

Psychological assessment and quality of life among patients with nonmetastatic colorectal cancer at Assiut University Hospital and South Egypt Cancer Institute

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Introduction

Depression, anxiety, stress, and poor quality of life (QoL) are often consequences of living with cancer. Cancer patients face the double challenge of learning to manage the physical as well as psychological effects of cancer. This study aimed to assess psychological symptoms and QoL among patients with colorectal cancer (CRC).

The study included a convenience sample of 151 patients who attended the outpatient clinic of the Oncology Department at Assiut University Hospital and South Egypt Cancer Institute (Assiut, Egypt). Patients were evaluated through demographic data sheet, socioeconomic status scale, QoL scale, and symptoms check list-90-revised.

Results

Females represented 64.2% of the patients. Most of the patients (76.16%) were living in rural areas. Somatization was found in 32.45%, hostility in 27.8%, anxiety in 9.27%, and depression in 8.6%. Overall, 65.56% of the patients had a moderate level of QoL. A high percentage of those who had moderate QoL had somatization, depression, anxiety, hostility, and phobia.

Conclusion and recommendations

These findings of high prevalence of different psychiatric symptoms and moderate level of QoL among CRC patients give the impression that, some of the patients with CRC might get benefit from psychiatric liaison to help them to deal with these challenges.

Keywords:

colorectal cancer, consultation liaison, quality of life, symptoms check list-90-revised

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Introduction

Colorectal cancer (CRC) includes cancerous growths in the colon, rectum, and appendix. Most CRCs arise from adenomatous polyps. These neoplasms are usually benign, but some develop into cancer over time. The occurrence of large bowel cancer is strongly related to age, with 83% of cases arising in people who are 60 years or older. It is a common form of malignancy in developed countries but occurs much less frequently in the developing world [1–3].

Cancer is one of the diseases with a high psychological impact. This condition can be assessed as stressful because it involves loss and threat [4]. There is no single way to include cancer as part of the patients life and, much less, there is an order in the adaptive reactions to it. The adjustment to cancer is influenced by society, the patient, and the disease itself; therefore, social factors are dynamic [5].

CRC and its treatment can have adverse effects on social functioning, including work and productive life; relationships with friends, relatives, and partners; and other social activities and interests. Patients with CRC, both with or without stoma, are troubled by frequent or irregular

bowel movements, diarrhea, flatulence, and fatigue, and often have to follow dietary restrictions [6,7].

The emotional adjustment of a patient during treatment depends largely on these secondary side effects [8]. With the confirmation of diagnosis and the initiation of treatment, both patient and the family are forced to deal with eating disorders, loss of appetite, weight loss, gastric upset, diarrhea, constipation, altered body image, difficulties in sexual relations, and other related events [9].

Comparisons between cancer survivors and healthy controls provide evidence that cancer survivors face ongoing problems related to the cancer diseases including reduction in energy, weight loss, and psychological distress [10]. The possible loss of autonomy, often associated with the feeling of burden on others, disrupts patient's quality of life (QoL) [11–13]. Several studies have assessed the impact of different treatments on patient's QoL [14,15].

Patients with colon cancer report serious psychological and emotional morbidities [16,17]. Various studies have shown high levels of depression in cancer patients using different methods of assessment [18–20]. It is reported that

depression in cancer patients may be caused by the diagnosis of cancer, long duration of treatment, side effects of treatment, disruption in life (their time disturbed by frequently visiting their physician, investigations, hospital admissions, etc.) and diminished QoL [18,20].

Significance

According to the Surveillance Epidemiology and End Results Program [21], comparing the rates of Egyptian CRC with the Surveillance Epidemiology and End Results Program of the USA, Egypt had higher rates up to the age of 30–34 years; at that point Egyptian rates level out whereas the USA rates increase sharply.

While it is known that psychological factors such as stress and depression adversely affect the QoL and daily functioning of cancer patients, they have also been shown to negatively affect physiological processes leading to ill health. Therefore, exploring psychological symptoms and QoL among patients with CRC and identifying the size of these problems to help in managing them will indirectly improve their physiological status and consequently improve their general health.

Aim

The study aimed to assess psychological symptoms and QoL among patients with CRC who attended the outpatient clinics of the Oncology Department of Assiut University Hospital and South Egypt Cancer Institute (Assiut, Egypt).

Patients and methods

This cross-sectional study was conducted at the outpatient clinics of the Oncology Department at Assiut University Hospital and South Egypt Cancer Institute. The first of these hospitals is the biggest general Tertiary Care University Hospital of Faculty of Medicine in Upper Egypt and the other is a specialized institute for treatment only for cancer patients located in the same city.

Participants

The study sample included a convenience sample of 151 patients diagnosed with nonmetastatic CRC attending the outpatient clinic for the Oncology Department and South Egypt Cancer Institute during the 6 months period from 22 January 2013 to 22 July 2013. The included patients received active treatments or attend the clinic for follow-up.

Exclusion criteria

- (1) Patients with metastatic CRC.
- (2) Patients with apparent delirium or bad general health at the time of interview that might affect their cooperation during their evaluation.

Each participant was individually interviewed to evaluate psychological status, through the symptoms check list-90-

revised (SCL-90-R). In addition, evaluation of QoL was carried out by using the QoL scale.

Setting

After approval of the protocol of the study by the Ethical and Scientific Committee of the Faculty of Nursing, Assiut University, communication with the directors of both hospitals to give permission to conduct the study was carried out. Each patient was interviewed on individual basis in complete privacy and after taking written informed consent. The interview was conducted in comfortable outpatient oncology clinic and took about 80–90 min. After the end of the interview data were coded and recorded by using the SPSS for windows, version 16.00 (SPSS Inc., Chicago, Illinois, USA) [22]. Descriptive statistics were used to figure out the demographic and clinical characteristics of the sample and were written as mean \pm SD. According to the nature of the variables, group differences were compared using the χ^2 -test and the *P*-value was considered of significance if it was less than 0.05.

The following tools were used:

- (1) Demographic and clinical data sheet: It included patient's name, sex, age, occupation, marital status, residence, education level, diagnosis, clinical symptoms, for example, eating disturbance (appetite, weight loss), bowel habit disorder (diarrhea, constipation), type of treatment that the patient received, duration of treatment, colostomy, and sexual relation with partner.
- (2) Socioeconomic status (SES) scale [23]: SES scale was designed by Abdallah [23] to assess the SES of the family and consists of four dimensions: parent's level of education, parent's occupation, total family monthly income, and lifestyle of the family. The sum of these variables gives the total score of the SES. Using this scale the patients were classified into high, middle, or low socioeconomic class.
- (3) QoL [24]: QoL scale is a modified Arabic version of QoL scale designed by Lehman *et al.* [25]. It consists of 57 items divided into six domains or subscales. The first subscale, comprising 12 items, covers physical health. The second subscale consists of eight items reflecting self-care. The third subscale includes 14 items and represents patient's emotional status. The fourth one consists of 13 items related to personal and social relationship. The fifth subscale includes five items that assess the patient's ability to make decision, to work, to carry out the work duties, and ability to take responsibility. The last subscale consists of five items used to collect data about spiritual concerns and personal beliefs. Responses were measured on a three-point likert scale, ranging from 0 to 2. The total score was 114 points. Patients who obtained a score less than 57 points were considered to have a low QoL, whereas those who scored between 57 and 85 points were considered to have a moderate QoL, and, finally,

Table 1 Demographic characteristics of the studied patients with colorectal cancer (n = 151)

| Demographic characteristics | Total [n (%)] | Male [54 (35.7)] [n (%)] | Female [97 (64.2)] [n (%)] | T-test (χ^2) | P-value |
|------------------------------------|-------------------|--------------------------|----------------------------|---------------------|---------|
| Age of total group (mean \pm SD) | 45.31 \pm 13.45 | 44.94 \pm 14.2 | 45.5113 | 41.83 | 0.803 |
| Residence | | | | | |
| Rural | 115 (76.16) | 43 (79.6) | 72 (74.2) | 0.558 | 0.455 |
| Urban | 36 (23.84) | 11 (20.4) | 25 (25.8) | | |
| Level of education | | | | | |
| Illiterate or read and write | 119 (78.8) | 38 (70.4) | 81 (83.54) | 7.833 | 0.098 |
| Technical school | 20 (13.24) | 9 (16.7) | 11 (11.3) | | |
| University education | 12 (7.94) | 7 (13.0) | 5 (5.2) | | |
| Occupation | | | | | |
| Not work | 116 (76.8) | 23 (42.6) | 93 (95.9) | 57.069 | 0.000 |
| Not skill worker | 20 (13.24) | 19 (35.2) | 1 (1.0) | | |
| Employee | 12 (7.94) | 9 (16.7) | 3 (3.1) | | |
| Student | 3 (1.98) | 3 (5.6) | 0 (0) | | |
| Marital status | | | | | |
| Single | 14 (9.27) | 8 (14.8) | 6 (6.2) | 10.723 | 0.013 |
| Married | 123 (81.4) | 46 (85.2) | 77 (79.4) | | |
| Divorced | 6 (3.9) | 0 (0) | 6 (6.2) | | |
| Widowed | 8 (5.29) | 0 (0) | 8 (8.2) | | |
| Socioeconomic status level | | | | | |
| Low | 4 (2.64) | 2 (3.7) | 2 (2.1) | 2.453 | 0.293 |
| Moderate | 122 (80.8) | 40 (74.1) | 82 (84.5) | | |
| High | 25 (16.55) | 12 (22.2) | 13 (13.4) | | |

those who scored more than 85 points were considered to have a high QoL.

(4) Symptom check list-90-revised (SCL-90-R) [26]:

It comprised 90-item self-report symptom inventory, designed primarily to reflect the psychological symptoms pattern of psychiatric and medical patients. Each item of this scale is rated on a five-point scale of distress (0: non-at-all and 4: extremely affected). It includes nine primary symptom dimensions and three global indices of distress that are labeled as follows: somatization, obsessive compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. For each dimension the raw score transformed into T-score and cut-off point is defined when it is greater than or equal to 60; according to the authors, individuals who reach the cut-off point need psychiatric assistance. In the present study the T-scores of all the dimensions were considered.

Results

The study included 151 nonmetastatic CRC patients; 64.2% of them were females with the age of onset of 41.1 years and the mean duration of illness of 3.7 years. The majority of the patients lived in rural areas and in the middle SES. Moreover, most of them were illiterate or could read and write only, were not working, and were currently married (Table 1).

Patients were pathologically classified into cancer colon, rectum, and anal patients. There were no statistically significant differences among them as regards their clinical symptoms. Only 24.5% of the studied sample had colostomy and 39.8% received chemotherapy (Table 2).

In spite of they having CRC, a high percentage of patients (65.56%) had moderate QoL with no effects on their demographic characteristics (Table 3) or their clinical variables (Table 4).

Considering participants who needed psychiatric assistance of different dimensions of SCL-90-R, 32.45% of the total sample had somatization, 27.8% had hostility, 8.6% had depression, 9.7% had anxiety, 5.9% had phobia, 5.29% had paranoia, and 3.9% had psychoticism. As regarded sex differences, females had significantly higher anxiety (92.9%) and hostility (78.6%) than did males (P 0.01 and 0.02, respectively) (Table 5).

As regards the effect of SCL-90-R dimension on QoL of patients, it was found that obsession, paranoia, and psychoticism were significantly associated with low level of QoL (Table 6).

Significantly high percentages of CRC patients who received nonspecific treatment were found to be in need of psychiatric assistance (Table 7).

Regarding the effect of colostomy on the different dimensions of SCL-90-R, a significantly higher percentage of those who had colostomy had paranoia (75%); otherwise colostomy was not significantly associated with higher frequency of other dimensions of SCL-90-R (Table 8).

Discussion

Most of the studied population in the present study comprised females, with age at onset of 41.1 years and mean duration of illness of 3.6 years. They were nonmetastatic and most of them in spite of having CRC had moderate QoL. Somatization, hostility, depression, and anxiety were highly prevalent among them. Obses-

Table 2 Frequency of symptoms related to colorectal cancer among the studied patients

| Clinical symptoms | Diagnosis [n (%)] | | | | χ^2 | P-value |
|-----------------------|-------------------|--------------------|---------------------|-----------------|----------|---------|
| | Total | Colon [94 (62.25)] | Rectum [54 (35.76)] | Anal [3 (1.98)] | | |
| Bowel habit | | | | | | |
| Not change | 87 (57.61) | 57 (60.6) | 29 (53.7) | 1 (33.3) | 2.121 | 0.714 |
| Diarrhea | 37 (24.50) | 20 (21.3) | 16 (29.6) | 1 (33.3) | | |
| Constipation | 27 (17.88) | 17 (18.1) | 9 (16.7) | 1 (33.3) | | |
| Appetite | | | | | | |
| Not change | 75 (49.66) | 47 (50.0) | 27 (50.0) | 1 (33.3) | 0.816 | 0.936 |
| Decreased appetite | 72 (47.68) | 45 (47.9) | 25 (46.3) | 2 (66.7) | | |
| Increased appetite | 4 (2.64) | 2 (2.1) | 2 (3.7) | 0 (0) | | |
| Weight loss | | | | | | |
| Yes | 97 (64.23) | 57 (60.6) | 37 (68.5) | 3 (100.0) | 2.631 | 0.268 |
| No | 54 (35.76) | 37 (39.4) | 17 (31.5) | 0 (0) | | |
| Have colostomy | | | | | | |
| Yes | 37 (24.50) | 15 (16.0) | 21 (38.9) | 1 (33.3) | 9.878 | 0.007 |
| No | 114 (75.49) | 79 (84.0) | 33 (61.1) | 2 (66.7) | | |
| Line of treatment | | | | | | |
| Nonspecific treatment | 80 (52.98) | 49 (52.1) | 31 (57.4) | 0 (0) | 13.27 | 0.039 |
| Chemotherapy | 60 (39.73) | 38 (40.4) | 20 (37.0) | 2 (66.7) | | |
| Radiotherapy | 5 (3.31) | 4 (4.3) | 0 (0) | 1 (33.3) | | |
| Combined medication | 6 (3.97) | 3 (3.2) | 3 (5.6) | 0 (0) | | |

sion, paranoia, and psychoticism were significantly associated with low QoL. About half of the studied population received nonspecific treatment. The choice of nonmetastatic group of patients is crucial, as the metastatic group represent the late stage of illness with marked stress. Bad general health accompanied by multiple testing and investigation added more stress to the metastatic group than to the nonmetastatic. Furthermore, the site of metastasis added confounding factors to the result of studying the nonmetastatic group. In addition, the choice of metastatic and nonmetastatic patient made the study population heterogeneous and the interpretation of the results was confusing.

The high prevalence of CRC in females recorded in the present study has been reported by others. In a study by Alvarado-Aguilar *et al.* [27] females represent more than half of the study population. Landsbergen *et al.* [28] found that females were more affected than were males. This was reported by others also [29–34]. On the other hand, there are a few reports of slightly more prevalence of CRC in males than in females, for example, Lavdaniti *et al.* [35] found a prevalence of 59.5% in males and 40.5% in females. Alacacioglu *et al.* [36] found that male represented 59.1% and females 40.9% in their study sample.

In the present study more than three-quarters of the participants were married. This higher prevalence of marriage among CRC patients was reported by others. In a study by Lavdaniti *et al.* [35], married participants represented 89.7% of the sample. Other studies revealed that participants were married in range of 58.3–91.5% [27–29,34,36–38]. It is clear that the late onset of the illness affected individuals around the age of 45 years who were expected of beings married at this age.

Impairment of QoL is common in CRC patients, as reported by many authors [39], and it was reported that the presence of diarrhea, incontinence, fatigue, and pain

in addition to having direct effects on QoL influence the daily activities and hobbies, and interfere with family and social life [40].

It was found that CRC patients scored their physical, role, cognitive, and global health functioning only as slightly worse, which is similar to our patients, and most of them showed moderate impairment [41]. Long-term effects of fatigue and sexual problems have also been reported. Impairment of QoL in females may be related to their feeling of responsibility about their family, their children, and their sexual relation with their partner [42–44]. Moreover, the effect of disease and side effects of treatment negatively affect their QoL.

According to the SCL-90-R manual, the cut-off point of each domain score was at least 60; at this point patients need psychiatric assistance. Accordingly, in the present study somatization, hostility, depression, anxiety, and psychosis were reported to be high. Higher prevalence of these domains were also found in mood disorders and anxiety disorders than that in Egyptian general population [45].

Furthermore, studying these domains by other authors using different scales was reported to be higher than that was reported in the present study. Fafouti *et al.* [46] used SCL-90-R, The Montgomery–Asberg Depression Rating Scale, and the Spielberger State-Trait Anxiety Inventory to assess depression and anxiety and found a higher prevalence of anxiety, depression, and general symptoms of psychopathology. In addition, a higher prevalence of distress, depression, and anxiety in CRC patients than the general population has been reported [47]. In their study, Hyphantis *et al.* [32] found an increase in paranoid ideation, psychoticism, interpersonal sensitivity, anxiety, and depressive symptoms in CRC patients.

Despite the use of different methods of evaluation of depression among samples of CRC patients, there was a high prevalence of depression. Humpel and Iverson [48] used the Centre for Epidemiological Studies-Depression

Table 3 Frequency of different levels of QoL of colorectal cancer patients

| Demographic characteristics | Total [n (%)] | Low QoL [8 (5.2)] [n (%)] | Moderate QoL [99 (65.56)] [n (%)] | High QoL [44 (29.13)] [n (%)] | χ^2 | P-value |
|------------------------------|---------------|------------------------------|--------------------------------------|----------------------------------|----------|---------|
| Sex | | | | | | |
| Male | 54 (35.76) | 3 (5.5) | 33 (61.1) | 18 (3.4) | 0.772 | 0.680 |
| Female | 95 (64.91) | 5 (5.26) | 66 (69.4) | 26 (27.76) | | |
| Marital status | | | | | 7.097 | 0.312 |
| Single | 14 (9.27) | 2 (14.2) | 6 (42.5) | 6 (42.9) | | |
| Married | 123 (81.4) | 6 (4.9) | 85 (69.1) | 32 (26.01) | | |
| Divorced | 6 (3.9) | 0 (0) | 4 (66.6) | 2 (33.4) | | |
| Widowed | 8 (5.29) | 0 (0) | 4 (50.0) | 4 (50.0) | | |
| Residence | | | | | 0.997 | 0.607 |
| Rural | 115 (76.16) | 5 (4.36) | 77 (66.95) | 33 (28.69) | | |
| Urban | 36 (23.84) | 3 (8.37) | 22 (61.1) | 11 (30.55) | | |
| Level of education | | | | | 5.307 | 0.724 |
| Illiterate or read and write | 119 (78.8) | 6 (5.04) | 79 (66.38) | 34 (28.57) | | |
| Technical school | 20 (13.24) | 1 (5.0) | 15 (75.0) | 4 (20.0) | | |
| University education | 12 (7.94) | 1 (8.33) | 5 (41.66) | 6 (50.0) | | |
| Occupation | | | | | 11.32 | 0.184 |
| Not work | 116 (76.8) | 6 (5.17) | 81 (69.8) | 29 (25.0) | | |
| Not skill worker | 20 (13.24) | 0 (0) | 12 (60.0) | 8 (40.0) | | |
| Employee | 12 (7.94) | 1 (8.4) | 5 (41.6) | 6 (50.0) | | |
| Student | 3 (1.98) | 1 (33.3) | 1 (33.3) | 1 (33.3) | | |
| Socioeconomic status level | | | | | 1.823 | 0.76 |
| Low | 4 (2.64) | 0 (0) | 4 (100) | 0 (0) | | |
| Moderate | 122 (80.8) | 8 (6.55) | 77 (63.11) | 37 (30.3) | | |
| High | 25 (16.55) | 0 (0) | 18 (72.0) | 7 (28.0) | | |

QoL, quality of life.

Table 4 Relationship between clinical variables of patients with colorectal cancer and their levels of QoL

| Clinical variables | Total [n (%)] | Low QoL [8 (5.2)] [n (%)] | Moderate QoL [99 (65.56)] [n (%)] | High QoL [44 (29.13)] [n (%)] | χ^2 | P-value |
|-----------------------|---------------|------------------------------|--------------------------------------|----------------------------------|----------|---------|
| Diagnosis | | | | | 0.879 | 0.928 |
| Cancer colon | 94 (62.25) | 4 (4.25) | 62 (65.96) | 28 (29.79) | | |
| Cancer rectum | 54 (35.76) | 4 (7.41) | 35 (64.81) | 15 (27.78) | | |
| Cancer anal | 3 (1.98) | 0 (0) | 2 (66.6) | 1 (33.33) | | |
| Sexual state | | | | | 11.89 | 0.064 |
| Not change | 20 (13.24) | 0 (0) | 10 (50.0) | 10 (50.0) | | |
| Less | 95 (62.91) | 5 (5.27) | 66 (69.47) | 26 (27.36) | | |
| Weight loss | | | | | 5.570 | 0.062 |
| Yes | 97 (64.23) | 6 (6.18) | 69 (71.13) | 22 (22.69) | | |
| No | 54 (35.76) | 2 (25.0) | 30 (31.3) | 22 (50.0) | | |
| Bowel habit | | | | | 7.701 | 0.103 |
| Not change | 87 (57.61) | 3 (3.45) | 52 (59.77) | 32 (36.78) | | |
| Diarrhea | 37 (24.50) | 2 (5.40) | 27 (72.97) | 8 (21.62) | | |
| Constipation | 27 (17.88) | 3 (11.11) | 20 (74.07) | 4 (14.82) | | |
| Appetite | | | | | 9.234 | 0.056 |
| Not change | 75 (49.66) | 1 (1.34) | 47 (62.66) | 27 (36.0) | | |
| Less | 72 (74.68) | 6 (8.33) | 50 (69.44) | 16 (22.23) | | |
| More | 4 (2.64) | 1 (25) | 2 (50) | 1 (25) | | |
| Have colostomy | | | | | 1.362 | 0.506 |
| Yes | 37 (24.50) | 2 (5.90) | 27 (72.97) | 8 (21.63) | | |
| No | 114 (75.49) | 6 (5.26) | 72 (63.16) | 36 (31.58) | | |
| Line of treatment | | | | | 10.41 | 0.108 |
| Nonspecific treatment | 80 (52.98) | 6 (7.5) | 52 (65.0) | 22 (27.5) | | |
| Chemotherapy | 60 (39.73) | 1 (1.66) | 37 (61.67) | 22 (36.67) | | |
| Radiotherapy | 5 (3.31) | 1 (20.0) | 4 (80.0) | 0 (0) | | |
| Combined medication | 6 (3.97) | 0 (0) | 6 (100.0) | 0 (0) | | |

QoL, quality of life.

scale and stated that over 30% of cancer patients were depressed. Using the Epidemiologic Studies-Depression Scale, higher levels of depression were observed in cancer colon patients [35]. Tsunoda *et al.* [31], who used the Hospital Anxiety and Depression Scale, found that 7.8% of their participants had anxiety and 36.7% had depression, and Alacacioglu *et al.* [36], who used the Beck

Depression Inventory, stated that 23.6% of the participants were depressed. Marrs [49] found that 30% of cancer patients suffer from chronic anxiety.

Medeiros *et al.* [50], who used The Beck Depression Inventory and The State-Trait Anxiety Inventory, found that 31.6% of CRC patients had depression. According to

Table 5 Frequency of male and female patients who need psychiatric assistance at different dimensions of SCL-90-R (score ≥ 60 at any dimension)

| Dimensions of SCL-90-R | Sex [n (%)] | | | χ^2 | P-value |
|------------------------|-------------|-------------------|---------------------|----------|---------|
| | Total | Male [54 (35.76)] | Female [97 (64.91)] | | |
| Somatization | 49 (32.45) | 17 (34.7) | 32 (65.3) | 0.036 | 0.850 |
| Obsession | 3 (1.98) | 2 (66.7) | 1 (33.3) | 1.273 | 0.259 |
| Sensitivity | 4 (2.64) | 1 (25.0) | 3 (75.0) | 0.207 | 0.649 |
| Depression | 13 (8.60) | 3 (23.1) | 10 (76.9) | 0.996 | 0.318 |
| Anxiety | 14 (9.27) | 1 (7.1) | 13 (92.9) | 5.501 | 0.019 |
| Hostility | 42 (27.81) | 9 (21.4) | 33 (78.6) | 5.203 | 0.023 |
| Phobia | 9 (5.96) | 3 (33.3) | 6 (66.7) | 0.025 | 0.875 |
| Paranoia | 8 (5.29) | 2 (25.0) | 6 (75.0) | 0.426 | 0.514 |
| Psychoticism | 6 (3.97) | 1 (16.7) | 5 (83.3) | 0.992 | 0.319 |

SCL-90-R, symptoms check list-90-revised.

Table 6 Relationship between levels of QoL and different dimensions of SCL-90-R in patients who need psychiatric assistance (score ≥ 60 at any dimension)

| Dimensions of SCL-90-R | QoL [n (%)] | | | | χ^2 | P-value |
|------------------------|-------------|-------------------|---------------------------|-----------------------|----------|---------|
| | Total | Low QoL [8 (5.2)] | Moderate QoL [99 (65.56)] | High QoL [44 (29.13)] | | |
| Somatization | 49 (32.45) | 7 (14.4) | 39 (79.6) | 3 (6.1) | 26.42 | 0.000 |
| Obsession | 3 (1.98) | 2 (66.7) | 1 (33.3) | 0 (0) | 23.13 | 0.000 |
| Sensitivity | 4 (2.64) | 2 (50) | 2 (50) | 0 (0) | 16.84 | 0.000 |
| Depression | 13 (8.60) | 5 (38.5) | 8 (61.5) | 0 (0) | 33.70 | 0.000 |
| Anxiety | 14 (9.27) | 5 (35.7) | 9 (64.3) | 0 (0) | 31.44 | 0.000 |
| Hostility | 42 (27.81) | 6 (14.3) | 35 (83.3) | 1 (2.4) | 25.97 | 0.000 |
| Phobia | 9 (5.96) | 2 (22.2) | 7 (77.8) | 0 (0) | 8.18 | 0.017 |
| Paranoia | 8 (5.29) | 4 (50) | 3 (37.5) | 1 (12.5) | 33.67 | 0.000 |
| Psychoticism | 6 (3.97) | 3 (50) | 3 (50) | 0 (0) | 25.61 | 0.000 |

QoL, quality of life; SCL-90-R, symptoms check list-90-revised.

Table 7 Frequency of the patients who need psychiatric assistance at different dimensions of SCL-90-R according to their lines of treatments

| SCL-90-R dimensions | Treatment [n (%)] | | | | χ^2 | P-value |
|---------------------|----------------------------------|---------------------------|-------------------------|-----------------------------|----------|---------|
| | Nonspecific therapy [80 (52.98)] | Chemotherapy [60 (39.73)] | Radiotherapy [5 (3.31)] | Combined therapy [6 (3.97)] | | |
| Somatization (n=49) | 7 (55.1) | 13 (26.5) | 4 (8.2) | 5 (10.2) | 15.48 | 0.001 |
| Obsession (n=3) | 1 (66.7) | 2 (33.3) | 0 (0) | 0 (0) | 1.00 | 0.800 |
| Sensitivity (n=4) | 1 (25.0) | 3 (75.0) | 0 (0) | 0 (0) | 2.19 | 0.533 |
| Depression (n=13) | 8 (61.5) | 2 (15.4) | 2 (15.4) | 1 (7.7) | 9.07 | 0.028 |
| Anxiety (n=14) | 11 (87.6) | 1 (7.1) | 2 (14.3) | 0 (0) | 12.25 | 0.007 |
| Hostility (n=42) | 20 (71) | 13 (66.7) | 5 (9.5) | 4 (16.7) | 18.93 | 0.000 |
| Phobia (n=9) | 5 (55.6) | 3 (33.3) | 1 (11.1) | 0 (0) | 2.24 | 0.522 |
| Paranoia (n=8) | 6 (75.0) | 1 (12.5) | 0 (0) | 1 (12.5) | 4.17 | 0.243 |
| Psychoticism (n=6) | 4 (66.7) | 1 (16.7) | 1 (16.7) | 0 (0) | 4.67 | 0.197 |

SCL-90-R, symptoms check list-90-revised.

Table 8 Frequency of patients who need psychiatric assistance at different dimensions of SCL-90-R according to presence or absence of colostomy

| Dimensions of SCL-90-R | Colostomy [n (%)] | | χ^2 | P-value |
|------------------------|-------------------|------------------|----------|---------|
| | Yes [37 (24.50)] | No [114 (75.49)] | | |
| Somatization (n=49) | 13 (26.5) | 36 (73.5) | 0.161 | 0.688 |
| Obsession (n=3) | 1 (33.3) | 2 (66.7) | 0.129 | 0.719 |
| Sensitivity (n=4) | 2 (50) | 2 (50) | 1.44 | 0.230 |
| Depression (n=13) | 4 (30.8) | 9 (69.2) | 0.302 | 0.583 |
| Anxiety (n=14) | 3 (21.4) | 11 (78.6) | 0.079 | 0.779 |
| Hostility (n=42) | 11 (26.2) | 31 (73.8) | 0.090 | 0.765 |
| Phobia (n=9) | 4 (44.4) | 5 (55.6) | 2.057 | 0.151 |
| Paranoia (n=8) | 6 (75.0) | 2 (25.0) | 11.64 | 0.001 |
| Psychoticism (n=6) | 1 (16.7) | 5 (83.3) | 0.207 | 0.649 |

SCL-90-R, symptoms check list-90-revised.

the authors, it is clear that fear of death and loss of health are commonly associated with somatic symptoms such as weight loss, fatigue, and motor difficulty. Intense feelings of tension, nervousness, and worry, that is, state anxiety, is an expected and well-known psychological response to a malignant disease and it is related to the emotional turmoil that follows diagnosis, anticipated prognosis, treatment, and its side effects [51–53]. The lower prevalence of depression in the present study than that reported by others might be attributed to late onset of the illness and to the fact that most of the patients were currently married. They lived in rural areas, which are socially supportive, and as part of extended families, which also are highly supportive. This social supportive network was also characterized by a religious background, which adds further support.

Hostility, paranoid ideation, anger, and aggressiveness were found to be high in our patients. It is clear that these symptoms are not specific to a certain type of tumor. This might be related to malignancy itself anywhere. As Fafouti *et al.* [46] found, these symptoms are associated with breast cancer patients. They stated that anger/aggressiveness were linked to each other, and that, specifically, they were suppressed; feeling helplessness and repression seemed to be the two key factors closely associated and interrelated with anger/aggressiveness, as repressed hostility, negative emotions, and a feeling of loss of control were often described by malignancy patients. These are likely to contribute through a vicious circle to unfavorable prognosis, whereas denial/minimizing have been reported to be associated with a more favorable prognosis [54].

Females were significantly at a higher risk than were males to develop anxiety and hostility. Moreover, they tend to develop higher levels of somatization, interpersonal sensitivity, depression, phobia, paranoia, and psychosis compared with males. Other studies have reported similar findings. Female patients reported higher levels of psychological distress than did male patients [28]. In addition, higher rates of depression have been described among women, but anxiety has been reported to be similar for both sexes [31]. The higher prevalence of these symptoms in females might be attributed to the fact that woman is the caregiver for the family and this leads to their worrying about cancer diagnosis and fear about their family future in case of their death.

In contrast, Hyphantis *et al.* [32] found that men were at a greater risk for further developing depressive symptoms. Lavdaniti *et al.* [35] stated that depression affects men and women with cancer equally, and that there was not statistically difference between depression and sex as well as between depression and age.

The line of treatments might be associated with a high prevalence of different dimension of the SCL-90-R. More than half of the patients who received chemotherapy complained of interpersonal sensitivity and hostility; furthermore, about one-third of them had phobia and obsession, and less than one-quarter complained of psychosis, depression, paranoia, and anxiety. This is in

agreement with Pandey *et al.* [55] who found depression to be present in less than one-quarter cancer patients undergoing chemotherapy. Medeiros *et al.* [50] found that third of their participants who received chemotherapy suffered from anxiety more than other items of SCL-90-R.

In the present study, patients came for follow-up and received nonspecific treatment for gastric upset, diarrhea, or general support. This group of patients represented more than half of the studied population. They had passed their active course of management of their cancer, either surgical and/or chemotherapy. They complained of different dimensions of SCL-90-R. This might be due to chronicity of illness, uncertainty about their future, frequent follow-up visits to the hospital, or investigation provoked. Their prior experience of diagnosis of cancer was associated with the suspicion of recurrence and threatens their QoL.

Patients with colostomy, either permanent or temporary, complained of paranoia as those patients tend to be isolated, withdrawn from social activity; they tend to be suspicious of others looking at them, others' thought that cancer is an infectious disease, bad odor of colostomy, and disturbed body image after colostomy. In this study, 30.8% of patients with colostomy had depression and 21.4% had anxiety; this is partially in agreement with White [56] who stated that 25% of people who have stoma operations experience severe problems with anxiety, depression, and other negative emotions at some stage during the years after the stoma surgery.

Conclusion

High prevalence of different dimensions of SCL-90-R, especially somatization, hostility, anxiety, and depression, were found among our CRC patients. Females significantly have a higher anxiety and hostility. Moderate impairment of QoL was affecting a high percentage of patients with CRC. There is a significant correlation among different SCL-90-R dimensions and QoL.

Recommendations

Some patients with CRC might get benefit from psychiatric liaison. Effort to improve their QoL may be an area of interest for future studies.

Acknowledgements

Conflicts of interest

There are no conflicts of interest.

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