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ORIGINAL RESEARCH

The Influence of Sociodemographic Factors and Clinical Aspects on the Quality of Life of Surgically Treated Patients with Colorectal Cancer

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Introduction: Due to the increasing number of cases and the levels of mortality, colorectal cancer is still a major health problem. Therefore, the growing interest in the quality of life of patients and the assessment of the quality of life of patients with colorectal cancer seems to be particularly important. The aim of the study was to investigate and determine factors that have a significant impact on the QoL of patients who were diagnosed with colorectal cancer that was surgically treated in the Surgical Department of the 4th Military Clinical Hospital in Wroclaw.

Methods: 102 respondents were enrolled into the study. The QLQ-C30, QLQ-CR29 as well as an original questionnaire regarding the socioeconomic factors were used for the assessment. The information was supplemented with patients' clinical data.

Results: According to the QLQ-C30 questionnaire the average QoL of the respondents was 55%. Factors such as male gender, younger age, higher BMI, no significant weight loss, living with family, lower level of education and being professionally active have significant positive impact on QoL. In contrary, patients with more advanced and malignant cancer with tumor located in the right half of the colon had worse QoL. The particular domains of QoL influenced by these factors were also identified. Determining these factors will allow for more effective treatment, for the shortening of the hospitalization and finally for the reduction of the costs.

Conclusion: The better QoL of the patients with colorectal cancer treated surgically showed younger men, living with family and with the support from close people, professionally active, with primary level of education, and without significant weight loss, ie less than 5% of body weight in the last 6 months. Moreover, patients with cancer located in the left colon, at a lower stage, with a lower grading demonstrated a better QoL.

Keywords: colorectal cancer, quality of life, clinico-pathological factors, QLQ-C30 questionnaire, QLQ-CR29 questionnaire

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Introduction

Due to advancements in civilization, life expectancy continues to increase, subsequently raising the likelihood of developing colorectal cancer. According to GLOBOCAN 2020, colorectal cancer was the third most common cancer worldwide and was also responsible for over 900000 deaths, making it the second leading cause of cancer-related deaths.[1–3] Additionally, each year an increase in the number of cancer cases among the younger population is being observed, which rises concerns about quality of life issues in long-term survivorship.[4,5]

Given these statistics and taking into consideration the constant evolution of oncology tending to see cancer as chronic disease not something that is totally curable, there is an urgent need to study this cancer not only in terms of survival, but also by emphasizing the aspect of quality of life (QoL) among those suffering from colorectal cancer.[6] This need is reflected by the continuous increased number of published articles devoted to quality of life in cancer patients. The annual count of research papers containing phrases "(colorectal cancer) AND (quality of life)" has doubled from 2013 to 2023.

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Quality of life is a term of great importance in contemporary medicine. The treatment process focuses not only on the cause of the symptoms and getting read of the root cause of problem but also include the subjective perception of patient's functioning, level of happiness and comfort. It is proved that quality of life is a predictor of treatment success and survival.[7] Moreover, the importance of quality of life is particularly emphasized in the context of holistic approach to the patient, where medical efforts are concentrated on overall well-being rather than solely focusing on the absence of disease.

To summarize, investigating the quality of life in colorectal cancer patients is important for further improving treatment methods, as patient motivation and engagement with treatment are often influenced by their quality of life.[8] In the previous review, the authors have analyzed QoL of patients with surgically treated colorectal cancer.[6] The main conclusion was that the presence of a stoma has the greatest impact on QoL impairment. Additionally, patients with stage I colorectal cancer reported higher overall QoL compared to those with stage II or III.

The aim of the study was to investigate and determine factors that have a statistically significant impact on the quality of life of patients who were diagnosed with colorectal cancer that was surgically treated in the Surgical Department of the 4th Military Clinical Hospital in Wroclaw.

Methods

The study received a positive opinion from the Bioethics Committee at the Medical University of Wroclaw (no. KB-702/2020).

The study used convenience sampling. All patients meeting the inclusion criteria and hospitalized in the department within a specified period were recruited. This allowed us to maximize the study sample.

The study included patients diagnosed with colorectal cancer who were hospitalized and operated on at the Surgical Department of the 4th Military Clinical Hospital in Wroclaw from May 2021 to November 2023. The surgical department of this hospital is one of the leading centers in the voivodeship performing operations on colon cancer and treats all patients (not only military patients).

The only inclusion criterion was confirmed colorectal cancer. 114 patients gave informed consent to take part in the study, therefore 114 sets of questionnaires were distributed. 12 sets were only partially completed or were illegible. 102 fully completed sets of questionnaires were obtained. 102 patients were qualified for the study. 52 women and 50 men were examined. The youngest patient was 35 and the oldest was 92 years old (average age was 68 years). A total of 6 patients had a stoma. All the surgical procedures were R0 resections. Characteristic of the patients was presented in the Table 1.

Table 1 Group Characteristic

		Total (N=102)
Gender	Female Male	52 (50.98%) 50 (49.02%)
Age [years]	Mean (SD) Median (quartiles) Range n	68.19 (10.32) 69 (63–74.75) 35–92 102
Age group	Up to 65 years 65–69 years 70–74 years 75–79 years Over 79 years	30 (29.41%) 25 (24.51%) 21 (20.59%) 11 (10.78%) 15 (14.71%)
Grading	Low grade High grade	97 (95.10%) 5 (4.90%)
Location of the tumor	Right colon Left colon	37 (36.27%) 65 (63.73%)

(*Continued*)

Table 1 (Continued).

		Total (N=102)
Staging	1. stage 2. stage 3. stage 4. stage	25 (24.51%) 31 (30.39%) 37 (36.27%) 9 (8.82%)
BMI [kg/m²]	Mean (SD) Median (quartiles) Range	25.6 (3.99) 25.83 (23.34–27.86) 16.65–39.06
BMI	Underweight Normal weight Overweight Obesity	7 (6.86%) 34 (33.33%) 52 (50.98%) 9 (8.82%)
Significant weight loss	Up to 5% Over 5%	48 (47.06%) 54 (52.94%)
Living place	Countryside City	25 (24.51%) 77 (75.49%)
Dwelling	Alone With family	31 (30.39%) 71 (69.61%)
Education	Primary, secondary Higher	80 (78.43%) 22 (21.57%)
Professional activity	Active Inactive	73 (71.57%) 29 (28.43%)

The study used standardized and validated questionnaires. To assess the quality of life, questionnaires constructed by the European Organization for Research and Treatment of Cancer (EORTC) were used: the QLQ-C30 questionnaire for cancer patients and the QLQ-CR29 questionnaire dedicated to patients with colorectal cancer.

The QLQ-C30 questionnaire assesses quality of life in 15 domains: QL - Global health status, PF - Physical functioning, RF - Role functioning, EF - Emotional functioning, CF - Cognitive functioning, SF - Social functioning, FA - Fatigue, NV - Nausea and vomiting, PA - Pain, DY - Dyspnoea, SL - Insomnia, AP - Appetite loss, CO - Constipation, DI - Diarrhea, FI - Financial difficulties. For each domain, quality of life is expressed on a scale of 0–100. The first 6 of them are functional scales, in which higher numbers mean a better quality of life. The remaining 9 are symptom scales, in which higher numbers mean greater severity of disease symptoms, and therefore a worse quality of life.

The QLQ-CR29 questionnaire assesses quality of life in 23 domains: BI - Body image, ANX - Anxiety, WEI - Weight, SEXM - Sexual functioning (Men), SEXW - Sexual functioning (Women), UF - Urinary frequency, BMS - Blood and mucus in stool, STF - Stool frequency, UI - Urinary incontinence, DU - Dysuria, AP - Abdominal pain, BP - Buttock pain, BL - Bloated feeling, DM - Dry mouth, HL - Hair loss, TA - Trouble with taste, FL - Flatulence, FI - Fecal incontinence, SS - Sore skin, EMB - Embarrassment by bowel movement, STO - Stoma care problems, IMP - Impotence, DYS - Dyspareunia. For each domain, quality of life is expressed on a scale of 0–100. The first 5 of these are functional scales, where higher numbers mean a better quality of life. The others 18 are symptom scales, in which higher numbers mean greater severity of disease symptoms, and therefore a worse quality of life.

The study also used an original questionnaire regarding the socioeconomic situation of patients, created by the first author of the publication. The information was supplemented with clinical data obtained from patients' medical records. All the data has been anonymized.

The questionnaires were distributed to patients personally by the first author of the study on the day of admission to the hospital, before the surgery. Patients completed the questionnaires in person, or if necessary, with the help of medical staff.

The factors examined included: gender, age, body weight, BMI, significant weight loss above 5%, place of residence, living alone or with family, level of education, and professional activity. In addition, clinical aspects were considered: location of the tumor, grading, staging and occurrence of mutations.

Statistical Analysis

The analysis of quantitative variables (ie expressed in numbers) was performed by calculating descriptive statistics such as the mean, standard deviations, the median, quartiles and minimum and maximum. The analysis of qualitative variables (ie not expressed in numbers) was carried out by calculating the absolute frequencies and percentages of all values that these variables could assume. The comparison of the values of quantitative variables in the two groups was performed using the Mann–Whitney test. Comparison of the values of quantitative variables in three or more groups was performed using the Kruskal–Wallis test and, if statistically significant differences between groups were detected, Dunn's post-hoc test. The study used nonparametric tests, which are the most robust methods. The significance level of 0.05 was adopted in the analysis. Therefore, all p values below 0.05 were interpreted as indicating significant relationships. The analysis was performed in R, version 4.3.2.

Results

The results included all the statistically significant differences ($p<0.05$). Not only statistical significance was considered, but also differences in the QoL scores. Differences in mean QoL scores greater than 10 points were considered clinically meaningful and included in the results.

Clinically significant differences did not meaningly affect the study results and conclusions. It was observed that clinically significant differences usually occurred in domains that were borderline to statistical significance (p slightly above 0.05). Supplementing the results with clinically significant correlations only increased the number of domains for which a given factor had an impact on the quality of life.

Functional Scales

The survey participants functioned best in the CF (85%) and PF (79%) domains, and least well in the EF (71%) and QL (55%) domains (QLQ-C30 questionnaire) as presented in Table 2. Data presented in the Table 3 unveils that the surveyed participants functioned best in the BI domain (80%), and least well in the SEXW domain (11%) (QLQ-CR29 questionnaire).

Table 2 Statistical Values for the Functional Scales of QLQ-C30 Questionnaire

QLQ-C30 – functional scales	N	No Data	Mean	SD	Median	Min	Max	Q1	Q3
QL	102	0	55.47	22.63	50	0	100	41.67	66.67
PF	102	0	79.67	20.71	86.67	20	100	73.33	93.33
RF	102	0	78.27	30.56	100	0	100	66.67	100
EF	102	0	71.16	23.38	75	0	100	58.33	91.67
CF	102	0	85.62	18.62	83.33	33.33	100	83.33	100
SF	102	0	78.43	24.77	83.33	0	100	66.67	100

Abbreviations: SD, standard deviation; Q1, lower quartile; Q3, upper quartile.

Table 3 Statistical Values for the Functional Scales of QLQ-CR29 Questionnaire

QLQ-CR29 – functional scales	N	No Data	Mean	SD	Median	Min	Max	Q1	Q3
BI	102	0	80.17	22.8	88.89	0	100	66.67	100
ANX	102	0	47.71	30.22	50	0	100	33.33	66.67
WEI	102	0	71.9	31.02	66.67	0	100	66.67	100
SEXM	50	52	34.67	32.27	33.33	0	100	0	66.67
SEXW	52	50	11.54	21.78	0	0	66.67	0	8.33

Abbreviations: SD, standard deviation; Q1, lower quartile; Q3, upper quartile.

Symptom Scales

Survey participants experienced the greatest problems in the FA (32%) and SL (32%) domains, and the fewest in the DY (8%) and NV (6%) domains (QLQ-C30 questionnaire). Survey participants experienced the greatest problems in the STO (44%) and UF (42%) domains, and the fewest in the TA (3%) and DYS (4%) domains (QLQ-CR29 questionnaire). All the abovementioned results are presented on the Tables 4 and 5.

Gender

It was shown that the quality of life in the QL (p=0.019), PF (p=0.003), RF (p=0.021), EF (p=0.017) and BI (p=0.048) domains was statistically significantly higher in men than in women. Moreover, in the FA (p<0.001), SL (p=0.017) and UF (p=0.025) domains, the quality of life was significantly worse (more severe symptoms) in women than in men.

Additionally, the quality of life in the PA and DM domains was clinically significantly worse (difference in mean score over 10 points) in women.

Table 4 Statistical Values for the Symptom Scales of QLQ-C30 Questionnaire

QLQ-C30 – symptom scales	N	No Data	Mean	SD	Median	Min	Max	Q1	Q3
FA	102	0	32.68	24.71	33.33	0	100	13.89	44.44
NV	102	0	6.05	15.87	0	0	83.33	0	0
PA	102	0	26.8	30.23	16.67	0	100	0	50
DY	102	0	8.5	17.98	0	0	100	0	0
SL	102	0	32.68	31.11	33.33	0	100	0	33.33
AP	102	0	20.92	27.72	0	0	100	0	33.33
CO	102	0	26.47	30.16	33.33	0	100	0	33.33
DI	102	0	15.03	24.2	0	0	100	0	33.33
FI	102	0	16.01	23.33	0	0	100	0	33.33

Abbreviations: SD, standard deviation; Q1, lower quartile; Q3, upper quartile.

Table 5 Statistical Values for the Symptom Scales of QLQ-CR29 Questionnaire

QLQ-CR29 – symptom scales	N	No Data	Mean	SD	Median	Min	Max	Q1	Q3
UF	102	0	42.16	24.23	33.33	0	100	33.33	50
BMS	102	0	17.16	21.68	16.67	0	100	0	33.33
STF	102	0	23.53	21.67	16.67	0	100	16.67	33.33
UI	102	0	15.03	25.53	0	0	100	0	33.33
DU	102	0	4.9	14.38	0	0	100	0	0
AP	102	0	29.41	34.56	33.33	0	100	0	33.33
BP	102	0	10.46	21.49	0	0	100	0	0
BL	102	0	31.05	32.25	33.33	0	100	0	33.33
DM	102	0	29.41	30.14	33.33	0	100	0	33.33
HL	102	0	5.56	16.31	0	0	100	0	0
TA	102	0	3.92	13.51	0	0	66.67	0	0
FL	102	0	27.12	28.43	33.33	0	100	0	33.33
FI	102	0	10.46	21.99	0	0	100	0	0
SS	102	0	11.44	21.24	0	0	100	0	33.33
EMB	102	0	18.63	29.13	0	0	100	0	33.33
STO	6	96	44.44	45.54	33.33	0	100	8.33	83.33
IMP	50	52	20	27.77	0	0	100	0	33.33
DYS	52	50	4.49	11.49	0	0	33.33	0	0

Abbreviations: SD, standard deviation; Q1, lower quartile; Q3, upper quartile.

Age

For the purposes of the study, patients were divided into 5 age groups: under 65 years of age, 65–69 years of age, 70–74 years of age, 75–79 years of age, and over 79 years of age.

It was shown that the quality of life in the PF domain was significantly better in groups of patients aged up to 79 years than in patients aged over 79 years. In the RF domain (p=0.047) it was significantly better in patients aged 65–69 and 70–74 than in patients aged over 79. Moreover, the quality of life in the SEXM domain (p=0.01) was significantly better in patients up to 69 years of age than in older patients.

The quality of life in the DY (p<0.001) and UI (p<0.001) domains was significantly worse (more severe symptoms) in patients over 74 years of age than in other age groups. The quality of life in the FI domain (p=0.032) was significantly worse in patients aged 75–79 years than in younger patients.

Additionally, the quality of life in the DU domain was clinically significantly worse in patients aged 75–79. In the AP, BL, DM and FL domains QOL was clinically significantly worse in patients over 74 years of age.

BMI

The quality of life of patients in the QL (p=0.006) and BI (p=0.003) domains was significantly better in overweight patients than in patients whose weight was normal and in patients who were underweight. Quality of life in the PF domain (p=0.007) was significantly better in patients whose weight was normal and in overweight patients than in underweight patients. Quality of life in the RF domain (p=0.015) was significantly better in obese and overweight patients than in underweight patients. The quality of life in the WEI domain (p=0.001) was significantly better in overweight patients than in patients whose weight was normal, in patients with obesity and in patients who were underweight. Quality of life in terms of FA (p=0.001) was significantly worse (more severe symptoms) in underweight patients than in patients whose weight was normal, in overweight patients and in obese patients.

The quality of life in the AP (p=0.033) and DM (p=0.016) domains was significantly worse (more severe symptoms) in underweight and normal weight patients than in overweight and obese patients.

Additionally, the quality of life in the SF, PA, SL, DI, UI, BP domains was clinically significantly worse in underweight patients than in remaining groups (difference in mean score over 10 points).

To avoid potentially misleading results regarding weight (no details considering the prognosis and pre-existing conditions of underweight patients), the study used another parameter related to body weight. In addition to the BMI value relating directly to body weight, the percentage of weight loss was also taken into account.

Significant Weight Loss

Significant weight loss was defined as a weight loss of at least 5% in the last 6 months. It was shown that the quality of life in the SF (p=0.014) and WEI (p=0.029) domains was significantly higher in patients who had lost up to 5% of their body weight than in patients who had lost more than 5% of their body weight. Moreover, the quality of life in the FA (p=0.016), STF (p=0.022), AP (p=0.026), DM (p=0.009), TA (p=0.028) and EMB (p=0.028) domains was significantly worse (more severe symptoms) in patients who had lost more than 5% of their body weight than in patients who had lost up to 5% of their body weight.

Additionally, the quality of life in the RF and ANX domains was clinically significantly better in patients who had lost up to 5% of their body weight. QoL in the FL domain was clinically significantly worse in patients who had lost more than 5% of their body weight.

Dwelling

Quality of life in the PF (p=0.03), EF (p=0.024) and CF (p=0.031) domains was significantly better in patients living with family than in patients living alone.

Additionally, the quality of life in the FA, DM and IMP domains was clinically significantly worse in patients living alone.

Living Place

There were no statistically significant differences in the quality of life between patients living in the countryside and those living in the city.

The quality of life in the SEXW domain was clinically significantly better in patients living in the village.

Level of Education

The quality of life in the IMP domain (p=0.02) was significantly worse (more severe symptoms) in patients with higher education than in patients with primary or secondary education.

The quality of life in the DM domain was clinically significantly worse in patients with higher education.

Professional Activity

Quality of life in the PF domain (p<0.001) was significantly better in professionally active patients than in professionally inactive patients. Moreover, the quality of life in the UI domain (p=0.005) was significantly worse (more severe symptoms) in professionally inactive patients.

The quality of life in the DM domain was clinically significantly worse in professionally inactive patients.

Grading

The quality of life in the RF (p=0.012) and ANX (p=0.046) domains was significantly better in patients with low-grade cancer than in patients with high-grade cancer. The quality of life in the AP (p=0.008), STF (p=0.027), DU (p=0.046), BL (p=0.019) and DM (p=0.038) domains was significantly worse (more severe symptoms) in patients with high-grade cancer.

Staging

The quality of life in the ANX domain (p<0.001) was significantly better in patients with stage 1 and 3 than in patients with stage 2. The lowest quality of life was observed in patients with stage 4 cancer.

The quality of life in the PA (p=0.013), CO (p=0.032), AP (p=0.003) and BL (p=0.009) domains was significantly worse (more severe symptoms) in patients with stage 4 cancer than in patients in the remaining groups.

Additionally, the quality of life in the QL, RF, EF, SF and WEI domains was clinically significantly better in patients with stage 1, 2 and 3 than in stage 4 (difference in mean score over 10 points). QoL in the SL, BMS, STF, FL, EMB and DYS domains was clinically significantly worse in patients with stage 4 than in the remaining groups.

Location of the Tumor

The quality of life in the FA (p=0.006) and AP (p=0.043) domains was significantly worse (more severe symptoms) in patients with a tumor in the right half of the colon than in patients with a tumor in the left colon or rectum.

Presence of Mutations

Mutation of the KRAS, NRAS and BRAF genes was examined in the histopathological material. The result was considered positive if a mutation in at least one gene was detected. Quality of life in the CF domain (p=0.048) was significantly better with mutations present than in the absence of mutations. The quality of life in the AP (p=0.017) and EMB (p=0.018) domains was significantly worse (more severe symptoms) with mutations present than with no mutations.

Discussion

In the era of personalized medicine, it is important to implement personalization not only in the therapeutic approach to a patient's disease but also in following a holistic concept of treatment that considers their general well-being, including their mental state, social conditions, and everyday functioning.[9] To provide the highest possible quality of life for patients, it is necessary to identify specific risk factors and groups of patients at risk of a significant reduction in quality of life. Our study focused on patients with colorectal cancer, which is the third most common cancer worldwide.[1,10] Our analysis supports the general statement that the presence of cancer in general,[11–13] but also colorectal cancer in particular, negatively impacts the quality of a patient's life in many ways.[14–16] Among the patients we surveyed, quality of life was mostly negatively impacted in the area of emotional functioning, which is consistent with studies linking colorectal cancer with emotional distress.[17] This result may indicate to physicians that patients with colorectal cancer require additional attention in this area, which could facilitate the application of a better selection of psychosocial interventions.

When attempting to improve the quality of life for patients with colorectal cancer, age must be considered. Our study found that patients aged 79 and above require greater emphasis on their overall well-being. It is important to note that there may be multiple factors contributing to the significant decrease in quality of life in this age group. The decline in quality of life is a gradual process that occurs in elderly patients. It is strongly associated with their health status and mortality, and the primary oncological disease may not be the sole reason for the decrease in quality of life.[18,19] This implies that in the population of older patients, there is a specific need for an in-depth medical interview to determine the true contribution of colorectal cancer to changes in patient quality of life. Therefore, methods to improve quality of life should target the root cause of the problem.

The analysis of the results indicates that the presence of colorectal cancer has a greater negative impact on women's quality of life than on men's. This aspect should be taken into consideration when planning psychosocial interventions for patients with colorectal cancer. Studies have shown significant differences in quality of life between the sexes in patients with various oncological diseases.[20] Our study provides evidence that this statement may be true in the case of colorectal cancer. The discrepancy may be due to statistically significant stronger fatigue and insomnia in women than in men, both of which are risk factors for lower quality of life.[21,22] To a lesser extent, it may also relate to impaired sexual activity in women caused by dyspareunia.

The presence of a colostomy or ileostomy is recognized as a factor that lowers the quality of life for patients.[23,24] Our study supports this statement by providing data which shows that the most intense symptoms related to colorectal cancer are those specifically connected to stoma care.

Our study revealed that it is not only patient characteristics and treatment-related factors that contribute to a decrease in patients' quality of life, but certain characteristics of a tumor may also be potential risk factors for a decrease in quality of life in patients with colorectal cancer. Worse clinical and pathological characteristics were mostly associated with more intense abdominal pain and, therefore, decreased QoL. An analysis of clinico-pathological data at the stage of patient diagnosis may enable physicians to introduce early interventions aimed at preventing a decrease in quality of life.

The research presented above demonstrated that, generally, patients with a higher BMI also experience a better quality of life. Conversely, underweight patients show a lower QoL, aligning with the conclusions of other researchers.[25,26] The quality of life in the FA domain was particularly decreased, highlighting the importance of ensuring adequate nutrition for patients suffering from colorectal cancer. However, the application of low BMI as a potential risk factor for a worse quality of life is limited, for example, due to the inability to differentiate between fat and muscle mass, or to account for the distribution of fat tissue.[27]

An increasing number of researchers are focusing not only on the cancer patient themselves but also on their environment. The issue of home care plays a significant role in determining the quality of life.[28] As the data presented in this study indicate, patients living at home with their families display a better quality of life. However, an emerging field of exploration for scientists is the quality of life of family caregivers of cancer patients.[29,30] It indicates that it is crucial to maintain a broad perspective while providing medical care, in accordance with the principles of personalized medicine and a holistic approach to the patient.

In order to provide the highest level of medical care, members of the therapeutic team should strive to identify risk factors for reduced quality of life and proactively provide patients with the necessary support.[31] The results of our study indicate that the presence of both mutations and tumors located in the right half of the colon may be factors contributing to decreased quality of life. Awareness of these risk factors may help improve patients' quality of life in the future by providing them with more personalized care.

Limitations of the Study

Despite the large research group and a broad approach to the issue, this work has some limitations. What should be mentioned here is the lack of follow-up, meaning the lack of reassessment of patients' quality of life with the same tools after surgery, which could further enrich the work. This was caused by the fact that too little time had passed since the procedure (the last patients included in the study were operated on at the end of 2023), as well as the limiting effect of the SARS-CoV-2 pandemic, which significantly hampered the qualification and questionnaire examination of patients.

Another limitation of the study is the lack of a control group. However, it seems that it would be difficult to draw rational conclusions with important clinical implications if the results presented here were applied to a group of healthy people without cancer.

The authors are aware of possible confounding factors that may affect the study results. However, it was decided to include all patients with diagnosed colorectal cancer undergoing surgical treatment in the study. With such a large study group, it might be impossible to consider all possible confounding factors. Therefore, it was decided to consider selected clinical and socioeconomic factors common to all the respondents.

Regarding the aforementioned, further research seems necessary. In particular, follow-up studies to reassess patients' QoL post-surgery to provide a longitudinal perspective.

Clinical Implications

This study allows us to identify factors that have a significant impact on the quality of life of patients with colorectal cancer. This information may contribute to even better treatment of cancer patients. Recent research is drawing more and more attention to the fact that, apart from improving the patient's biological condition, his mental, emotional, and social condition is equally important.

A comprehensive, holistic approach to the treatment of oncological patients may in the future contribute to improving treatment results and shortening the therapeutic process and thus reducing the costs of therapy.

Conclusions

The average quality of life of the respondents according to QL in the QLQ-C30 questionnaire was 55%.

The better QoL of the patients with colorectal cancer treated surgically showed younger men, living with family and with the support from close people, professionally active, with primary level of education, and without significant weight loss, ie less than 5% of body weight in the last 6 months.

Moreover, patients with cancer located in the left half of the colon, at a lower stage and with a lower grading displayed a better quality of life.

Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki and approved by the Bioethics Committee at the Wroclaw Medical University (no. KB-702/2020).

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Informed Consent Statement

Written informed consent was obtained from all the subjects involved in the study.

Author Contributions

All the authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare no conflict of interest.

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