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Return to Work in Colorectal Cancer Patients

Lahya Afshari Saleh[1], Mohammad Taha Khorashadizadeh[2], Soodabeh Shahid Sales[3], Hamed Tabesh[4], Ehsan Rafeemanesh[5], Hossein Zakeri[6]

[1]Department of Occupational Medicine, Division of Sleep Medicine, Psychiatry and Behavioral Sciences Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

[2]Student Research Committee, Mashhad University of Medical Sciences, Mashhad, Iran
[3]Cancer Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
[4]Department of Medical Informatics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
[5]Department of Occupational Medicine, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
[6]Department of Emergency Medicine, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

Corresponding Author: Hossein Zakeri, Department Of Emergency Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
E-mail: zakerih@mums.ac.ir

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ABSTRACT

Background: Return to work (RTW) significantly impacts the quality of life of cancer survivors and carries substantial economic and social implications. This study investigates the RTW rate among colorectal cancer patients post-surgery.

Materials and Methods: Colorectal cancer patients referred to the Mashhad University of Medical Sciences oncology clinics were enrolled based on inclusion criteria and after obtaining oral consent. Each participant completed a checklist and a questionnaire on the quality of working life for colorectal cancer patients. The checklist included age, gender, insurance type, annual income, marital status, occupation, hospitalization duration, medical history, occupational profile, health status, and disease stage. Data analysis was performed using SPSS software.

Results: A total of 57 patients were included, with 54 (94.7%) males. Forty-four patients (77.2%) returned to work in their previous or new roles. Among these, 27 (47.4%) worked full-time, 17 (29.8%) part-time, and 13 (22.8%) did not RTW. No significant relationship was found between RTW and factors such as age (p=0.116), gender (p=0.547), residence (p=0.333), insurance type (p=0.083), job type (p=0.526), history of chronic diseases (p=0.432), or cancer treatment method (p>0.999). However, significant correlations were observed between RTW and the quality of life questionnaire score (p=0.001), length of hospitalization (p=0.041), and annual income (p<0.001).

Conclusion: Approximately 77% of colorectal cancer patients returned to work following treatment. Shorter hospital stays and higher income were associated with greater RTW rates. Additionally, the quality of working life questionnaire score was strongly correlated with RTW (p=0.001).

Keywords: Colorectal cancer; Return to work; Quality of working life

INTRODUCTION

Colorectal cancers are the third most common cancer in men and the second most common in women worldwide. Colon cancer is also a leading cause of cancer-related death globally[1]. Numerous studies investigating the burden of colon cancer predict a dramatic increase in the prevalence of this disease in the future. In 2020, the global annual incidence of colon cancer was 1.93 million, with projections indicating that this number will reach 3.2 million per year by 2040, primarily in the United States and China[2].

Cancer poses significant challenges not only for patients and their families but also for employees in the workplace. Some cancer patients take time off work during treatment, while others continue working part-time or full-time. The ability to return to work (RTW) depends on various factors, including the type of cancer, treatment regimen, nature of the job, financial needs, and attitudes toward work[3]. Over recent decades, improvements in colon cancer treatments have substantially increased survival

rates. Furthermore, increased screening at younger ages has resulted in a growing number of colon cancer diagnoses among working-age individuals[4]. Reduced work capacity can lead to adverse consequences for the individual and society. Consequently, the RTW of colon cancer patients has garnered increasing attention in recent years[5]. A study conducted in 2020 by Bakker et al. in the Netherlands found that two-thirds of patients returned to work within two years of taking leave. Factors such as metastasis, emotional distress, and post-surgery complications were associated with a failure to RTW during this period [6]. Similarly, a study by Gordon et al. in Australia identified older age, low body mass index (BMI), and poor physical health as factors that hindered patients' RTW[7]. RTW can significantly impact the quality of life for cancer survivors. It can enhance survival rates and give patients a sense of normalcy and control over their lives. To the author's knowledge, the return-to-work rate and the factors influencing it among colon and rectal cancer patients have not been investigated in this country. Therefore, this study assesses the return-to-work rate among colon and rectal cancer patients following surgery.

MATERIALS AND METHODS

Study design

This study investigated the medical records of colorectal cancer patients referred to the oncology centers of Mashhad University of Medical Sciences who were treated between 2018 and 2019. The study subjects included patients who received treatment and attended oncology clinics for routine check-ups. Additionally, some subjects were contacted via phone by the researcher for inclusion. Participants were enrolled based on the inclusion criteria and after obtaining oral consent. Stage IV disease was excluded due to its poor prognosis. Deceased patients were identified and excluded using the university's document registration system linked to the university's database.

A checklist containing demographic variables and a questionnaire on the quality of working life of colorectal cancer patients was completed for each participant. The quality of working life questionnaire, originally in English with 23 items[8], was translated into Farsi, and its validity and reliability were evaluated. The questionnaire includes items addressing the meaning of work, perception of the work situation, work environment, recognition within the organization, and health-related issues affecting work. Response options include completely disagree, disagree, slightly disagree, slightly agree, agree, completely agree, and not applicable (N/A). Higher scores indicate a higher quality of working life. RTW was considered positive if a patient returned to work and worked for at least one month[9]. Full-time work was defined as working at least 8 hours per day, while part-time work was defined as working fewer than 8 hours per day.

The checklist also included age, gender, place of residence, insurance type, annual income, marital status, occupation, duration of hospitalization, medical history, job profile, health status, and disease stage. Patients' annual income was categorized into less than 650,000,000 Rials per year and 650,000,000 Rials or more per year, based on the minimum wage stipulated by labor law.

Job exposure variables were categorized into three groups based on the nature of the work: administrative, industrial-manual, and service jobs. Administrative jobs were those involving primarily sitting with minimal chemical and physical exposure. Industrial-manual jobs involve manual labor, high chemical exposure, and a higher risk of accidents. Service jobs were those in which services were provided rather than goods produced, such as sales positions.

Questionnaire Validation

The questionnaire was first translated from English to Farsi by a translator. Subsequently, two translators, one of whom was a native English speaker, back-translated it from Farsi to English. The original questionnaire and the final English translation were then compared. Face validity was used to assess the validity of the questionnaire, evaluating its appearance, proportionality, and relevance to the researcher's objectives qualitatively. A panel of five experts reviewed the questionnaire for issues such as comprehension difficulties, ambiguities, and technical or specialized terminology appropriateness. Their feedback was

incorporated into the final version of the questionnaire.

Content validity was assessed quantitatively to ensure the validity of the data and coverage of the research subject. The Content Validity Ratio (CVR) was used to determine the necessity of each question, and the Content Validity Index (CVI) was used to evaluate the overall quality of the instrument.

For CVR calculation, the opinions of nine experts were solicited. Experts were asked to classify each item into three categories: necessary, useful but not necessary, or not necessary. The CVR was then calculated using the following formula: n is the total number of experts, and n_e is the number of experts rated the item as "necessary." Table 1 presents the calculated CVR values.

$$CVR = \frac{n_e - \frac{n}{2}}{\frac{n}{2}}$$

The minimum acceptable CVR value was determined based on the Lawshe Table, with a threshold of 0.78 for nine experts. Items with a CVR value below 0.78 were excluded from the questionnaire. If the CVR was greater than 0.78, the item was considered essential with an acceptable statistical significance level of 0.05[10].

For the CVI calculation, the questionnaire was re-administered to the same nine experts, who evaluated each item based on three criteria: simplicity and fluency, relevance, and clarity/transparency. Responses were given on a four-point Likert scale (Waltz and Basel index). The CVI was calculated by dividing the number of experts rated an item as 3 or 4 by the total number of experts. Items with a CVI below 0.7 were deemed irrelevant and removed, those between 0.7 and 0.79 were deemed relevant but requiring revision, and those above 0.79 were considered acceptable and appropriate. Table 1 shows the calculated CVI values.

$$CVI = \frac{\text{The number of experts who scored the items 3 and 4}}{\text{total number of experts}}$$

A pilot test was conducted with 18 participants to assess the reliability of the questionnaire. Ambiguous items were modified based on feedback from the pilot group.

Statistical analysis

Descriptive and analytical statistical methods were employed for data analysis. The mean, standard deviation, and frequency distribution indices were used to describe the sample. The Chi-square and Fisher's exact tests were applied to investigate the relationship between RTW and other variables. The independent t-test was used to compare quantitative variables between two groups, while the ANOVA test was employed for comparisons among three or more groups. A 95% confidence level was considered for all statistical tests. Based on the registered data from the university oncology centers, with an average of 75 cases per year and a survival rate of approximately 50%, as reported in an Iranian study[11], it was estimated that about 185 individuals could be followed up from 2018 to 2022. All individuals who met the inclusion criteria and provided consent were included in the study.

Ethical considerations

Unwritten informed consent was obtained from all participants. Inclusion in the study was voluntary, and individuals were not excluded unless they explicitly declined to participate. The study followed the ethical principles outlined in the Declaration of Helsinki and received approval from the Ethics Committee of Mashhad University of Medical Sciences (IR.MUMS.MEDICAL.REC.1398.480).

RESULT

A total of 57 patients were included in the study, of which 54 (94.7%) were male and the remaining were female (Table 2). Of these, 44 patients (77.2%) returned to work at their former or new positions. Among the returnees, 39 patients (68.4%) resumed their previous roles with the same responsibilities as before (Table 3).

Table 4 shows the relationship between patients' RTW and their demographic and clinical characteristics. Notably, the income of patients who

did not RTW was significantly lower than that of those who did; 83.3% of the non-returnees reported no income (p<0.001). Table 5 compares the quality of work-life questionnaire scores among patients with varying demographic and clinical characteristics. As seen, those who returned to work had significantly higher scores on the job quality of life questionnaire compared to non-returnees (p<0.001).

Table 1: Determining the validity of questionnaire items

Q No.	CVI	CVR	Q No.	CVI	CVR
1	0.88	0.78	13	1	1
2	1	0.78	14	0.88	0.78
3	1	0.78	15	1	0.78
4	0.88	0.78	16	1	1
5	1	0.78	17	0.88	0.78
6	0.88	0.78	18	1	1
7	1	1	19	1	1
8	0.88	0.78	20	1	1
9	1	1	21	1	1
10	1	0.78	22	1	0.78
11	0.88	0.78	23	0.88	0.78
12	1	1			

Table 2: Demographic characteristics of the participants

Variable		Frequency	percent
Gender	Male	54	94.7
	Female	3	5.3
Age	Over 50 years	32	56.1
	Under 50 years	25	43.9
Address	Mashhad	36	63.2
	Other cities	21	36.8
Insurance	Social Security	37	64.9
	Public	15	26.3
	No insurance	5	8.8
Job type	Office	20	35.1
	Manual workers	20	35.1
	Service staff	17	29.8
Annual income	Below 650,000,000 Rials	28	49.1
	650,000,000 Rials or more	23	40.4
	No income	6	10.5
Marital status	Single	1	1.8
	Married	56	98.2
smoking		6	10.5
History of chronic diseases	Yes	8	14
	No	49	86
History of night work before cancer		18	31.6

Table 3: The rate of patients returns to work after starting treatment and the length of time away from work

Variable		Frequency	Percent
Return to work status	Former job with less duties	39	68.4
	New job	3	5.3
	Not returned to work	2	3.5
	Former job with less duties	13	22.8
Time away from work	3 months or less	18	31.6
	3-6 months	15	26.3
	6-12 months	14	24.6
	12-36 months	8	14
	Above 36 months	2	3.5

Table 4: Relationship between patients' return to work with their demographic and clinical characteristics

Characteristics		Returned to work	Not returned to work	P
Gender	male	(77.8) 42	(22.2) 12	* 0.547
	female	(66.7) 2	(33.3) 1	
Age	Under 50 years	(68.8) 22	(31.3) 10	* 0.116
	Over 50 years old	(88) 22	(12) 3	
Address	Mashhad	(72.2) 26	(27.8) 10	* 0.333
	Other cities	(85.7) 18	(14.3) 3	
Insurance	Social security	(83.8) 31	(16.2) 6	0.083
	Salamat	(73.3) 11	(26.7) 4	**
	No insurance	(40) 2	(60) 3	
Job Type	Official	(85) 17	(15) 3	0.526
	Industrial - manual	(70) 14	(30) 6	**
	Service	(76.5) 13	(23.5) 4	
Annual income	Below 650 million Rials	(85.7) 24	(14.3) 4	**
	650 million Rials or more	(82.6) 19	(17.4) 4	0.001<
	No income	(16.7) 1	(83.3) 5	
smoking	Yes	(66.7) 4	(33.3) 2	* 0.611
	No	(78.4) 40	(21.6) 11	
History of previous illness	One disease	(100) 6	(0) 0	0.432
	Two diseases	(100) 1	(0) 0	**
	Four diseases	(100) 1	(0) 0	
	No previous diseases	(73.5) 36	(26.5) 13	
Method of treatment	Chemotherapy and surgery	(76.1) 35	(23.9) 11	*
	Chemotherapy, surgery and radiotherapy	(81.8) 9	(18.2) 2	0.999>
Working hours before disease	Full-time	(76.8) 43	(23.2) 13	*
	Part-time	(100) 1	(0) 0	0.999>
Night work	Yes	(77.8) 14	(22.2) 4	*
	No	(76.9) 30	(23.1) 9	0.999>
Cancer stage	1	(100) 1	(0) 0	0.329
	2	(91.7) 11	(8.3) 1	**
	3	(72.7) 32	(27.3) 12	
Hospitalization duration	Under 2 weeks	(90.5) 19	(9.5) 2	0.041
	2-4 weeks	(82.4) 14	(17.6) 3	*
	Above 4 weeks	(57.9) 11	(42.1) 8	

* Fisher's exact test. ** Chi-square test.

Table 5: Comparison of the score of the job quality questionnaire of colorectal cancer patients among patients with different demographic and clinical characteristics

Variables		Questionnaire score, mean ± SD	P
Gender	Male	24.48 ± 61.48	* 0.610
	Female	20.39 ± 69	
Age	Under 50 years	25.27 ± 57.65	* 0.144
	Over 50 years old	22.96 ± 67.28	
Address	Mashhad	23.86 ± 64.87	* 0.231
	Other cities	25.44 ± 56.74	
Insurance	Social security	24.31 ± 69.73	** 0.003
	Salamat	16.35 ± 46.51	
	No insurance	23.33 ± 49.80	
Job Type	Official	18.74 ± 78.15	** 0.001
	Guild - manual	25.61 ± 54.12	
	Service	20.01 ± 51.85	
Annual income	Below 650 million Rials	17.79 ± 76.16	** < 0.001
	650 million Rials and higher	23.16 ± 51.11	
	no income	15.22 ± 36.46	
smoking	Yes	24.59 ± 53.50	* 0.382
	No	24.60 ± 62.86	
Working hours after disease	Full-time	17.08 ± 76.15	** < 0.001
	Part-time	22.48 ± 55.26	
	Not working	22.55 ± 40.86	
Night work experience	Yes	25.38 ± 64.09	* 0.321
	No	22.58 ± 57.08	
Cancer stage	1	60.30	** 0.333
	2	17.81 ± 71.29	
	3	25.93 ± 59.34	
Hospitalization period	Under 2 weeks	19.79 ± 72.57	** < 0.001
	2-4 weeks	22.01 ± 67.49	
	Above 4 weeks	23.37 ± 45.02	
Return to work	Yes	21.69 ± 68.08	* < 0.001
	No	22.55 ± 40.86	

* Independent T-test.
** ANOVA test

DISCUSSION

The present study aimed to determine the rate of RTW among colorectal cancer patients. Nearly three-fourths of patients returned to work following their diagnosis, while the remainder did not. Similar international studies reported a return-to-work rate ranging from 60% to 83% two years after leaving work due to illness, with our study's return rate falling within this range[12,13]. The majority of returning patients (68%) resumed their previous roles and duties, while a small percentage either reduced their responsibilities (5%) or changed jobs (3.5%). Regarding the time away from work, nearly half of the patients were absent for less than 6 months before returning, whereas others either remained absent for longer periods or had not returned to work at all.

The length of hospitalization was significantly associated with RTW (p=0.04). More than 90% of patients who were hospitalized for less than 2 weeks returned to work, while return rates for patients hospitalized for 2-4 weeks and over 4 weeks dropped to 82% and 58%, respectively. This reduced return-to-work rate among patients with prolonged hospital stays is likely due to more severe surgeries or complications that increased their hospitalization duration, thus complicating their ability to RTW.

In a 2020 study by Bakker et al.[14], no significant differences were observed in return-to-work rates between male and female patients, and age was not a predictor of RTW. Factors predictive of failure to RTW after one year included metastasis, adjuvant therapy, stoma, emotional distress, and postoperative complications. In our study, prolonged hospitalization was linked to an inability to RTW,

likely due to metastases or complications. These findings align with those of Bakker et al., supporting the role of extended hospitalization as a factor in return-to-work failure.

In a 2021 study by Wind et al.[15], patients over 60 were less likely to lose their jobs, and return-to-work rates were lower for stage 4 cancer patients than those with stage 1 cancer. In our study, older patients showed slightly higher return-to-work rates, although this difference was not statistically significant. Furthermore, unlike Wind et al.'s findings, disease stage did not correlate with return-to-work rates in our study, although stage 4 patients were excluded. These discrepancies suggest that treatment course and methods, rather than disease severity, may impact RTW more. Li et al. [16] noted that extended hospitalization following laparoscopic colorectal cancer resection is related to factors such as low preoperative pulse oximetry, complex surgeries, perioperative events, and postoperative albumin infusion. Conversely, distant metastasis and early postoperative ambulation may serve as protective factors.

Our study found that patients in administrative roles reported a higher quality of work life than those in industrial-manual or service jobs. Administrative jobs, typically involving less physical labor, allowed patients to manage their work despite physical limitations, which may have naturally reduced their strength. In contrast, patients in industrial-manual or service jobs may have faced greater challenges returning to work post-cancer, leading to a decline in their quality of work life. Previous studies have identified physical issues such as pain, fatigue, nausea, and vomiting as significant barriers to RTW for colorectal cancer patients[17, 18].

Our findings indicated that return-to-work patients had significantly higher scores on the work-life questionnaire quality than non-returnees ($p<0.001$). This questionnaire evaluates the interaction between individuals, their colleagues, and their managers, considering the patient's physical condition and the importance of work. The results suggest that improving workplace conditions, fostering empathy from colleagues and employers, adjusting job demands according to the patient's physical and mental health, and enhancing mental well-being play crucial roles in the return-to-work process.

Toleutayeva et al. [19] studied the quality of life among 319 colorectal cancer patients in Kazakhstan between November 2021 and June 2022. The study found that, according to patients' subjective assessments, their global health status remained average, with fatigue, insomnia, and loss of appetite being the most common symptoms.

This study, like others, had both strengths and limitations. One limitation was the relatively small sample size, smaller than that in similar studies conducted abroad. A key strength of the study is its novelty in examining the return-to-work rate of colorectal cancer patients in Mashhad, which, to the author's knowledge, is being explored for the first time in this region. Future research should investigate additional factors influencing RTW, preferably in a prospective design with a larger sample size.

CONCLUSION

Nearly three-quarters of colorectal cancer patients RTW following treatment. Patients with shorter hospitalizations are more likely to resume work than those with longer hospital stays. Additionally, the quality of work-life score was strongly correlated with the return-to-work rate ($p=0.001$).

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