study sample was predominantly composed of women over 60 years, married, retired, and with a moderate education level. These sociodemographic findings are in line with national studies[21,22], but diverge from international studies, in which most patients with CRC were male[23], aged 59 on average, and had a higher education level[24].

The findings from this study indicate that a significant portion of the individuals were using alcohol or tobacco before the diagnosis. Literature evidence corroborates this association, describing the metabolism of ethanol into acetaldehyde, a highly reactive compound capable of inducing damage to DNA and promoting oxidative stress, contributing to carcinogenesis. Additionally, in another study, they reinforce that both smoking and alcohol intake are independent risk factors for CRC, with a synergistic effect when combined. Tobacco, rich in carcinogenic compounds like nitrosamines, induces genetic mutations and chronic inflammation in the

Table 5. Correlations between symptoms and quality of life domains (Spearman coefficient)

Symptom	Correlated variable	Coefficient ρ (Spearman)	*p*
Pain	Fatigue	0.555	<0.001
Pain	Insomnia	0.347	<0.05
Fatigue	Insomnia	0.258	0.095
Pain	Performance of roles	-0.395	<0.01
Pain	Emotional domain	-0.312	<0.05
Insomnia	Cognitive domain	-0.410	<0.01
Performance of roles	Emotional domain	0.382	<0.05
Performance of roles	Cognitive domain	0.408	<0.01

gastrointestinal tract, while ethanol enhances these effects, increasing susceptibility to developing colorectal neoplasms[24,25].

Additionally, factors such as tumoral aggressiveness and infiltration of adjacent structures, such as perineural invasion (PI), play an important role in pain exacerbation. PI is a tumoral aggressiveness factor and is associated with an unfavorable prognosis. However, its direct relationship with pain in patients with CRC is still poorly explored in the literature. Studies[26,27] suggest that this invasion pattern can contribute to pain in advanced disease stages, especially when involving nervous plexuses or adjacent structures to the tumor. Furthermore, the release of inflammatory mediators, like cytokines and tumoral growth factors, can sensitize nerve endings and result in chronic pain.

The findings from this study, in relation to the high prevalence of pain, fatigue, insomnia, and commitment of physical and emotional domains, are consistent with the results described in national[21,22] and international[23,25] studies that highlight the multidimensional impact of symptoms on the QoL of patients with CRC and other neoplasms. On the other hand, there is a scarcity, especially in the Brazilian context[21,22], of studies that specifically explore the association between possible symptomatic clusters, such as the combination of pain, fatigue, and insomnia, and the different QoL domains assessed by QLQ-C30 in patients in antineoplastic treatment, which reinforces the contribution of the present research.

The higher incidence of primary tumors in the rectum and descending colon regions, observed in this study, is in line with up-to-date findings from the literature[28,29]. Rectal cancer usually manifests with well-defined symptoms, like bleeding with or without changes to intestinal habits. In contrast, the symptoms related to colon cancer are frequently vague in the initial stages. Furthermore, the rectum is more exposed to local risk factors, such as fecal stasis and higher concentrations of anaerobic bacteria, which can promote chronic inflammation and damage to DNA, increasing the risk of carcinogenesis[30,31].

In the present study, symptoms like tingling, sensation of electric shock, and numbness were the most reported by patients. These symptoms are characteristic of neuropathic pain associated with the use of chemotherapy agents, like oxaliplatin, a compound of the XELOX protocol. This chemotherapy can cause acute and chronic peripheral neuropathy, manifested by sensory and motor dysfunction, due to its toxicity to sensory neurones and dorsal root ganglia[32,33]. Acute neuropathy, often triggered by exposure to the cold, can manifest as feelings of electric shock or tingling, while chronic neuropathy is more associated with persistent symptoms, like numbness and loss of sensitivity[34].

Results from the QLQ-C30 scale highlight that pain and fatigue were the most prevalent symptoms among patients. Pain is frequently associated with tumoral growth, metastases, or post-surgical complications[7]. Fatigue, on the other hand, is a multifactorial symptom, being influenced by the disease itself, anemia, malnutrition, treatment side effects, and physical and emotional factors[35]. The high incidence of pain, fatigue, insomnia, and nausea in patients with CRC is well aligned with the current literature. These symptoms are multifactorial, often inter-related, and have a significant impact on QoL. They possibly also influence treatment adherence and prognosis, revealing the need for systematic screening of symptoms and causing implications for early palliative care[5,21,36].

In the present study, there was a significant negative correlation between pain and the emotional and performance of roles domains, indicating that an increase in pain intensity is associated with greater functional and emotional commitment. These findings reinforce that oncological pain has a multidimensional impact, interfering with the capacity to perform daily activities and with psychological well-being. Moreover, the strong positive correlation between pain and fatigue suggests the coexistence of a symptomatic cluster, in which physical symptoms tend to mutually enhance, aggravating overall commitment of QoL[8,22,35].

The results from this study demonstrate high overall health scores, in line with studies that also identified relatively positive health assessments among patients with CRC, even in the presence of relevant symptoms[23,37,38]. A possible process of "psychological adaptation" can contribute to this finding, to the extent that, by living with a chronic condition, the individual has to redefine expectations and comparison parameters, beginning to consider health as satisfactory when the patient can

maintain some degree of autonomy, symptom control, and continuity of family and social roles[23].

Spirituality, often reported by oncological patients, can also influence by offering meaning to the illness experience, favoring coping strategies, and supporting feelings of hope, which can soften the emotional impact of symptoms[39]. Moreover, in cultural contexts such as the Brazilian one, the presence of supportive family and community networks, appreciation of affection bonds, and daily solidarity can mitigate the negative effects of physical and emotional symptoms on the subjective assessment of overall health, contributing to more positive perceptions of QoL[24,40].

The high variability observed in the QLQ-C30 symptoms, highlighted by high standard deviation values for pain, fatigue, insomnia, nausea, and appetite loss, represents a limitation of the present study. This dispersion can indicate significant heterogeneity in the experience of patients, possibly influenced by individual factors, such as disease stage, therapies used, presence of comorbidities, and psychosocial support. Moreover, differences in access to palliative care and symptom and pain management strategies can also have contributed to this variability.

Previous studies[6,37] reported similar findings in oncological populations, observing high standard deviation in the scores for pain, insomnia, appetite loss, nausea, and vomiting, suggesting that factors such as nutritional state and social support play an essential role in the perception of these symptoms, associating it to changes in the systemic inflammatory system and adverse effects of treatments.

The present study presents some limitations that should be considered when interpreting the results. The use of a convenience sample and the conduction of the study in a single center can limit the generalization of findings to other populations. Additionally, the cross-sectional design impairs the establishment of causal relations between pain and QoL. The reduced sample size may have influenced the statistical strength of the analyses, especially in the detection of lower-magnitude correlations. Additionally, when dealing with self-report instruments, one cannot dismiss the possibility of response bias. Given these limitations, we recommend that further multicentric studies be conducted, with more representative samples and longitudinal designs, to expand the understanding of the interaction between symptoms and QoL in patients with CRC.

CONCLUSION

This study showed that patients with CRC in treatment present a high prevalence of symptoms, especially pain, fatigue, insomnia, and nausea, with a relevant impact on the functional domains of QoL. Although participants have reported a positive perception on their overall health, there was a significant compromise of physical and emotional functions, in addition to correlations between pain and harm in the performance of roles and emotional domain, reinforcing the multidimensional character of the painful symptom.

The findings reinforce the need for systematic monitoring of symptoms and QoL throughout the treatment, with a multiprofessional approach and individualized management strategies. Multicentric and longitudinal studies are recommended to deepen understanding of clinical and psychosocial determinants involved and support more effective interventions towards improving the QoL of these patients.

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CONTRIBUTIONS

All the authors have substantially contributed to the study design, data acquisition, analysis, interpretation, wording, and critical review. They approved the final version for publication.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interest to declare.

DATA AVAILABILITY STATEMENT

Data is available upon request to the corresponding author, upon reasonable request, provided that the confidentiality and privacy of the participants are preserved and the ethical provisions applicable to the study are respected.

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