Supportive care needs, quality of life and psychological morbidity of advanced colorectal cancer patients

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A B S T R A C T

Purpose: This study describes the supportive care needs in a consecutive sample of Italian colorectal cancer (CRC) patients, evaluating their quality of life and psychological morbidity.
Methods: This study used a cross-sectional design and self-assessment procedures and was conducted in an ambulatory setting. Demographics, basic clinical features, supportive care needs, quality of life and psychological morbidity of 203 CRC patients were gathered.
Results: Approximately the 80% of the patients experienced one or more moderate- or high-level unmet need, notably regarding psychological concerns (approximately the 20% presented also signs of anxiety and depression). Functional roles and cognitive functioning were low. Symptoms of fatigue, nausea and vomiting and financial issues were frequent. The severity of anxiety, depression and quality of life impairment was significantly different across different levels of needs according to a unique linear relation. Patients with moderate or high needs had more severe anxiety and depression and a lower quality of life (i.e., lower level of functioning and more severe symptoms) than those with no needs or low needs.
Conclusions: The findings of this study suggest that meeting supportive care needs seems to improve psychological morbidity, functions and symptoms of CRC patients.

1. Introduction

Supportive care is defined as a global person-centred approach to care that includes a wide range of attention and care for physical, psychosocial, spiritual needs, as well as needs linked to a perceived lack in the health care system or in delivery of information on the disease and treatment or even needs about sexual functions (Hui, 2014).

Colorectal cancer (CRC) is a common disease and a leading cause of cancer death worldwide. The continuous advances in diagnosing and treating CRC are linked to an increased need of this patient population for clinical care and an even greater need for supportive care throughout the illness trajectory (Kotronoulas et al., 2017; Ekholm et al., 2013).

CRC patients must address peculiar physical challenges and restrictions due to the disease (e.g., fatigue, nausea, lack of appetite, gastrointestinal obstruction) and treatment (e.g., stoma care, diarrhoea, vomiting, bowel dysfunction, neuropathy), which are often sources of embarrassment and distress (Wood et al., 2015). Previous studies linked the distress of CRC patients to symptoms in several domains, quality of life impairment and unmet needs regarding supportive care at the end

of treatment (Russell et al., 2015), following discharge from the hospital (Harrison et al., 2011), during follow-up (Wieldraaijer et al, 2017) or during long-term survival (Harrison et al., 2011). To date, only one recent systematic review has been performed on the supportive care needs of CRC patients (Kotronoulas et al., 2017). In this review, the authors identified 136 supportive care needs reported by this cancer population and found that the need for emotional support and reassurance when trying to deal with fears of the cancer returning or spreading is the most frequent desire (up to 6 out of 10 patients), followed by the need for more information about diet, nutrition and long-term self-management of symptoms and complications at home. Female gender and younger age were the most consistent correlates of unaddressed concerns and of greater needs for support (Kotronoulas et al., 2017). In addition, heightened levels of anxiety and depressive symptoms are widely documented in this cancer population (Tsunoda et al., 2005; Simon et al., 2009; Alacacioglu et al., 2010; Husson et al., 2013; Braamse et al., 2016).

Regarding the need for supportive care of advanced CRC patients, very few data are available with regard to this subpopulation. One study conducted in Japan on advanced CRC patients reported a mean

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prevalence of unmet needs of 45% with a clear prevalence of psychological needs (Sakamoto et al., 2017).

Since the advances of CRC treatments, the illness trajectory and life expectancy have lengthened, and advanced CRC patients can live for a relatively long period (deStefanis et al., 2019). The substantial lack of data about supportive care needs of advanced CRC patients undermines their tailored management and is at the base of the study purpose. This study aims to start to bridge the gap describing the supportive care needs of advanced CRC evaluating also their quality of life and the psychological morbidity.

2. Methods

2.1. Study design, participants and setting

This study used a cross-sectional design and self-assessment procedures for data collection. Possible participants were identified from outpatient treatment lists between January 2017 and January 2018 by an expert data manager with the intent to approach a consecutive sample.

Eligibility criteria for this study required that each patient had a diagnosis of stage III-IV colon or rectal cancer, was in active treatment with curative intent in an outpatient setting, was over 18 years of age and was able to understand and complete the questionnaires. Patients were ineligible if they were cognitively impaired, deemed too unwell by the treating team or physically or mentally unable to provide written informed consent and/or complete the written questionnaires.

This study was conducted in an ambulatory setting in the SSD ColoRectal Cancer Unit, Oncology Department, "Città della Salute e della Scienza" hospital in Turin. Patients were approached in person in the waiting room while they were waiting for treatment. Those who were eligible and agreed to participate were accompanied to a reserved room where they were fully informed about the methods and purposes of the study, signed the informed consent form and completed the questionnaires. The study was conducted in accordance with the principles of the Declaration of Helsinki and was approved by the appropriate ethics committee ("Comitato Etico Interaziendale AOU Città della Salute e della Scienza di Torino" N. CS/947, 27 May 2016).

2.2. Measures and instruments

Age, gender, marital status, educational level and other socio-demographic information were self-reported. The date of CRC diagnosis, cancer site and stage, type of treatment and other basic clinical information of the patient were collected from clinical records.

Supportive care needs were assessed using the Italian version of the Supportive Care Needs Survey – Short Form (SCNS-SF34) (McElduff et al., 2004; Zeneli et al., 2016). The SCNS-SF34 has a total of 34 items belonging to 5 different domains: Psychological (10 items), Health system & information (11 items), Physical & daily living (5 items), Patient care & support (5 items), and Sexuality (3 items). Patients rated their need for help with each item over the past month based on the following 5-point scale built as follows: 1 = not applicable (no need), 2 = satisfied (need met), 3 = low unmet need, 4 = moderate unmet need, and 5 = high unmet need; low refers to a need that causes little concern and little desire for additional help; a moderate need causes some concern and some desire for additional help; and a high need causes much concern and a strong desire for additional help.

Quality of life and specific symptoms and concerns related to CRC were assessed using the European Organisation for Research and Treatment of Cancer (EORTC) core questionnaire (QLQ-C30) (Aaronson et al., 1993) and its CRC-specific module (QLQ-CR29) (Whistance et al., 2009). The QLQ-C30 provides an index of the general health status of respondents and evaluates five domains of functioning (physical, role, emotional, cognitive and social) and a list of symptoms closely linked to having a cancer. The QLQ-CR29 addresses four domains of functioning

(body image, anxiety, weight and sexual interest) and a list of symptoms strictly related to CRC. Higher scores on functional scales indicate higher levels of functioning, whereas higher scores on symptom scales indicate greater intensity of symptoms.

Symptoms of anxiety and depression were assessed using the self-rated Hospital Anxiety and Depression Scale (HADS). The HADS consists of 14 items and yields scores based on two independent subscales measuring symptoms of anxiety (HADS-A) and depression (HADS-D). For each subscale, scores of 8–10 are considered borderline while scores above 11 suggest clinical anxiety or depression (Zigmond and Snaith, 1983; Annunziata et al., 2011).

2.3. Statistical analyses

Data were analysed using SPSS software v. 20.0 (IBM, Armonk, New York). Since normative data are not yet available, scores of the SCNS-SF34 were calculated and transformed to a range of 0–100. Mean ratings of scale domains were also calculated. Scores of the EORTC-QLQC30 were summed to provide new sums called Function (relative to items concerning functions), Symptom (relative to items concerning symptoms) and Total (a mean value of all the items). The summed scores were calculated and transformed to the 0–100 range following the procedure of Hinz and colleagues (Hinz et al., 2012). Independent samples t-tests and one-way ANOVAs, with Bonferroni's correction when appropriate, were used to study between-group differences and to compare the EORTC-QLQC30 scores with the reference values (Scott et al., 2008) and the EORTC-QLQCR29 scores with the data of the large sample international validation study (Whistance et al., 2009). Cohen's d was used to calculate effect sizes. The proportion of patients who designated each item of the SCSN-SF34 as a moderate to high level was calculated, and the ten most prevalent items were isolated. The proportion of patients who reported "no needs" (i.e., selected response option 1 or 2 to all the items of the SCSN-SF34), "low needs" (i.e., selected response option 3 to at least one item but did not select response option 4 or 5 to any options), and "moderate to high needs" (i.e., selected response option 4 or 5 to at least one item) was calculated. SCNS-SF34 scores for each domain were recoded to discrete variables comprising three categories (no need, low need, moderate/high need); relative frequencies for each category were calculated. Then, to study characteristics of the categories with different levels of need, they were compared on levels of anxiety, depression and quality of life through multivariate analysis of variance (MANOVA) with alpha set at 0.01.

3. Results

3.1. Participants

A total of 250 patients were approached, and 235 expressed their consent to participate in the study and were recruited. Of those, 20 patients were excluded from the study because of their cancer stage (patients in stages I-II were not enrolled), and 12 were not able to adequately complete the questionnaires. The final sample included 203 patients. Detailed demographic and clinical characteristics of the participants are reported in Table 1.

3.2. Supportive care needs

Detailed standardized scores of the SCNS-SF34 by scale domains are shown in Table 2. The mean ratings for the scale domains were as follows: Psychological = 2.5 ± 0.9, Physical & daily living = 2.4 ± 1,1, Sexuality = 1.8 ± 1.1, Health system & information = 2.4 ± 0.9, and Patient care & support = 2.0 ± 0.8. More than three-quarters of the patients surveyed (76.8%) experienced at least one or more moderate- or high-level unmet need. Moderate- or high-level unmet needs were found in the 31.8% of the patients for the Psychological domain, in the 26.0% for the Physical & daily living domain, in the

Table 1

Patients' characteristics (N = 203).

	n(%)
Age	
≤59 years	52(25.6)
60–69 years	78(38.4)
≥70 years	73(36.0)
Gender	
Male	115(56.7)
Females	88(43.3)
Marital status	
Married/defacto	150(73.9)
Single/widowed	53(26.1)
Age leaving school	
≤11 years	113(55.7)
12–14 years	62(30.5)
15–19 years	25(12.3)
≥20 years	3(1.5)
Current employment	
Paid work	56(27.6)
Not working	23(11.3)
Retired	124(61.1)
Time since diagnosis	
≤12 months	102(50.2)
13–49 months	62(30.5)
≥50 months	39(19.2)
Cancer site	
Colon	145(71.4)
Rectum	58(28.6)
Tumor	
Primary	140(69.0)
Relapsed	63(31.0)
Cancer stage	
III	70(34.5)
IV	133(65.5)
Treatment	
Chemotherapy	22(10.8)
Surgery + chemotherapy	140(69.0)
Surgery + chemotherapy + radiation	41(20.2)
Chemotherapy	
Adjuvant	75(36.9)
For metastatic disease	128(63.1)
Colostomy	
Underwent	140(69.0)
Not underwent	63(31.0)

Table 2

Supportive care needs and quality of life scores (N = 203).

	m ± sd	p(d)	+/−
Supportive care needs (SCNS-SF34)			
Psychological	38.9 ± 23.4		
Health system & information	33.9 ± 22.4		
Physical & daily living	37.7 ± 27.1		
Patient care & support	24.4 ± 17.9		
Sexuality	18.9 ± 25.2		
Quality of life (EORTC-QLQ-C30)			
Global Health status	60.5 ± 20.0		
Function	71.5 ± 17.3		
Physical functioning	74.5 ± 21.1		
Role functioning	64.3 ± 26.3	< 0.001(0.6)	−
Emotional functioning	69.5 ± 23.2		
Cognitive functioning	77.8 ± 25.0	< 0.001(0.6)	−
Social functioning	71.7 ± 27.5		
Symptom	25.3 ± 14.9		
Fatigue	44.4 ± 24.8	< 0.001(0.5)	+
Nausea/vomiting	16.8 ± 22.9	< 0.001(0.6)	+
Pain	26.6 ± 29.4		
Dyspnoea	17.7 ± 24.9		
Sleep loss	32.7 ± 33.3		
Appetite loss	19.3 ± 28.1		
Constipation	19.1 ± 31.3		
Diarrhoea	26.1 ± 32.1		
Financial difficulties	18.9 ± 28.5	0.001(0.3)	+
Total	71.4 ± 14.2		
Quality of life (EORTC-QLQ-CR29)			
All patients			
Body image	77.7 ± 28.1	< 0.001(2.1)	+
Anxiety	54.7 ± 29.5	< 0.001(0.5)	+
Weight	81.4 ± 26.3	< 0.001(2.2)	+
Urinary frequency	27.5 ± 27.7	< 0.001(0.8)	+
Blood and mucus in stool	3.1 ± 9.2	0.002(0.3)	−
Urinary incontinence	5.4 ± 15.5	0.003(0.3)	−
Dysuria	4.6 ± 14.5		
Abdominal pain	22.8 ± 27.1	0.003(0.3)	+
Buttock pain	14.1 ± 25.7		
Bloating	23.3 ± 31.0	0.014(0.2)	+
Dry mouth	29.9 ± 38.0		
Hair loss	14.7 ± 28.0		
Taste	31.1 ± 35.0	< 0.001(0.6)	+
Patients without stoma (n = 154)			
Stool frequency	16.1 ± 25.3		
Flatulence	21.3 ± 30.8		
Faecal incontinence	4.4 ± 13.7		
Sore skin around anus	13.8 ± 22.5		
Embarrassment by defaecation	9.4 ± 23.1		
Patients with stoma (n = 49)			
Stool frequency/bags change	13.2 ± 19.4		
Flatulence	23.8 ± 29.7		
Faecal incontinence/leakage	12.2 ± 22.2		
Sore skin around stoma	17.1 ± 25.6		
Embarassment by stoma	32.0 ± 34.0		
Stoma care problems	25.5 ± 36.3		
Males (n = 115)			
Sexual interest	68.7 ± 28.4	0.008(0.9)	−
Impotence	28.5 ± 36.9		
Females (n = 88)			
Sexual interest	89.8 ± 16.3		
Dyspareunia	8.2 ± 22.1		

Notes: Scores were standardized sums of ratings; High score for functional scales indicates better functioning whereas high symptom score indicates more problems; p(d), T-tests p-value and Cohen's d relative to the comparison with the reference values (Scott et al., 2008; Whistance et al., 2009); +/−, observed score higher (+) or lower (−) than the reference value (Scott et al., 2008; Whistance et al., 2009).

11.8% for the Sexuality domain, in the 17.1% for the Health system & information domain and in the 8% for the Patient care & support domain. The top ten most prevalent moderate- or high-level unmet needs are listed in Table 3. The top three unmet need belonged to the psychological domain, followed by the physical & daily living and health system & information domains.

Females showed higher scores than males in the psychological ($t = 3.277$, $p = 0.001$, $d = 0.5$) and physical & daily living ($t = 2.585$, $p = 0.010$, $d = 0.4$) domains. Patients with stage IV cancer had higher scores than patients in stage III cancer in the patient care & support domain ($t = 2.582$, $p = 0.011$, $d = 0.4$). No differences emerged by age group, age of leaving school, time since diagnosis, type of tumor (colon vs rectal) or treatment or between patients with or without colostomy.

3.3. Quality of life

Detailed standardized scores of the EORTC QLQ-C30 and QLQ-CR29 by scale domains are shown in Table 2. P-values, effect sizes and interpretation of the comparisons between the observed scores and the reference values are also reported (see Table 2). Females showed lower scores than males on the QLQ-C30 total score ($t = -2.672$, $p = 0.008$, $d = 0.4$), and the difference was mainly in the Function score of the scale ($t = -3.187$, $p = 0.002$, $d = 0.5$). Females were also more worried about future health ($t = 2.652$, $p = 0.009$, $d = 0.4$). Patients with stage IV cancer had lower scores in physical functioning ($t = -2.402$,

$p = 0.017$, $d = 0.4$) and were more concerned about dry mouth ($t = 2.594$, $p = 0.010$, $d = 0.4$) and hair loss ($t = 3.024$, $p = 0.003$, $d = 0.5$) than patients with stage III cancer. Patients over seventy years old had more problems with urinary incontinence than younger patients ($p = 0.002$, $d = 0.5$). Patients with primary tumors were worried about future health ($t = 2.846$, $p = 0.005$, $d = 0.4$). Patients with

Table 3
Ten most prevalent "Moderate" or "High" level unmet supportive care needs.

Rank	SCNS-SF34 item	n(%)†	Domain
1	Concerns about the worries of those close to you	94(46.3)	Psychological
2	Fears about the cancer spreading	77(37.9)	Psychological
3	Uncertainty about the future	74(36.5)	Psychological
4	Lack of energy/tiredness	72(35.5)	Physical & daily living
5	Being informed about things you can do to help yourself to get well	66(32.5)	Health system & information
6	Having one member of hospital staff with whom you can talk to about all aspects of your condition, treatment and follow-up	59(29.1)	Health system & information
7	Not being able to do the things you used to do	54(26.6)	Physical & daily living
8	Being informed about cancer which is under control or diminishing (that is, remission)	50(24.6)	Health system & information
9	Pain	48(23.6)	Physical & daily living
10	Being informed about your test results as soon as possible	45(22.2)	Health system & information

Notes: † number and percentage of "Moderate" or "High" needs.

colostomy had more problems with faecal incontinence ($t = 2.961$, $p = 0.003$, $d = 0.4$) and felt more embarrassed ($t = 5.242$, $p < 0.001$, $d = 0.8$). Relative to patients who had undergone surgery and/or chemotherapy, those who had also undergone radiation reported more pain ($p = 0.011$, $d = 0.5$). No differences emerged by age of leaving school or time since diagnosis.

3.4. Anxiety and depression

The HADS mean scores were also under the cut-off values also for subthreshold symptoms of both anxiety and depression. Clinical anxiety was found in approximately 13% of the patients. Clinical depression affected approximately 11%. More than 20% showed signs of borderline anxiety and depression. Females were more anxious ($t = 3.527$, $p = 0.001$, $d = 0.5$) and depressed ($t = 2.858$, $p = 0.005$, $d = 0.4$) than males. No differences emerged by age group, age of leaving school, time since diagnosis, type or stage of tumor or treatment or between patients with or without colostomy.

3.5. Quality of life, anxiety and depression across different levels of need

The MANOVA results showed significant effects of anxiety, depression and quality of life on all the domains of supportive care needs. Patients with moderate or high needs had more severe anxiety and depression and lower quality of life (i.e., lower functional capacity and more severe symptoms) than those with no needs or low needs. Significance values of test statistics and descriptive statistics are reported in Table 4.

4. Discussion

Findings of this study suggest a gap in the provision of adequate supportive care for CRC patients, notably regarding needs in the psychological domain, where more than the 30% of the patients reported moderate- or high-level unmet need. Most of the patients (just under 80%) experienced at least one or more moderate- or high-level unmet need. Moreover, fears about cancer spreading and anguish about the future were frequent and reported by approximately 40% of the participants. Concern about the worries of loved ones was observed in just under 50% of participants. Patients' self-perceived burden was defined as "an empathic concern engendered from the impact on others of one's illness and care needs, resulting in guilt, distress, feelings of responsibility and diminished sense of self" (McPherson et al., 2007) (p 425). Cancer patients frequently worry about being a burden to their families (Simmons, 2007), and this condition has been shown to be associated with diminished will to live (Chochinov et al., 2005), desire for hastened death (Filiberti et al., 2001), and avoidance of a home setting for end-of-life care (Thomas et al., 2004).

The between-group differences in supportive care needs were not surprising. Moreover, the size of their effect was small. Gender was associated with reporting some unmet needs in the psychological domain, with females reporting higher levels of unmet need than males. This result is consistent with previous research (Sanson-Fisher et al., 2000; Boyes et al., 2012). Similarly, cancer stage was associated with reporting some unmet needs in the Patient care & support domain, with patients with stage IV cancer reporting higher levels of unmet needs than patients with stage III cancer. Additionally, this result is in keeping with other studies that found that patients with advanced disease have higher levels of need than patients in remission or with localized disease (Sanson-Fisher et al., 2000; Boyes et al., 2012).

Concerning cancer-related quality of life, the study population showed lower functional roles and cognitive functioning when compared to the reference values for advanced CRC patients (Scott et al., 2008). The study participants also experienced more disabling symptoms of fatigue, nausea and vomiting. They were also more concerned about financial difficulties. Except for the differences in financial concerns, the effect size of these differences was moderate. These findings are very similar to those observed in previous studies of CRC patients (Arndt et al., 2004; Russell et al., 2015). As observed in those studies, symptoms of fatigue, nausea and vomiting are particularly disabling during treatment and tend to decline after treatment. The patients we examined in this study were all in active treatment (i.e., chemotherapy) during the assessment; some of them had also undergone surgery and/or radiation in the past. This factor is probably the reason why patients encountered problems in concentrating and remembering (i.e., cognitive functioning) and in performing daily activities and hobbies (i.e., functional roles). Notably, the patients who also had radiation reported more pain. Financial problems were also a greater issue for the participants in this study. This result was also observed in other studies on CRC patients (Russell et al., 2015) and has also been found in other cancer populations (Timmons et al., 2013). Except for women, patients with primary tumor and patients over seventy years old, the study population reported fewer concerns about future health, weight and body image and also fewer problems with urinary incontinence and blood and mucus in the stool than the patients from the large multicenter validation study of the EORTC CRC-specific module (Whistance et al., 2009). The effect sizes of these comparisons ranged from medium to large. However, the patients we examined had more severe problems with urinary frequency, abdominal pain and related bloating, they reported frequent taste disturbances, and men showed lower sexual interest. Effect sizes for these comparisons were mainly small or medium. Particularly, patients with stage IV cancer were more physically compromised and concerned about physical symptoms (i.e., dry mouth and hair loss) than those with stage III cancer, whereas stoma patients were more embarrassed and concerned about faecal incontinence. Taken together, the findings from EORTC QLQ-C30 and its CRC-specific module seem to suggest that the CRC-related quality of life of the study population was more physically rather than psychologically compromised and must be investigated and interpreted by considering the presence of subsets of patients determined by both demographic and clinical factors.

Beyond the above distinction between anxiety, depression and

Table 4
Comparing groups with different levels of needs on anxiety, depression and quality of life: mean HADS and EORTC QLQ-C30 scores by levels of needs.

SCNF-SF34 domains by levels of needs	V	HADS Anxiety	HADS Depression	QLQ-C30 Function	QLQ-C30 Symptom
Psychological	0.410**	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p < 0.001$
No		3.4 ± 2.9	3.5 ± 2.8	81.6 ± 13.8	18.9 ± 12.1
Low		5.8 ± 3.7	6.0 ± 3.1	71.6 ± 14.1	25.1 ± 14.6
Moderate/High		9.0 ± 3.8	8.1 ± 3.7	59.9 ± 16.5	32.8 ± 14.8
Health system & information	0.169**	$p < 0.001$	$p = 0.001$	$p < 0.001$	$p = 0.007$
No		4.6 ± 3.8	4.9 ± 3.3	76.5 ± 15.4	22.5 ± 15.5
Low		6.6 ± 3.7	5.8 ± 3.0	69.6 ± 13.9	26.7 ± 12.6
Moderate/High		8.7 ± 4.3	7.8 ± 5.0	61.1 ± 22.8	31.8 ± 16.2
Physical & daily living	0.469**	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p < 0.001$
No		4.3 ± 3.7	4.1 ± 3.0	83.5 ± 11.7	15.8 ± 9.9
Low		6.5 ± 4.3	6.4 ± 3.6	68.6 ± 13.6	28.1 ± 12.6
Moderate/High		7.9 ± 3.8	7.7 ± 3.8	56.4 ± 15.5	36.1 ± 14.5
Patient care & support	0.160**	$p < 0.001$	$p = 0.016$	$p < 0.001$	$p = 0.133$
No		5.0 ± 3.8	5.3 ± 3.2	75.2 ± 14.5	24.0 ± 15.1
Low		7.9 ± 4.1	6.5 ± 4.5	64.5 ± 19.4	27.9 ± 13.3
Moderate/High		8.1 ± 4.8	7.7 ± 4.8	60.5 ± 22.5	30.0 ± 17.3
Sexuality	0.087*	$p = 0.071$	$p = 0.001$	$p = 0.014$	$p = 0.626$
No		5.6 ± 4.4	5.2 ± 3.5	73.2 ± 17.3	25.4 ± 15.2
Low		6.4 ± 3.4	6.0 ± 3.2	71.1 ± 13.3	23.9 ± 12.7
Moderate/High		7.6 ± 3.8	8.2 ± 4.8	62.1 ± 20.8	27.6 ± 17.0

Notes: V, Pillai-Bartlett trace; *p*-values refer to separate univariate ANOVAs on the outcome variables; *$p < 0.05$; **$p < 0.001$.

psychological supportive care needs, the frequency of anxious-depressive symptoms observed in this study seems to be relevant, since the 1-month prevalence of anxiety and mood disorders in the Italian general population is approximately 2.2% and 1.5% respectively (de Girolamo et al., 2006), versus the 11–13% experiencing clinical symptoms in the study population. The severity of anxious-depressive symptoms and quality of life impairment was significantly different across the different levels of supportive care needs according to a unique linear relation in all the need domains. That is, the severity of anxiety and depression together with the impairment of quality of life increases as the intensity of the need rises from low to moderate to high. This could mean that meeting supportive care needs has a significant positive impact on psychological morbidity, functions and symptoms. Anxiety, depression, and the different components of quality of life (i.e., functions and symptoms), even individually considered, had a significant effect on the domains of supportive care needs. However, the analysis of the sum of squares and cross products (SSCP) matrix of the MANOVA provided an interesting insight into the pattern of the data since it suggests that there might be a relationship between anxiety, depression and quality of life that it could be more important than these individual variables alone. Future studies could benefit from deepening this understanding through further analyses to shed further light on the relationships between these variables.

This study includes important limitations. First, the analyses were based on a single time-point which prevents the observation of the pattern of supportive care needs, quality of life and psychological morbidity over time throughout the CRC trajectory. For this reason, the findings of this study do not allow us to establish causal links between the variables. Second, this study was conducted at a single site and examined only patients with advanced disease (i.e., stage III-IV) in active treatment. This limits the generalizability of the results, not only to the cancer population in general but also to the whole CRC population. Third, in examining the effect of quality of life, anxiety and depression on supportive care needs, this study did not consider other subjective variables as possible covariates, such as personality characteristics, strategies for coping and adjustment or other factors linked to the history of the disease.

5. Conclusion

In summary, the study population reported specific unmet supportive care needs, mainly related to psychological concerns. Psychological morbidity was present in a small subset of patients. Functional roles and cognitive functioning were significantly impaired, and disabling CRC- and treatment-related symptoms were reported. Meeting supportive care needs seems to improve psychological morbidity, functions and symptoms. These findings could have implications for clinical care. Patients and clinicians should know that psychological issues and concerns, specific symptoms and functional impairments might be expected throughout the CRC trajectory. Referring to supportive care appears to be a feasible way to quickly plan adequate interventions to relieve suffering or to prevent suffering as much as possible. Future research should test the effectiveness of supportive care-based interventions in different cancer settings.

Declaration of competing interest

All authors declare that they have no conflicts of interest.

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