Health-related quality of life and related factors in patients with colorectal cancer in Iran: a systematic review

Zahra Naeimabadi, PhD[a], Homayoon Bana Derakhshan, PhD[b,*], Maryam Rassouli, PhD[c], Abbas Ebadi, PhD[d]

Introduction: This systematic review aims to examine the health-related quality of life (QOL) in Iranian patients with colorectal cancer (CRC) and its related factors.

Methods: A thorough, systematic search was conducted in different international electronic databases, including Scopus, PubMed, Web of Science, and Persian electronic databases such as Iranmedex, and Scientific Information Database using keywords such as "Colorectal neoplasm", "Colorectal tumors", "Colorectal cancer", "Quality of life", and "Life quality" from the earliest to 17 October 2022. The quality of the studies included in this systematic review was evaluated using the appraisal tool for cross-sectional studies (AXIS tool).

Results: There were 820 CRC patients in the five cross-sectional studies that made up this systematic review. The mean score of QOL in patients with CRC was 61.99 (SD = 15.87) out of 100 based on EORTC-QLQ-C30, which indicates a moderate to good level of QOL. Factors such as age, gender, living conditions, level of education, occupation, monthly income, health insurance, physical activity, performance status, and comorbidities had a significant relationship with QOL in patients with CRC.

Conclusion: In sum, the findings of the five studies that were a part of this systematic review revealed that Iranian patients with CRC had a moderate to good QOL. Therefore, managers and health policymakers can create psychological counseling programs with an emphasis on the factors affecting the QOL of patients in light of how crucial it is to raise patients' understanding of the long-term impacts of CRC and how they affect their QOL.

Keywords: colorectal cancer, colorectal neoplasm, colorectal tumor, quality of life, systematic review

Introduction

Colorectal cancer (CRC) has emerged as a topic of worldwide concern, affecting nations in both developed and developing regions[1]. Based on global statistics, CRC ranks as the third most

[a]Student Research Committee, Department of Medical Surgical Nursing, School of Nursing and Midwifery, Shahid Beheshti University of Medical Science, [b]Assistant Professor of Medical Education, Head of Anesthesia & Operating Room Department, School of Nursing & Midwifery, Shahid Beheshti University of Medical Sciences, [c]Professor, Cancer Research Center, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran and [d]Behavioral Sciences Research Center, Life style institute, Nursing Faculty, Baqiyatallah University of Medical Sciences

Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

*Corresponding author. Address: Anesthesia and Operating Room Department, Nursing and Midwifery Faculty, Shahid Beheshti University of Medical Sciences, Tehran 41469-39841, Iran. Tel.: +989 110 236 996; fax: +981 333 550 097. E-mail: contact1997@yahoo.com (H. Bana Derakhshan).

HIGHLIGHTS

- The mean score of quality of life (QOL) in patients with colorectal cancer (CRC) was 61.99 (SD = 15.87) out of 100 based on EORTC-QLQ-C30, which indicates a moderate to good level of QOL.
- Factors such as age, gender, living conditions, level of education, occupation, monthly income, health insurance, physical activity, performance status, and comorbidities had a significant relationship with QOL in patients with CRC.
- In sum, the findings of this systematic review revealed that Iranian patients with CRC had a moderate to good QOL.
- Therefore, managers and health policymakers can create psychological counseling programs with an emphasis on the factors affecting the QOL of patients in light of how crucial it is to raise patients' understanding of the long-term impacts of CRC and how they affect their QOL.

prevalent form of cancer, accounting for ~6.1% of all cancer cases[2]. Asia has the highest (51.8%) contribution to CRC cases[3]. The escalating prevalence of CRC is driven by various factors, including population expansion, alterations in demographics, and the adoption of Westernized lifestyle habits[4]. More specifically, ~70% of CRC cases are caused by environmental factors, including dietary habits (high consumption of red and processed meat, low intake of fiber, fruits, vegetables, and dairy products), physical inactivity, smoking, and alcohol use[2,4]. A genetic predisposition accounts for a quarter of CRC cases,

while the remaining patients are influenced by hereditary factors[4]. However, advances in regular screening, early diagnosis, and treatment have contributed to the survival of CRC patients[1,5]. The available epidemiological evidence indicates a reduction of over 35% in the occurrence of CRC among the wider population subsequent to the introduction of population screening measures during the 1990s[6]. The survival rate of these patients has also increased over the decades, and nowadays, we see that about 58% of patients experience 10-year survival after their diagnosis[6,7].

During the disease, patients with CRC face psychological distress, including depression and anxiety[8]. Furthermore, the individuals affected by CRC, including patients and their families, are implicated in the physical as well as the financial adversities that ensue[9]. Eventually, the long-term presence of physical and mental issues will worsen the quality of life (QOL) of these patients[1].

The literature review showed poor levels of QOL in CRC patients[7,10,11]. On the other hand, improving the survival of cancer patients and their QOL is one of the main strategic goals of medical institutions[12]. Moreover, the escalating prevalence of CRC in developing countries highlights the essentiality of comprehending the relationship between the QOL of individuals afflicted with CRC and related factors for the purpose of enhancing survival outcomes. Therefore, this systematic review aims to investigate the QOL among Iranian patients diagnosed with CRC and its related factors.

Methods

Study registration and reporting

This systematic review was conducted utilizing the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist (Supplementary Table S1, Supplemental Digital Content 1, http://links.lww.com/MS9/A370)[13]. Additionally, the current review was not registered in the International Prospective Register of Systematic Reviews (PROSPERO) database.

Search strategy

A thorough, systematic search was conducted in different international electronic databases, including Scopus, PubMed, Web of Science, and Persian electronic databases such as Iranmedex, and Scientific Information Database (SID) using keywords extracted from Medical Subject Headings such as "Colorectal neoplasm", "Colorectal tumors", " Colorectal cancer", "Quality of life", and "Life quality" from the earliest to the 17th of October 2022. For example, the search strategy was in PubMed/MEDLINE database, including (("Colorectal neoplasm") OR ("Colorectal tumors") OR ("Colorectal carcinomas") OR ("Colorectal cancer")) AND (("Quality of life") OR ("Life quality")) AND ("Health-related quality of life")). Boolean operators "OR" and "AND" were used to combine keywords. Additionally, Iranian electronic databases' keyword counterparts in Persian were searched. The systematic search was carried out independently by two researchers. This systematic review excludes the use of gray literature, including expert opinions, conference presentations, theses, research and committee reports, and ongoing research.

Gray literature refers to articles that have been electronically published but have not been reviewed by a for-profit publisher[14].

Inclusion and exclusion criteria

Cross-sectional studies with a focus on QOL and related factors among Iranian patients with CRC were included in this systematic review. This review study has excluded letters to the editor, case reports, conference proceedings, experiments, studies with qualitative designs, and reviews.

Study selection

EndNote 8X software was used to manage the data for this systematic review study. Two researchers independently chose the studies for this review based on the inclusion and exclusion criteria. At first, the title, abstract, and full text of articles were evaluated to remove duplicate articles. Then, this operation was carried out manually to avoid data loss. During the selection of studies, the third researcher settled the discrepancies between the first two. To avoid data loss, references were lastly manually checked.

Data extraction and quality assessment

Information including the name of the first author, year of publication, location, sample size, male/female ratio, age, single/married ratio, occupation, comorbidities, level of education, location of the tumor, stoma/non-stoma, stage of cancer, questionnaire, and key results was extracted from the articles included in this systematic review. The quality of the studies included in this systematic review was evaluated using the appraisal tool for cross-sectional studies (AXIS tool). This tool evaluates the quality of the included studies via 20 items with a two-point Likert, including yes (score of 1) and no (score of 0). This tool assesses report quality (7 items), study design quality (7 items), and the possible introduction of biases (6 items). Finally, AXIS rates the quality of studies at three levels: high (70–100%), fair (60–69.9%), and low (0–59.9%)[15]. Two researchers extracted information and evaluated the quality of the studies, independently. Also, the AMSTAR 2 checklist was completed to evaluate the study quality (Supplementary File S2, Supplemental Digital Content 2, http://links.lww.com/MS9/A371)[16].

Results

Study selection

As shown in Fig. 1, there were 867 studies found following a thorough search of the electronic databases. Due to duplicate articles, 191 articles were excluded from the study. The remaining 676 papers were reduced to 631 studies that were removed because they did not meet the goals of the study and 10 articles that were eliminated for having non-cross-sectional designs. Following a thorough examination of the full-text papers, it was determined that of the 33 studies that remained, 16 were omitted from the current systematic review due to insufficient research design, and 12 were excluded due to a lack of relevant data. Finally, five[17–21] studies remained in this systematic review.
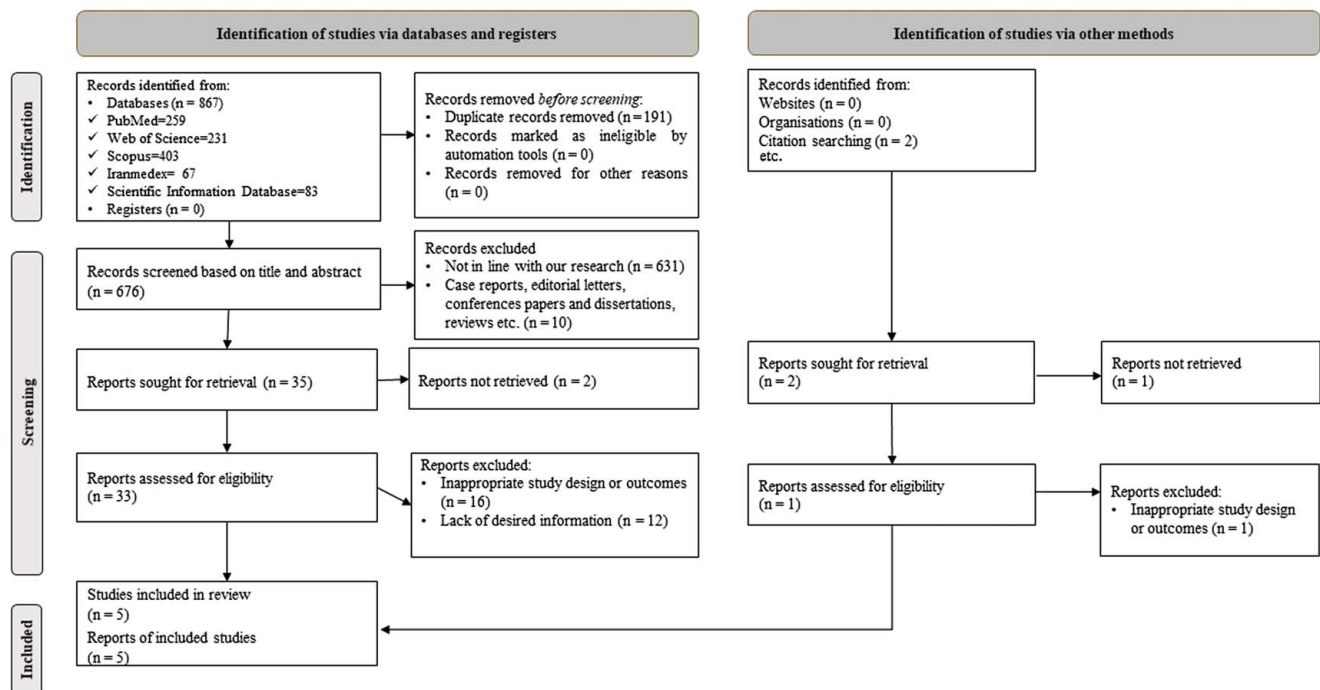
Naeimabadi et al. Annals of Medicine & Surgery (2024)

Annals of Medicine & Surgery

Figure 1. Flow diagram of the study selection process.

Study characteristics

As mentioned in Table 1, there were 820 CRC patients in the five[17–21] cross-sectional studies that made up this systematic review. Their mean age was 58.07 (SD = 13.85), and 58.01% of them were males. Among the participants, 86.06% were married and 69.51% were unemployed. Literacy rates among patients with CRC were 58.93%. Of the patients, 53.26% had colon cancer and 64.80% had comorbidity conditions. All studies[17–21] were conducted in Iran. To measure the QOL in patients with CRC, EORTC-QLQ-C30 (European Organization for Research and Treatment of Cancer quality-of-life questionnaire C30) was used in four studies[17–19,21], and FACT-C (The functional assessment of cancer therapy-colorectal) was used in one study[20].

Methodological quality of the included study

As shown in Fig. 2, all studies[17–21] were of high quality. Also, one study[17] did not report research limitations, and two studies[17,21] did not report funding sources or conflicts of interest.

QOL in patients with CRC

As mentioned in Table 1, the mean score of QOL in patients with CRC was 61.99 (SD = 15.87) out of 100 based on EORTC-QLQ-C30, which indicates a moderate to good level of QOL. The score in the domains of emotional functioning (EF) was 60.71 (SD = 24.35), physical functioning (PF) was 57.39 (SD = 26.43), cognitive functioning (CF) was 76.95 (SD = 23.15), social functioning (SF) was 56.14 (SD = 26.55), and role-playing functioning (RF) was 55.04 (SD = 27.86).

Factors related to QOL in patients with CRC

As mentioned in Table 2, factors such as gender (n = 4)[18–21], occupation (n = 1)[18], living condition (n = 1)[20], health insurance (n = 1)[20], and performance status (n = 1)[20] had a significant relationship with QOL in patients with CRC. The results of the studies showed that there was a significant positive relationship between the QOL of patients with CRC and age (n = 2)[17,20], level of education (n = 1)[18], monthly income (n = 1)[20], and physical activity (n = 1)[18]. Additionally, there was a significantly negative relationship between comorbidities (n = 2)[18,20] and QOL in CRC patients. Nonetheless, an insignificant relationship was observed between certain variables and QOL, including place of residency[18,21], duration of disease[18], type of cancer[17,18], and cancer staging[17].

Factors related to PF dimension

As mentioned in Table 2, factors such as gender (n = 3)[18,19,21] and occupation (n = 1)[18] had a significant relationship with the PF dimension. Factors such as age (n = 2)[17,18], level of education (n = 1)[18], and physical activity (n = 1)[18] had a significant positive relationship with the PF dimension. Moreover, the PF dimension had a significant negative relationship with comorbidities (n = 1)[18]. However, no significant relationship was found between factors such as place of residency[18,21], duration of disease[18], type of cancer[17,18], and cancer staging[17] with the PF dimension.

Factors related to RF dimension

As mentioned in Table 2, factors such as occupation (n = 1)[18] had a significant relationship with the RF dimension. Factors such as age (n = 1)[17], level of education (n = 1)[18], and physical

Table 1

Basic characteristics of the included studies in this systematic review

References	Location	Sample size	M/F ratio (%)	Age (mean ± SD)	Single/ married ratio (%)	Occupation (employed/ unemployed) (%)	Comorbidities (Yes/No) (%)	Level of education (%)	Location of tumor (%)	Stoma/ Non-stoma (%)	Stage of cancer (%)	Questionnaire	Key results	AXIS score
Momeni et al.,[20]	Iran	110	58.18/ 41.82	58.33 (SD = 12.39)	10.00/ 90.00	36.37/63.63	N/A	● Literate: 68.19 ● Illiterate: 31.81	● Colon: 16.36 ● Rectal: 83.64	28.18/ 71.82	● I: 10.90 ● II: 40.00 ● III: 43.63 ● IV: 5.47	FACT-C	● The mean score of QOL in CRC patients was 95.72 (SD = 19.18). ○ The mean score of the PWB dimension was 21.88 (SD = 5.59). ○ The mean score of the EWB dimension was 18.48 (SD = 4.72). ○ The mean score of the SFWB dimension was 16.26 (SD = 5.05). ○ The mean score of the FWB dimension was 16.60 (SD = 4.42).	High
Nikbakht et al.,[21]	Iran	120	62.50/ 37.50	56.82 (SD = 13.78)	15.00/ 85.00	28.33/71.67	67.50/32.50	● Literate: 53.33 ● Illiterate: 46.67	N/A	N/A	N/A	EORTC-QLQ-C30	● The mean score of QOL was 52.15 (SD = 19.09). ○ The mean score of the EF dimension was 67.29 (SD = 21.34). ○ The mean score of the PF dimension was 60.00 (SD = 24.18). ○ The mean score of the CF dimension was 80.69 (SD = 21.06). ○ The mean score of the SF dimension was 61.25 (SD = 23.29). ○ The mean score of the RF dimension was 60.28 (SD = 24.27).	High
Akhondi-Meybodi et al.,[17]	Iran	120	52.50/ 47.50	60.31 (SD = 15.71)	N/A	N/A	N/A	N/A	● Colon: 70.80 ● Rectal: 29.20	N/A	N/A	EORTC-QLQ-C30	The mean score of QOL was 76.98 (SD = 8.70).	High
Aminisani et al.,[18]	Iran	157	61.78/ 38.22	56.71 (SD = 13.78)	N/A	31.84/68.16	68.15/31.85	● Literate: 54.14 ● Illiterate: 45.86	● Colon: 72.61 ● Rectal: 27.39	N/A	N/A	EORTC-QLQ-C30	● The mean score of QOL was 51.05 (SD = 19.55). ○ The mean score of the EF dimension was 65.95 (SD = 21.60).	High

Table 1

(*Continued*)

References	Location	Sample size	M/F ratio (%)	Age (mean ± SD)	Single/ married ratio (%)	Occupation (employed/ unemployed) (%)	Comorbidities (Yes/No) (%)	Level of education (%)	Location of tumor (%)	Stoma/ Non-stoma (%)	Stage of cancer (%)	Questionnaire	Key results	AXIS score
													○ The mean score of the PF dimension was 60.13 (SD = 22.81). ○ The mean score of the CF dimension was 80.80 (SD = 20.62). ○ The mean score of the SF dimension was 62.01 (SD = 24.16). ○ The mean score of the RF dimension was 60.79 (SD = 24.22).	
Laghousi *et al.*,[19]	Iran	303	55.11/ 44.89	58.16 (SD = 13.58)	16.83/ 83.17	25.41/74.59	58.74/41.26	● Literate: 60.06 ● Illiterate: 39.94	N/A	N/A	● I, II: 35.31 ● III, IV: 64.69	EORTC-QLQ-C30	● The mean score of QOL was 49.91 (SD = 26.38). ○ The mean score of the EF dimension was 48.89 (SD = 30.10). ○ The mean score of the PF dimension was 52.05 (SD = 32.29). ○ The mean score of the CF dimension was 69.36 (SD = 27.78). ○ The mean score of the SF dimension was 45.15 (SD = 32.20). ○ The mean score of the RF dimension was 44.05 (SD = 35.08).	High

CF, cognitive functioning; EF, emotional functioning; EORTC-QLQ-C30, European Organization for Research and Treatment of Cancer quality-of-life questionnaire C30; FACT-C, the functional assessment of cancer therapy-colorectal; N/A, not applicable; PF, physical functioning; QOL, quality of life; RF, role-playing functioning; SD, standard deviation; SF, social functioning.

Figure 2. Assessment of the quality of the included articles.

activity $(n=1)$[18] had a significant positive relationship with the RF dimension. Furthermore, the RF dimension had a significant negative relationship with comorbidities $(n=1)$[18]. Nonetheless, no significant relationship was found between factors such as gender[17–19,21], place of residency[18,21], duration of disease[18], type of cancer[17,18], and cancer staging[17] with the RF dimension.

Factors related to EF dimension

As mentioned in Table 2, factors such as gender $(n=3)$[18,19,21] and type of cancer $(n=1)$[17] had a significant relationship with the EF dimension. Factors such as level of education $(n=1)$[18] had a significant positive relationship with the EF dimension. However, the EF dimension had a significant negative relationship with comorbidities $(n=1)$[18]. Nonetheless, no significant relationship was found between factors such as age[17,18], place of residency[18,21], duration of disease[18], and cancer staging[17] with the EF dimension.

Factors related to CF dimension

As mentioned in Table 2, factors such as gender $(n=2)$[18,21] had a significant relationship with the CF dimension. Also, age $(n=1)$[17] had a significant positive relationship with the CF dimension. However, no significant relationship was found between factors such as level of education[18], occupation[18], place of residency[18,21], physical activity[18], duration of disease[18], type of cancer[17,18], cancer staging[17], and comorbidities[18] with the CF dimension.

3.5.5. Factors related to SF dimension

As mentioned in Table 2, factors such as place of residence $(n=2)$[18,21], gender $(n=1)$[18], and occupation $(n=1)$[18] had a

significant relationship with the SF dimension. Also, age $(n=1)$[17], physical activity $(n=1)$[18], and level of education $(n=1)$[18] factors had a significant positive relationship with the SF dimension. However, the SF dimension had a significant negative relationship with comorbidities $(n=1)$[18]. Nonetheless, no significant relationship was found between factors such duration of disease[18], type of cancer[17,18], and cancer staging[17] with the SF dimension.

Discussion

The findings of the five studies that were a part of this systematic review revealed that Iranian patients with CRC had a moderate to good QOL. Factors such as age, gender, living conditions, level of education, occupation, monthly income, health insurance, physical activity, performance status, and comorbidities had a significant relationship with QOL in patients with CRC.

The most prevalent form of gastrointestinal cancer and the second leading cause of cancer-related death in individuals, CRC is becoming more and more common[22]. The type of treatment received and the actual nature of the disease have an impact on the QOL of CRC patients. To improve their QOL and lessen their discomfort, it is crucial to explore and comprehend the impacts of the condition as much as possible[23]. The result of this study showed that patients with CRC had moderate to good levels of QOL. However, there was a difference in the results of the studies included in this systematic review, which could be related to factors related to QOL such as age, gender, living condition, level of education, occupation, monthly income, health insurance, physical activity, performance status, and comorbidities.

A review study was conducted by Jansen *et al.* on the QOL of long-term CRC patients. The results of this study showed that the patients generally had a good QOL, but their physical QOL was

Table 2

Factors associated with QOL among CRC patients

References	QOL	PF	RF	EF	CF	SF
Momeni et al.,[20]	• There was a significant relationship between gender and QOL ($P < 0.023$). • There was a significant relationship between living conditions with QOL ($P < 0.001$). • There was a significant relationship between health insurance with QOL ($P < 0.039$). • There was a significant relationship between performance status with QOL ($P < 0.033$). • There was a significant positive relationship between age and QOL ($P < 0.033$). • There was a significant positive relationship between monthly income status with QOL ($P < 0.013$). • There was a significant negative relationship between comorbidities and QOL ($P < 0.003$).	N/A	N/A	N/A	N/A	N/A
Nikbakht et al.,[21]	There was a significant relationship between gender and QOL ($P = 0.001$).	There was a significant relationship between gender and PF dimension ($P < = 0.002$).	N/A	There was a significant relationship between gender and EF dimension ($P < 0.001$).	There was a significant relationship between gender and CF dimension ($P = 0.007$).	There was a significant relationship between place of residence and SF dimension ($P = 0.012$).
Akhondi-Meybodi et al.,[17]	There was a significant positive relationship between age and QOL ($P < 0.001$).	There was a significant positive relationship between age and PF dimension ($P < 0.001$).	There was a significant positive relationship between age and RF dimension ($P < 0.001$).	There was a significant relationship between the type of cancer and EF dimension ($P = 0.01$).	There was a significant positive relationship between age and CF dimension ($P < 0.001$).	There was a significant positive relationship between age and SF dimension ($P < 0.001$).
Aminisani et al.,[18]	• There was a significant relationship between gender and QOL ($P < 0.001$). • There was a significant relationship between occupation and QOL ($P < 0.001$). • There was a significant positive relationship between physical activity and QOL ($P = 0.001$). • There was a significant positive relationship between the level of education and QOL ($P < 0.001$). • There was a significant negative relationship between	• There was a significant relationship between age and PF dimension ($P = 0.049$). • There was a significant relationship between gender and PF dimension ($P = 0.009$). • There was a significant relationship between occupation and PF dimension ($P < 0.001$). • There was a significant positive relationship between physical activity and PF dimension ($P < 0.001$). • There was a significant positive relationship between the level of education and the PF dimension	• There was a significant relationship between occupation and RF dimension ($P < 0.001$). • There was a significant positive relationship between the level of education and the RF dimension ($P = 0.026$). • There was a significant positive relationship between physical activity and RF dimension ($P < 0.001$). • There was a significant negative relationship between comorbidities and RF dimension ($P = 0.007$).	• There was a significant relationship between gender and EF dimension ($P < 0.001$). • There was a significant positive relationship between the level of education and EF dimension ($P = 0.013$). • There was a significant negative relationship between comorbidities and EF dimension ($P < 0.001$).	There was a significant relationship between gender and CF dimension ($P = 0.014$).	• There was a significant relationship between gender and SF dimension ($P = 0.047$). • There was a significant relationship between place of residence and SF dimension ($P = 0.047$). • There was a significant relationship between occupation and SF dimension ($P < 0.001$). • There was a significant positive relationship between the level of education and the SF dimension ($P = 0.003$). • There was a significant positive relationship between physical activity

| Laghousi et al.,[19] | There was a significant relationship between gender and QOL (P<0.001). | comorbidities and QOL (P<0.001). • There was a significant negative relationship between comorbidities and PF dimension (P<0.001). There was a significant relationship between gender and PF dimension (P=0.004). | N/A | There was a significant relationship between gender and EF dimension (P=0.029). | N/A | and the SF dimension (P=0.001). • There was a significant negative relationship between comorbidities and SF dimension (P=0.001). | N/A |

CF, cognitive functioning; EF, emotional functioning; N/A, not applicable; PF, physical functioning; RF, role-playing functioning; SF, social functioning.

lower than that of the general population. However, patients had worse long-term depression scores and suffered from long-term symptoms of CRC[24]. In the present systematic review, factors such as gender, age, income status, and comorbidities were related to the QOL of patients with CRC in Iran. The results of the study of Jansen et al.[24] showed that men had a lower level than women in the physical dimension of QOL. Also, the general QOL was higher at older ages. Higher income had a positive relationship with QOL in these patients, while comorbidities had the opposite relationship. However, in another systematic review study conducted by Shrestha et al.[25], it was shown that, in general, gender does not affect the QOL of cancer patients.

Another factor that affected the QOL of patients with CRC was physical activity. In a systematic review article, Eyl et al. investigated the effect of physical activity on the QOL of patients with CRC. The results of this study showed that physical activity at any intensity (low to more intense levels) improves the QOL of these patients. It also showed that the relationship between physical activity and QOL is greater in women than in men[26].

In general, the results of other studies were consistent with the results of this systematic review. Despite moderate to good QOL in patients with CRC in Iran, patients are still suffering from physical and psychological problems. Factors related to the QOL can be useful for identifying the needs and problems of the QOL of these patients. Therefore, more studies focusing on factors related to the QOL in these patients are needed.

Limitations

The current systematic review, like other research, had certain limitations. Meta-analysis was not performed in this systematic review. Despite the lack of a meta-analysis in this work, the methodical approach to data collection, sorting, and analysis remained constant, and there was no heterogeneity in them. Despite completing a thorough and systematic search, it is possible that not all articles about this subject were found.

Implications for health managers and policymakers

The findings of this systematic review ascertained that numerous factors, both modifiable and non-modifiable, impact the QOL in individuals suffering from CRC. Healthcare managers and policymakers possess the capacity to make informed decisions aimed at improving the QOL, by enhancing certain factors that are alterable, including health insurance, clients' knowledge regarding health, levels of physical activity, and comorbidities. The provision of adequate healthcare coverage, particularly in developing nations, remains a primary concern for patients. Furthermore, a general view of the health status of patients will improve the control of disease conditions. Ultimately, the level of knowledge and awareness pertaining to a particular disease, as well as an individual's motivation and aspiration to attain optimal living conditions, can be influenced by the prospect of joining specialized associations aimed at supporting the afflicted cohort of patients.

Implication for future research

Despite having a moderate to good QOL, CRC patients in Iran continue to have physical and psychological difficulties. It may be helpful to identify these patients' needs and difficulties by looking at the aspects that are associated with their QOL. More

Naeimabadi et al. Annals of Medicine & Surgery (2024)

Annals of Medicine & Surgery

long-term studies that concentrate on factors related to these patients' QOL are also required.

Conclusion

In sum, the findings of the five studies that were a part of this systematic review revealed that Iranian patients with CRC had a moderate to good QOL. Factors such as age, gender, living conditions, level of education, occupation, monthly income, health insurance, physical activity, performance status, and comorbidities had a significant relationship with QOL in patients with CRC. Therefore, managers and health policymakers can create psychological counseling programs with an emphasis on the factors affecting the QOL of patients in light of how crucial it is to raise patients' understanding of the long-term impacts of CRC and how they affect their QOL.

Ethical approval

This study is a systematic review and does not require ethical approval and consent.

Consent

This study is a systematic review and does not require ethical approval and consent.

Sources of funding

None.

Author contribution

Study concept and design, data acquisition, data interpretation, drafting of the manuscript, and revision of the manuscript: all authors. The final version of the manuscript is approved by all authors.

Conflicts of interest disclosure

The authors declare no conflicts of interest.

Research registration unique identifying number (UIN)

We could not register our manuscript in the Research Registry UIN, www.researchregistry.com, due to internet access restrictions and international sanctions. We live in Iran. We hardly even meet the basic needs of our daily life. We do not receive any funding for our research, and we cannot pay for our research. Please excuse us from registering this manuscript in the Research Registry UIN: www.researchregistry.com.

Guarantor

Homayoon Bana Derakhshan.

Data availability statement

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Acknowledgement

None.

References

[1] Son H, Son Y-J, Kim H, et al. Effect of psychosocial interventions on the quality of life of patients with colorectal cancer: a systematic review and meta-analysis. Health Qual Life Outcomes 2018;16:1–12.
[2] Sawicki T, Ruszkowska M, Danielewicz A, et al. A review of colorectal cancer in terms of epidemiology, risk factors, development, symptoms and diagnosis. Cancers 2021;13:2025.
[3] Onyoh EF, Hsu W-F, Chang L-C, et al. The rise of colorectal cancer in Asia: epidemiology, screening, and management. Curr Gastroenterol Rep 2019;21:1–10.
[4] Wong MC, Ding H, Wang J, et al. Prevalence and risk factors of colorectal cancer in Asia. Intest Res 2019;17:317–29.
[5] Balhareth A, Aldossary MY, McNamara D. Impact of physical activity and diet on colorectal cancer survivors' quality of life: a systematic review. World J Surg Oncol 2019;17:1–12.
[6] Stoffel EM, Murphy CC. Epidemiology and mechanisms of the increasing incidence of colon and rectal cancers in young adults. Gastroenterology 2020;158:341–53.
[7] Mols F, Schoormans D, de Hingh I, et al. Symptoms of anxiety and depression among colorectal cancer survivors from the population-based, longitudinal PROFILES Registry: prevalence, predictors, and impact on quality of life. Cancer 2018;124:2621–8.
[8] Harrington CB, Hansen JA, Moskowitz M, et al. It's not over when it's over: long-term symptoms in cancer survivors – a systematic review. Int J Psychiatry Med 2010;40:163–81.
[9] McDougall JA, Blair CK, Wiggins CL, et al. Socioeconomic disparities in health-related quality of life among colorectal cancer survivors. J Cancer Surviv 2019;13:459–67.
[10] Russell L, Gough K, Drosdowsky A, et al. Psychological distress, quality of life, symptoms and unmet needs of colorectal cancer survivors near the end of treatment. J Cancer Surviv 2015;9:462–70.
[11] Weaver KE, Forsythe LP, Reeve BB, et al. Mental and physical health-related quality of life among US cancer survivors: population estimates from the 2010 National Health Interview Survey. Cancer Epidemiol Biomarkers Prev 2012;21:2108–17.
[12] Drury A, Payne S, Brady A-M. Identifying associations between quality of life outcomes and healthcare-related variables among colorectal cancer survivors: a cross-sectional survey study. Int J Nurs Stud 2020;101:103434.
[13] Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. Int J Surg 2021;88:105906.
[14] Corlett RT. Trouble with the gray literature. Biotropica 2011;43:3–5.
[15] Downes MJ, Brennan ML, Williams HC, et al. Development of a critical appraisal tool to assess the quality of cross-sectional studies (AXIS). BMJ Open 2016;6:e011458.
[16] Shea BJ, Reeves BC, Wells G, et al. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ 2017;358:j4008.
[17] Akhondi-Meybodi M, Akhondi-Meybodi S, Vakili M, et al. Quality of life in patients with colorectal cancer in Iran. Arab J Gastroenterol 2016;17:127–30.
[18] Aminisani N, Nikbakht H, Jafarabadi MA, et al. Depression, anxiety, and health-related quality of life among colorectal cancer survivors. J Gastrointest Oncol 2017;8:81.

[19] Laghousi D, Jafari E, Nikbakht H, *et al*. Gender differences in health-related quality of life among patients with colorectal cancer. J Gastrointest Oncol 2019;10:453.

[20] Momeni M, Ghanbari A, Jokar F, *et al*. Predictors of quality of life in patients with colorectal cancer in Iran. Indian J Cancer 2014; 51:550.

[21] Nikbakht HA, Sani NA, Jafarabadi MA, *et al*. Quality of life and its determinants among colorectal cancer survivors. J Kermanshah Univ Med Sci 2015;19:e70707.

[22] Aminisani N, Nikbakht H-A, Shojaie L, *et al*. Gender differences in psychological distress in patients with colorectal cancer and its correlates in the Northeast of Iran. J Gastrointest Cancer 2022;53:245–52.

[23] Bahrami M. Do nurses provide holistic care to cancer patients? Iran J Nurs Midwifery Res 2010;15:245.

[24] Jansen L, Koch L, Brenner H, *et al*. Quality of life among long-term (≥ 5 years) colorectal cancer survivors–systematic review. Eur J Cancer 2010;46:2879–88.

[25] Shrestha A, Martin C, Burton M, *et al*. Quality of life versus length of life considerations in cancer patients: a systematic literature review. Psychooncology 2019;28:1367–80.

[26] Eyl RE, Xie K, Koch-Gallenkamp L, *et al*. Quality of life and physical activity in long-term (≥ 5 years post-diagnosis) colorectal cancer survivors-systematic review. Health Qual Life Outcomes 2018;16: 1–13.