



Research Article

ISSN : 2277-3657
CODEN(USA) : IJPRPM

Quality of Life of Colorectal Cancer Patients: Colostomies vs. Non-colostomies

Hanan Abd Elwahab El Sayed^{1*}, Nehad Ahmed Ibrahim¹, Murad Abdul-Raheem Abdul-Rahman²

¹PHD, Assistant Prof. in Assistance Medical Science Department, Community College, Tabuk University, KSA

² Lecturer. Assistance Medical Science Department, Community College, Tabuk University, KSA

*Email: hananabdelwahab80@yahoo.com

ABSTRACT

Background: Colorectal cancer (CRC) is the most commonly diagnosed cancer worldwide especially among males, and has been considered the third among females. Methods: Objective: to evaluate the quality of life of patients suffering from colorectal cancer. Methods: Descriptive design was applied in order to achieve the goal of this study. The study was carried out at outpatient clinics of King Fahd and King Khalid Hospitals. A purposive sample of colorectal cancer patients (n= 40) in the previous hospitals were included. Three tools of data collection included: 1) self-administrated questionnaire sheet which included socio-demographic data and clinical features of the studied patients; 2) The standardized EORTC QLQ-C30 questionnaire which was used to assess the quality of life; and, 3) The INFO25 which had a 25-item module, to assess the information provision among the studied patients. Results: The findings revealed that, 57.5% of the studied subjects were males, and 42.5% of them were females but only 25.0% of them had rectal cancer. Also, cognitive functioning rated the highest with the mean value of 77.01 ± 5.60 , while the emotional functioning scored the lowest, and pain was considered the most distressing symptom with the mean score of 62.43 ± 10.32 followed by fatigue, and the highest knowledge score for the helpfulness of information received and the information about treatments, and the lowest knowledge score was for the information about different places of care. Conclusion: Patients performed well on most of EORTC QLQ-C30 functional scales, and the lowest score was obtained for the emotional functioning. Pain, fatigue and insomnia were the most stressful symptoms. Patients reported the highest knowledge score for the helpfulness of information received and the information about treatments, while the information about different places of care got the lowest knowledge score.

Key words: *Colorectal Cancer, Quality of Life, Patients.*

INTRODUCTION

Gastrointestinal tract diseases can be regarded as the most recurrent carcinoma in developed countries [1]. Colorectal cancer (CRC) is the most frequently identified cancer worldwide, as its rate has been quickly grown in Asia over the recent decades [2]. Although, 55% of CRC cases have been observed in high income developed countries, more mortality (52%) has occurred in low and middle income developing countries, that indicated poorer level of prognosis in these countries.

In Saudi Arabia, it is the most common cancer among males (10.6%), and the third among females (8.9%) [3]. The lower overall 5-year survival has been due to the lack of screening, a higher proportion of advanced stage cancer at the time of presentation, lack of specialized care outside the major cities, and a higher proportion of rectal cancer cases [4].

There have been factors known to increase the risk of CRC. Genetic and family history plays an important role in CRC genesis and patients with familial adenomatous polyposis. Moreover, patients with ulcerative or Crohn's colitis also have been at the increased risk of CRC [5].

Colorectal cancer at the beginning levels, often has no symptoms; this point emphasizes the importance of screening. While the tumor grows, it may bleed or obstruct the intestine. In some patients, blood loss due to the

cancer results in anemia, which leads to the symptoms including weakness, excessive fatigue, and sometimes shortness of breath [6].

Colorectal cancer treatment includes surgery, chemotherapy, and radiotherapy; however, intense treatments are stressful and often result in physical and psychological suffering, and negatively affect QOL that becomes an important marker for assessing the effects of the disease treatments [7].

Colorectal cancer treatments have several effects on physical and social functioning of the patients. This includes relations with friends, relatives, and partners; work and productivity; other social activities and interests. Patients with CRC, both stoma and non-stoma patients, are disturbed by frequent and irregular bowel movements, fatigue, flatulence, and diarrhea, and often have to follow dietary restrictions [8]. Measures of the quality of life (QOL) in CRC patients are important because they can provide clinicians with a reference to help making decisions about patients' treatments [9] since dissatisfaction with health care services leads to undesirable consequences [10].

The European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) has been described as more sensitive than the other questionnaires in detecting the impairment of QOL [11]. Also, the INFO25 information module has been used among the cancer patients in different disease stages and in follow-up periods for research and daily clinical purposes. This Questionnaire can be presented on its own or along with the other EORTC questionnaires, for evaluating the quality of life [12, 13].

Colorectal cancer can be prevented through screening which can detect the disease in its early stages and improve the survival rates [14]. Specialists can offer appropriate nursing intervention to decrease depression and fatigue and enhance patient QOL [2]. Patient information is an important element to support cancer survivors. Providing patients with appropriate information about their services through informed decision-making may result in lower levels of distress, the improved satisfaction with care, and the enhanced QOL [12, 15]. Because there has been limited research in this area of Saudi Arabian on cancer patients, the aim of this study was to assess QOL of colorectal cancer patients.

Significance of the study:

Colorectal cancer is the fourth cause of cancer related to deaths worldwide. This cancer has been considered the first among males, and the third among females since 2002 in Saudi Arabia [4]. According to Saudi Cancer Registry, 2012, Saudi Arabia was considered the third country after Oman and United Arab Emirates. There were 1,230 cases of CRC accounting for 11.1% of all the newly diagnosed cases in year 2012. It affected 675 (54.9%) males and 555 (45.1 %) females with a male to female ratio of 122:100. In Tabuk city, colorectal cancer affected 9.8% of males and 5.3% of females. The survival rates for CRC in Saudi Arabia equaled to 44.6% that was low in comparison to the worldwide CRC survival rates. It is one of the preventable cancers if diagnosed in the early stages [16].

Aim of the Study:

The aim of the study was to evaluate the quality of life of colorectal cancer patients through:

1. Assessing the QOL in patients with colorectal cancer
2. Identifying the differences in QOL concerns between the patients in functional scales and symptoms scales.
3. Assessing the patients' knowledge regarding colorectal cancer
4. Developing health educational guidelines to patients according to their needs.

SUBJECTS AND METHODS

Research Design:

Descriptive design was utilized to fulfill the aim of this study.

Research setting

The study was conducted at outpatient clinics of King Fahd and King Khalid Hospitals

Subjects

- **Subject Type and Criteria**

A purposive sample of 40 patients who were diagnosed with QOL at King Fahd and King Khalid Hospitals between the period from 15th October 2017 and 17th March 2018 were recruited for the study.

- **Inclusion and exclusion criteria**

Eligibility criteria included the confirmed diagnosis of CRC within one year, the patients had to be at least 18 years old and ready to participate in the study, but the patients who were non-willing to participate, and the expatriates were excluded because the concerns that QOL among those from different values, nationalities, and ethnicities may differ or vary widely.

Tools of Data collection

- **First Tool**

A structured interviewing questionnaire was established by the researchers in Arabic language after reviewing the related literature. It involved:

- Demographic data of the studied patients such as; age, educational level, marital status and sex
- Clinical characteristics of the studied patients, which included the presence of co-morbid disease, tumor location, and the type of treatment

- **Second Tool**

The standardized EORTC QLQ-C30 questionnaire was used to evaluate QoL in the study. This questionnaire included 30 items that were divided into 3 main categories: global health status scale/QoL, functional scales, and symptom scales. The high score of QoL and the high score of functional scales showed a good level, whereas the high score of symptom scale represented a high level of symptomatology or problems. The linear transformation to 0-100 was applied to obtain the score.

(Table 1) The range was the difference between the maximum possible value of the raw score and the minimum possible value. All items in any scale took the same range of values. So, the range of raw score equaled the range of the item values. Most items were scored 1 to 4, giving the range = 3. The exclusions included the items contributing to the global health status / QoL, which were 7-point questions with the range = 6, and the initial yes/no items which had the range = 1 [17].

Table 1. Distribution of 30-item module of The EORTC QLQ-C30, range and their score

	Scale	Item	Range	Question
Global health status / QoL				
Global health status/QoL	QL2	2	6	29, 30
Functional scales				
Physical functioning	PF2	5	3	1 to 5
Role functioning	RF2	2	3	6, 7
Emotional functioning	EF	4	3	21 to 24
Cognitive functioning	CF	2	3	20, 25
Social functioning	SF	2	3	26, 27
Symptom scales / items				
Fatigue	FA	3	3	10, 12, 18
Nausea, vomiting	NV	2	3	14, 15
Pain	PA	2	3	9, 19
Dyspnea	DY	1	3	8
Insomnia	SL	1	3	11
Appetite loss	AP	1	3	13
Constipation	CO	1	3	16
Diarrhea	DI	1	3	17
Financial difficulties	FI	1	3	28

- **Third Tool**

The INFO25 is a 25-item module comprised of four multi-item scales including: information about the disease (4 questions), information about the medical tests (3 questions), information about the treatment (6 questions), and information about the other services (4 questions). In addition to the four multi-item scales, the EORTC INFO25 had eight single items (Table 2). Regarding different places of receiving care, receiving written and digital information, self-help attempts, wish to receive more information or less information, the satisfaction with the information received, and the helpfulness of the information obtained. Global score could be calculated by averaging the scores from the 12 scales. The higher scores indicated the higher levels of information. Twenty-one out of twenty-five INFO25 questions were scored on a 1 to 4 point Likert scale (“not at all”, “a little”, “quite a bit”, “very much”). Four questions (50, 51, 53, 54) were answered by either “yes” or “no”. Questions 53 and 54 had an extra sub-question for the patients who have replied “yes”, in which they were asked to specify the topics in which they would like to receive more or less information [18].

Table 2. Distribution of 25-item module of The INFO25, range and their score

		Item	Range	Score	Question
Multi-item scales	Information about the disease	4	3	12	38-41
	Information about medical tests	3	3	9	42-44
	Information about treatments	6	3	18	45-50
	Information about other services	4	3	12	51-44
	Information about different places of care	1	3	3	55
Single-item scales	Things you can do to help yourself get well	1	3	3	56
	Received written information	1	3	3	57
	Information on CD or tape/video	1	1	1	58
	Satisfaction with information received	1	1	1	59
	Wanted more information	1	1	1	60
	Helpfulness of information	1	1	1	61
	Information about the disease	1	1	3	62
	Global Score	1	25	67	

Methods

The study was performed as the following steps

- **Approvals**

A written official approval for this research was obtained from the responsible authorities of Tabuk University that was taken and delivered to the director of the outpatient clinics of King Fahd and King Khalid Hospitals to obtain their agreement to conduct the study after explaining its purpose.

- **Tools Validity**

The validity of questionnaires was reviewed for the content validity by a jury of three experts in the field of community health nursing to ascertain the relevance and completeness of the tools. EORTC QLQ-C30 scales indicated good validity and suitability for measuring the QOL in cancer patients [19]. Moreover, the validity of The INFO25 was confirmed [18].

- **Tools Reliability**

Reliability was made by using Cronbach's Alpha coefficient test, which showed that each of the two tools consisted of relatively homogenous items as indicated by the high reliability. According to Cronbach Alpha coefficient test for the multi-item scales of EORTC QLQ-C30 ranged from 0.56 to 0.85, with the emotional functioning having the highest Cronbach's -coefficient. The reliability of INFO25 was confirmed and the internal consistency showed a reliability of 0, 78 [19].

- **Ethical Considerations**

Permission was taken from the Ethics Committee of the Tabuk University. All the participants were knowledgeable about the aims and the methods of the study, and afterward they signed the informed consent. The participants were told that all the gathered information would be kept confidential and used only for the purpose of the study. They were also informed about their right to withdraw at any time from the study without giving any reasons, and that the study would not have any physical, social, or psychological risks.

- **Pilot Study**

A pilot study was done on 10 % of the sample (4) patients who were excluded from the main sample with the main purpose to test the relevance and applicability of the tools.

- **Procedures**

The previous mentioned settings were visited by the researchers two days/week. The researchers interviewed each patient after ensuring their health status and reviewing their medical record, and they explained the purpose of the study to the patients, and asked them for the participation. Upon the consent to participate, patients filled the questionnaires. The average time for the completion of the questionnaires was (20-25 minutes).

- **Statistical Analysis**

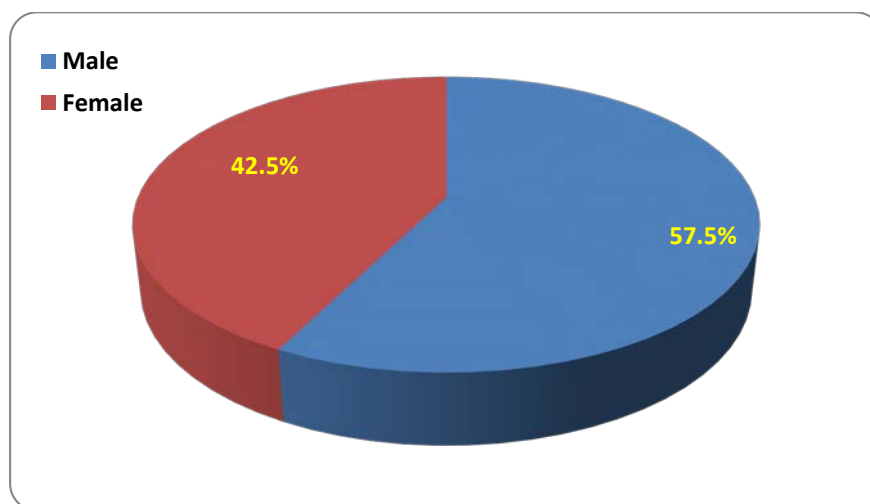
Data analysis was performed using Statistical Package for Social Sciences (SPSS version 20.0). Descriptive statistics were used to describe the characteristics of the study subjects (e. g. frequency, percentages, mean, and standard deviation).

RESULTS

Table 3: Distribution of the studied subjects according to their demographic and clinical characteristics. (n = 40)

Characteristics	No	%
Age/ year		
20- 30	1	2.5
31-40	2	5.0
41-50	16	40.0
51-60	21	52.5
Mean \pm SD	50.05 \pm 6.17	
Educational level		
Illiterate	2	5.0
Primary education	8	20.0
Secondary education	13	32.5
University education	17	42.5
Marital status		
Partner	32	80.0
No partner	8	20.0
Presence of co-morbid disease		
None	15	37.5
one	7	17.5
Two or more	18	45.0
Tumor location		
Colon	30	75.0
Rectum	10	25.0

Table (3) shows the demographic and clinical characteristics of the studied patients. It was clear that 52.5% of the patients were aged from 51-60 years, with a mean age of 50.05 ± 6.17 years. In addition, 42.5% of them had University education. Furthermore, 80% of them were married and 45.0% of the subjects had two or more co-morbid diseases. Only, 25.0% of them had rectal cancer.

**Figure 1:** Distribution of the studied subjects according to their sex. (n = 40)

As shown in Fig.1 it was clear that, 57.5% of the studied subjects were males, and 42.5% of them were females.

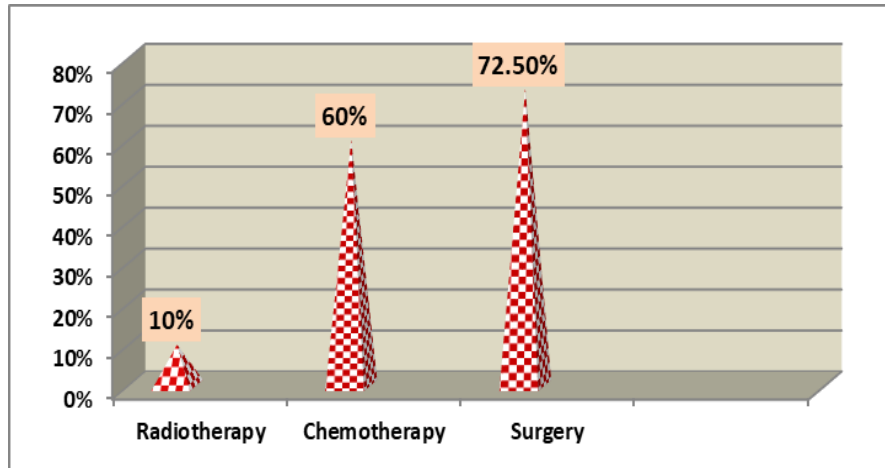


Figure 2: Distribution of the studied subjects according to type of treatment.

Figure 2 represents that more than two thirds (72.5%) of the sample had surgery, and only 10% of the sample received radiotherapy.

Table 4: Mean score of global health status and functional scales in EORTC QLQ-C30 (n=40).

Items	No. of items	Mean ± SD
Global health status/ quality of life	2	68.65±11.34
Functional scales		
Physical functioning	5	70.77±9.43
Role functioning	2	67.90±9.23
Emotional functioning	4	60.35±12.47
Cognitive functioning	2	77.01±5.60
Social functioning	2	62.44±10.32

Based on Table 4, it was found that the mean value of the global health status/ quality of life was 68.65±11.34 points. Cognitive functioning rated the highest with the mean value of 77.01±5.60, whereas the emotional functioning scored the lowest with the mean value of 60.35±12.47 followed by Social functioning.

Table 5: Mean score of symptom scales in EORTCQLQ-C30. (n=40).

Symptom scales/items	No. of items	Mean ± SD
Fatigue	3	39.33 ±12.56
Nausea and vomiting	2	20.80 ±12.63
Pain	2	62.43 ±10.32
Dyspnea	1	27.05 ±9.18
Insomnia	1	33.50 ±6.09
Appetite loss	1	29.13 ±9.41
Constipation	1	22.68 ±13.71
Diarrhea	1	15.61 ±6.58
Financial difficulties	1	17.27 ±6.63

According to Table 3, it was found that pain was considered the most distressing symptom with the mean score of 62.43 ±10.32 followed by fatigue and insomnia.

Table 6: Perceived information provision among study subjects. (n = 40).

QLQ-INFO 25 scales items	No. of items	Mean ± SD
Information about the disease	4	58.2 ±3.43
Information about medical tests	3	61.91 ±10.23
Information about treatments	6	64.35± 12.47

Information about other services	4	30.01± 9.60
Information about different places of care	1	25.43±7.31
Things you can do to help yourself getting well	1	55.14±8.52
Received written information	1	50.24± 2.83
Information on CD or tape/video	1	40.33±4.35
Satisfaction with information received	1	60.84±5.12
Wish to receive more information	1	33.44± 6.22
Wish to receive more information	1	35.21 ± 10.21
Helpfulness of information received	1	70.14± 9.31

As Table (6) indicates, it was observed that the mean score for the helpfulness of information received was 70.14 and the mean scores for the information about the treatments, and the information about the medical tests were 61.91 and 64.35; respectively. Regarding the satisfaction with the information received, the mean score was 60.84, while the information about different places of care was only 25.43 scores.

DISCUSSION

Colorectal cancer has been one of the common causes of mortality all around the world. Cancer as well as influencing the patients physically, it may impose negative effects on the quality of life (QoL) of cancer survivors. Currently, the unfavorable effects of cancer and their treatment on the QoL in cancer patients have been much taken into consideration [20]. Assessing the life quality in cancer patients should be considered very significant for cancer management and treatment, and could be used as a useful means for conducting clinical trials [21].

The present study's findings indicated that 40% of the study participants were aged 41-50 years old with the mean of 50.05 and three quarter of the sample were colon cancer. This result was in accordance with a previous study by Orlich et al. [22]. who stated that there were 490 cases of colorectal cancer (380 colon, 110 rectal), and the mean ages at the time of diagnosis in males and females were 57 and 53 years; respectively.

The present study's results revealed that, 45.0% of the subjects had two or more co-morbid disease and 42.5% of them had university education. Furthermore, 80% of them were married. This finding went in the same line with Wang et al. [23] who investigated "The association between comorbidities and the quality of life among colorectal cancer survivors in the People's Republic of China" reported that just 20.2% of the participating patients were without any comorbidity, and cancer survivors tended to have more than one comorbidity, and 40% had more than three comorbidities such as cardiovascular, respiratory, digestive, and musculoskeletal diseases that lower QOL. In addition, Adams et al. [24] who studied the "Quality of Life and Mortality of Long-Term Colorectal Cancer Survivors in the Seattle Colorectal Cancer Family Registry" stated that the majority of CRC survivors were married and got some post-secondary education.

It was clear from the current study that, about more than half of the sample was males. This finding was similar to Natra et al. [9] who studied the "Quality of Life in Malaysian Colorectal Cancer Patients: A Preliminary Result " and Glavić et al. et al. [25] who studied the "Quality of Life and Personality Traits in Patients with Colorectal Cancer", and found that more than half of their participants were males. Also, Al-Ahwal et al. [3] who investigated the national survival data for colorectal cancer among Saudis between 1994 and 2004, and reported that CRC was diagnosed in (66.9%) of males and (44.6%) of females.

Regarding the type of treatment, it was obvious from the current study that more than two third of the sample had surgery, and only 10% of the sample received radiotherapy. This finding was consistent with a previous study conducted in Saudi Arabia by Alotaibi et al. [26] with the title of "Functional Assessment of Quality of Life Using EORTC QLQ-CR29 in patients with Colon Cancer at King Abdulaziz University Hospital " which documented that three quarter of the sample had surgery, while only 15% of the sample received radiotherapy. Moreover, Yi Tung et al. [2] in the study entitled "Depression, Fatigue, and QoL in Colorectal Cancer Patients During and After Treatment," stated that, about half of the studied subjects had surgery and fewer received radiotherapy.

It was found that the global health status and the quality of life were decreased in colorectal cancer patients. Cognitive then emotional functioning decreased and followed by social one. The data obtained from the present study agreed of the study with the findings carried out by Jansen et al. [8] who examined the health related quality of life during the 10 years after the diagnosis of colorectal cancer, and found that one year after the diagnosis, the emotional, cognitive, and social functioning and fatigue, financial difficulties, constipation, and diarrhea were

significantly worse in the patients comparing to the controls, but just the differences for financial difficulties were clinically relevant. Also, over the entire follow-up, the younger survivors (age at diagnosis less than 60 years) reported restrictions in role, social, emotional, and cognitive functioning and specific problems like constipation, diarrhea, fatigue, and insomnia.

Moreover, Ahmed et al. [27] who investigated Health-Related Predictors of Quality of Life in Cancer Patients in Saudi Arabia, reported that the emotional wellbeing, social function, and general health decreased in the patients, one year after being diagnosed as having cancer. In addition, Almutairi et al. [28] in an investigation, assessed the quality of life of colorectal cancer patients in Saudi Arabia, and reported that social functioning and functional scales of CRC patients were the highest, while the emotional scales were the lowest. The most annoying symptom was found to be insomnia.

Also, Al Wutayd et al. [14] in his study on the knowledge, attitude and practice among adults in Riyadh, Saudi Arabia, documented that the awareness programs should be implemented to initiate a strong connection between the public, health centers and educational institutions in order to upgrade the level of awareness on colorectal cancer. Additionally, two studies conducted in Saudi Arabia, one by Alnuwaysir et al. [29] which was entitled "Colorectal Cancer Awareness and Attitude among Adult, Al-Dammam, Saudi Arabia", and the other by Al Eid et al. [30] entitled "Knowledge of Colorectal Cancer Screening among men in Alahsa, Saudi Arabia ", concluded that the presentation of a clear picture of CRC, and its detection, with more emphasis on the screening tests of CRC required for the prevention of the disease in early stage at all levels of individual and national education programs in Saudi Arabia, would be needed to improve CRC knowledge. It is suggested that by educating the patients, and efforts to increase their adherence to treatment, a step can be taken towards enhancing the life quality of these patients [31].

Regarding the studied knowledge score, the present study's results revealed that, the highest score was obtained for the helpfulness of the information about treatments and the information about medical tests, while the information about different places of care obtained the lowest score. This finding was similar to the study conducted in Saudi Arabia by Al Jamaan et al. [32] who examined the evaluation of Referral System for cancer patients and the Information they received about their disease in tertiary hospitals in Riyadh, 2012, and reported the maximum score for the information about the medical tests and treatments, and the minimum score for the information about the other services.

Moreover Husson et al. [33] indicated that patients received quite a bit or very much information about the other services, and more than two-third of the patients in their study stated that they received written information, while almost a quarter of the patients wanted to receive more information regarding the cause of their cancer, complications and long-term effects of the treatments. In fact, health education is a process for empowering patients and bridges their health information to performance to make changes in their lifestyle [34].

On the same line, Pinto et al. [35] who assessed the information given to the cancer patients attending day hospitals in a comprehensive cancer center, documented that, the maximum score for the helpfulness of information received, the information about disease, and the information about the treatments, while the lowest score was obtained for the wish to receive less information.

CONCLUSION

Based on the results of the present study, it could be concluded that, CRC patients reported favorable overall global quality of life. They showed good functioning in most EORTCQLQ-C30 functional scales, with the lowest score for the emotional functioning. Pain, fatigue and insomnia were the most distressing symptoms presented in this study. In the QLQ-INFO25, CRC patients reported the highest knowledge score for the helpfulness of the information received which was about the treatments, while, the lowest knowledge score was obtained for the information about different places of care.

Recommendations

- The quality of life after breast cancer should be addressed in Saudi society.
- The present study should be replicated on larger sample, and different settings.

ACKNOWLEDGEMENTS

Thanks to the Deanship of Scientific Research at Tabuk University for approving and funding this study and giving the opportunity to conduct this research under NO(S-1437-0238).

REFERENCES

1. Dunn J, Kay NgS, Breitbart W, Aitken J, Youl P, Baade P et al., Health-related quality of life and life satisfaction in colorectal cancer survivors: trajectories of adjustment. *Health and Qual Life Outcomes*, 2013; 11:46.
2. Yi Tung, H., Bo Chao, T., Hua Lin, Y., Fen Wu, S., Yen Lee, H., Yun Ching, C., Wei Hung, K., & Jen Lin, T., Depression, Fatigue, and QoL in Colorectal Cancer Patients During and After Treatment, *Western Journal of Nursing Research*, 2016; 38(7) 893– 908.
3. Al-Ahwal, M.S., Shafik, Y.H., Al-Ahwa, H.M., First national survival data for colorectal cancer among Saudis between 1994 and 2004. *BMC Public Health*, 2013; 13 (73): pp 1-6.
4. Alsanea, N., Abduljabbar, A.S., Alhomoud, S., Bazarbashi, S., Colorectal cancer in Saudi Arabia : Incidence, survival, demographics and implications for national policies, *Annals of Saudi medicine*, 35(3): 196-202.
5. Raskov. H., Pommergaard, H.C., Burcharth. J., Rosenberg J., Colorectal carcinogenesis-update and perspectives. *World J Gastroenterol*, 2014 ; 20(48): 18151-18164.
6. American Cancer Society, Colorectal Cancer Facts & Figures 2017-2019, P.2.
7. Heydarnejad, M. S., Hassanpour, D. A., & Solati, D. K., Factors affecting quality of life in cancer patients undergoing chemotherapy. *Africa Health Sciences*, 2011 ; 11, 266-270.
8. Jansen, L., Herrmann, A., Stegmaier, C., Singer, S., Brenner, H., Arndt, V. Health related quality of life during the 10 years after diagnosis of colorectal cancer : a population-based study. *J Clin Oncol.*, 2011; 29(24): 3263–3269.
9. Natrah, M. S., Ezat, S. W. P., Syed, M. A., Mohd Rizal, A. M., & Saperi, S., Quality of life in Malaysian colorectal cancer patients: A preliminary result. *Asian Pacific Journal of Cancer Prevention*, 2012; 13, 957-962.
10. Hossein Mahmoudi1, Saeid Joudi2*(2017), “The Effect Of Implementation Of Health Development Plan On Patient Satisfaction In Public Hospitals Of Tabriz, Iran”, *Pharmacophore*, 8(4), 15-19.
11. Schwenk W, Neudecker J, Haase O, Raue W, Strohm T, Müller JM. Comparison of EORTC quality of life core questionnaire (EORTC-QLQ-C30) and gastrointestinal quality of life index (GIQLI) in patients undergoing elective colorectal cancer resection. *Int J Colorectal Dis* 2004; 19 (6):554–60.
12. Arraras, J. I., Greimel, E., Sezer, O., Chie, W. C., Bergenmar, M., Costantini, A., et al. An international validation study of the EORTC QLQ-INFO25 questionnaire: An instrument to assess the information given to cancer patients. *European Journal of Cancer*, 2010; 46(15), 2726–2738.
13. Singer, S., Engelberg, P. M., Weißflog, G., Kuhnt, S., & Ernst, J, Construct validity of the EORTC quality of life questionnaire information module. *Quality of Life Research*, 2013; 22(1), 123–129.
14. Al Wutayd, O., Alamri, F., Ali, A.M., Kassim, K.A., Ibrahim, A.K., Colorectal Cancer Risk Factors: A Study of Knowledge, Attitude and Practice Among Adults in Riyadh, Saudi Arabia, *Cancer Research Journal*, 2015; 3(5): 94-99.
15. Husson O, Mols F, van de Poll-Franse LV. The relation between information provision and health-related quality of life, anxiety and depression among cancer survivors: a systematic review. *Annals of oncology : official journal of the European Society for Medical Oncology ESMO* 2011;22(4):761-72.
16. Al-Thafar, A.K., Al-Naim, A.F., Albgas, D.S., Boqursain, S.K., Aldhafar, A.S., Ghreiz, S.M., Ibrahim, S., Knowledge Attitude and Practice of Colorectal Cancer among School Teachers in Al-Ahsa Saudi Arabia, *Asian Pac J Cancer Prev.*, 2017; 18 (10), 2771-2774.
17. Fayers, P.M., Aaronson, N.K., Bjordal, K., Groenvold, M., Curran, D., Bottomley, A., on behalf of the EORTC Quality of Life Group, The EORTC QLQ-C30 Scoring Manual, 3rd ed., 2001; pp.6-8.
18. Püsküllüoğlu, M., & Tomaszewski, K., Zygulska, A., Ochendusko, S., Streb, J., & Tomaszewska, I., Krzemieniecki, K., Pilot Testing and Preliminary Psychometric Validation of the Polish Translation of the EORTC INFO25 Questionnaire Validation of the Polish version of INFO25—pilot study, *Applied Research Quality Life*, 2014; 9:525–535
19. Cankurtaran, E.S., Akbiyik, I.D., Ozalp, E., Understanding the reliability and validity of the EORTC QLQ-C30 in Turkish cancer patients, *European Journal of Cancer Care* 2007; 17(1):98 – 104

20. Pirri, C., Bayliss.E., Trotter, J., Olver, I.N., Katris, P., Drummond, P. et al., Nausea still the poor relation in antiemetic therapy? The impact on cancer patients' quality of life and psychological adjustment of nausea, vomiting and appetite loss, individually and concurrently as part of a symptom cluster. *Support Care Cancer*, 2013; 21(3):735–748
21. Rathod, S., Livergant, J., Klein, J., Witterick, I., Ringash, J., A systematic review of quality of life in head and neck cancer treated with surgery with or without adjuvant treatment. *Oral Oncol.*, 2015; 51(10): 888–900
22. Orlich MJ, Singh PN, Sabaté J, Fan J, Sveen L, et al. , Vegetarian dietary patterns and the risk of colorectal cancers. *JAMA Intern Med.*, 2015; 175(5): 767-776.
23. Wang, J., Sun, L., Ding, N., Li, J., Gong, H., Chen, X., Yu, D., Luo, Z., Yuan, Z., & Yu1, J., The association between comorbidities and the quality of life among colorectal cancer survivors in the People's Republic of China, *Patient Prefer Adherence*, 2016; 10: 1071–1077.
24. Adams, S.V., Ceballos, R., Newcomb, P.A., Quality of Life and Mortality of Long-Term Colorectal Cancer Survivors in the Seattle Colorectal Cancer Family Registry, *PLOS One*. 2016; 11(6): e0156534.
25. Glavić, Z., Galić, S & Krip, M., Quality of Life and Personality Traits in Patients with Colorectal Cancer, *Psychiatria Danubina*, 2014; 26 (2): pp 172-180.
26. Alotaibi, S.M., AlAbbas, F., Bashnini, N.K., Almoshadq, A.F., Al-Hindi, H., et al., Functional Assessment of Quality of Life Using EORTCQLQ-CR29 in Patients with Colon Cancer at King Abdulaziz University Hospital. *J Integr Oncol.*, 2015; 11(6):1-6.
27. Ahmed, A.E., Almuzaini, A.S., Alsadhan, M.A., Alharbi, A.G., Almuzaini, H.S., Ali, Y.Z., & Jazieh, A., Health-Related Predictors of Quality of Life in Cancer Patients in Saudi Arabia, *J Canc Educ.*, 2017; 3: 1 – 9.
28. Almutairi, K.M., Alhelih, E., Al-Ajlan, A.S., & Vinluan, J.M., A cross-sectional assessment of quality of life of colorectal cancer patients in Saudi Arabia, *Clin Transl Oncol.*, 2016; 18:144–152.
29. Alnuwaysir, M., Baral, N., Alhadhari, H., Colorectal Cancer Awareness and Attitude among Adult, Al-Dammam, Saudi Arabia. *Adv Cancer Prev.*, 2016 ;1 (4)1: 117.
30. Al Eid, Z.M., AlRadhi, Z.I., AlTuraiki, Z.I., AlSalem, E.S. & AlAbbad, Z.M., Knowledge of Colorectal Cancer Screening among men in AlAhsa, Saudi Arabia, *International Journal of Scientific & Engineering Research*, 2017; 8 (9): 264 – 268.
31. Masroor Roudsari Daryadokht, Mohammad Beigi Elahe*, Haghani Hamid, (2017), “Effect of Peer Education on the Medication Adherence and the Quality of Life of Hypertensive Patients”, *Pharmacophore*, 8(3), 19-23.
32. Al Jamaan, M.A., Memish, Z.A., Basulaiman, M.O., Saeedi, M. Y., Al Wadey, A.M., Arafa, M. A., Al Saif, A. A., Alfarwan, W.M., Al-Fahaad, H.A., Alqarni, A.S., Evaluation of Referral System for Cancer Patients and The Information they received about Their Disease in Tertiary Hospitals in Riyadh, Middle east journal of family medicine, 2014; 12 (5): 26– 33.
33. Husson, O. (2013). Information provision and patient reported outcomes in cancer survivors: With a special focus on thyroid cancer, Tilburg University.
34. Darkhor, S., Estebasari, F., Hosseini, M., Yazdani Charati, J., Vasli, P. (2018). Effect of health promotion intervention on Nurses' healthy lifestyle and health-promoting behaviors: RCT study. *J Adv Pharm Edu Res*, 8(1):108-114.
35. Pinto, A.C.C.P., Assessing the information given to cancer patients attending day hospital in comprehensive cancer centre, Master's Dissertation in Clinical Oncology, Porto university, 2011; p.40,41.