

ORIGINAL ARTICLE

Quality of life in colorectal cancer patients: an Izmir Oncology Group (IZOG) study

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Summary

Purpose: To investigate the variables of quality of life (QoL) among Turkish patients with colorectal cancer (CRC).

Methods: In this prospective study we investigated the QoL of Turkish CRC patients. Two hundred and twenty two patients with CRC were included. The sociodemographic form and European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) were used.

Results: The study group consisted of 142 males (64%) and 80 females (36%). The mean patient age was 55.68 ± 11.387 years. The majority of the patients (36.9%) had local disease while advanced-stage disease and locally advanced stage disease had 32.2% and 28.8% of the patients; respectively. The mean QoL score was moderate (62.81 ± 27.0). The most common complaints were fatigue, economic difficulties and constipation. Gender, education level and disease stage were

associated with QoL. Physical, role and social functioning were more adversely affected in female patients. Compared to women, men had significantly more favorable global QoL ($p=0.044$). Some functional scales were worse in advanced disease compared to other stages. These outcomes were statistically significant in the functional scales of global health ($p=0.007$), physical ($p=0.03$), cognitive ($p=0.01$) and emotional function ($p=0.007$). Patients with advanced disease had worse outcomes in some symptoms (nausea, vomiting, dyspnea, loss of appetite and financial distress).

Conclusions: Female gender and advanced disease were strongly associated with poorer QoL among Turkish CRC patients.

Key words: colorectal cancer, EORTC QLQ-C30, quality of life, stage

Introduction

CRC is the second most common cause of cancer-related mortality and ranks fourth in incidence in many developed countries. Both men and women are affected at the same rate. Approximately one million new cases and 250,000 deaths are observed annually worldwide [1]. Although incidence rates for CRC have not significantly changed in the last two decades, mortality rates from CRC have declined due to earlier diagnosis, improved diagnostic tests and advances in the treatment, both in the adjuvant and the metastatic settings [2,3]. In the

first year after the diagnosis, approximately 80% of patients with colon cancer remain alive and approximately 62% of these patients live more than 5 years [4]. Moreover, patients who present with early and localized stage disease, have a 5-year overall survival rate of 90% [5].

The loss of health because of cancer and/or its treatment may lead to psychophysical or functional impairment [6]. CRC and its treatment may also have negative impact on social functioning, including work and productive life, relationships with

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friends, relatives, and partners, and other social activities and interests. CRC patients either with stoma or nonstoma, reported problems including irregular bowel movements, diarrhea, flatulence and fatigue, and often have to follow dietary restrictions [7,8]. Therefore, it is important to evaluate the QoL of CRC patients to assess whether such impairments disrupt their daily life. Several studies investigated the impact of CRC in the patient's QoL, both in short-term and long term periods [9,10].

The purpose of the present study was to investigate the roles of different variables on the QoL in Turkish patients with CRC.

Methods

In this prospective study we investigated the QoL of Turkish CRC patients. Two hundred and twenty two patients who were diagnosed with colorectal cancer and followed up at the Katip Celebi University and Ataturk Education and Research Hospital, Department of Oncology, between January 2008 and April 2014 were included. The data were collected using a series of forms completed during face-to-face interviews by trained interviewers for the determination of the patient QoL. All interviews were performed with patients' permissions before enrolment. Demographic features of the patients with CRC were obtained from the baseline questionnaire. Although many QoL scales have been used for cancer patients, the EORTC QLQ-C30 is well-designed and one of the most widely used for cancer patients [11]. Therefore, QoL was measured using the EORTC QLQ-C30. There was no restriction on patient selection with regard to histology of colorectal cancer, disease stage or demographic characteristics. Sociodemographic data included age, education and marital status. The EORTC QLQ-C30 questionnaire includes 5 functioning scales (physical, role, emotional, social, and cognitive functioning), a scale for global QoL and 9 symptoms scale (e.g., pain, insomnia, dyspnea, loss of appetite, financial difficulties, fatigue, nausea and vomiting, constipation, diarrhea). It has shown good psychometric properties and demands little time for completion (10-15 min). EORTC-QLQ-C30 (version 3) was translated and validated in Turkish language by Hoopman et al. [12]. Scores for each QoL scale were calculated as suggested by the EORTC Study Group on QoL [13]. All scales and item scores were transformed linearly so that the results ranged from 0 to 100. The higher scores in functioning and global scale and the lower scores in symptom scales showed better QoL [13]. Sociodemographic factors (age, sex, marriage status and education level), clinical factors (active disease and disease duration) and EORTC QLQ-C30 subscale parameters were taken into account to determine factors which could have effect on the global QoL scores.

Statistics

All data were analyzed by using SPSS for Windows, version 20.0 Descriptive statistics summarized frequencies and percentages for categorical variables, mean and

Table 1. Sociodemographic characteristics of colorectal cancer patients

Sociodemographic characteristics	Patients (N=222) N(%)
Gender	
Female	80 (36)
Male	142 (64)
Marital status	
Married	192 (86.5)
Single (widowed, divorced, not married)	30 (13.5)
Education	
Primary education	122 (55.5)
High school	62 (27.9)
University	38 (17.1)
Monthly income (TL)	
0-500	54 (24.3)
500-1,000	99 (44.6)
1,000 and above	69 (31.1)
Disease stage	
Local disease	82 (36.9)
Locally advanced disease	64 (28.8)
Advanced stage disease	76 (34.2)

TL (Turkish lira): 0.511

standard deviation for continuous variables. Independent samples t-tests were used to compare categorical variables. A value of $p < 0.05$ was considered as statistically significant.

Results

The characteristics of the 222 patients (142 males/64% and 80 females/36%) in the study are shown in Table 1. The Eastern Cooperative Oncology Group (ECOG) performance status (PS) of all patients was 0 or 1. Their mean age was 55.68 ± 11.387 years (range 20-83). The majority of the patients (36.9%) had local disease, 34.2% had advanced-stage disease, and 28.8% had locally advanced disease. Most of the patients (86.5%) were married, 77% were non-smokers and 82.9% never used alcohol. Only 17.1% of the patient were graduated from college.

EORTC-QLQ C30 variables are demonstrated in Table 2. The mean QoL score was moderate (62.81 ± 27.0). The most common complaints were fatigue, economic difficulties and constipation. The least reported symptoms were followed by nausea, vomiting and loss of appetite (Table 2). The as-

Table 2. The mean scores of EORTC QLQ-C30

<i>EORTC QoQ-C30</i>	<i>Mean±SD</i>
Physical functioning	69.47±25.628
Role functioning	78.13±31.723
Cognitive functioning	77.16±26.702
Emotional functioning	73.13±25.864
Social functioning	68.97±33.133
Global quality of life	62.81±27.017
Fatigue	40.00±30.155
Pain	24.03±28.911
Nausea and vomiting	17.39±27.005
Dyspnea	15.57±27.335
Insomnia	27.85±35.704
Appetite loss	20.94±30.329
Constipation	25.60±33.155
Diarrhea	23.48±30.154
Financial problems	36.53±37.207

Table 3. Relationship between quality of life and gender

<i>EORTC QoQ-C30</i>	<i>Gender</i>	<i>Mean±SD</i>	<i>p value</i>
Physical functioning	Fernale	64.49±26.956	0.029
	Male	72.27±24.502	
Role functioning	Fernale	72.29±33.718	0.039
	Male	81.41±30.168	
Cognitive functioning	Fernale	73.21±28.675	0.098
	Male	79.38±25.358	
Emotional functioning	Fernale	70.44±24.268	0.246
	Male	74.64±26.685	
Social functioning	Fernale	62.39±35.046	0.026
	Male	72.67±31.532	
Global quality of life	Fernale	57.96±26.875	0.044
	Male	65.54±26.805	
Fatigue	Fernale	44.80±31.998	0.075
	Male	37.30±28.831	
Pain	Fernale	28.03±30.321	0.122
	Male	21.77±27.942	
Nausea and vomiting	Fernale	20.72±29.760	0.188
	Male	15.51±25.237	
Dyspnea	Fernale	13.70±26.301	0.447
	Male	16.62±27.938	
Insomnia	Fernale	33.67±49.017	0.226
	Male	26.69±35.956	
Appetite loss	Fernale	20.33±29.709	0.824
	Male	21.28±30.771	
Constipation	Fernale	22.85±33.731	0.355
	Male	27.15±32.8	

Table 4a. Relationship between quality of life and stage

<i>EORTC</i>	<i>Stage</i>	<i>Mean±SD</i>	<i>p value</i>
Physical functioning	Local clisease	75.85±3.182	0.003
	Locally advanced disease	70.11±21.870	
	Advanced clisease	62.04±29.195	
Role functioning	Local clisease	80.25±33.570	0.386
	Locally advanced disease	80.26±26.677	
	Advanced clisease	74.05±33.537	
Cognitive functioning	Local clisease	80.88±25.158	0.001
	Locally advanced disease	83.02±20.949	
	Advanced clisease	68.22±30.388	
Emotional functioning	Local clisease	77.76±25.560	0.007
	Locally advanced disease	76.06±19.921	
	Advanced clisease	65.65±29.064	
Social functioning	Local clisease	73.30±31.545	0.124
	Locally advanced disease	70.69±29.757	
	Advanced clisease	62.84±36.816	
Global quality of life	Local clisease	70.01±21.701	0.007
	Locally advanced disease	60.25±27.729	
	Advanced clisease	57.20±30.037	

sociation between sociodemographic features and medical history, and QoL scores were also assessed with the following results: gender, educational level and disease stage were associated with QoL. There was no statistically significance between men and women in terms of emotional and cognitive functioning. Physical, role and social functioning were more adversely affected in female patients. Compared to women, men had significantly more favorable global QoL ($p=0.044$). The QLQ-C30 questionnaire did not reveal statistical difference between men and women for symptom scale (e.g., pain, dyspnea, sleep disturbance, loss of appetite and diarrhea) (Table 3). Some functional scales were worse in advanced disease compared

to early disease stages. These outcomes were statistically significant in the functional scales of global health ($p=0.007$), physical function ($p=0.03$), cognitive function ($p=0.01$) and emotional function ($p=0.007$). However, there was no statistically significant difference in social and role function at different stages (Table 4a). Patients with advanced disease had worse outcomes in some symptoms such as nausea and vomiting ($p=0.001$), dyspnea ($p=0.006$), loss of appetite ($p=0.030$) and financial distress ($p=0.036$) these results were statistically significant (Table 4b). Both tobacco use and alcohol consumptions were not associated with QoL. Patients with higher educational levels were more likely to exhibit better social function than those

Table 4b. Relationship between quality of life and stage

<i>EORTC</i>	<i>Stage</i>	<i>Mean±SD</i>	<i>p value</i>
Fatigue	Local clisease	36.68±28.507	0.123
	Locally advanced disease	37.47±27.304	
	Advanced clisease	45.72±33.540	
Pain	Local clisease	18.63±24.714	0.001
	Locally advanced disease	19.47±24.118	
	Advanced clisease	33.70±34.212	
Nausea and vomiting	Local clisease	10.10±18.427	0.001
	Locally advanced disease	11.08±19.117	
	Advanced clisease	30.56±34.746	
Dyspnea	Local clisease	10.55±21.498	0.006
	Locally advanced disease	12.46±22.538	
	Advanced clisease	23.61±34.275	
Insornnia	Local clisease	28.40±47.152	0.604
	Locally advanced disease	25.95±34.311	
	Advanced clisease	32.81±39.768	
Appetite loss	Local clisease	15.39±27.247	0.030
	Locally advanced disease	19.70±27.608	
	Advanced clisease	27.97±34.399	
Constipation	Local clisease	22.71±30.901	0.507
	Locally advanced disease	25.41±30.047	
	Advanced clisease	28.88±37.808	
Financial problems	Local clisease	36.12±39.938	0.036
	Locally advanced disease	27.99±31.474	
	Advanced clisease	44.17±37.456	

who graduated from elementary school ($p=0.031$). In addition, patients who graduated from elementary school were more likely to have experienced financial difficulties ($p=0.001$).

Discussion

Baade et al. reported that survival expectations of patients with CRC increased and reached 93.2% at the 5th year after diagnosis [14]. This leads to a rising prevalence of patients living with the consequences of CRC and its treatment with an estimated worldwide prevalence of more than 3 million people in 2008 [15]. This rise has greatly attracted the interest of their impact on health-related QoL [16]. Health-related QoL is now considered as an important endpoint for the oncology community [17]. QoL of colorectal cancer patients can also provide valuable information regarding the progress of disease and the side effects of cancer therapies. In addition, some studies established that a better QoL was associated with prolonged survival of patients with cancer [18]. Braun et al. found that a 10-point increase in base line global QoL scores (using EORTC QLQ-C30) was associated with a 7% decreased risk of death [19]. This result was also proved for other types of cancer [20]. Therefore, improving the QoL may lead to an improvement of the prognosis and well-being of cancer patients. Identifying the features of QoL the patients with poor prognosis can be assessed easily. Hence, the clinicians may plan medical, psychological or social interventions to improve the patients' general status [21]. Many researchers have defined that QoL had a direct influence on therapy adherence and consequently on survival [22]. Moreover, a newly published trial proved that the baseline QoL influenced the survival of CRC patients [23].

QoL in CRC patients has been reported to be associated with several factors. The reported factors include sociodemographic features (gender, age, income, educational level and social network), variables related to treatment and other factors, like presence of comorbidities [21,24]. Smith et al. have illustrated that CRC patients had more comorbidities and poorer physical and mental QoL compared with individuals without cancer, and patients who had two or more comorbidities or those who had a recent diagnosis were found to have poorer QoL [25].

The initial treatment of CRC is usually surgery. After the operation many patients are advised to perform one or more additional treatments including radiotherapy and chemotherapy. All these factors may, of course, impact the patients' QoL. The physical and psychological consequences of surgery can impact negatively QoL. Receiving chemotherapy in addition to surgery was shown to be associated with lower QoL among rectal

cancer patients [26]. The other determinants of lower QoL for long-term survivors of CRC after diagnosis are long-term complications of surgery, late toxicities from chemotherapy and radiation therapy, and advanced age related with comorbidities [26,27]. Other important health-related factors, such as obesity or having comorbidities [21], and some specific diseases, such as heart diseases, anxiety/depression or urinary disorders, are proved to be associated with poorer QoL [28,29]. The nonspecific symptoms, i.e. diarrhea, incontinence, fatigue and pain, have been reported to directly or indirectly affect the QoL of CRC patients by avoiding daily activities and hobbies [30,31].

The stage and the localization of CRC on diagnosis are important in determining QoL, as they relate to symptoms, treatment modalities and therapy durations [32]. Patients stage I live with more favorable QoL scores. On the contrary, as expected, patients with stage IV continue their lives with lower scores. Stage II and III patients experience decreased initial QoL scores which are followed by better QoL scores. These outcomes may be explained with the perception (or reconceptualization) of QoL after CRC diagnosis [33]. On the other hand, some studies reported that there is no significant relationship between tumor stage and QoL [10].

In our study, disease stage was strongly associated with QoL. Some functional scales were worse in advanced disease compared to other stages. These changes were statistically significant in the functional scales of global health, physical function, cognitive function and emotional function. However, there was no statistically significant difference in the social and in the role function at different stages. Patients with advanced disease had worse scales of some symptoms, such as nausea and vomiting, dyspnea, loss of appetite and financial distress and the outcomes of variables were statistically significant.

Although some studies suggested that gender has not been reported as a significant factor for QoL, this does not seem to be true for specific problems like sexual functioning in men or physical problems and pain in women [34]. Among male patients, better outcomes for physical function, emotional function, role performance general health/QoL and for the symptoms of fatigue and pain were reported by Mosconi et al. [35]. In a study comparing the QoL of 264 men and 255 women with rectal cancer, Schmidt et al. found that females had a lower QoL for physical function and general health status than men [36].

Fleishman and Lawrence suggested that the difference between genders might be attributed to the fact that male patients may try not to show their weaknesses or dependence [37]. In our study, although there was no statistically significant difference between men and women in terms of emotional and cognitive function, the physical role and social function were more adversely affected in female patients. Compared to women, men had more favorable global QoL and this result was

statistically significant. The QLQ-C30 questionnaire did not reveal statistical difference between men and women for symptom scale (e.g., pain, dyspnea, sleep disturbance, loss of appetite and diarrhea).

In conclusion, the present study showed that gender and stage were strongly associated with QoL. Female gender and advanced disease were strongly associated with poorer QoL in Turkish CRC patients.

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