Çankırı Karatekin University
Graduate School of Health Sciences

Master of Science Thesis

DETERMINING THE QUALITY OF LIFE PATIENTS WITH COLORECTAL CANCER IN AL-DIWANIYAH TEACHING HOSPITAL IN IRAQ

Ahmed Kareem Hadi HADI

Advisor
Asst. Prof. Dr. Nedret TEKİN KAYA

ÇANKIRI 2023

DETERMINING THE QUALITY OF LIFE PATIENTS WITH COLORECTAL CANCER IN AL-DIWANIYAH TEACHING HOSPITAL IN IRAQ

BY

Ahmed Kareem Hadi HADI

The Institute of Health Sciences
The Department of Nursing

The Degree of Master of Science

SUPERVISOR
Asst. Prof. Dr. Nedret TEKİN KAYA

2023

ACCEPTANCE AND APPROVAL

Ahmed Kareem Hadi HADI, the graduate student of The Institute of Health Sciences with the student number of 208210233 , has successfully presented her thesis entitled "Determining The Quality of Life Patients with Colorectal Cancer in Al-Diwaniyah Teaching Hospital in Iraq" before the jury whose signatures are below, after fulfilling all of the requirements determined by the relevant regulations for the degree of Master of Science:

Advisor **:** Asst. Prof. Dr. Nedret TEKİN KAYA

Examining Committee Members:

Chairman **:** Prof. Dr. Esra YILDIZ
Ataturk University

Member **:** Asst. Prof. Dr. Nedret TEKİN KAYA
Cankiri Karatekin University

Member **:** Asst. Prof. Dr. Seher GÖNEN ŞENTÜRK
Cankiri Karatekin University

Approved for the Graduate School of Health Sciences

Assoc. Prof. Dr. Nazan KAYTEZ
Director of Graduate School

ETHICS STATEMENT

The thesis entitled “Determining The Quality of Life Patients with Colorectal Cancer in Al-Diwaniyah Teaching Hospital in Iraq” which was prepared and presented as a thesis, was written by myself and in accordance with the scientific, academic rules and ethical conduct. The idea/hypothesis of my thesis solely belongs to my supervisor and to me. The research pertaining to the thesis was conducted by myself and therefore, all of the used sentences and interpretations within the work belongs to me.

I declare the aforementioned issues to be correct.

Signature

29/11/2023

Ahmed Kareem Hadi HADI

ABSTRACT

DETERMINING THE QUALITY OF LIFE PATIENTS WITH COLORECTAL CANCER IN AL-DIWANIYAH TEACHING HOSPITAL IN IRAQ

Ahmed Kareem Hadi HADI

Master of Science in Nursing

Advisor: Asst. Prof. Dr. Nedret TEKİN KAYA

November 2023

Colon and rectum cancer affects the large intestine, which is the lower and last part of the digestive system. It is one of the most common cancer diseases in the world and is more common in adults over the age of 45. It affects males at a higher rate than females. Colorectal cancer begins in the form of clusters of small cells that form growths called polyps. They are initially non-cancerous and form in the inner wall of the colon and rectum. Their growth is slow, but over time, most of them turn into malignant cancerous. Generally, the causes are genetic factor, inflammatory diseases in the intestines, diet, diabetes, obesity, exposure to radiation, etc. In addition to blood in the stool, the most important symptoms are the feeling that the abdomen is not fully emptied during defecation, long-term abdominal pain, loss of appetite, anemia and the patient's weight loss without any reason. It is important to know the quality of life of colorectal cancer patients. Quality of life includes many dimensions including physical, social, psychological and economic. This study aimed to determine the quality of life of colorectal cancer patients. A cross-sectional research design was used in the study. The number of patients participating in the sample was 225. Data were collected between July 2022 and October 2022 at a Teaching Hospital in Al-Diwaniyah, Iraq. Sociodemographic Form and EORTC QLQ-C30 Quality of Life Scale were used as data collection tools. Data were collected by face-to-face interview method. In the analysis of data; Mann-Whitney U test and Kruskal Wallis Test were used to analyze descriptive statistics (number, percentage, mean, standard deviation) and quantitative data. Of the participants, 52.9% were between the ages of 38-47, 63.1% were male, 87.1% were married, 49.3% were university graduates, 68% were civil servants, 66.7% have income

equal to their expenses, 74.7% have 1- 5 children, 72.9% live in the city. 59.6% of them did not have cancer in their family, 41.3% were receiving chemotherapy, and 49.8% stated that they had colorectal cancer for 8 months. EORTC QLQ-C30 subscale score averages are as follows; Its functional dimension is 34.7422±4.47665, its symptoms dimension is 32.5111±3.59080, and its general health dimension is 6.7067±3.50805. There is a significant difference between the participants' age, education level, job, income level and place of residence and the EORTC QLQ-C30 functional dimension ($p<0.05$). Additionally, there is a significant difference between work income status and place of residence and the extent of symptoms ($p<0.05$). It was found that there is a relationship between age and the general functions of the patient, as the disease rate increases with age and for those over the age of 40, where their general functions are weak due to age and because of the negative side effects of the treatments. It was also determined that the patient's gender and general functions were not affected, both genders affected their general functions equally, but there was a low correlation between the patient's gender and the symptoms of the disease. Symptoms were more common in men. İt was found that there was a relationship between the patient's occupation and work and the severity of the symptoms. It was determined that there was a relationship between the symptoms of the disease and the place where the patient lived. It was found that there is a relationship between the patient's general functions and his general health. It was determined that there was a relationship between the genetic factor and the incidence of this disease, but it was weak. Their cognitive functions were found to be low, their social functions moderate, and their emotional functions weak. In the study, it was determined that the quality of life of colorectal cancer patients was low. It can be recommended that nurses monitor the health status of patients, plan care content that will improve the quality of life, reduce the side effects of treatment by giving appropriate treatment, and guide patients and parents about the necessity of appropriate nutrition and exercise activity. It is also important for patients to receive psychological support from their families and surroundings, as well as from nurses.

2023, 54 pages

Keywords: Quality of life, Colorectal cancer, Patient

ÖZET

IRAK AL-DIWANIYAH EĞİTİM HASTANESİNDEKİ KOLOREKTAL KANSERLİ HASTALARIN YAŞAM KALİTESİNİN BELİRLENMESİ

Ahmed Kareem Hadi HADI

Hemşirelik, Yüksek Lisans

Tez Danışmanı: Asst. Prof. Dr. Nedret TEKİN KAYA

Kasım 2023

Kolon ve rektum kanseri, sindirim sisteminin alt ve son kısmı olan kalın bağırsağı tutmaktadır. Dünyada en yaygın görülen kanser hastalıklarından biridir ve daha çok 45 yaş üstü yetişkinlerde daha çok görülmektedir. Erkekleri kadınlara göre daha yüksek oranda etkiler. Kolorektal kanser, polip adı verilen büyümeleri oluşturan küçük hücre kümeleri şeklinde başlar. Başlangıçta kanserli değildirler ve kolon ve rektumun iç duvarında oluşurlar. Büyümeleri yavaştır, ancak zamanla çoğu kansere dönüşür. Genelde nedenleri genetik faktörün yanı sıra bağırsaklardaki iltihabi hastalıklar, diyet, diyabet, obezite, radyasyona maruz kalma vb. Dışkıda kan bulunmasının yanı sıra, dışkılama sırasında karnın tam olarak boşalmadığı hissi, uzun süreli karın ağrısı, iştah kaybı, anemi ve hiçbir neden olmaksızın hastanın kilosunun azalması en önemli belirtileridir. Kolorektal kanserli hastaların yaşam kalitesinin bilinmesi önemlidir. Yaşam kalitesi fiziksel, sosyal, psikolojik ve ekonomik olmak üzere birçok boyutu içermektedir. Bu çalışmada, kolorektal kanserli hastaların yaşam kalitesini belirlemek amaçlanmıştır. Çalışmada kesitsel araştırma tasarımı kullanılmıştır. Örnekleme katılan hasta sayısı 225'tir. Veriler Temmuz 2022-Ekim 2022 tarih aralığında Irak'taki Al-Diwaniyah şehrinde bulunan bir Eğitim Hastanesinde toplandı. Veri toplama aracı olarak, Sosyodemografik Form, ve EORTC QLQ-C30 Yaşam Kalitesi Ölçeği kullanılmıştır. Veriler yüz yüze görüşme yöntemiyle toplanmıştır. Verilerin analizinde; Tanımlayıcı istatistikler (sayı, yüzde, ortalama, standart sapma) ve niceliksel verilerin analizinde Mann-Whitney U testi ve Kruskal Wallis Testi kullanıldı. Katılımcıların, %52.9'u 38-47 yaş aralığında, %63.1'i erkek, %87.1'i evli, %49.3'ü üniversite mezunu, %68'i memur,%66.7'sinin geliri giderine eşit, %74.7'sinin 1-5 arasında çocuğu var,

%72.9'u şehirde yaşamaktadır. %59.6'sının ailesinde kanser yok, %41.3'ü kemoterapi almakta, %49.8'i 8 aydan beri kolorektal kanseri olduğunu belirtmiştir. EORTC QLQ-C30 alt boyut puan ortalamaları şu şekildedir; İşlevsel boyutu 34.7422±4.47665, Semptomlar boyutu 32.5111±3.59080, genel sağlık boyutu 6.7067 ±3.50805'dir. Katılımcıların yaş, eğitim düzeyi, iş, gelir durumu ve yaşadığı yer ile EORTC QLQ-C30 işlevsel boyutu arasında anlamlı fark vardır ($p<0.05$). Ayrıca, iş gelir durumu ve yaşadığı yer ile semptomlar boyutu arasında da anlamlı fark vardır ($p<0.05$). Hastalık oranının yaşla birlikte artması ve 40 yaş üstü kişilerde yaşa bağlı olarak genel fonksiyonlarının zayıf olması ve tedavilerin olumsuz yan etkileri nedeniyle yaş ile hastanın genel fonksiyonları arasında ilişki olduğu saptanmıştır. Ayrıca hastanın cinsiyetinin ve genel fonksiyonlarının etkilenmediği, her iki cinsiyetin de genel fonksiyonlarını eşit oranda etkilediği ancak hastanın cinsiyeti ile hastalığın belirtileri arasında düşük bir ilişki olduğu belirlendi. Semptomlar erkeklerde daha çoktu. Hastanın mesleği ve işi ile semptomların şiddeti arasında ilişki olduğu belirlendi. Hastalığın semptomları ile hastanın yaşadığı yer arasında ilişki olduğu belirlendi. Hastanın genel fonksiyonları ile genel sağlığı arasında da ilişki olduğu tespit edildi. Genetik faktör ile bu hastalığın görülme sıklığı arasında bir ilişki olduğu ancak zayıf olduğu tespit edildi. Bilişsel işlevleri düşük, sosyal işlevleri orta, duygusal işlevleri zayıf bulunmuştur.

Çalışmada kolorektal kanser hastalarının yaşam kalitesinin düşük olduğu belirlenmiştir. Hemşirelerin, hastaların sağlık durumlarını izlemeleri, yaşam kalitesini yükseltecek bakım içerikleri planlamaları, uygun tedaviyi vererek tedavinin yan etkilerini azaltmaları, uygun beslenme ve egzersiz aktivitesinin gerekliliği konusunda hastalara ve ebeveynlere rehberlik etmeleri önerilebilir. Hastaların gerek aile ve çevrelerinden, gerekse hemşirelerden, psikolojik destek almaları da önemlidir.

2023, 54 sayfa

Anahtar Kelimeler: Yaşam kalitesi, Kolorektal kanser, Hasta

PREFACE AND ACKNOWLEDGEMENTS

I thank everyone who supported me from my family, especially my father and my sick mother, who always prayed to God to help me in this study. The wonderful doctor and second mother, Dr. Nedret Tekin Kaya, who helped me and stood by me in my studies. Words of gratitude to you are not enough. I extend my sincere thanks to the patients who helped me answer the questionnaire questions, and their answers were comprehensive, realistic, and reflected their health condition.

Ahmed Kareem Hadi HADI

Çankırı-2023

CONTENTS

INDEX OF ABBREVIATIONS AND SYMBOLS

%	The percent sign

LIST OF ABBREVIATIONS

CEA	Carcinoembryonic Antigen
CRC	Colorectal Cancer
CT	Computed Tomography
DNA	Deoxyribo Nucleic Acid
MRI	Magnetic Resonance Imaging
NICE's	National Institute for Health and Care Excellence
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

LIST OF TABLES

1. INTRODUCTION

The colon forms the upper part of the intestine and occupies a large area in the abdomen. It is one of the main parts of the nutritional canal. The transverse colon is situated between the ascending colon, descending colon, and sigmoid colon, with the The apex of the colon on the abdomen's right side and the descending colon on the left, and is located near the rectum In front of the third sacral vertebra. The length of the colon, which extends from the small intestine to the anus, is 5 feet or 1.5 meters. The colon performs many important functions in the alimentary canal, as it produces stool within the digestive system by absorbing water and nutrients from the remaining food, thus forming semi-solid stools. the colon contains a muscular wall that contracts and relaxes to help excrete waste (Mármol *et al.* 2017).

The colon also contains beneficial bacteria in very large numbers that are important in the production of vitamins such as vitamin K, and thus the colon contributes to maintaining the health of the intestine. The rectum is the last big intestine, in portion and is located between the sigmoid colon and the anal canal. Its length is about 12 to 15 cm. Its main function is to temporarily store stool and waste until it is expelled from the body (Samir *et al.* 2022).

The rectum consists of the anal valves or the valves of Houston, which are mucous folds where the anal sphincter helps control waste and stool and thus plays a role in holding stool in the rectum before it is removed from the body through the anus (Carmichael *et al.* 2022). One of the diseases that affect the digestive system is colorectal cancer (CRC). Cancer is a non-communicable disease and affects all age groups. But as person ages, the risk increases (Ladabaum et al., 2020).

Cancer is one of the foremost causes of death.. According to the World Health Organization, one in every five people gets cancer. Since it is the second cause of death, this number is anticipated to increase in the upcoming years. Each year, about 9.6 million people die out of a total of 18.2 Millions of people suffer from this disease.

Most of them are from developing countries. But the cure rate of this disease is constantly increasing in some types of cancer due to early detection methods and appropriate treatment options. World Health Organization (WHO) report on cancer: Establishing priorities, making appropriate investments, and offering care to everyone (World Health Organization 2020). CRC is a term used for malignant tumors in the large intestine and rectum. Although these tumors differ from each other biologically and therapeutically, they are treated as a single disease. People over the age of 50 who have a medical or family medical record of CRC, tumors of the colon mucosa, or ulcerative colitis or granulomatous colitis (Crohn's disease) are at highest risk and should undergo regular cancer checkups (Mrabti et al. 2016).

The development and occurrence of cancer is due to changes in genes. Scientists believe that there are many factors that cause genetic change. These factors may include hormones, viruses, ultraviolet rays and chemicals (Miller *et al.* 2020).

Among the serious diseases that affect the digestive system is CRC, which forms in the large intestine or rectum due to the abnormal growth of cells, where they become capable of spreading to other parts and organs of the body. Neighboring lymph and by way of the blood that travels from the intestinal wall or rectum, this type of cancer can move to the liver. In Western countries one of the most common cancers is CRC. The second cause of death for people with cancer. It is more common in people aged 50 and over (Marley *et al.* 2016). Periodic examination should be carried out in order to early detection of the disease and start treatment. Many patients do not suffer from any early symptoms, but this type of cancer can be prevented and if detected early, it can be treated. The cure rate for CRC if detected early is about 90%, but in the case of late detection, the rate is 12% (Abdullah *et al.* 2012). Colorectal cancer has shown a significant increase in incidence in Iraq after 2007 (Hussain, A. M., & Lafta, R. K. 2021).

In many affluent countries, CRC is the second most prevalent reason for associated with cancer deaths and the fourth most widespread malignancy, affecting more men than women. Each year, there are roughly 1 million new cases and 250,000 fatalities

worldwide.. Survival rates have increased over the past decade due to advances in early detection, improved diagnostic testing, the introduction of adjuvant therapy, and the treatment of metastatic disease (Weiser *et al.* 2018).

1.1 Questions the study

What is the quality of life of colorectal cancer patients?

Is there a relationship between patients' quality of life and CRC?

1.2 Limitations

- Place limits : Oncology Center at Al-Diwaniyah Teaching Hospital in Iraq.
- Time limits : This research was conducted only within a limited time period in 2022.
- In this study, only patients with colorectal cancer were included.

2. GENERAL INFORMATION

2.1 Colorectal cancer

This type of cancer begins in the large intestine or rectum, specifically in the lower part of the colon that meets the rectum. Colon cancer is initially in the form of small lumps of cells called polyps that form in the colon. If the cells continue to divide, they will form masses of tissue called a tumor (Granados-Romero *et al.* 2017).

Polyps are considered non-cancerous and can be treated with known treatment methods (Like surgical intervention). They do not often reoccur after treatment and, unlike malignant tumors; they do not expanded to some parts of the body. cancerous tumors pass through the bloodstream or lymphatic system and reach other parts of the body, causing other cancerous tumors called metastases (Brown *et al.* 2018).

Colon cancer cells invade different body parts, they can spread to the lung, liver, kidney, or bladder. CRC has five stages. Stage 1 is the stage in which the disease first occurs. The second stage is the stage when the cancer reaches the inner surface of the large intestine and the deep muscle layer of the colon. In the third stage, the malignancy has spread outside the colon but has not reached the lymph nodes. In the fourth stage, Cancer cells proliferated outside of the colon and digestive tract and move to other parts of the body through the lymph nodes. This stage is the deadliest stage of CRC (Siegel *et al.* 2017).

2.2 Pathophysiology

The big intestine's wall contains four layers: the mucosa, the submucosal layer, the muscular layer, and the serosa. The mucous membrane separates the mucous and sub mucosal layer (Barresi, 2021). The malignant lesion located at the bottom of the mucous membrane develops and penetrates the muscular mucosa and reaches the submucosal

layer. The growth of benign tumors is slow, while malignant tumors are rapid, and this is the main difference between them (Pashirzad *et al.* 2022).

There are three ways to spread the malignant lesion, direct invasion, penetration into the lymph nodes, vein invasion. The malignancy of a tumor is determined by its ability to penetrate the sub mucosal layer. Then the tumor penetrates the thin layer of muscular connective tissue and then invades the wall of the large intestine. The third way to spread malignancy is through venous invasion, which is the main route for metastatic spread through the hepatic portal vein (Brockmoeller *et al.* 2019).

2.3 Risk factors

There are several factors that increase the risk of developing CRC:

Aging: The polyps that appear in the colon and rectum, which can cause cancer, increase with age, especially in people over 50 years old.

A person's medical history: If he had previously had non-cancerous polyps, he would be more likely to develop this disease in the future.

Chronic bowel diseases: Inflammatory diseases in the colon increase the possibility of contracting this illness, such as ulcerative colitis (Petimar *et al.* 2019).

Genetic: Solitary colon cancer, which constitutes 50-60% of colon cancer, increases its incidence by 30-40% if there is a family history of this disease (Lowery *et al.* 2016).

Diet: People who eat foods high in sugar, fat and calories and those who follow a low-fiber diet are more likely to develop this disease.

Diabetes: People with diabetes are more likely to develop CRC.

Smoking is one of the factors that raise colon cancer risk and rectal cancer.

Alcohol: Excessive alcohol consumption increases the risk of developing this disease

Obesity increases the risk of this disease (Tabung *et al.* 2017, Patel *et al.* 2018).

2.4 Diagnosis and early detection

Early detection of CRC is very necessary because the discovery of this disease in its initial stages greatly helps in its treatment (Biller *et al.* 2021).

Early detection of CRC reduces the occurrence and numbers of people with CRC, increases the rates of treatment and cure of the disease, reduces deaths from this disease, and makes the state of health of those who have this illness much better. For early diagnosis of this disease, people over the age of forty must undergo the necessary tests. Because polyps often appear after these ages (De Rosa *et al.* 2015).

There are several tests and examinations to detect CRC:

Colonoscopy: is the best way to detect benign and malignant polyps in the colon. Through the endoscope, the doctor can take a biopsy. The patient is given light anesthesia. This examination requires complete evacuation and cleansing of the colon.This examination is performed and repeated often once every ten years. Before conducting this examination, the patient must tell the doctor if he suffers from heart problems or if patient is allergic to one of the drugs. Also, a diet rich in fiber should be followed about 4 days before the examination, and he must drink enough water before performing this test (Kothari *et al.* 2019).

Fecal occult blood test: This test indicates the presence of blood passing into the stool from large-sized polyps or cancerous tissue (Wang *et al.* 2016)..

X-ray Examination: It is an x-ray to examine of the colon and rectum using barium enema. This substance is used as an enema in the rectum, air is blown into the rectum and this causes the colon to expand. X-ray images are clearly visible, but this test is not considered ultra-sensitive and is not very reliable. This test is done every five years.This test is done once every five years (Wang *et al.* 2016).

Computerized tomography: This method, which is the latest method to detect CRC, is a radiological imaging diagnostic method. Examination is done using X-rays (Wang *et al.* 2016).

There is a very modern method for detecting CRC, which is the approach searching for deoxyribonucleic acid in the stool, and it is the most accurate and best method for detecting the disease after endoscopy. All cells of the human body contain deoxyribonucleic acid. The stool contains the genetic material that is released by colon cells. When this disease occurs, defects or mutations occur on the genetic material of colon cells that can be observed in the stool. This test is expensive and not widely available (Vega *et al.* 2015).

2.5 Types of colorectal cancer

Adenocarcinomas constitute about 96% of cancers that affect the colon and rectum. This type consists in the cells responsible for the production and secretion of mucous substances. This type of tumor can be benign, meaning it is not always malignant. Fibroids, a rare type of colorectal the muscles being impacted by cancer, blood vessels, or tissues in the colon's and rectum's walls. This type of cancer mostly affects the lymph nodes. Sarcomas, which is a rare type of CRC and affects the muscles, blood vessels, or tissues in the wall of the colon and rectum (Baran *et al.* 2018).

2.6 Symptoms of colorectal cancer

Initial signs and symptoms of colon cancer: These symptoms are weight loss without any causes, rectal bleeding, and persistent abdominal pain. The patient also develops anemia due to iron deficiency. If the symptoms of CRC are related to the colon or rectum organ, it means that the tumor has not spread to other organs. These symptoms include: diarrhea, frequent constipation and alterations in bowel habits, blood seen in the stools, bloating or cramping in the abdomen (Han et al. 2020).

Symptoms of systemic colon cancer: These symptoms affect the digestive system and sometimes on the whole body and include: loss of appetite for no reason and severe weight loss, vomiting, nausea, and the patient may develop jaundice, anemia and severe fatigue (Shawki et al. 2018; Han et al. 2020). Most patients may complain of fatigue, pain,breathing difficulties, insomnia, appetite decline, constipation and diarrhea. It is also considered a side effect associated with CRC treatment such as chemotherapy, radiotherapy, and others (Mols et al. 2018).

2.7 Treatment of colorectal cancer

Metastatic CRC is a frequent problem for which new targeted therapies and biologically based combinations are being investigated. In addition to biologics, standard regimens often include cytotoxic chemotherapy triplets (FOLFOXIRI) and doublets (FOLFOX, FOLFIRI). Significant insights into carcinogenesis have been revealed by large-scale, thorough analyses like those of cancer genomics atlas,and promising therapeutic targets for metastatic CRC have been identified (Hendler *et al.* 2018). There are tests that must be done before the operation of the patient.To validate a diagnosis of CRC, endoscopic biopsy and histology of the specimen are necessary .After then it is required clinical staging. These assist with prognosis and direct further treatment (Matsuda et al. 2018).

Screening should be performed with computed tomography (CT) of the pelvis, abdomen and chest. The degree of regional dispersal and metastasis must be determined. The

patient's electrolytes and renal function should be reviewed, and complete blood count. Additionally, ask for a baseline serum fetal cancer level. As part of disease surveillance, the carcinoembryonic antigen (CEA) that you can contrast with post-treatment levels (Salibasic *et al.* 2019).

MRI: This may be useful when intravenous contrast is not recommended. It is suitable for determining the extent and stage of the tumor. Computed tomography is used to detect metastasis and obtain more detailed information (Eslami *et al.* 2019).

Surgical treatment of CRC varies based on the stage and spread of the cancer and consists of different stages (O'Leary et al. 2020):

Early surgery for CRC: If colon cancer is localized in a small area, surgical treatment is recommended.

A colonoscopy to remove polyps (polypectomy): If the polyp is small and in a limited location, it can be completely removed during colonoscopy.

Endoscopic mucosal resection: Endoscopic mucosal resection, an operation that involves removing small part of the colon's internal lining, may be used to remove large polyps during colonoscopy.

Laparoscopic operation: Laparoscopic surgery can be used to remove polyps that colonoscopy cannot remove. By means of several small incisions in the abdomen wall, surgeons perform this technique, inserting tools with cameras that show the colon on a display screen. Furthermore, Samples could be removed by the surgeon from the lymph nodes close to the cancerous tissue (O'Leary *et al.* 2020). The cancer-affected part of the colon and some of the healthy tissue on either side of the malignancy are removed by the surgeon. Healthy parts of the colon or rectum can often be anastomosed by the surgeon. It is possible to perform this surgery with a minimally invasive technique (laparoscopy). If the healthy colon or rectum cannot be reattached, you may need an

ostomy. In order to remove the feces in a bag that is fastened over the opening, this entails making an incision in the abdominal wall at the portion of the remaining intestine. The stoma may sometimes be opened temporarily to allow the colon or rectum to heal after surgery. However, in rare cases, a colostomy may be permanent. During colon cancer surgery, the area around the lymph nodes is also typically removed and screened for malignancy (Chakedis *et al.* 2018).

The doctor may recommend surgery or chemotherapy if the cancer has progressed to the liver or lung. This type of surgery may be followed by chemotherapy, or chemotherapy may be administered before surgery. The average interval between an ablation and the next recurrence is 16 to 22 months. Keep track of any modifications in bowel habits, decrease in weight, stomach pain, or a recognizable mass. Talk about scheduling the immediate imaging and/or endoscopic examination with the oncologist and treating surgeon. NICE's (National Institute for Health and Care Excellence) most recent suggestion advise ordering a CEA serum level test. CT scan is recommended every year or every six months. One year following surgery, colonoscopy is done (Hickish *et al.* 2017).

There are possible complications after the surgical procedure, including:

Anastomotic leaking is one of the major issues that have been noted following surgery as a potential consequence. Colon and rectum surgery has significant morbidity. Some risk factors are related to the tumor (large, sophisticated or metastatic tumors needing to inferior anastomosis of the rectal region), the patient (radiation prior to surgery smoking, vascular disease, lung disease, diabetes, inadequate nutrition. and corticosteroids), and surgery (technical error, urgent operative surgery, blood loss, operating time, the inotropes) are relevant (Pak *et al.* 2020).

Other risky situations may include infection (especially at the surgery site), bleeding, venous thromboembolism, and undergoing any major abdominal surgery (Darbandi *et a*l. 2020).

2.7.1 Chemotherapy

Chemotherapy is a class of chemical medications that can be ingested or administered intravenously and is used to treat cancer. Each is effective against a particular form of cancer, at particular doses, and on particular schedules. One or more of them can be combined to treat a particular type of cancer. Chemotherapy for colon cancer is used in a number of ways, including before surgery to shrink the tumor so that it can be removed without complications, after surgery to get rid of any cancer cells that were not removed, or as a palliative treatment if the cancer has extend to other bodily parts and you are unable to perform surgery to remove it. Here, the goal is to ease symptoms and relieve tumors (Gustavsson *et al.* 2015).

After colon cancer surgery, chemotherapy is applied in the following cases: It can be applied in stage 2 and stage 3 colon cancer. Stage 3 cancer has a high probability of returning. Chemotherapy is also used to treat bowel cancer that has metastasized to other body organs. Chemotherapy is typically unnecessary for stage 1 colon cancer. Typically, chemotherapy treatments last 8 rounds, to every cycle lasting between 2 and 3 weeks. The stage of the disease and the extent of its dissemination determine the success rate of chemotherapy for colon cancer. It is challenging to appraise the efficacy and success levels of each treatment separately because chemotherapy is frequently combined with other treatments for colon cancer. The overall 5 year survival rate, which represents the CRC healing rate over all four stages, ranges from 63% to 67% (Holch *et al.* 2017). Colon cancer treatment side effects and symptoms include: Tiredness, diarrhea, ulcers in the mouth, hair loss, infection, tingling numbness in the hands, feet, and neck (M.McQuade *et al.* 2017).

2.7.2 Radiotherapy

Radiotherapy has evolved over the past 20 years into a crucial component of the multidisciplinary strategy used to treat CRC patients.radiation is primarily thought of as an adjuvant therapy In a pre or postoperative environment, chemotherapy is

occasionally used in conjunction. alone adjuvant radiotherapy reduces local recurrence rates significantly (Tam *et al.* 2019).

For some early lesions, local radiation can be used. .In cases of rectal tumors or pelvic recurrences that are incurable, radiation treatment has proved a significant palliative treatment option, reducing symptoms. Pre-operative irradiation with or without chemotherapy, after which a surgical resection, is The ideal order for patients with locally advanced primary or malignancies that recur (Yamada *et al.* 2021).

Intense energy beams are used in radiation therapy to kill cancer cells. X-rays are frequently utilized in radiation therapy, however protons or other forms of energy may also be used. A machine outside the body emits high-energy beams that are directed at a specific location on the body of the patient. Radiation is injected into the patient's body during brachytherapy, a new kind of radiation treatment. By eradicating the genetic information that regulates cell growth and division, radiation treatment kills cells. Radiation therapy kill healthy normal cells while still destroying malignant cells. Radiation therapy is used to treat cancer in more than half of cancer patients. Radiation is used by doctors to treat all cancer types. Some benign (non - malignant) tumors can benefit from radiotherapy. Radiation therapy lasts for 10 to 30 minutes. Throughout treatment, the patient sleeps in the same posture that was chosen for them during the radiation session. The patient is fixed. The patient won't experience any pain during the radiotherapy treatment (Haddock 2017).

The following are some radiation adverse effects: The radiation area's skin may look red, itchy, or swollen blistered or appears to have sunburn. Radiation dermatitis, often known as dry, scaly, or itchy skin, might develop after a few weeks. The majority of the time, these issues go away gradually following therapy, but occasionally, the skin may change color and become more sensitive than it was before. Patients frequently experience weariness and fatigue during treatment, but subsides over time once treatment is finished. Other adverse effects include nausea, hair loss, dry mouth, ulcers, a change in the tissues of the skin, infections, and digestive difficulties (Häfner *et al.* 2016).

2.7.3 Immunotherapy

One of the treatment approaches that might aid in the fight against cancer is cancer immunotherapy, which works through inducing the immune system to kill cancer cells in a variety of ways. One sort of biological therapy is immunotherapy. Cancer immunotherapy is not as widely utilized like chemotherapy. The advancement of immunotherapy is constrained by the absence of true tumor-specific antigens (Rahman *et al.* 2022).

The goal of immunotherapy is to locate cancer cells that the immune system may be unable to uncover lurking in bodily tissues and to teach these cells how to better evade the immune system's detection and attack mechanisms (Whiteside *et al.* 2016).

2.7.4 Targeted therapy

This treatment is classified as chemotherapy, but it differs in its action from chemotherapy, where chemotherapy kills malignant cancer cells, while targeted therapy works to stop the growth of these cells as well as stop their spread, as its work is to target changes within the life cycle of cancer cells. It has fewer side effects and toxicity compared to chemotherapy (Nappi *et al.* 2018). It destroys and stops the blood vessels that feed cancer cells. Strengthen the body's immune system and raise its ability to fight malignant cancer cells. It introduces toxic substances into the cancerous cell and kills it without harming the healthy cells. It stops the work of hormones that are involved to the formation of cancer cells in the body (Xie *et al.* 2020).

Targeted therapy can be used either alone or in combination with other treatments such as chemotherapy, radiotherapy, or surgery. There are some side effects of this type of treatment, including. Intestinal disorders such as diarrhea, hepatitis as well as liver problems such as high liver enzymes, skin problems, decreased blood clotting, delayed healing of wounds may occur (Ohhara *et al.* 2016):

2.8 Nursing care for colorectal cancer

The detection and control of side effects brought on by the toxicity of CRC therapy regimens are crucial tasks for oncology nurses. Abdominal pain and diarrhea, nausea and vomiting, skin and hypersensitivity reactions, fatigue, stomatitis, neutropenia and thrombocytopenia and alopecia are among the side effects of the treatment. Patients' daily lives are complicated by the demanding treatment schedule, it is detrimental influence on their quality of life. Patients with CRC need to have their psychosocial and educational needs met in addition to their side effect care (Li *et al.* 2018).

The role of the oncology nurse in managing CRC therapy patients and seeing to it that their educational, psychological, and physical requirements are satisfied. Patients who are informed about side effects of treatment are better able to control their symptoms and avoid serious or fatal complications. Nurses should provide health education to patients about bowel cancer, explain the pathogenesis and treatment process of bowel cancer, give information about chemotherapy, and provide psychological support. Nurses should regulate the use of analgesics in patients experiencing severe pain and advise patients on pharmaceutical safety measures and increase their compliance with treatment (Tuominen *et al.* 2019).

As soon as a patient shows an anomaly while receiving chemotherapy, the doctor should be informed promptly. The nurse should inform the patient about the necessary preparations and precautions before chemotherapy (Zhang *et al.* 2022).

Patients compliance with their treatment must enhanced by being made aware of the need to receive chemotherapy on a regular basis and to follow their doctor's recommendations for adopting healthy life styles and self-care ability. The nursing staff plays a very important role in the continuous monitoring and follow-up of patients. The patient must be under distinguished and high quality medical and nursing care. Nurses can take advantage of their advanced nursing abilities when considering care and think about the best ways to offer comprehensive support and continuity of care (Mao *et al.* 2019).

The nursing contribution must be highlighted and assessed in this process in order to track patients' health, stabilize function, reduce surgical aftereffects, and promote wellbeing in addition to spotting disease recurrence. İt is important to make the person getting follow-up care feel supported in addressing any psychosocial, financial, and employment concerns that may occur as a result of the cancer experience (Fowler *et al.* 2023).

2.9 Prevention of colorectal cancer

In general, CRC is one of the cancers whose incidence can be reduced significantly. Researchers analyze the risk factors for a particular type of cancer to determine ways to prevent it. Since these risk factors can be avoided to lower the risk, ways to prevent colon cancer may include dietary changes, avoiding exposure to carcinogenic factors, and treating precancerous conditions to stop them from progressing to cancer (Kanth *et al.* 2021).

In the pathophysiology of CRC, diet is crucial. According to the WHO/evidence FAD's standards, a high diet of fruit has the potential to cut risk, whereas a high intake of vegetables is more likely to do so. Vegetables and fruits, especially those that are raw, seem to have anticancer effects. The evidence supporting the risk-lowering effects of whole grains in relation to CRC is rated as probable, whereas the data supporting the increased risk associated with frequent use of sweets and goods made from refined white flour is (still) insufficient. Milk and other dairy products may have a risk-reducing effect Data on eggs and red meat suggest a potential risk-increasing influence (Thanikachalam *et al.* 2019).

Prospective cohort studies reveal that persons who consume more folic acid from multivitamin supplements than the average person do so at a lower risk of developing CRC. There is little proof that calcium, selenium, vitamin D, and vitamin E reduce the incidence of CRC. a diet rich in in fruits, vegetables, whole grains, and legumes combined with low-fat dairy, fish, and chicken can serve as the major preventative measure (Aguirre-Portolés *et al.* 2017).

The study, carried out examined 77.659 people's diets. In comparison to meat eaters, vegetarians who avoided all animal products—including meat, eggs, and dairy had a lower risk of CRC, while vegetarians who avoided meat entirely had a 22% lower risk. Additionally, fruits and vegetables shorten the time waste materials stay in the colon and support a diet and lifestyle that are generally healthy High-fiber meals have also been associated with a decreased incidence of CRC (Orlich, et al.,2015).

High consumption of processed and red meat has been connected with many studies to a higher risk of CRC. Meat that has been smoked, salted, or preserved chemically with substances known to cause cancer is considered processed meat. Lean foods, such as chicken and fish, are advised by doctors as an alternative to minimizing red meat consumption (Van Veen *et al.* 2020). It is preferable to put sports activity within the daily programs, that is, exercise should be practiced for 30 minutes per day, as this contributes to reducing the risk of many diseases, including CRC. You must have an ideal and healthy weight, as studies have shown that fat that accumulates in the abdominal area increases the risk of colon and rectal cancer. Studies have shown that eating fiber-rich food effectively contributes to the prevention of CRC, as eating 10 grams of dietary fiber daily reduces the incidence of CRC by 10% (Donovan *et al.* 2017).

Red meat should be eaten sparingly because it contributes to colon and rectal cancer, especially processed meat, which means that the individual should not eat more than 0.5 kg per week of red meat. You should not drink alcohol because it increases the risk of colon and rectal cancer. Studies have shown that smokers are at high risk of developing CRC, so smoking should be quit (Liu et al. 2017).

Alcohol consumption is thought to have a potential risk-increasing effect. Contrary to earlier assessments, diets high in fat appear to raise the risk of colon cancer only indirectly as a component of a hyper caloric diet by increasing the risk of obesity. As a result, the data linking obesity, particularly visceral fat, to a higher risk of CRC is regarded (Hull 2021).

2.10 Quality of life

Quality of life is a multidimensional concept that cannot be measured directly, but whose subdomains can be extracted through indicators. There are different theoretical approaches regarding the measurability of quality of life. Observable living conditions can be evaluated according to scientific or moral standards. Subjectivists emphasize the individual perception of one's own life situation. Objectivists consider that there are identifiable basic needs that determine well-being. According to the American Quality of Life survey, quality of life is increasingly determined by non-material values in the process of social development. Since happiness, satisfaction and fears can only be evaluated by the citizens themselves, the process of assessing life quality should also be done by asking them (Grove et al. 2021).

Quality of life is subjective and related to the individual situation; it is also influenced by people's interaction with their environment. Life, leisure, school and work environment, social relationships with other people, and many other things, mental and physical state, are thought to influence life satisfaction. Quality of life is studied in politics, medicine, sociology, economics and many other fields. Perceived quality of life is related to how close one actually is to the desired physical, psychological and social situation, rather than the material or non-material things one has (Sarı & Kındap, 2018).

Individuals with colostomy often experience physical problems such as leakage, odor, diarrhea and constipation, which negatively affect their quality of life. They encounter psychosocial problems related to worship, distortion of body image, bathing, physical activity, travelling, dressing and sexuality. In order to prevent the development of these problems and to solve the developing problems, nurses should provide discharge training and care by using the roles of caregiver, educator, consultant, supporter, nurturer and facilitator. It is reported that with the service provided in this direction, patients will accept the process faster, receive support, learn methods of coping with physical and psychosocial problems, and thus be able to carry out their own care independently (Duluklu and Şenol Çelik 2019).

3. MATERIAL METHODS

In this part, the methodology to be used in the study is explained, including research method, place of study, sample respondent, questionnaire, ethical principles and data analysis.

3.1 Design of the study

This study was conducted in the form of a cross-sectional design. A face-to-face interview with patients was conducted to fill out the questionnaire.

3.2 Aim of the study

This study was conducted to determine the quality of life of colorectal cancer patients.

3.3 Place of the study

The study was conducted in Al Diwaniyah city / Diwaniyah Health Department /Al Diwaniyah Teaching Hospital (oncology ward).

3.4 Time of the study

Data was collected from 7/2022 to 10/2022. The researcher obtained consent from each patient participating in the study.

3.5 Study sample

In addition to the Cochran formula, the Yamane equation was used to calculate the sample size. Yamane (1967) introduced another simpler formula for measuring the sample size of the population for the 95% confidence level and p. = 05, the sample size

should be: Population number of colon cancer patients at Al-Diwaniyah Teaching Hospital (N) number of samples (n) accuracy (e) (Yamane, 1967).

n= N\N(0.05*0.05)+1 n= 512\512(0.05*0.05) +1 n= 225

3.6 Data collection

The researcher informed the patients about the study. Participation of colon cancer patients in the study was not mandatory but optional. The researcher did not interfere with the answers.

3.7 Data tools

3.7.1 Socio demographic characteristics form

This form consists of 11 questions: age, marital status, educational status, employment status, income, number of children, place of residence, family history of cancer, how long ago the cancer was diagnosed, cancer stage, surgical treatment applied, and treatments applied.

3.7.2 Clinical characteristics form

The Arabic version of the European scale (The EORTC QLQ-C30) was used. It has been translated into Arabic by (Jassim *et al*. 2020). is a 30-item questionnaire composed of five functional subscales (physical, role, cognitive, emotional, and social), three symptom scales (fatigue, pain, and nausea and vomiting), and a Global Health (GH) Status. The remaining five single items assess symptoms commonly reported by cancer patients (dyspnea, insomnia, appetite loss, constipation, and diarrhea).

The reliability of the questionnaire (internal consistency) was tested by Cronbach's alpha coefficient and the accepted value to be met was >0.70. The results of Cronbach's alpha coefficient were 0.84 and this reflects the high internal consistency. The study concluded that the scale is valid and reliable for use among the Arab population (Jassim et al. 2020).

The reliability analysis of the scale and sub-dimensions used was examined. Functional size 0.788, symptom size 0.701, general health dimension 0.920, and according to these results the scale is reliable.

3.8 Ethical permission approvals

This study complies with the ethical and safety standards of participants. The researcher obtained the necessary permissions for the study and data collection. An application was made to Divaniye Health Directorate for approval. Approval of the Iraq Ethics Board was received by Decision No. (53) dated 6/7/2022 (APPENDIX 3). The researcher gave participating patients information about the study and explained the purpose of the study. The "Declaration of Helsinki Principles of Research and Publication Ethics" were followed in the conduct of the study. Consent was obtained from the participants for the study, taking into account the principles stated in the Declaration of Helsinki. Permission was obtained from the author to use the scale (Appendix 5).

3.9 Methods of statistic

Version 26 of SPSS (Statistical Package for the Social Sciences) were used for the purpose of analyzing the data collected during this study. As a result of the analysis, non-parametric tests were used for data that did not show normal distribution. nonparametric tests such as Kruskal-Wallis test and Mann Whitney-U test were used.Apart from these, t-test and ANOVA tests were used in independent groups to analyze normally distributed data. Number, percentage and correlation coefficient were used in the analysis of the data.

4. RESULTS

This chapter extensively introduces the outcomes of the research in tables and these refer to the objectives of this study, which are as follows:

Table 4.1 Distribution of participants' demographic characteristics

DEMOGRAPHIC DATA	GROUPS	n	%
Age	18-27	16	7.1
	28-37	43	19.1
	38-47	119	52.9
	48 or above	47	20.9
Gender	Male	142	63.1
	Female	83	36.9
Marital Status	Married	196	87.1
	Single	29	12.9
Education level	Literate	11	4.9
	primary school graduate	25	11.1
	Secondary School graduate	36	16.0
	High school graduate	42	18.7
	Bachelor's degree	111	49.3
Employment	Housewife	20	8.9
	Civil servant	153	68.0
	Worker	17	7.6
	Retired	12	5.3
	Self-employment	23	10.2
How would you evaluate your family's monthly income according to your expenses?	Income less than expenses	64	28.4
	Income is equal to expense	150	66.7
	Income more than expenses	11	4.9
How many children do you have?	No child	30	13.3
	1-5	168	74.7
	6-10	27	12.0
Where did you live the longest?	Rural	61	27.1
	Urban	164	72.9

%: percentage

52.9% of the patients participating in the study were between the ages of 38-47; 63.1% are male; 87.1% are married; 49.3% are university graduates; 68% are civil servants; 66.7% of them have income equal to their expenses; 74.7% have 1-5 children; 72.9% live in the city (Table 4.1).

Table 4.2 Distribution of patients according to their medical characteristics

ITEM	GROUPS	n	%
Does anyone in your family have cancer?	No	134	59.5
	Yes, my first degree relative (mother, father, sibling)	58	25.8
	Yes, my second-degree relative (aunt, uncle, uncle, aunt, etc.)	33	14.7
Treatment phase	Surgical	65	28.9
	Chemotherapy	93	41.3
	Radioactive	36	16.0
	Hormonal	31	13.8
Duration of the disease	Less than 8 months	112	49.8
	8-36 months	94	41.8
	More than 36 months	19	8.4

The proportion of patients without cancer in any of their family members is 59.5%; The rate of those who are in the process of chemotherapy is 41%. 49.8% of the patients stated that they had been suffering from this disease for 8 months or less (Table 4.2).

Kurtosis and skewness tests were used to determine whether the data were normally distributed. When there was no normal distribution, Mann Whitney U and Kruskal Wallis tests were used.

This table shows whether there is a normal distribution or not. The functional area is distributed normally; symptoms and general health status are not distributed normally.

Table 4.3 Distribution of patients' quality of life mean score

OVERALL and SUB-DIMENSIONS of the EORTC QLQ-C30 SCALE	Min	Max	Mean ±SD
Funcation	23.00	52.00	34.7422±4.47665
Physical functioning	5.00	20.00	10.70±2.045
Role functioning	2.00	7.00	4.253±0.92
Emotional functioning	6.00	16.00	12.19±1.91
Cognitive functioning	2.00	6.00	2.528±0.76
Social functioning	2.00	8.00	5.062±1.054
Symptoms	23.00	42.00	32.5111±3.59080
Fatigue	4.00	11.00	7.568±1.287
Nausea and vomiting	3.00	8.00	6.066±1.149
Pain	4.00	8.00	5.737±0.885
Dyspnoea	1	4	2.12±0.623
Insomnia	1	4	2.23±0.557
Appetite Loss	1	4	3.02±0.627
Constipation	1	4	2.47±0.835
Diarrhoea	1	4	2.62±0.863
Financial difficulties	1.00	4.00	2.911±0.688
General Health	2.00	14.00	6.7067 ±3.50805

In the light of statistical analysis mean and standerdvsion, this table illustrated the dimension and subdimension of qualtiy life towards patients with CRC. The study results indicate that the majority of patients low quality of life (Table 4.3).

Table 4.4 Comparison of EORTC QLQ-C30 Functional Dimension scores by demographic characteristics of participants (n= 255)

DEMOGRAPHIC DATA	GROUPS	n	MEAN	SD	TEST	P
Age	18-27	16	35.18	3.124	3.702[F]	0.013
	28-37	43	34.11	5.113		
	38-47	119	34.18	4.323		
	48 or above	47	36.57	4.231		
	Total	225	34.74	4.476		
Gender	Male	142	34.309	3.986	-1.906[t]	0.058
	Female	83	35.48	5.152		
Marital Status	Married	196	34.72	4.663	-0.110[t]	0.913
	Single	29	34.82	2.976		
Education level	Literate	11	38.09	3.534	2.537[F]	0.041
	Primary school graduate	25	35.44	4.203		
	Secondary School graduate	36	34.44	4.57		
	High school graduate	42	35.35	3.81		
	Bachelor's degree	111	34.11	4.68		
	Total	225	34.74	4.47		
Employment	Housewife	20	37.80	4.77	6.040[F]	0.000
	Civil servant	153	34.00	4.45		
	Worker	17	37.11	2.86		
	Retired	12	37.08	4.58		
	Self-employment	23	34	3.24		
How would you evaluate your family's monthly income according to your expenses?	Income less than expenses	64	36.17	4.274	6.792[F]	0.001
	Income is equal to expense	150	34.36	4.38		
	Income more than expenses	11	31.63	4.631		
How many children do you have?	No child	30	34.76	4.082	1.104[F]	0.333
	1-5	168	34.54	4.612		
	6-10	27	35.92	3.96		
Where did you live the longest?	Rural	61	36.39	3.996	11.942[F]	0.001
	Urban	164	34.12	4.501		

n=number of participants, t= T-test, F=ANOVA test

Comparison of EORTC QLQ-C30 Functional Dimension scores according to the demographic characteristics of the participants is shown in table 4.4. No significant difference was found in variables related to gender, marital status and having children (p>0.05).

Table 4.5 Comparison of EORTC QLQ-C30 Symptoms Dimension scores by demographic characteristics of participants (n= 255)

DEMOGRAPHIC DATA	RATING AND GROUPS	n	Mean	SD	TEST	p
Age	18-27	16	33	2.921	5.818 KW	0.121
	28-37	43	32.16	4.087		
	38-47	119	32.24	3.372		
	48 or above	47	33.34	3.806		
Gender	Male	142	32.47	3.210	5574 U	0.497
	Female	83	32.57	4.182		
Marital Status	Married	196	32.50	3.685	2700 U	0.663
	Single	29	32.55	2.922		
Education level	Literate	11	35.09	3.238	8.931 KW	0.063
	Primary school graduate	25	33.52	4.233		
	Secondary School graduate	36	32.16	2.922		
	High school graduate	42	32.66	3.979		
	Bachelor's degree	111	32.08	3.411		
Employment	Housewife	20	34.1	4.115	16.232 KW	0.003
	Civil servant	153	32.05	3.55		
	Worker	17	34.82	3.283		
	Retired	12	33.25	2.895		
	Self-employment	23	32.08	3.028		
How would you evaluate your family's monthly income according to your expenses?	Income less than expenses	64	33.53	3.660	8.347 KW	0.015
	Income is equal to expense	150	32.18	3.488		
	Income more than expenses	11	31	3.521		
How many children do you have?	No child	30	32.63	3.872	1.975 KW	0.373
	1-5	168	32.34	3.606		
	6-10	27	33.40	3.128		
Where did you live the longest?	Rural	61	33.67	3.3001	8.614 KW	0.003
	Urban	164	32.07	3.608		

n=number of participants, U= Mann Whitney U, F= Kruskal Wallis H

Comparison of EORTC QLQ-C30 Symptom Dimension scores according to the demographic characteristics of the participants is shown in table 4.5. Employment, How

would you evaluate your family's monthly income according to your expenses? Where did you live the longest? There was a significant difference in these variables ($p<0.05$).

Table 4.6 Comparison of EORTC QLQ-C30 General Health Dimension scores by demographic characteristics of participants (n= 255)

DEMOGRAPHIC DATA	RATING AND GROUPS	n	Mean	SD	TEST VALUE	p
Age	18-27	16	7.00	3.669	0.863 KW	0.834
	28-37	43	6.86	3.335		
	38-47	119	6.69	3.413		
	48 or above	47	6.48	3.922		
Gender	Male	142	6.55	3.491	5483 U	0.382
	Female	83	6.96	3.542		
Marital Status	Married	196	6.73	3.520	2782.5 U	0.855
	Single	29	6.51	3.480		
Education level	Literate	11	8.00	3.633	4.490 KW	0.344
	Primary school graduate	25	6.76	3.243		
	Secondary School graduate	36	7.52	3.652		
	High school graduate	42	6.52	3.814		
	Bachelor's degree	111	6.36	3.373		
Employment	Housewife	20	6.70	3.540	3.962 KW	0.411
	Civil servant	153	6.57	3.566		
	Worker	17	7.35	3.498		
	Retired	12	5.66	3.143		
	Self-employment	23	7.65	3.283		
How would you evaluate your family's monthly income according to your expenses?	Income less than expenses	64	6.75	3.352	0.933 KW	0.627
	Income is equal to expense	150	6.62	3.586		
	Income more than expenses	11	7.54	3.503		
How many children do you have?	No child	30	6.13	3.350	0.801 KW	0.670
	1-5	168	6.82	3.527		
	6-10	27	6.59	3.618		
Where did you live the longest?	Rural	61	7.08	3.518	1.040 KW	0.308
	Urban	164	6.56	3.504		

n=number of participants, U= Mann-Whitney U, F= Kruskal-Wallis H

Comparison of EORTC QLQ-C30 General Health Dimension scores according to the demographic characteristics of the participants is shown in table 4.6 In this table, it can

be seen that there is no statistically significant situation regarding the general health dimension (p>0.05).

Table 4.7 Comparison of EORTC QLQ-C30 Functional Dimension scores by their medical characteristics of participants (n= 255)

DEMOGRAPHIC DATA	GROUPS	n	MEAN	SD	TEST VALUE	p
Does anyone in your family have cancer disease?	No	134	34.70	4.39	3.268 F	0.040
	Yes, my first degree relative (mother, father, sibling)	58	33.89	4.66		
	Yes, my second-degree relative (aunt, uncle, uncle, aunt, etc.)	33	36.36	4.136		
Treatment phase	Surgical	65	35.3385	4.48705	8.033 F	0.000
	Chemical	93	35.8065	4.37448		
	Radioactive	36	33.3056	3.86057		
	Hormonal	31	31.9677	3.98735		
Duration of the disease	Less than 8 months	112	35.91	4.539	8.140 F	0.000
	8-36 months	94	33.52	3.953		
	More than 36 months	19	33.89	4.954		

n=number of participants, t= T-east, F=ANOVA teat

Comparison of EORTC QLQ-C30 Functional Dimension scores according to participants' medical characteristics is shown in table 4.7. A significant difference was found in the variables related to "Does anyone in your family have cancer? Treatment phase, Duration of the disease" (p<0.05).

Table 4.8 Comparison of EORTC QLQ-C30 Symptoms Dimension scores by their medical characteristics of participants (n= 255)

DEMOGRAPHIC DATA	RATING AND GROUPS	n	Mean	SD	TEST VALUE	p
Does anyone in your family have cancer?	No	134	32.10	3.575	13.903 KW	0.001
	Yes, my first degree relative (mother, father, sibling)	58	32.36	3.582		
	Yes, my second-degree relative (aunt, uncle, uncle, aunt, etc.)	33	34.42	3.122		
Treatment phase	Surgical	65	31.92	3.671	22.993 KW	0.000
	Chemical	93	33.65	3.174		
	Radioactive	36	32.25	3.827		
	Hormonal	31	30.61	3.303		
Duration of the disease	Less than 8 months	112	33.16	3.408	12.054 KW	0.002
	8-36 months	94	31.62	3.491		
	More than 36 months	19	33.00	4.333		

n=number of participants, U= Mann-Whitney U, F= Kruskal-Wallis H

Comparison of EORTC QLQ-C30 Symptoms Dimension scores according to participants' medical characteristics is shown in Table 4.8. A significant difference was found in the variables related to ‘’Does anyone in your family have cancer , Treatment phase and Duration of the disease’’ Symptoms Dimension scores scores ($p<0.05$).

Table 4.9 Comparison of EORTC QLQ-C30 General Health Dimension scores by their medical characteristics of participants (n= 255)

DEMOGRAPHIC DATA	RATING AND GROUPS	n	Mean	SD	TEST	p
Does anyone in your family have cancer?	No	134	6.53	3.39539	0.528	0.768
	Yes, my first degree relative (mother, father, sibling)	58	6.96	3.55392		
	Yes, my second-degree relative (aunt, uncle, uncle, aunt, etc.)	33	6.93	3.92858		
Treatment phase	Surgical	65	6.83	3.52034	0.621 KW	0.892
	Chemical	93	6.77	3.45193		
	Radioactive	36	6.36	3.27896		
	Hormonal	31	6.64	4.02118		
Duration of the disease	Less than 8 months	112	7.00	3.63540	1.646 KW	0.439
	8-36 months	94	6.35	3.40053		
	More than 36 months	19	6.68	3.26688		

n=number of participants, U= Mann-Whitney U, F= Kruskal-Wallis H

Comparison of EORTC QLQ-C30 General Health Dimension scores according to participants' medical characteristics is shown in Table 4.9 This table shows that there no statistical significant situation regarding the general health dimension ($p>0.05$).

5. DISCUSSION

This study was conducted on 225 patients. In the study, the rate of men (63.1%) was higher than women (Table 4.1). Similar results were found in studies. (Arraras et al. 2021; Van Zutphen et al. 2017; Beckmann *et al.* 2015; Vijayvergia et al. 2016). As for the average age of the participating patients, it was from 38 to 47, which is the highest percentage (Table 4.1). This agrees with previous studies, because the incidence increases with age and at the age of 40 and over (Favoriti *et al.* 2016). The rate of married people (87.1%) was found to be higher in the study. Similar results were found in studies (Arraras et al. 2021; Gonzalez-Saenz de Tejada et al. 2016). Most of the participating patients (49.3%) were university graduates and most of the patients (72.9%) lived in the city. A similar result was found in a study. It was found that most of the participants were university graduates (Arraras et al. 2021). As a different result, in one study, the education level of the majority of patients was found to be low (Van Zutphen et al. 2017). Most of the participating patients (60%) were civil servants. (Table 4.1). Most of them were state employees and had a salary that met their daily expenses, according to previous studies (Schneider *et al.* 2020).

Table 4.2 The percentage of patients who do not have a family member with cancer is the highest, and this matches previous studies, because the genetic factor constitutes a small percentage o f the incidence of CRC, which is 5% (Carethers *et al.* 2015). The patients participating in the chemotherapy stage had a higher rate (41.3%) because most of them had undergone surgical treatment. Because cancer has spread at a certain rate and chemotherapy is required to limit its spread and reduce its recurrence. The duration of disease was less than 8 months, with a higher (49.8%) rate (Table 4.2).

The patients' mean EORTC QLQ-C30 Quality of Life Scale general health subscale score was found to be low at 6.7067 ±3.50805 (Table 4.3). The general health status of the patients is low has been found. In a study, the average general health status subscale score was found to be at a moderate level (Çalışkan et al. 2015).

In this study, the functional health status of the patients was found to be poor. In our study, patients received the highest score from the functional scales from emotional function and the lowest score from cognitive function (Table 4.3). In a study, the functional health status of patients was found to be good. In the study, patients received the highest score from the functional scales from emotional function and the lowest score from physical function (Çalışkan et al. 2015). It is desirable for patients to receive high scores in emotional function and it is thought that this supports the patient positively. In one study, physical function was average (Van Zutphen *et al.* 2017). In one study, patients' cognitive functions were found to be poor. Social function was at an average level (Gonzalez-Saenz de Tejada *et al.* 2016).

In Table 4.7, it was found that there is not an effect and relationship between the patient's age, gender, marital status, education level, and the symptoms dimension scores. There is also a relationship between the patient's gender and the severity of symptoms, as the appearance of symptoms was slightly more in males (Mattiuzzi *et al.*2019). Similar results were found in a study. It was noted that there was no statistical significance between the marital status and the severity of the symptoms, as well as there was no relationship between the level of education and the symptoms of the disease (McGettigan *et al.* 2020). There was a statistical indication between the patient's job and the severity of symptoms (Table 4.7), because cancer generally needs multiple aspects, pharmacological treatment and psychological treatment, and this is very expensive for those who do not have sufficient income, as the patient who has a good job and sufficient financial income can improve his quality of life and reduce the physical and psychological symptoms of cancer. This is not the case for the patient who does not have enough income to self-treat during intensive examinations and follow-ups in specialized centers (Den Bakker *et al.* 2020). There is no statistical relationship between having children and the symptom dimension score (Table 4.7). However, a study found different results. There is a statistical indication between the number of children and the severity of symptoms, as patients who have children complain of bad psychological and emotional conditions because of their fear for their children and the extent of their children's fear and anxiety about them (McTiernan *et al.* 2019). There is also a statistical significance between the symptoms of the disease and the patient's

place of residence, because villages and rural areas lack treatment centers of good quality and specifications, unlike the city. İt is thought that patients who live in city centers enjoy a better quality of life in terms of symptoms and progression of the disease than patients who live in villages (Lin *et al.* 2016). Similar results were found in our study. A significant relationship was found between the symptom dimension score and whether the patients lived in a rural or urban area (Table 4.7).

There is no relationship between the age, gender, marital status, education level, employment, and the general functions of a patient with CRC in our study (Table 4.8). İt was shown that there is an effect in terms of age on the patient's functions, and this matches previous studies, as this disease affects age groups from the age of 40 and over, and thus their functions decrease in general with age, due to infection with the disease and the negative side effects of treatments (Zaimi *et al.* 2018). İn a study, It is shown that there is no effect or relationship between the patient's gender and his general functions (Hornbrook *et al.* 2017). Similar results were found in our study. It was determined that there was no important partnership between the patient's gender and general functions (Table 4.8). Another study yielded different results. It was noted that there was a relationship between the patient's gender and his general health, as it was noted that female patients are more affected by the symptoms of the disease and the symptoms of various chemical, radiological and other treatments, compared to male patients (Williams et al. 2023). Also, there is no relationship between the marital status and the general functions of a patient with CRC (Table 4.8) Similar outcomes were found in a study carried out (Franjić *et al.* 2021). In one study, it was noted that there was no statistically significant difference between the patient's marital status and general health status. As educated patients have a better quality of life to some extent because of their commitment to the reviews and recommendations of doctors and their sufficient information about the disease (Rayborn et al. 2021). There is a relationship between the level of education and the general functions of the patient in terms of that the CRC patient who is educated and who has complete information about this disease has the ability to organize his quality of life correctly and maintain his functions in general Overall function is affected (Lathan *et al.* 2016). There is also an effect in terms of the patient's job, whether he is an employee, worker, or earner, and the general

functions of the patient. Because this disease makes some unemployed people, i.e. workers and earners, leave work due to the decline in their physical functions in general, especially those who have a poor health condition due to the advanced stage of the disease (Ellis *et al.* 2018).

Also, the material condition and daily income has an impact on the jobs of the patient because this disease causes great material losses, and this is not tolerated by most patients whose financial condition is bad because they leave their work because of the disease and the decline in jobs in general, and this leads to a decrease in daily income (Keum and Giovannucci, 2019). İn our study, there was no significant difference in the general health score of the patients and whether they lived in rural or urban areas (Table 4.8). There is also a relationship between functional status and the patient's general health. Where the working patient or who has a specific job enjoys advantages in terms of the physical and psychological condition and the quality of medical care, as well as the continuous work makes the cancer patient more feeling and hopeful in life, and this has a major role in the treatment journey, which makes him enjoy better general health than the patient who does not have a job or a job (Høverstad *et al.* 2015). In one study, it was determined that there was no significant relationship between the patient's monthly income and general health status, or between the patient's number of children and general health status. It was noted that there is a simple relationship between the place of residence of the patient and his general health due to the patient who lives in urban areas attending visits to specialized health centers and being close to them, unlike the patient in villages and rural areas who suffer from difficulty in obtaining adequate health care and difficulty in accessing medical centers in cities (Alves et al. 2019). In our study, no significant relationship was found between the number of children, monthly income status, patient's number of children and general health status (Table 4.8).

In Table 4.7, a relationship was observed between the presence of a family member with cancer and the general functions of the patient. There is a relationship between the incidence of this disease and the genetic factor, which is one of the causes of infection, and a number of members of the same family may develop cancer due to genetic

mutations (Archambault *et al.* 2020). There is also a relationship between the stage of treatment and the functions of the patient (Table 4.7). The patient's functions deteriorate during the treatment stage because of the strong side effects of chemotherapy and others (Lee *et al.* 2017).

In our study, it was found that there was a highly significant difference between the symptoms dimension and the treatment phase of the disease (Table 4.8). It was also observed that there is a statistical relationship between the stage of treatment and symptoms of the disease, as it is known that cancer treatments of different types, chemical, radiological, hormonal, and targeted therapies cause severe side effects, especially chemical ones, such as vomiting, headache, general fatigue, loss of appetite, hair loss, etc., but there is a difference in terms of the stage of treatment, for example, chemotherapy has severe side effects compared to the side effects of surgical, radiological (Wu 2018). There is also a statistical relationship between the duration of treatment of the disease and the symptoms dimension (Table 4.8).

There is a relationship between the duration of disease treatment and general functions, as long-term treatment causes fatigue to the patient’s body despite the fatigue he suffers from because of the disease. Long-term treatments, especially chemical ones, cause strong side effects, as they cause the killing of healthy cells and a decrease in the body’s stamina, and thus a decrease in its functions (Damato *et al.* 2023). But as a different result, in our study, no significant difference was detected between the general health dimension and the duration of the disease. İt was determined that there was no statistical relationship between the patient's general health status and the treatment stage (Table 4.9).

6. CONCLUSION

6.1 Conclusion

Our study found that this disease affects males at a higher rate than females. It was also found that the risk of developing this disease increases with age. It was also shown that the relationship between heredity and disease is low through the information of the participating patients, and most of them were in the stage of chemotherapy, and the largest percentage of them were from urban residents and were civil servants with a bachelor's degree. Also, the disease and its treatment had a noteworthy effect on the quality of life of most patients in terms of their ability to practice their lives normally. Likewise, their perceptual and cognitive function was somewhat low, and most of the patients suffered from symptoms of nausea, vomiting, loss of appetite, diarrhea or constipation, and this is due to the symptoms of the disease itself, as well as due to the severe side effects of various treatments, such as chemotherapy and others. Likewise, most patients were suffering from financial and economic difficulties, and this negatively affected their treatment due to the high costs of treatment.

It was found that there is a relationship between the patient’s profession and work and the severity of the symptoms because cancer requires different treatments, whether pharmaceutical or psychological, and this is very expensive for the patient, as the one who has a profession with sufficient income can reduce the symptoms of the disease and the consequences of treatment and can improve his quality of life well. It was determined that there was a relationship between the symptoms of the disease and the place where the patient lived. It was also found that there is a relationship between the patient's general functions and his general health. It was also found that there is a relationship between the duration of the disease and the patient’s general functions, as long-term treatment causes severe fatigue to the patient’s body in addition to the suffering of the disease and thus causes a decrease in the patient’s ability, and this leads to a decrease in his general functions.

6.2 Recommendation

The findings of our research are based on the reliability of the scales used and the sample limited to the responses of the patients in the group. The small sample size of our research is a limitation of the research. It may be recommended to conduct a study on a larger sample. Nurses should consider the importance of quality of life as well as improving the health of their cancer patients. The patient should be helped to cope with his illness and psychological and emotional support should be provided. The patient should get support from his family and relatives.

REFERENCES

Aguirre-Portolés, C., Fernández, L. P. and Ramírez de Molina, A. 2017. Precision nutrition for targeting lipid metabolism in colorectal cancer. Nutrients, 9(10): 1076.

Alves, J. M., Prado-Lopez, S., Cameselle-Teijeiro, J. M. and Posada, D. 2019. Rapid evolution and biogeographic spread in a colorectal cancer. Nature communications, 10(1): 5139.

Archambault, A. N., Su, Y. R., Jeon, J., Thomas, M., Lin, Y., Conti, D. V. and Hayes, R. B. 2020. Cumulative burden of colorectal cancer–associated genetic variants is more strongly associated with early-onset vs late-onset cancer. Gastroenterology, 158(5): 1274-1286.

Abdullah, A. R., Abdulfattah, S. Y., Ali, A. H. and Abdulhameed, B. A. 2012. Increasing serum level of tumor necrosis factor alpha in some gastrointestinal cancers in Iraqi patients. Egypt J. Exp. Biol., 8(1): 49-54.

Arraras, J. I., Nolte, S., Liegl, G., Rose, M., Manterola, A., Illarramendi, J. J. and EORTC Quality of Life Group. 2021. General Spanish population normative data analysis for the EORTC QLQ-C30 by sex, age, and health condition. Health and Quality of Life Outcomes, 19: 1-12.

Baran, B., Ozupek, N. M., Tetik, N. Y., Acar, E., Bekcioglu, O. and Baskin, Y. 2018. Difference between left-sided and right-sided colorectal cancer: a focused review of literature. Gastroenterology research, 11(4): 264.

Barresi, V. 2021. Colorectal Cancer: From Pathophysiology to Novel Therapeutic Approaches. Biomedicines, 9(12): 1858.

Beckmann, K. R., Bennett, A., Young, G. P., Cole, S. R., Joshi, R., Adams, J. and Roder, D. 2015. Sociodemographic disparities in survival from colorectal cancer in South Australia: a population-wide data linkage study. BMC health services research, 16, 1-14.

Biller, L. H. and Schrag, D. 2021. Diagnosis and treatment of metastatic colorectal cancer: a review. Jama, 325(7): 669-685.

Brockmoeller, S. F. and West, N. P. 2019. Predicting systemic spread in early colorectal cancer: Can we do better?. World journal of gastroenterology, 25(23): 2887.

Brown, R. E., Short, S. P. and Williams, C. S. 2018. Colorectal cancer and metabolism. Current colorectal cancer reports, 14: 226-241.

Carethers, J. M. and Jung, B. H. 2015. Genetics and genetic biomarkers in sporadic colorectal cancer. Gastroenterology, 149(5): 1177-1190.

Carmichael, J. C. and Mills, S. 2022. Anatomy and embryology of the colon, rectum, and anus. The ASCRS textbook of colon and rectal surgery, 3-27.

Chakedis, J. and Schmidt, C. R. 2018. Surgical treatment of metastatic colorectal cancer. Surgical Oncology Clinics, 27(2): 377-399.

Çalışkan, T., Duran, S., Karadaş, A. and Tekir, Ö. 2015. Kanser hastalarının yaşam kalitesi ve sosyal destek düzeylerinin değerlendirilmesi. Kırıkkale Üniversitesi Tıp Fakültesi Dergisi, 17(1): 27-36.

Damato, A., Ghidini, M., Dottorini, L., Tomasello, G., Iaculli, A., Ghidini, A. and Petrelli, F. 2023. Chemotherapy Duration for Various Indications in Colorectal Cancer: a Review. Current Oncology Reports, 25(4): 341-352.

Darbandi, A., Mirshekar, M., Shariati, A., Moghadam, M. T., Lohrasbi, V., Asadolahi, P. and Talebi, M. 2020. The effects of probiotics on reducing the colorectal cancer surgery complications: a periodic review during 2007–2017. Clinical Nutrition, 39(8): 2358-2367.

De Rosa, M., Pace, U., Rega, D., Costabile, V., Duraturo, F., Izzo, P. and Delrio, P. 2015. Genetics, diagnosis and management of colorectal cancer. Oncology reports, 34(3): 1087-1096.

Den Bakker, C. M., Anema, J. R., Huirne, J. A. F., Twisk, J., Bonjer, H. J. and Schaafsma, F. G. 2020. Predicting return to work among patients with colorectal cancer. Journal of British Surgery, 107(1): 140-148.

Donovan, M. G., Selmin, O. I., Doetschman, T. C. and Romagnolo, D. F. 2017. Mediterranean diet: prevention of colorectal cancer. Frontiers in nutrition, 4: 59.

Duluklu, B. and Şenol Çelik, S. 2019. Kolostomisi olan bireylerde yaşam kalitesi: sorunlar ve hemşirelik girişimleri. Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi, 6(2): 111-119.

Ellis, L., Canchola, A. J., Spiegel, D., Ladabaum, U., Haile, R. and Gomez, S. L. 2018. Racial and ethnic disparities in cancer survival: the contribution of tumor, sociodemographic, institutional, and neighborhood characteristics. Journal of Clinical Oncology, 36(1): 25.

Eslami, M., Yousefi, B., Kokhaei, P., Hemati, M., Nejad, Z. R., Arabkari, V. and Namdar, A. 2019. Importance of probiotics in the prevention and treatment of colorectal cancer. Journal of cellular physiology, 234(10): 17127-17143.

Favoriti, P., Carbone, G., Greco, M., Pirozzi, F., Pirozzi, R. E. M. and Corcione, F. 2016. Worldwide burden of colorectal cancer: a review. Updates in surgery, 68(1): 7-11.

Fowler, M., Tobback, H., Karuri, A. and Fernández-Ortega, P. 2023. Nursing care and management of adverse events for patients with BRAF V600E-mutant metastatic colorectal cancer receiving encorafenib in combination with cetuximab: a review. Supportive Care in Cancer, 31(4): 204.

Franjić, D., Babić, D., Marijanović, I. and Martinac, M. 2021. Association between resilience and quality of life in patients with colon cancer. Psychiatria Danubina, 33(suppl 13): 297-303

Gonzalez-Saenz de Tejada, M., Bilbao, A., Bare, M., Briones, E., Sarasqueta, C., Quintana, J. M. and Escobar, A. 2016. Association of social support, functional status, and psychological variables with changes in health-related quality of life outcomes in patients with colorectal cancer. Psycho-Oncology, 25(8): 891-897.

Granados-Romero, J. J., Valderrama-Treviño, A. I., Contreras-Flores, E. H., Barrera-Mera, B., Herrera Enríquez, M., Uriarte-Ruíz, K. and Arauz-Peña, G. 2017. Colorectal cancer: a review. Int J Res Med Sci, 5(11): 4667.

Grove, T. N., Muirhead, L. J., Parker, S. G., Brogden, D. R. L., Mills, S. C., Kontovounisios, C. and Warren, O. J. 2021. Measuring quality of life in patients with abdominal wall hernias: a systematic review of available tools. Hernia, 25(2): 491-500.

Gustavsson, B., Carlsson, G., Machover, D., Petrelli, N., Roth, A., Schmoll, H. J. and Gibson, F. 2015. A review of the evolution of systemic chemotherapy in the management of colorectal cancer. Clinical colorectal cancer, 14(1): 1-10.

Haddock, M. G. 2017. Intraoperative radiation therapy for colon and rectal cancers: a clinical review. Radiation Oncology, 12(1): 1-8.

Häfner, M. F. and Debus, J. 2016. Radiotherapy for colorectal cancer: current standards and future perspectives. Visceral medicine, 32(3): 172-177.

Han, C. J., Yang, G. S. and Syrjala, K. 2020. Symptom experiences in colorectal cancer survivors after cancer treatments: A systematic review and meta-analysis. Cancer nursing, 43(3): E132.

Hendler, R. and Zhang, Y. 2018. Probiotics in the treatment of colorectal cancer. Medicines, 5(3): 101.

Hickish, T. andre, T., Wyrwicz, L., Saunders, M., Sarosiek, T., Kocsis, J. and de Gramont, A. 2017. MABp1 as a novel antibody treatment for advanced colorectal cancer: a randomised, double-blind, placebo-controlled, phase 3 study. The Lancet Oncology, 18(2): 192-201.

Holch, J. W., Ricard, I., Stintzing, S., Modest, D. P. and Heinemann, V. 2017. The relevance of primary tumour location in patients with metastatic colorectal cancer: a meta-analysis of first-line clinical trials. European Journal of Cancer, 70: 87-98.

Hornbrook, M. C., Goshen, R., Choman, E., O'Keeffe-Rosetti, M., Kinar, Y., Liles, E. G. and Rust, K. C. 2017. Early colorectal cancer detected by machine learning model using gender, age, and complete blood count data. Digestive diseases and sciences, 62: 2719-2727.

Høverstad, K. N. 2015. The association between socioeconomic status and colorectal cancer incidence (Master's thesis, UiT Norges arktiske universitet.

Hull, M. A. 2021. Nutritional prevention of colorectal cancer. Proceedings of the Nutrition Society, 80(1): 59-64.

Hussain, A. M. and Lafta, R. K. 2021. Cancer trends in Iraq 2000–2016. Oman medical journal, 36(1): e219.

Jassim, G. and AlAnsari, A. 2020. Reliability and Validity of the Arabic Version of the EORTC QLQ-C30 and QLQ-BR23 Questionnaires. Neuropsychiatric Disease and Treatment, 6(9): 3045-3052.

Kanth, P. and Inadomi, J. M. 2021. Screening and prevention of colorectal cancer. Bmj, 3: 74.

Keum, N. and Giovannucci, E. 2019. Global burden of colorectal cancer: emerging trends, risk factors and prevention strategies. Nature reviews Gastroenterology and hepatology, 16(12): 713-732.

Kothari, S. T., Huang, R. J., Shaukat, A., Agrawal, D., Buxbaum, J. L., Fehmi, S. M. A. and Wani, S. 2019. ASGE review of adverse events in colonoscopy. Gastrointestinal endoscopy, 90(6): 863-876.

Ladabaum, U., Dominitz, J. A., Kahi, C. and Schoen, R. E. 2020. Strategies for colorectal cancer screening. Gastroenterology, 158(2): 418-432.

Lathan, C. S., Cronin, A., Tucker-Seeley, R., Zafar, S. Y., Ayanian, J. Z. and Schrag, D. 2016. Association of financial strain with symptom burden and quality of life for patients with lung or colorectal cancer. Journal of Clinical Oncology, 34(15): 1732.

Lee, M. T. G., Chiu, C. C., Wang, C. C., Chang, C. N., Lee, S. H., Lee, M. and Lee, C. C. 2017. Trends and outcomes of surgical treatment for colorectal cancer between 2004 and 2012-an analysis using national inpatient database. Scientific reports, 7(1): 1-8.

Li, P., Guo, Y. J., Tang, Q. and Yang, L. 2018. Effectiveness of nursing intervention for increasing hope in patients with cancer: a meta-analysis. Revista latino-americana de enfermagem, 26.

Lin, C. C., Bruinooge, S. S., Kirkwood, M. K., Hershman, D. L., Jemal, A., Guadagnolo, B. A. and Olsen, C. 2016. Association between geographic access to cancer care and receipt of radiation therapy for rectal cancer. International Journal of Radiation Oncology* Biology* Physics, 94(4): 719-728.

Liu, H., Liu, X., Zhang, C., Zhu, H., Xu, Q., Bu, Y. and Lei, Y. 2017. Redox imbalance in the development of colorectal cancer. Journal of Cancer, 8(9): 1586.

Lowery, J. T., Ahnen, D. J., Schroy III, P. C., Hampel, H., Baxter, N., Boland, C. R. and Smith, R. 2016. Understanding the contribution of family history to colorectal cancer risk and its clinical implicaions: a state-of-the-science review. Cancer, 122(17): 2633-2645.

M.McQuade, R., Stojanovska, V., C Bornstein, J. and Nurgali, K. 2017. Colorectal cancer chemotherapy: the evolution of treatment and new approaches. Current medicinal chemistry, 24(15): 1537-1557.

Mao, L., Li, S., Yu, W., Li, Z., He, C., Wang, H. and Chen, Y. 2019. Comprehensive high-quality nursing care reduces postoperative pain and improves quality of life in patients with colorectal cancer. J Int J Clin Exp Med, 12(7): 9238-9244.

Marley, A. R. and Nan, H. 2016. Epidemiology of colorectal cancer. International journal of molecular epidemiology and genetics, 7(3): 105.

Mármol, I., Sánchez-de-Diego, C., Pradilla Dieste, A., Cerrada, E. and Rodriguez Yoldi, M. J. 2017. Colorectal carcinoma: a general overview and future perspectives in colorectal cancer. International journal of molecular sciences, 18(1): 197.

Matsuda, T., Yamashita, K., Hasegawa, H., Oshikiri, T., Hosono, M., Higashino, N. and Kakeji, Y. 2018. Recent updates in the surgical treatment of colorectal cancer. Annals of gastroenterological surgery, 2(2): 129-136.

Mattiuzzi, C., Sanchis-Gomar, F. and Lippi, G. 2019. Concise update on colorectal cancer epidemiology. Annals of translational medicine, 7(21): 656.

McGettigan, M., Cardwell, C. R., Cantwell, M. M. and Tully, M. A. 2020. Physical activity interventions for disease-related physical and mental health during and following treatment in people with non-advanced colorectal cancer. Cochrane Database of Systematic Reviews, 1: 5.

McTiernan, A. N. N. E., Friedenreich, C. M., Katzmarzyk, P. T., Powell, K. E., Macko, R., Buchner, D. and Piercy, K. L. 2019. Physical activity in cancer prevention and survival: a systematic review. Medicine and science in sports and exercise, 51(6): 1252).

Miller, K. D., Fidler-Benaoudia, M., Keegan, T. H., Hipp, H. S., Jemal, A. and Siegel, R. L. 2020. Cancer statistics for adolescents and young adults, 2020. CA: a cancer journal for clinicians, 70(6): 443-459.

Mols, F., Schoormans, D., de Hingh, I., Oerlemans, S. and Husson, O. 2018. 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, 124(12): 2621-2628.

Mrabti, H., Amziren, M., ElGhissassi, I., Bensouda, Y., Berrada, N., Abahssain, H. and Errihani, H. 2016. Quality of life of early stage colorectal cancer patients in Morocco. BMC gastroenterology, 16(1): 1-10.

Nappi, A., Berretta, M., Romano, C., Tafuto, S., Cassata, A., Casaretti, R. and Nasti, G. 2018. Metastatic Colorectal Cancer: Role of Target Therapies and Future Perspectives. Current cancer drug targets, 18(5): 421-429.

O'Leary, M. P., Choong, K. C., Thornblade, L. W., Fakih, M. G., Fong, Y. and Kaiser, A. M. 2020. Management considerations for the surgical treatment of colorectal cancer during the global Covid-19 pandemic. Annals of surgery, 272(2): e98.

Ohhara, Y., Fukuda, N., Takeuchi, S., Honma, R., Shimizu, Y., Kinoshita, I. and Dosaka-Akita, H. 2016. Role of targeted therapy in metastatic colorectal cancer. World journal of gastrointestinal oncology, 8(9): 642.

Orlich, M. J., Singh, P. N., Sabaté, J., Fan, J., Sveen, L., Bennett, H. and Fraser, G. E. 2015. Vegetarian dietary patterns and the risk of colorectal cancers. JAMA internal medicine, 175(5): 767-776.

Pak, H., Maghsoudi, L. H., Soltanian, A. and Gholami, F. 2020. Surgical complications in colorectal cancer patients. Annals of medicine and surgery, 55: 13-18.

Pashirzad, M., Sathyapalan, T., Sheikh, A., Kesharwani, P. and Sahebkar, A. 2022. Cancer stem cells: An overview of the pathophysiological and prognostic roles in colorectal cancer. Process Biochemistry.

Patel, S. G. and Ahnen, D. J. 2018. Colorectal cancer in the young. Current gastroenterology reports, 20: 1-12.

Petimar, J., Smith-Warner, S. A., Rosner, B., Chan, A. T., Giovannucci, E. L. and Tabung, F. K. 2019. Adherence to the World Cancer Research Fund/American Institute for Cancer Research 2018 Recommendations for Cancer Prevention and Risk of Colorectal CancerWCRF/AICR Recommendations and Colorectal Cancer Risk. Cancer Epidemiology, Biomarkers and Prevention, 28(9): 1469-1479.

Rahman, M., Behl, T., Islam, M., Alam, M., Albarrati, A., Albratty, M. and Bungau, S. G. 2022. Emerging management approach for the adverse events of immunotherapy of cancer. Molecules, 27(12): 3798.

Rayborn, A. 2021. Educating Staff to Improve Colorectal Cancer Screening (Doctoral dissertation, Walden University).

Salibasic, M., Pusina, S., Bicakcic, E., Pasic, A., Gavric, I., Kulovic, E. and Beslija, S. 2019. Colorectal cancer surgical treatment, our experience. Medical Archives, 73(6): 412.

Samir Abd El-Kader Ali, A., Osman Ali Khalil, O. and Ibrahim Shehata Kawashty, A. 2022. Laparoscopic versus open colectomy: A retrospective outcome of 30 consecutive patients. Al-Azhar Medical Journal, 51(1): 169-174.

Sarı, V. İ. and Kındap, A. 2018. Türkiye'de kentsel yaşam kalitesi göstergelerinin analizi. Sayıştay Dergisi, (108): 39-72.

Schneider, J. L., Layefsky, E., Udaltsova, N., Levin, T. R. and Corley, D. A. 2020. Validation of an algorithm to identify patients at risk for colorectal cancer based on laboratory test and demographic data in diverse, community-based population. Clinical Gastroenterology and Hepatology, 18(12): 2734-2741.

Shawki, S., Ashburn, J., Signs, S. A. and Huang, E. 2018. Colon cancer: inflammation-associated cancer. Surgical Oncology Clinics, 27(2): 269-287.

Siegel, R. L., Fedewa, S. A. anderson, W. F., Miller, K. D., Ma, J., Rosenberg, P. S. and Jemal, A. 2017. Colorectal cancer incidence patterns in the United States, 1974–2013. JNCI: Journal of the National Cancer Institute, 109(8): 322.

Tabung, F. K., Brown, L. S. and Fung, T. T. 2017. Dietary patterns and colorectal cancer risk: a review of 17 years of evidence (2000–2016). Current colorectal cancer reports, 13: 440-454.

Tam, S. Y. and Wu, V. W. 2019. A review on the special radiotherapy techniques of colorectal cancer. Frontiers in oncology, 9, 208.

Thanikachalam, K. and Khan, G. 2019. Colorectal cancer and nutrition. Nutrients, 11(1): 164.

Tuominen, L., Stolt, M., Meretoja, R. and Leino-Kilpi, H. 2019. Effectiveness of nursing interventions among patients with cancer: an overview of systematic reviews. Journal of clinical nursing, 28(13-14): 2401-2419.

Van Veen, M. R., Mols, F., Smeets, L., Kampman, E. and Beijer, S. 2020. Colorectal cancer survivors' beliefs on nutrition and cancer; correlates with nutritional information provision. Supportive Care in Cancer, 28: 1255-1263.

Van Zutphen, M., Winkels, R. M., van Duijnhoven, F. J., van Harten-Gerritsen, S. A., Kok, D. E., van Duijvendijk, P. and Kampman, E. 2017. An increase in physical activity after colorectal cancer surgery is associated with improved recovery of physical functioning: a prospective cohort study. BMC cancer, 17(1): 1-9.

Vega, P., Valentín, F. and Cubiella, J. 2015. Colorectal cancer diagnosis: Pitfalls and opportunities. World journal of gastrointestinal oncology, 7(12): 422.

Vijayvergia, N., Li, T., Wong, Y. N., Hall, M. J., Cohen, S. J. and Dotan, E. 2016. Chemotherapy use and adoption of new agents is affected by age and comorbidities in patients with metastatic colorectal cancer. Cancer, 122(20): 3191-3198.

Wang, X., Chen, L., Jin, H., Wang, S., Zhang, Y., Tang, X. and Tang, G. 2016. Screening miRNAs for early diagnosis of colorectal cancer by small RNA deep sequencing and evaluation in a Chinese patient population. OncoTargets and therapy, 1159-1166.

Weiser, M. R. 2018. AJCC 8th edition: colorectal cancer. Annals of surgical oncology, 25, 1454-1455.

Whiteside, T. L., Demaria, S., Rodriguez-Ruiz, M. E., Zarour, H. M. and Melero, I. 2016. Emerging opportunities and challenges in cancer immunotherapy. Clinical Cancer Research, 22(8): 1845-1855.

Williams, J. R. and Ayscue, J. M. 2023. Colorectal cancer screening: A review of current screening options, timing, and guidelines. Journal of Surgical Oncology, 127(8): 1236-1246.

World Health Organization. 2020. WHO report on cancer: setting priorities, investing wisely and providing care for all.

Wu, C. 2018. Systemic therapy for colon cancer. Surgical Oncology Clinics, 27(2): 235-242.

Xie, Y. H., Chen, Y. X. and Fang, J. Y. 2020. Comprehensive review of targeted therapy for colorectal cancer. Signal transduction and targeted therapy, 5(1): 1-30.

Yamada, S., Takiyama, H., Isozaki, Y., Shinoto, M., Makishima, H., Yamamoto, N. and Tsuji, H. 2021. Carbon-ion radiotherapy for colorectal cancer. Journal of the Anus, Rectum and Colon, 5(2): 113-120.

Yamane, T. 1967. Statistics: An Introductory Analysis, 2nd Edition

Zaimi, I., Sparreboom, C. L., Lingsma, H. F., Doornebosch, P. G., Menon, A. G., Kleinrensink, G. J. and Dutch ColoRectal Audit Group. 2018. The effect of age on anastomotic leakage in colorectal cancer surgery: A population-based study. Journal of Surgical Oncology, 118(1): 113-120.

Zhang, A. and Fu, H. 2022. The Impact of Palliative Care and Nursing Intervention on the Psychology and Quality of Life of Elderly Patients with Colorectal Cancer. Journal of Oncology, 2: 22.

APPENDICES

APPENDIX 1. Data collection form

APPENDIX 1. Data collection form (continued)

APPENDIX 1. Data collection form (continued)

APPENDIX 1. Data collection form (continued)

APPENDIX 2. Ethics committee permission

APPENDIX 2. Ethics committee permission (continued)

APPENDIX 3. Permission to use scale

CURRICULUM VITAE

Personal Information

Name and Surname : Ahmed Kareem Hadi HADI