

Brief Report**Comparison of Coping, Psychological Distress, and Level of Functioning in Patients With Gastric and Colorectal Cancer Before Adjuvant Chemotherapy**

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Abstract

Context. Patients with gastrointestinal cancers are at high risk for functional problems that are generally accompanied by a decline in their overall status and intense psychological distress.

Objectives. This study compares the level of functioning in individuals with gastric cancer (GC) and colorectal cancer (CRC) and analyzes whether improved functioning can be explained by patients' psychological status and coping strategies.

Methods. This is a prospective, transversal, multicenter study in patients with nonmetastatic GC and CRC before initiating adjuvant chemotherapy. Participants answered questionnaires evaluating quality of life, including functioning (European Organization for Research and Treatment of Cancer Quality of Life questionnaire), coping strategies (Mini-Mental Adjustment to Cancer), and psychological distress (Brief Symptom Inventory-18).

Results. Between December 2015 and July 2017, 266 patients with CRC and 69 patients with GC were consecutively recruited. A pathological level of functioning was more prevalent in people with GC than in those with CRC (20% vs. 5%). Individuals with GC presented worse functioning and more psychological distress and displayed more hopelessness, anxious preoccupation, and cognitive avoidance as coping strategies than those with CRC. Psychological distress and fighting spirit accounted for 40% of the functional status in GC patients, whereas psychological distress and hopelessness represented 58% of CRC patients' functional status.

Conclusion. Our findings suggest that level of functioning affects many subjects with GC and reveals the importance of developing interventions targeted at enhancing adaptive coping strategies before initiating adjuvant cancer treatment. *J Pain Symptom Manage* 2018;■■-■■. © 2018 Published by Elsevier Inc. on behalf of American Academy of Hospice and Palliative Medicine.

Key Words

Gastrointestinal cancer, coping, functioning, psychological distress

Background

Gastric cancer (GC) is the fifth most common cancer worldwide, after lung, breast, colorectal, and prostate cancers with approximately one million new cases

every year.¹ While its incidence has declined around the world in recent years, the absolute number of cases has remained stable or even risen, owing to the higher world population and life expectancy.¹ Its mortality is decreasing, particularly in endemic areas,

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thanks to the implementation of early detection strategies and *Helicobacter pylori* infection treatment.¹ The greater number of GC survivors has raised interest in understanding the impact that treatment, surgery, and chemotherapy and/or radiotherapy have on their functioning and quality of life.

Beginning cancer treatment is often characterized by heightened psychological distress owing to factors such as anxiety, worry, and, in some cases, the perception that their diagnosis was delayed. This distress may be associated with and exacerbated by the decline in functioning and quality of life.² Coping, that is, cognitive or behavioral activity aimed at overcoming stress, has been conceptualized as either adaptive or maladaptive and affects the person's perception in a stressful situation. In the transactional model of stress,³ the use of one kind of strategy or another influences the outcome (e.g., in better daily functioning or in terms of quality of life). Lashbrook et al.⁴ suggest that subjects with breast, prostate, and colorectal cancers use different coping strategies that vary from seeking social support, accepting responsibility, to cognitive avoidance or denial. Specifically, CRC patients emphasize the importance of looking for information to manage functional difficulties and to be able to resume their social activities through emotion-based coping,⁵ whereas in individuals with GC, hopelessness and resignation were associated with higher levels of anxiety, depression, and psychological distress.^{6,7}

Several studies, mostly conducted in Asian populations, have compared quality of life in GC patients on the basis of the type of cancer surgery.^{8,9} Most of these authors find a decline in physical and emotional functioning before the intervention that recovers beginning in the third postoperative month, while cognitive and social functioning scores failed to display statistical differences during the first year of follow-up.¹⁰ There is a paucity of literature on the prevalence of functional difficulties in individuals with CRC initiating adjuvant chemotherapy, although the data suggest that 30%–50% are affected by these problems during and after treatment.^{11,12}

This study examines and compares functioning in GC and CRC sufferers before initiating adjuvant chemotherapy and analyzes whether there are differences between groups in sociodemographic and/or clinical conditions, psychological distress, and coping strategies and, finally, if improved functioning can be explained by patients' psychological status and coping strategies.

Methods

Study Design and Participants

NEOcoping is a prospective, transversal, multi-center study promoted by the Continuous Care Group

of the Spanish Society of Medical Oncology. Adults (>18 years old) with nonmetastatic, resected GC or CRC, eligible for adjuvant chemotherapy, were consecutively recruited. Patients who had received preoperative chemotherapy and/or radiotherapy were excluded. Medical oncologists proficient in gastrointestinal cancer management from 14 Spanish hospitals carried out recruitment. Participants completed study questionnaires before beginning chemotherapy and after providing informed consent. The study was approved by the Ethics Committees of each center and by the Spanish Agency of Medicines and Medical Devices.

Variables and Measures

Patient and tumor characteristics were obtained by means of interview and clinical history. The following variables were collected: gender, age, marital status, education level, occupational status, tumor stage, time between diagnosis and surgery, time between surgery and chemotherapy, if the advisability of adjuvant treatment was decided by a multidisciplinary committee, type of adjuvant treatment, chemotherapy and/or radiotherapy, and number and type of cytotoxic drugs administered.

The questionnaires completed by the patients were the European Organization for Research and Treatment of Cancer Quality of Life questionnaire, the Mini-Mental Adjustment to Cancer, and the Brief Symptom Inventory.

The European Organization for Research and Treatment of Cancer Quality of Life questionnaire¹³ contains six functioning scales (physical, role, emotional, cognitive, social, global health status), rated on a four-point Likert scale ranging from 0 (not at all) to 3 (very much); the higher the score, the higher the level of functioning. A linear transformation was used to standardize the raw score; scores range from 0 to 100 (in this sample, $\alpha = 0.85$).

The Mini-Mental Adjustment to Cancer¹⁴ contains 29 items grouped into five coping strategy subscales: fighting spirit, hopelessness, anxious preoccupation, fatalism, and cognitive avoidance (Cronbach's α was 0.80–0.79 in this sample).

The Brief Symptom Inventory¹⁵ includes 18 items divided into three dimensions of psychological distress (somatization, depression, and anxiety) rated on a five-point scale from 0 (not at all) to 4 (extremely) (in this sample, $\alpha = 0.86$).

Statistical Analyses

Descriptive statistics are reported for demographic and clinical information. Participants were divided into those with GC and those with CRC. Independent t-tests were performed to compare differences for continuous variables. The chi-square test was used to

test differences in proportions. Pearson correlation coefficients were calculated for the relationship between functional, adjustment to cancer, and psychological distress scores in both groups. Multiple linear regressions were used to determine whether higher functional scores were related to adjustment to cancer and psychological distress in participants. Significance was set at $P < 0.05$. Statistical analyses were performed with Statistical Package for Social Sciences (SPSS) software (IBM SPSS Statistics for Windows, Armonk, NY: IBM Corp.).

Results

Descriptive and Clinical Data

Between December 2015 and July 2017, 377 patients were consecutively recruited; 42 were not eligible (nine failed to meet inclusion criteria; 12 met exclusion criteria, and 21 had incomplete data at the time of this analysis).

Table 1 illustrates that 266 subjects had CRC and 69 had GC. Demographic variables were the same in both groups. Of the clinical variables, differences were detected between individuals with GC and CRC as regards time between surgery and adjuvant chemotherapy and adjuvant treatment modality. On average, patients with GC started adjuvant treatment 11 days later than those with CRC ($t[334] = -4.417$, $P < 0.001$, $d = 0.51$) and received chemotherapy together with radiotherapy in 46% of the cases, whereas only 4% of those with CRC (all of whom had cancer of the rectum) received adjuvant radiotherapy ($\chi^2 = 87.378$; $P < 0.001$; odds

ratio = 20.049; 95% CI, 9.31–43.16). Two or more cytotoxic drugs were administered in 35% of GC cases versus 65% of CRC patients who received polychemotherapy consisting of the association of fluoropyrimidine and oxaliplatin ($\chi^2 = 16.500$; $P < 0.001$; odds ratio = 0.330; 95% CI, 0.19–0.57; see Table 1).

Comparative Data Between CRC and GC

Before initiating adjuvant treatment, functional status was worse among participants with GC (mean [M] = 72.4, SD = 20.9) than those with CRC (M = 81.4, SD = 15.8) ($t[330] = 3.793$, $P < 0.006$, $d = 0.51$) (see Table 2). If we set a cutoff of ≤ 50 for the functioning score, the percentage of individuals with a pathological level of functioning was significantly higher in patients with GC (20%) compared to CRC (5%) ($\chi^2 = 19.404$; $P < 0.001$; odds ratio = 5.990; 95% CI, 2.48–14.41). Insofar as coping strategies are concerned, subjects with GC exhibited more hopelessness (M = 29.9 vs. M = 19.5, $t[332] = 3.957$, $P < 0.001$, $d = 0.52$), anxious preoccupation (M = 51.2 vs. M = 41.7, $t[332] = 2.714$, $P < 0.001$, $d = 0.38$), and cognitive avoidance (M = 62.2 vs. M = 51.6, $t[332] = 2.969$, $P < 0.001$, $d = 0.40$) than those with CRC. Similarly, GC patients presented greater psychological distress (M = 65.6 vs. M = 62.3, $t[332] = 3.570$, $P < 0.001$, $d = 0.52$) (see Table 2).

Univariate Analysis: Functional Scale

In the GC group, functional scale results were negatively associated with psychological distress ($r = -0.603$, $P < 0.001$), anxious preoccupation ($r = -0.411$, $P = 0.001$), and hopelessness ($r = -0.294$, $P = 0.018$) and positively associated

Table 1
Patient Demographic and Clinical Characteristics

	Colorectal Patients (N = 266), n (%)	Gastrointestinal Patients (N = 69), n (%)	P-value
Gender (male)	155 (58)	34 (53)	0.455
Age, M (SD)	63.1 (11.1)	63.9 (11.3)	0.599
Marital status (married)	194 (80)	50 (78)	0.763
Education (high school graduate)	97 (40)	23 (36)	0.562
Work (retired)	163 (68)	46 (71)	0.516
Tumor stage			
I–II	89 (33)	26 (38)	0.282
III	177 (67)	43 (62)	
Time between onset of symptoms and diagnosis in days, M (SD)	192 (75)	180 (94)	0.608
Time between diagnosis and surgery	183 (164)	211 (194)	0.274
Time between surgery and chemotherapy	43 (19)	54 (33)	0.001
Adjuvant treatment decided by multidisciplinary committee	132 (49)	28 (42)	0.180
Adjuvant treatment			
Chemotherapy	255 (96)	37 (54)	0.001
Chemotherapy and radiotherapy	11 (4)	32 (46)	
Cytotoxic drugs			
One drug	94 (35)	43 (65)	0.001
Two or more drugs	172 (65)	26 (35)	

M = mean.

^aPercentages add up to less than 100 due to missing data.

Table 2
Psychosocial Characteristics as per Mini–Mental Adjustment to Cancer and Brief Symptom Inventory–18 Questionnaires

	Gastrointestinal Patients (N = 69)	Colorectal Patients (n = 266)	t	Pvalue	d
Functional status	72.7 (17.9)	81.4 (15.8)	−3.793	0.001	0.51
Fighting spirit	78.3 (18.5)	78.6 (17.6)	−0.118	0.930	—
Hopelessness	29.9 (21.1)	19.5 (18.6)	3.957	0.001	0.52
Anxious preoccupation	51.2 (24.1)	41.7 (25.9)	2.714	0.007	0.38
Fatalism	72.3 (18.2)	67.0 (19.9)	1.976	0.050	—
Cognitive avoidance	62.2 (25.7)	51.6 (26.1)	2.969	0.003	0.40
Psychological distress	65.6 (6.5)	62.3 (6.5)	3.570	0.001	0.52

with fighting spirit ($r = 0.472$, $P < 0.001$). In CRC patients, functional status was negatively associated with psychological distress ($r = -0.739$, $P < 0.001$), anxious preoccupation ($r = -0.505$, $P = 0.001$), and hopelessness ($r = -0.292$, $P = 0.018$) and positively associated with fighting spirit ($r = 0.223$, $P < 0.001$) and age ($r = 0.225$, $P < 0.001$). In both the GC and CRC groups, we found that as the level of psychological distress, anxious preoccupation, and hopelessness decreased and the degree of fighting spirit increased, functional status improved (see Fig. 1).

Multiple Regressions

In GC, multivariate analysis predicting functional scale produced a significant regression equation ($F = 22.32$, $P < 0.001$) and explained 40% of the variance in functional scores. The significant predictors were psychological distress ($\beta = -1.34$, $P < 0.001$) and fighting spirit ($\beta = 0.25$, $P = 0.016$).

In CRC patients, multivariate analyses predicting functional status produced a significant regression equation ($F = 165.64$, $P < 0.001$) and accounted for 58% of the variance in functional scores. The significant predictors of functional decline were

psychological distress ($\beta = -1.75$, $P < 0.001$) and hopelessness ($\beta = -0.86$, $P = 0.003$) (see Table 3).

Discussion

In patients with cancer, a good functional status is fundamental for both treatment and survival. This is particularly the case in people with GC, given that their functioning can be diminished as a result of complications associated with the surgery itself.¹⁶ Therefore, functional status and quality of life in oncological patients has become an increasingly compelling focus of research.^{17,18} Our study revealed a high percentage of pathological postoperative functional levels in people with GC compared to CRC (20% vs. 5%). This has adverse repercussions for their quality of life,¹¹ negatively impacting them psychologically, socially, and economically.¹⁹

Integral therapy that incorporates surgery, chemotherapy, and radiotherapy has become the leading treatment modality for GC.²⁰ GC is often diagnosed in locally advanced or metastatic stages, and symptoms that hinder proper nutrition and cause physical decline are common.²¹ In our study, the combination

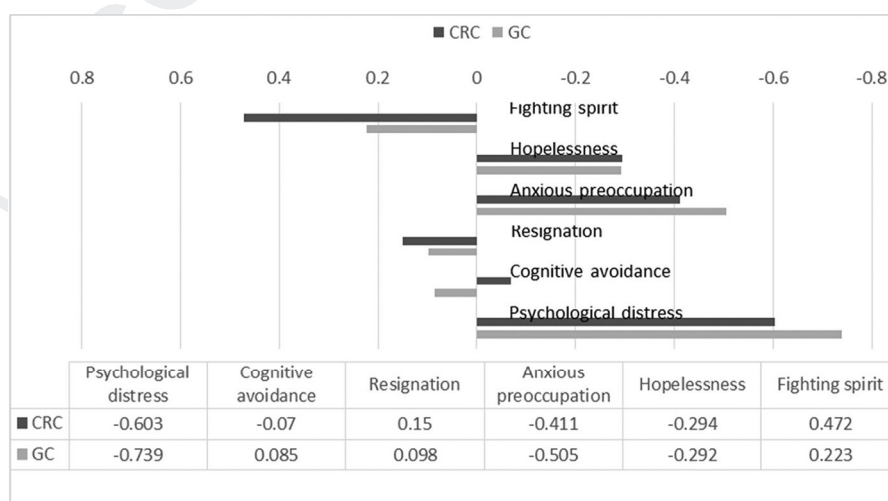


Fig. 1. Correlations between functional status (European Organization for Research and Treatment of Cancer) and adjustment to cancer (Mini–Mental Adjustment to Cancer) and psychological distress (Brief Symptom Inventory–18) in patients with gastric cancer (GC) and colorectal cancer (CRC).

Table 3
Linear Regression Analysis to Predict Correlation Between Functional Scale and Psychological Variables (Adjustment to Cancer and Psychological Distress); Adjusted r^2 , Unstandardized Coefficients, Standardized Coefficients, Variance Analysis, and Significance

Group	Dependent Variable	Independent Variable	β	Standard Error	Pvalue	F-value	r^2
GC	Functional scale	Psychological distress	-1.34	0.29	0.001	22.32 (<0.001)	40.4
		Fighting spirit	0.25	0.10	0.016		
		Constant	141.15	23.81	0.001		
CRC	Functional scale	Psychological distress	-1.75	0.10	0.001	165.07 (<0.001)	57.8
		Hopelessness	-0.86	0.03	0.020		
		Constant	192.59	6.39	0.001		

CRC = colorectal cancer; GC = gastric cancer.

of surgery-chemotherapy-radiotherapy was the treatment of choice for resected, nonmetastatic GC, followed by surgery and adjuvant chemotherapy. In the case of CRC, consistent with clinical guidelines, all patients with colon cancer underwent surgery and adjuvant chemotherapy; adjuvant radiotherapy was only administered to subjects with rectal cancer, who had not received it before surgery. Differences were also found with respect to the timing and choice of chemotherapy between individuals with GC and those with CRC. Participants with GC received chemotherapy at an average of 11 days later than CRC patients after surgery, given that postoperative recovery tends to take longer in GC. Similarly, some authors have found that people with GC exhibited significant functional and social decline due to cancer and/or the consequences of treatment.²² The GC patients who underwent open gastric surgery had more complications and worse functioning scale scores than those undergoing laparoscopy. Furthermore, these consequences lasted up to four years after treatment.²³ We also detected differences regarding chemotherapy; GC was treated with a single drug, fluoropyrimidine, associated with radiotherapy in most cases compared to the use of oxaliplatin and fluoropyrimidine in CRC. Patients with gastric or rectal cancer who underwent preoperative treatment were excluded from this study to prevent interference of treatment on coping and psychological distress measures.

Psychological factors, such as psychological status and coping strategies, play an important role during treatment and subsequent rehabilitation and impact cancer survivors' quality of life.^{24,25} A significant proportion of GC survivors are at risk for physical symptoms, psychological distress, and financial burden related to their illness.²⁶ In our study, participants with GC displayed greater psychological distress, more hopelessness, anxious preoccupation, and cognitive avoidance than those with CRC. The diagnosis of cancer is a stressful life event that often generates psychological distress,²⁷ which varies widely from one study to another based on the type of cancer; for instance, it is present in some 44% of people

with GC and in 63% of postoperative patients or those initiating chemotherapy.^{28,29} This is slightly lower in individuals with CRC, as psychological distress is present in 54% at diagnosis,³⁰ 40% at two years, and 42% at five years.³¹

Coping strategies are crucial to getting through this stressful situation. People with positive coping strategies tend to adjust better psychologically, whereas depression has been correlated with less adaptive coping.³² Similarly, studies show that psychological distress in GC is associated with a poor overall survival rate³³ and greater risk of suicidal ideation, especially when accompanied by hopelessness as a coping strategy.⁶ In CRC, individuals with greater chronic psychological distress experienced greater loss of physical and social functioning and worse quality of life, compared to those who did not present distress.³⁴ Previous research has shown that cancer type, personality traits, and both internal and external resources are associated with improved HRQL in CRC survivors.³⁵

Both psychological status and coping influence patients' functional status or quality of life. The results of our study indicate that functional status is partly explained by psychological distress and coping strategies in both groups, albeit with nuances. In GC, less psychological distress and greater fighting spirit correlated with better functional status, whereas in CRC, less psychological distress and less hopelessness were associated with better functional status. This leads us to assume that psychological treatment should be different depending on the type of cancer, timing, and the individual's needs. For GC patients, intervention can be aimed at support during the process of adaptation in the different phases of the disease, preparing them for surgery, bolstering a sense of personal control over their situation, and fostering active participation and fighting spirit throughout the process. In CRC, treatment might target identifying patients who are either depressed, pessimistic, or feel hopeless about their disease, helping them to express and manage their fears and reduce maladaptive emotional reactions.

Another aspect that emerges from our results is when intervention would be necessary. It seems that psychological evaluation and treatment to improve functional status and quality of life should be a part of the integral approach to patients with GC starting at the beginning of treatment, in light of the high prevalence of impairment they suffer, whereas in individuals with CRC, it can be reserved for those cases that exhibit symptoms of psychological distress, such as anxiety and depression.

Among the strengths of this study are the comparison of patients with GC and those with CRC on one hand, and the evaluation of level of functioning, coping strategies, and psychological distress after surgery and before initiating adjuvant treatment, on the other hand. These aspects have been largely ignored and barely compared up until the present time.

Limitations include the cross-sectional design that prevents us from inferring directionality and the use of self-report measures to assess functioning. In future research, it would be advisable to analyze if the association observed is maintained over time, if it is prolonged after treatment, and its social repercussion.

Conclusion

In conclusion, this study reveals that functional postoperative problems are relatively prevalent in participants with GC in comparison to CRC and that this rate is influenced by the patient's psychological status and their coping style. Multivariate analysis showed that better health-related coping strategies and positive psychological adjustment are associated with improved functional status in GC and CRC patients. These preliminary findings point to just how important it is to assess aspects such as functioning, emotional status, and coping strategies in patients who are preparing to initiate chemotherapy and for health care professionals to provide the medical and psychological therapy that best suits each person. In particular, psychological counseling seems to be necessary in individuals with GC from the very beginning of treatment that could include interventions to foster adaptive coping strategies, such as physical exercise,³⁶ mindfulness,³⁷ or integrative oncology intervention.³⁸

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Ethical approval: The study has been performed in accordance with the ethical standards of the

Declaration of Helsinki and its subsequent amendments. This study is an observational trial without intervention.

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