



Çankırı Karatekin University
Graduate School of Health Sciences



Master of Nursing Science Thesis

**ASSESSMENT OF THE QUALITY OF LIFE FOR PATIENTS
SUFFERING FROM CANCER IN THE ONCOLOGY CENTER**

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SUPERVISOR

Asst. Prof. Dr. Ayşe Özge DENİZ

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PATIENTS SUFFERING FROM CANCER IN THE
ONCOLOGY CENTER**

BY

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**Institute of Health Sciences
Department of Nursing
Internal Medicine Nursing Master's Program with Thesis**

Degree of Master of Science in Nursing

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Asst. Prof. Dr. Ayşe Özge DENİZ**

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ACCEPTANCE AND APPROVAL

Khulood Majid Ali LAMI, a graduate student of ÇAKÜ Institute of Health Sciences with the student number of 208210235, has successfully presented her thesis entitled “Assessment of the Quality of Life for Patients Suffering from Cancer in the Oncology Centre” 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:

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ETHICS STATEMENT

The thesis entitled “Assessment of the quality of life for patients suffering from cancer in the oncology centre” 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 sentences used and interpretations within the work belongs to me.

I declare the aforementioned issues to be correct.

Signature

June, 2023

Khulood Majid Ali LAMI

ABSTRACT
**ASSESSMENT OF THE QUALITY OF LIFE FOR PATIENTS
SUFFERING FROM CANCER IN THE ONCOLOGY CENTER**

Khulood Majid ALI

Master of Science in Nursing
Asst. Prof. Dr. Ayşe Özge DENİZ
2023

Background: Cancer is a leading health problem in terms of morbidity and mortality rates worldwide. Today, due to advances in medical research, advances in early diagnosis and treatment, quality of life has gained importance with the prolongation of the life span of cancer patients and the increase in the recovery rate. Cancer is a chronic disease that affects the quality of life of patients from the moment the disease is diagnosed.

Objective: The aim of the study was to evaluate the quality of life of cancer patients treated at an Oncology Centre in Najaf.

Methods: The study was conducted between March and June 2022 with 195 cancer patients who met the sampling criteria at the Najaf Oncology Center in Najaf, Iraq. It is a descriptive and cross-sectional study. Data were collected with the patient sociodemographic characteristics form and the European Institute for Cancer Research and Treatment quality of life questionnaire (EORTC QLQ-C30). The research data were analyzed by processing into the SPSS 25.0 package program with, descriptive statistical methods (numerical values, percentage, min-max values, mean and standard deviations), Independent Sample t-Test for comparison of quantitative data in data with normal distribution, and One-Way Analysis of Variance in comparisons of more than two groups. (ANOVA). The Kruskal-Wallis H test was used for variables in which the amount of data was low in the groups, and corrected Bonferroni was used to find the group that made a difference when there was a difference. Statistical significance level was accepted as $p < 0.05$.

Results: 28.2% of the participants were between the ages of 46-64, 58.5% were women, 86.7% were married, 30.8% were graduates of high school or an equivalent school, 42.6% were housewives, 62.6% were economically inadequate. 82.6% had children and 44.1% of those who had children lived with five or more children, 84.6%

lived with their spouse and children, 59.5% had a chronic disease, and 59.5% of those with chronic diseases had hypertension. None of the participants drank alcohol, and 36.4% smoked. When the distribution of primary cancer regions was examined, it was found that 20.5% of the participants had breast cancer; 18.5% had gastrointestinal cancer, and 17.9% of cancers were in the urogenital region; 97.4% of the participants were undergoing chemotherapy, and 30.3% had had radiotherapy. It was found that 44.6% of them had received surgical treatment. Sub-dimension score averages of the quality of life scale were 34.23 ± 8.84 for the functional dimension, 33.85 ± 9.87 for the symptom dimension, and for the general health dimension, it was found to be 68.38 ± 18.63 . There was a significant relationship between the quality of life symptom dimension and age and having children, the general health dimension and age, surgical treatment status, and smoking status ($p < 0.05$). No correlation was found between gender, education level, marital status, income status, number of children, having a chronic disease, cancer region and quality of life ($p > 0.05$).

Conclusions: According to the results obtained from the study, it was determined that the patient's age, having children, surgical treatment status, and smoking status affected different dimensions of life quality.

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Key Words: Cancer , quality of life , patient.

ÖZET
ONKOLOJİ MERKEZİNDE KANSER TEDAVİSİ GÖREN
HASTALARIN YAŞAM KALİTESİNİN DEĞERLENDİRİLMESİ

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Tez Danışmanı: Dr. Öğr. Üyesi Ayşe Özge DENİZ

2023

Giriş: Kanser, dünya genelinde morbidite ve mortalite oranları açısından önde gelen bir sağlık problemidir. Günümüzde tıbbi araştırmalardaki ilerlemeler, erken teşhis ve tedavideki gelişmeler nedeniyle kanser hastalarının yaşam sürecinin uzaması ve iyileşme oranının artması ile birlikte yaşam kalitesi önem kazanmıştır. Çünkü Kanser, hastalık tanısı konulduğu andan itibaren hastaların yaşam kalitesini etkileyen kronik bir hastalıktır.

Amaç: Bu çalışmanın amacı, Necef'te bulunan bir Onkoloji Merkezinde tedavi gören kanser hastalarının yaşam kalitelerini değerlendirmektir.

Materyal-Method: Çalışma Mart-Haziran 2022 tarihleri arasında Irak'ın Necef kentinde bulunan Necef Onkoloji Merkezinde örneklem kriterlerini karşılayan 195 kanser hastası ile yapılmıştır. Tanımlayıcı ve kesitsel bir çalışmadır. Veriler hasta sosyodemografik özellikler formu ve Avrupa Kanser Araştırma ve Tedavi Kurumu yaşam kalitesi anketi (EORTC QLQ-C30) ile toplanmıştır. Araştırma verisi SPSS 25.0 paket programına işlenerek analiz edilmiş olup, tanımlayıcı istatistiksel metotlar (sayı, yüzde, min-maks değerleri, ortalama ve standart sapma), Normal dağılıma sahip verilerde niceliksel verilerin karşılaştırılmasında bağımsız örneklem t Test, ikiden fazla grup karşılaştırmalarında Tek Yönlü Varyans Analizi (ANOVA) kullanılmıştır. Veri sayısının gruplarda az olduğu değişkenler için ise Kruskal Wallis H testi ve fark bulunduğu durumda fark yaratan grubu bulmak için düzeltilmiş Bonferroni kullanılmıştır. İstatistiksel anlamlılık düzeyi $p < 0.05$ olarak kabul edilmiştir

Bulgular: Katılımcıların %28.2'si 46-64 yaş arasında olup, %58.5'i kadın, %86.7'si evli, %30.8'i lise ve eşdeğer bir okuldan mezun, %42.6'sı ev hanımı, % 62.6'inin ekonomik durumunun yetersiz olduğu, %82.6'sının çocuğu olduğu ve çocuğu olanların %44.1'inin 5 ve daha fazla çocuğu, %84.6'sının eşi ve çocukları ile yaşadığı, %59.5'inin bir kronik hastalığının olduğu; kronik hastalığı olanların ise %59.5'inin hipertansiyon olduğu Katılımcıların tamamının alkol kullanmadığı, %36.4'ünün sigara

kullandığı, primer kanser bölgelerinin dağılımı incelendiğinde, %20.5'inin meme; %18.5'inin gastrointestinal; %17.9'unun ürogenital bölgesinde olduğu, %97.4'ünün kemoterapi; %30.3'ünün radyoterapi; %44.6'sının cerrahi tedavi aldığı sonucuna varılmıştır. Yaşam kalitesi ölçeğinin alt boyut puan ortalamaları; fonksiyonel boyut için 34.23 ± 8.84 ; semptom boyutu için 33.85 ± 9.87 ; genel sağlık boyutu için 68.38 ± 18.63 olarak bulunmuştur. Yaşam kalitesi semptom boyutu ile yaş ve çocuk sahibi olma; genel sağlık boyutu ile yaş, cerrahi tedavi durumu, sigara kullanma durumu arasında anlamlı bir ilişki söz konusudur ($p < 0.05$). Cinsiyet, eğitim durumu, medeni durum, gelir durumu, çocuk sayısı, kronik hastalığa sahip olma ve kanser bölgesi ile yaşam kalitesi arasında bir ilişki bulunmadı ($p > 0.05$).

Sonuç: Araştırmadan elde edilen sonuçlara göre, hastanın yaşı, çocuk sahibi olması, cerrahi tedavi durumu, sigara kullanma durumunun yaşam kalitesinin farklı boyutları üzerinde etkili olduğu belirlenmiştir.

2023, 74 sayfa

Anahtar Kelimeler: Kanser, Yaşam kalitesi, Hasta

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LIST OF ABBREVIATIONS

AML	Acute myeloid leukaemia
ANOVA	Analysis of variance
AP	Appetite loss
CBC	Complete blood count
CF	Cognitive
COPD	Chronic obstructive pulmonary disease
CT	Computed Tomography
DNA	Deoxyribonucleic Acid
DY	Dyspnea
EF	Emotional
EGD	Esophagogastroduodenoscopy
EORTC QLQ-30	European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire
ERCP	Endoscopic retrograde cholangiopancreatography
FA	Fatigue
GLOBOCAN	The Global Cancer Observatory
HIV	Human Immunodeficiency Virus
HPV	Human Papillomavirus
HRQOL	Health-related quality of life
M category	Metastasis category
N category	Nodes category
NV	Nausea/vomiting
PA	Pain
PF	Physical
PSA	Prostate Specific Antigen
QOL	Quality of life
QALYs	Quality-adjusted life years
QLI	Quality of life index
RBCs	Red blood cells

RF	Role
RNA	Ribonucleic acid
SF	social
SL	insomnia/sleep
T category	Tumor category
TNM	Tumor, Nodes, Metastasis
WBC	White Blood Cells
WHO	World Health Organization



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1. INTRODUCTION

Cancer is the second leading cause of mortality and illness in the world, after cardiovascular disease. Cancer refers to a collection of illnesses that are distinguished from one another by the unrestrained growth and multiplication of abnormal cells. If cancer is allowed to progress without being treated, it may kill the patient. In addition to producing mental and physical deficits, it is also characterised by periods of recovery that are followed by relapses. According to the most prevalent school of thought, cancer originates from a single aberrant cell, known as a clonal origin, whose Deoxyribonucleic Acid (DNA) has been altered in a number of different ways throughout the course of human history (Kumari, Kaur and Kajal, 2017).

The uncontrolled spread of cancer cells, sometimes referred to as metastasis, has the potential to be fatal. Both internal causes, such as inherited mutations, hormones, immunological illnesses, and random mutations, and environmental factors, such as cigarettes, chemicals, radiation, and infectious organisms, are known to be contributors to the development of cancer. Cancer may also be caused by a combination of internal and external factors. The factors that may lead to the development of cancer are complicated, and our understanding of them is limited. It is generally documented that some factors, such as a person's diet, certain diseases, inactivity, obesity, and environmental toxins, could boost the probability that a person would get cancer. Among these factors are also environmental contaminants. It is possible that these factors work together to induce or increase carcinogenesis in humans, resulting in cancer being the leading cause of death around the world. If this is the case, then this hypothesis is supported by evidence. It is estimated that between 2% and 5% of individuals throughout the world will be diagnosed with cancer at some point in their lives (Mathur, Nain, & Sharma, 2015). It is projected that the global load will rise as a result of the ageing and expanding population of the globe, especially in the less developed nations where 82% of the world's population resides. This is because of the fact that the world's population will continue to grow (Torre *et al.* 2015).

Both the occurrence of cancer and the death rates connected with it are increasing at a shockingly quick pace all over the globe. The ageing and growth of the population, as well as changes in the incidence and distribution of key cancer risk factors, some of which are connected to the advancement of socioeconomic conditions, are among the various elements that contribute. It has been shown that a combination of factors, including rapid population expansion and an ageing population, are responsible for the dramatic reduction in mortality rates caused by stroke and coronary heart disease in comparison with those caused by cancer in many countries (Bray *et al.* 2018).

Therefore, cancer is a real illness that has the potential to take a patient's life. Fear, which in turn causes sadness and a negative attitude to life, is a defining characteristic of this condition. This patient group has a significant number of individuals who suffer from anxiousness and depression. In many instances the patients' overall physical and mental health might actually suffer as a direct result of the treatment that they are receiving. As a result, it is very necessary to perform research on the resilience of cancer patients (Kumar and Batra, 2019).

Cancer's devastating effects on a person's life significantly diminish that person's overall quality of life. The idea of "life quality" is hard to nail down and define precisely. The World Health Organisation (WHO) describes an individual's attitude on life, values, goals, standards, and interests as the components that comprise their quality of life, and places this framework within the context of their culture. As the disease advances through its phases, the patient's quality of life adapts to reflect the new stage of the illness. For instance, all of the subscales that go into determining one's score on the cancer-specific quality of life scale are connected to cancer in one way or another. The goal of treatment for cancer should be to completely eradicate the disease. To put it another way, we are concerned not just with people's capacity to live, but also to thrive in their environments (Isikhan *et al.*, 2001).

The quality of life (QOL) measure is a comprehensive and complicated assessment that assesses how a cancer patient's diagnosis, treatment, and the progression of their disease influence their day-to-day functioning and their potential to recover. The QOL metric is

also known as the quality of life index (QLI). The quality of life (QOL) of a cancer patient has emerged as an increasingly significant indicator of the effectiveness of cancer treatment and care in recent years. A patient's quality of life (QOL) is an individual evaluation of their physical, mental, and social well-being that reflects how they feel about the effect of their cancer diagnosis and treatment. QOL may be measured in terms of quality-adjusted life years (QALYs). There are a lot of different ways that quality of life may be assessed. There have been a number of studies that have shown a correlation between how cancer patients rate their overall quality of life and how long they are able to survive after being diagnosed with the disease. In light of this, it may be advantageous to acquire insight into the treatment and care of cancer patients by identifying the aspects that affect a person's quality of life (Yan *et al.*, 2016).

1.1 Importance of the study

Cancer is the leading cause of death and disability in every region of the world, and it is the second leading cause of disability worldwide, behind heart disease as the top cause. One of the distinguishing features of cancer is the uncontrolled multiplication of abnormal cells throughout the body. Cancer is characterised by this. It is believed that there are around one hundred distinct forms of cancer, each of which may be differentiated from the others depending on the type of human tissue or organ that it affects (Bray *et al.*, 2018).

Cancer research, early detection tools, and treatment choices have all experienced major advancements in recent years, all of which have led to an increase in the life expectancy of cancer patients. On the other hand, the disease and the laborious treatment that must be undertaken for it have far-reaching effects. One of these criteria is the amount of life that an individual has. When we speak about someone's "life quality," we mean not only their physical and mental health, but also the quality of their interactions with the people in their life (Kumari *et al.*, 2017).

In a study conducted by Kannan *et al.* (2011) with 32 cancer patients in a medical oncology clinic of a tertiary hospital, they concluded that 80% of the patients had an

average or below-average quality of life. Consequently, assessing the quality of life of cancer patients is critical for developing interventions aimed at improving their outcomes. Similarly, assessment helps patients understand how treatment, illness, and health affect their quality of life (Alam *et al.*, 2020).

This study aims to evaluate the quality of life of cancer patients treated at an Oncology Center in Najaf.

1.2 Purpose of the study

The purpose of study is to evaluate the quality of life of cancer patients treated at an Oncology Centre in Najaf,Iraq.

1.3 Limitations

1. Among the problems encountered in preparing the current study to assess the quality of life for cancer patients in the Oncology Centre in Najaf Governorate is the difficulty of communicating and speaking with some cancer patients in order to collect data, especially those in their last stages, due to their poor health condition.
2. The study cannot be generalized because it showed results conducted in a single centre. The results obtained are limited to one group only.

2. GENERAL INFORMATION

2.1 Cancer

When used in the context of medicine, the word "cancer" refers to a collection of diseases that have the potential to have an effect on almost every organ and system that can be found in the human body. The uncontrolled growth of cancer cells is the underlying cause of abnormal cell multiplication as well as the spread of the disease to other tissues, which may be traced back to the original cause. It is believed that cancer arises from a single cell that develops into a malignant tumour after undergoing a series of mutations. This cell begins its existence as a healthy cell but eventually transforms into a cell that may cause cancer. This procedure might take a number of years to complete. A working definition of causative carcinogens is the interaction that takes place between the genes of a person and the environmental variables, which may include physical, chemical, and biological carcinogens. Another definition of causative carcinogens is the interaction that takes place between the genes of a person and a cancer-causing agent (Reynolds, Oli, & Oli, 2020).

2.1.1 Epidemiology of cancer

It is essential to have a comprehensive knowledge of cancer epidemiology in order to be able to devise efficient strategies for the prevention of cancer, the screening of cancer patients, and the diagnosis of cancer. This is as a result of the fact that it provides vital information on shifts in population as well as the possible causes of the issue, since it is impossible to make decisions on health care that can be relied on in the absence of data of a high quality in the area of cancer epidemiology (Mattiuzzi and Lippi, 2019).

Cancer is the second leading cause of death in the world and in Iraq, following heart and cerebrovascular diseases (Alwan et al., 2022; Can, 2020). The incidence of cancer is increasing gradually as a result of the prolongation of life span with developing technology and developments in the field of diagnosis and treatment (Ovayolu, 2016). According to the Global Cancer Observatory (GLOBOCAN) database, as of 2020, there were approximately 19.3 million cancer patients all over the world and 10 million

cancer deaths have occurred. The most common cancer types were breast (11.7%), lung (11.4%), colorectal (10%), prostate (7.3%) and stomach cancer (5.6%). The highest mortality rate is reported to occur in lung cancer (Sung et al., 2021). It is estimated that there will be 28.4 million cancer patients worldwide by 2040 (Bray et al, 2021).

The most common causes of cancer deaths are lung (18%), colorectal (9.4%), liver (8.3%), stomach (7.7%) and breast (6.9%) cancers. The most frequently diagnosed cancer in men is lung cancer, and in women, breast cancer (Ferlay et al., 2021; Sung et al., 2021).

When GLOBOCAN 2020 Iraq cancer statistics were examined, it was reported that there were 33 873 new cases and 19 789 deaths. Breast, lung and colorectal cancers were among the most common cancer types in Iraq in 2020 (GLOBACAN, 2020). Lung cancer is the most common cancer diagnosed in men and breast cancer in women. These cancer types are similar to the distribution of other cancer types in the world.

2.1.2 Aetiology of cancer

2.1.2.1 Chemicals

It is generally accepted that a chemical causes cancer if it either produces mutations in the DNA of cells or interferes with the normal metabolic activities of cells. Some chemicals have the potential to interact directly with DNA, while others may be metabolised into reactive compounds that can form covalent adducts with DNA. This can result in changes to genes that are required for vital biological processes (Soliman, 2018).

There are many chemicals in the air, water, food, medicines, alcohol and tobacco that can increase the risk of developing cancer (Can, 2020). Tobacco use is an important risk factor, especially in the development of lung cancer, while alcohol use can increase the risk of developing cancer of the mouth, larynx, liver, oesophagus, colon, rectum and breast (Can, 2020; Owayolu, 2016).

2.1.2.2 Diet and Exercise

Numerous studies have pointed to a connection between being overweight and an increased likelihood of a person acquiring cancer in their lifetime. People who are overweight often have higher insulin and oestrogen levels because their bodies have to work harder to hold on to their excess fat. This additional exertion causes their bodies to produce more of these hormones. Consuming alcoholic drinks is one factor that might increase one's risk of acquiring certain forms of cancer. Other factors that can increase one's likelihood of developing cancer include being overweight, not getting enough exercise, and eating an unhealthy diet. A higher body mass index raises the risk of developing a number of different cancers, including those of the oesophagus, pancreas, liver, and kidneys. In addition, obesity raises the risk of developing many malignancies, including breast cancer in women who have passed menopause, cancer of the colon and rectum, cancer of the endometrium (the lining of the uterus), and other cancers (Behrens *et al*, 2018).

About 25% of all cancers globally are thought to be caused by obesity and a sedentary lifestyle. Increasing regular physical exercise, however, is associated with a decline in the occurrence of many different forms of cancer. Numerous factors, including a decrease in systemic inflammation, insulin-like growth factor, hyperinsulinemia, pro-inflammatory leptin, sex hormones, other obesity-related cytokines, and an increase in anti-inflammatory adiponectin levels, could explain the association between physical activity and a reduced risk of developing cancer (Molina-Montes *et al*, 2021).

3.1.1.1 Infection

Infectious pathogens are strong and modifiable causes of cancer (de Martel *et al.*, 2020). Globally, carcinogenic diseases such as *Helicobacter pylori*, human papillomavirus (HPV), hepatitis B, hepatitis C and Epstein-Barr virus have been linked to 13% of cancer diagnoses in 2018 (de Martel *et al.*, 2020). Hepatitis B and C viruses and some types of HPV increase the risk for liver and cervical cancer respectively (WHO, 2020). Moreover, HPV can cause cancer in the mouth, anal and vaginal areas as well as cervical cancer (Baykara, 2016). Infection with HIV increases the risk of developing

cervical cancer six-fold and substantially increases the risk of developing a selection of other cancers such as Kaposi sarcoma. (WHO, 2020).

3.1.1.2 Radiation

The dose and duration of exposure, age of exposure, gender and cell type are important in cancer formation (Gökoğlu et al., 2020). For this reason, factors such as frequent exposure to ionizing radiation for diagnosis and treatment, nuclear power plants and nuclear bombs cause various types of cancer (Can, 2020; Gökoğlu et al., 2020). The risk of developing leukaemia or breast and lung cancer may increase in those exposed to radioactive substances as a result of radioactive leaks in power plants (Can, 2020). In addition, ultraviolet (UV) rays in the sun's light can cause DNA damage and may be a factor in the development of skin cancer and melanoma (Can, 2020; Sümen and Öncel, 2018).

2.1.2.3 Heredity

Since the division and control of cells is under the control of genes, cancer is a disease mainly related to genes (Baykara, 2016). The reason for genetic susceptibility to cancer is the inclusion of certain sequence changes in cancer susceptibility genes (Ovayolu, 2016). Genes involved in cancer formation are oncogenes, tumour suppressor genes and DNA repair genes (Baykara, 2016). Genetic predisposition may come to the fore in the development of some cancer types such as breast, colon and gynaecological cancers (Can, 2020).

2.1.2.4 Hormones

There is a significant link between hormone responsiveness and endocrine-related diseases such as breast cancer, cancer of the endometrium, cancer of the prostate, and cancer of the testis. However, other malignancies such as those of the thyroid and ovary are equally vulnerable to the effects of hormones. What sets them apart from other creatures is the fact that the vast majority of them either create hormones themselves or

are reliant on hormones in some way. In these particular forms of cancer, hormones such as oestrogen and androgen play an important part not only in the process of triggering apoptosis, but also in the process of angiogenesis, carcinogenesis, and tumour invasion. By way of explanation, oestrogen is to blame for the development of breast and ovarian cancer because it stimulates the ligand-activated transcription factor ER in the nucleus of the cell. This results in cancerous growths in these organs (Jeon, Hwang & Choi, 2016).

2.1.3 Pathophysiology of cancer

Cancer cells have six distinctive characteristics, including their inability to respond to signals that would normally cause them to differentiate or stop dividing, their ability to proliferate endlessly, their resistance to apoptosis, their ability to infiltrate healthy tissue and generate new blood vessels, and their capacity to induce angiogenesis. Cancer may be caused by alterations in both oncogenes and tumour suppressor genes. These proteins are encoded by genes that play an important role in controlling cell growth and division. Almost all human cancers result from alterations in genes that usually stop cell proliferation at several checkpoints in the cell cycle if, for example, DNA damage is identified at an earlier stage. Mutations in genes producing proteins, such as those that usually arrest cells in the G1 phase of the cell cycle, are a common cause of cancer. Furthermore, a constitutively active Ras or other activated signal transduction protein has been found in a variety of human cancers with different origins (Piero and Joan, 2015).

Tumours may develop for a variety of reasons, including the appearance of previously unknown oncogenes, the abnormal overexpression of known oncogenes, the silencing or inactivation of tumour suppressor genes, and the creation of novel oncogenes. In most cases, the transformation of a healthy cell into a cancerous one requires mutations in many genes. In the case of large-scale changes, a whole segment of a chromosome may be lost or gained. The process of genomic amplification involves the excessive duplication of a small segment of chromosomes that often includes one or more

oncogenes and sometimes additional genes. When two different parts of chromosomes link together in the incorrect place, this is called a translocation. The Philadelphia chromosome, which results from a translocation of chromosomes 9 and 22, is a well-known example. Chronic myelogenous leukaemia is the source of the oncogenic tyrosine kinase BCR-abl (Zamarin *et al.*, 2014).

When a normal cell acquires a series of tiny abnormalities, the cell is able to avoid other regulators that restrict the production of harmful tissue and progress towards cancer. Because it confronts evolutionary forces against the body's architecture and order-enforcing mechanisms, this unintentional survival of the fittest situation is reminiscent of a rebellion. Once cancer has emerged, it progresses towards more advanced stages through a continuous process called clonal evolution. Good therapeutic options are difficult to build and need an evolutionary approach due to intra-tumour heterogeneity (heterogeneous mutations in cancer cells) generated by clonal growth (Bernstein, Nfonsam, Prasad, & Bernstein, 2013).

2.1.4 Spread of cancer

As the tumour expands, cancer cells are transferred to other bodily areas via the lymphatic system or bloodstream, where they may develop into new tumours, a process known as metastasis. Cancer may spread to lymph nodes, which are little bean-shaped structures that aid in infection defence. The lymph nodes are found in the neck, underarms, and groin area, among other places. Cancer can potentially spread to other body regions such as the liver, bones, brain, or lungs through the bloodstream. When cancer spreads to other parts of the body from where it started, it is referred to as metastatic cancer of the original site. For example, when lung cancer spreads to the breast, it is referred to as metastatic lung cancer rather than breast cancer (Saini, Kumar, Bhatt, Saini, & Malik, 2020).

2.1.5 Types of cancer

2.1.5.1 Carcinomas

This begins in the tissue or skin that covers the glands and the surface of internal organs and develops into a solid tumour. Examples are lung cancer, breast cancer, prostate cancer and colorectal cancer (Saini *et al.*, 2020).

2.1.5.2 Sarcomas

Everything in the body begins in the connective and supporting tissues and works its way outward from there. It is conceivable for it to be made up of any mix of nerves, tendons, joints, fat, blood vessels, bone, lymphatics, muscles, and cartilage. This is because its composition is very variable (Hui, 2016).

2.1.5.3 Leukaemia

White blood cells are attacked by the malignant illness known as leukaemia. It makes its presence known when blood cells that are operating normally grow and change in an uncontrolled manner. Acute myeloid leukaemia, acute lymphocytic leukaemia, chronic myeloid leukaemia, and chronic lymphocytic leukaemia are the four primary forms of leukaemia that have been identified thus far. The most prevalent form of leukaemia is known as acute myeloid leukaemia (AML) (Mjali, Al-Shammari, Abbas, Azeez and Abbas, 2019)

2.1.5.4 Lymphomas

The lymphatic system is a network of glands and tubes that assists the body in fighting off infections. This system is where lymphoma originates. Lymphomas include Hodgkin and non-Hodgkin varieties (Willemze *et al.*, 2019).

2.1.5.5 Central Nervous System Cancers

Cancers such as meningiomas, gliomas, pituitary adenomas, vestibular schwannomas, primitive neuro-ectodermal tumours, and gliomas are all examples of conditions that may originate in the brain or spinal cord. Other possible locations include the pituitary gland (Pentsova *et al.*, 2016).

2.1.5.6 Multiple Myeloma

Cancer that begins in plasma cells, which are a subtype of immune cells, is what leads to the development of multiple myelomas. Myeloma is a kind of cancer that is caused by an accumulation of plasma cells in the bone marrow. This accumulation is what leads to the development of the disease. Plasma cells are the target of treatment for the disease which is also known as Kahler's disease (Saini *et al.*, 2020).

2.1.5.7 Melanoma

The process starts off in what is called the first stage, which is known as the melanocyte precursor cells. The pigment melanin, which is present in the skin, is produced by these specialised cells, which are responsible for the creation of melanin. Melanomas, despite the fact that they are recognised the great majority of the time on the skin, may also develop in other pigmented tissues, including the eye. This is true even though the skin is the most common location for them to be found (Schadendorf *et al.*, 2018).

2.1.5.8 Other Types of Tumours

Germ Cell Tumours are a tumour originating from germ cells. Tumours made of germ cells might be malignant or benign. Normally, the gonads (ovary and testis) are home to germ cells (Maoz *et al.*, 2020).

Neuroendocrine Tumours are composed of cells that, in response to nerve impulses, secrete hormones into the circulation. These tumours can only be found in the endocrine system. They are capable of producing hormones at levels that are greater than what is considered normal, which may result in a range of symptoms. This might be harmless or it could be malignant (Saini *et al.*, 2020).

2.1.6 Clinical Classification and Stages of Cancer

The TNM Classification is a strategy that may be used to arrange the many kinds of cancer that can develop in human beings. Its primary use is in the diagnosis of solid tumours, where it is helpful in establishing the stage of the illness as well as the patient's outlook for the future. The communication that takes place between the various providers, the sharing of data, and the research that is carried out at the population level would all benefit from the implementation of a standardised classification system. The primary tumour, lymph nodes that are nearby, and metastases that are farther away are all taken into account by the system (Huang & O'Sullivan, 2017).

Tumour (T category)

The following is an example of how either a letter or a number might be used to denote the T category.

(TX) indicates that primary tumour measurement cannot be conducted due to an inadequate quantity of information being made available. This is due to the fact that there is not enough information. (T0) indicates that the patient does not have any primary tumours present in their body. (Tis) leads one to conclude that the cancer cells are not migrating to other layers of the tissue but rather are staying in the layer of the tissue where they first developed. This is because the cancer cells remain in the layer of tissue where they initially formed. This disorder is often referred to as cancer *in situ* or pre-cancer. Pre-cancer is another name for cancer *in situ*. The number that follows the letter T (T1, T2, T3, or T4) may provide information about the size of the tumour or the

degree to which it has spread to structures that are nearby. This quantity may be expressed as the letters T1, T2, T3, or T4. If the tumour has a higher T score, this implies that it has spread to tissues that are nearby or that it is more widespread (Byrd *et al.*, 2017).

Nodes (N category)

Lymph nodes that are physically close to the primary tumour are subjected to routine examinations to look for signs that the disease has spread to other parts of the body. Small, bean-shaped clusters of immune cells may be seen scattered throughout the lymphatic system. These nodes are known as lymph nodes. Before spreading to other parts of the body, many different forms of cancer often begin to metastasize in the lymph nodes first. Lymph nodes are the natural beginning location for metastasis. (NX) means that either no data are available or that the lymph nodes in that location cannot be studied because they are inaccessible. It is possible that both of these scenarios are true. (N0) is the abbreviation that is used in the medical field to refer to the circumstance in which there is no indication of malignancy in the lymph nodes that surround a tumour. If there is a number following the N, such as N1, N2, or N3, this may indicate the size, position, and/or number of lymph nodes in the surrounding region that are malignant. If there is no number after the N, this may indicate that there are no lymph nodes in the surrounding area that are malignant. If the N value is higher than expected, this suggests that the cancer has spread to a greater number of lymph nodes in the surrounding region (Brierley, Gospodarowicz, & Wittekind, 2017).

Metastasis (M category)

If the doctor suspects that the cancer has spread to other parts of the body, he or she may do further testing. The term "metastasis" refers to the process through which cancer spreads beyond the site of the primary tumour. (M0) indicates that there are no signs that the cancer has spread to other places of the body and that there is no evidence that the cancer has spread. The (M1) stage indicates that the cancer has spread to additional organs or tissues than the original one. As a result of the fact that various kinds of

cancer use a variety of variants of the TNM categorization system, the letters and numbers do not always match with one another. For example, the T categories of certain cancers show the size of the main tumour, but the T categories of other cancers specify the degree to which the illness has progressed inside the original organ or onto neighbouring tissues (irrespective of the size of the tumour) (Rosen and Sapra, 2021).

In order to provide you an accurate picture of where your cancer is in its course, your physician or nurse may use one of the following cancer staging terms.

(Stage 0) Even when abnormal cells are present, there has been no invasion of the surrounding tissue. This condition is referred to as cancer *in situ*, which is the medical phrase for it. Although CIS may eventually develop into cancer, it is not cancer in and of itself. pointing to the presence of cancer in situ. Tis, N0, M0 (The Beginning, the Middle, and the End). It seems that there is cancer present. When the score is greater, it indicates that the cancer is more widespread and has spread into the tissues that are nearby. The patient's cancer has spread to other regions of his body, which indicates that he is in Stage IV (Brierley *et al.*, 2017).

2.1.7 Diagnosis in Cancer

The vast majority of cancers are discovered for the first time in one of two ways: either individuals have symptoms of the disease or they go through screening procedures to look for it. It is not possible for it to come at a definitive diagnosis based on either of them. Patients who have cause to think that they have cancer may be subjected to diagnostic procedures such as endoscopies, X-rays, and CT scans, to name just a few. The only approach to arrive at a definitive diagnosis once a pathologist has completed a histological investigation of the cancerous cells is to employ genetic testing. This is also the only way to determine the specific kind of cancer. This indicates the many different kinds of cells that are proliferating, as well as the histological grade of the tumour and any inherited defects that may be present. It is possible that by making use of this information, one will be able to ascertain the patient's prognosis as well as the therapy that will prove to be the most successful. When consulting with pathologists, other

possible applications for tissue samples include cytogenetic analysis and immunohistochemistry. The molecular profile of cancer samples has the potential to provide information on the nature of the disease, its prognosis, and prospective treatment choices. Molecular profiling of cancer samples is currently being conducted (Adwas *et al.*, 2019).

2.1.8 Cancer diagnosis methods

2.1.8.1 Lab tests

Clinical chemists utilise chemical methods to analyse body fluids and tissues for specific chemical markers. The most frequent specimens used in clinical chemistry are blood and urine. Many different types of assays exist for the detection and quantification of chemical components in bodily fluids like blood and urine. Possible components include glucose, electrolytes, enzymes, hormones, lipids (fats), and other metabolic substances and proteins (Saini *et al.*, 2020). The following are examples of some common laboratory examinations:

Medical examinations

CBC (complete blood count)

Urinalysis

Tumour markers (Saini *et al.*, 2020)

2.1.8.2 Diagnostic imaging

Recent advancements in diagnostic imaging have made it feasible to detect cancer at an earlier stage when it first appears. These advancements have, in many cases, done away with the necessity for more intrusive surgical procedures in order to establish the diagnosis. The word "imaging" refers to the process of constructing informative visual representations of an organism or its components, which is what the process of "imaging" really entails. In addition to identifying cancer and other abnormalities, it is also able to evaluate the severity of the condition and determine how well it is

responding to therapy. This is the case whether or not the patient has cancer. During surgical procedures such as biopsies and other operations, imaging may also be beneficial. Imaging modalities that are used in the diagnosis of cancer fall into a number of categories, the most common of which are imaging based on transmission, imaging based on reflection, and imaging based on emission. They each tackle the issue using their own unique strategies (Adwas *et al.*, 2019).

2.1.8.3 Endoscopic examinations

Types of endoscopies include:

Cystoscopy (also called cystourethroscopy)

Colonoscopy

Endoscopic retrograde cholangiopancreatography (ERCP)

Oesophagogastroduodenoscopy (also called EGD or upper endoscopy)

Sigmoidoscopy (Saini *et al.*, 2020)

2.1.8.4 Genetic testing

Patients who submit themselves to genetic testing to learn about the likelihood of developing cancer due to their family history are likely to be in a better position to make choices that are well-informed about the detection and prevention of cancer at an earlier stage. It has been shown via research carried out in both the United States and the United Kingdom that the rate of genetic testing is much lower among persons of colour than it is among white individuals. The tests may appear to the participants in the form of Positive, Negative or Variant of uncertain significance (Hann *et al.*, 2017).

2.1.8.5 Tumour biopsies

A biopsy is a diagnostic procedure that includes the surgical removal of a sample of tissue or cells from the patient's body in order to study them under a microscope. This sample may be taken from almost any part of the body. Additionally, in order to numb

the region prior to the taking of certain biopsies, a local anaesthetic may be provided; however, this step is not necessary for other types of biopsies. Biopsies are often performed for the purpose of determining whether or not a tumour is malignant, as well as for the purpose of locating the source of a persistent infection or inflammation (Adwas *et al.*, 2019).

2.1.9 Treatment of cancer

The kind of cancer and the extent to which it has developed both have a role in determining the range of therapy possibilities that are open to a patient. Although some cancer patients have only one treatment option available to them, the vast majority of cancer patients go through a combination of therapies in order to beat the disease. The following is but a small selection of the wide variety of various treatment options that are available:

2.1.9.1 Surgery

Surgery is used to treat the vast majority of solitary solid tumours. This treatment has the potential to make patients feel more comfortable while also improving their chances of survival. The definitive diagnosis of cancer, as well as the stage of the disease, often depends on the results of biopsies, which are carried out because their performance is required. When treating cancer that has spread to a limited location, surgery is often required to remove the whole tumour and, in some rare instances, lymph nodes from the immediate vicinity as well. This therapy is so effective that it has the potential to completely eradicate some types of cancer (Sonker *et al.*, 2018).

Other operations for cancer treatment that do not require any cutting include:

Cryosurgery: Cryosurgery is a method of treating cancer and other aberrant tissue by subjecting it to very low temperatures generated by liquid nitrogen or argon gas. This kind of treatment is categorised as "local" since it is directed at a particular area. Both

superficial and deep tumours respond well to cryosurgery. Other names for cryosurgery include cryotherapy and cryoablation. When treating cancer, cryosurgery may be used in conjunction with other treatments as hormone therapy, chemotherapy, immunotherapy, radiation therapy, and surgery. For instance, cryotherapy may be used to treat any residual tissue after a primary bone tumour has been surgically removed to lessen the likelihood of a recurrence (Hou, Sun, Rao & Liu, 2018).

2.1.9.2 Radiation Therapy

Radiation therapy is often regarded as the most effective treatment for a number of different types of cancer. It has been commonly thought for a long time that ionising radiation kills cancer cells by disrupting their DNA either directly or indirectly. However, there is now accumulating evidence that radiation may kill tumours by triggering either local or systemic immune responses. This contradicts the previously held belief that ionising radiation kills tumour cells by damaging their DNA. When paired with immune-stimulating drugs like immune checkpoint inhibitors, this is extremely beneficial as a treatment method. Even though ionising radiation can cause immunological changes in the microenvironment of a tumour, such as facilitated tumour antigen release, increased effector T-cell infiltration, and upregulation of the MHC-1 molecule on tumour cells, cancer immunotherapy, such as immune checkpoint inhibitors, can cause radiosensitization. This is because radiosensitization increases the likelihood that a patient will respond favourably to radiotherapy. In spite of the fact that exposure to ionising radiation might result in radiosensitization, this is nonetheless the case (Wang *et al.*, 2019).

2.1.9.3 Chemotherapy

Chemotherapy is an effective treatment for cancer because it impedes the expansion and multiplication of tumours, both of which are necessary for their development. However, since chemotherapy has an impact on healthy cells as well, this might also result in potentially dangerous side effects. It is possible to thwart the growth of tumours in a number of different locations, both inside the cell itself and in the surrounding

environment in which it is found. The medication that is administered during conventional chemotherapy often has an impact not only on the activity of cancer cells but also on the process of macromolecular formation. These pharmaceuticals either interfere with the normal functioning of DNA, RNA, or proteins, hence preventing the creation of DNA, RNA, or proteins; alternatively, they hinder the synthesis of proteins by preventing the formation of DNA. When there is a significant degree of interference with the production or function of macromolecules, cell death may occur either as a direct consequence of the chemotherapeutic treatment or via the activation of apoptosis. Both of these outcomes are possible when there is a significant level of interference. The process of cell death may sometimes be slowed by using standard pharmaceuticals. This is due to the fact that only a small percentage of cells will perish as a consequence of any particular therapy. It is very likely that a second dose of the drug will be required in order to get the desired effect (Amjad, Chidharla and Kasi, 2020).

Radiation treatment and chemotherapy are often administered together under the umbrella term of chemoradiotherapy. Photochemotherapy is a kind of treatment for cancer that makes use of pharmaceuticals that are only rendered cytotoxic in the presence of light. These drugs are used in conjunction with light to kill cancer cells. Photochemotherapy is the term that describes this kind of treatment. One may divide the practice of administering chemotherapy as a treatment for cancer into many separate areas. These substances may be broken down into a variety of categories, the most frequent of which being alkylation agents, antimetabolites, topoisomerase inhibitors, antimicrotubules, and cytotoxic antibiotics (Adwas *et al.*, 2019).

2.1.9.4 Immunotherapy

Immunotherapy is an alternative kind of cancer treatment that, in contrast to traditional cancer therapies such as radiation and chemotherapy, dynamically alters the immune system to attack cancer cells from a variety of angles and orientations. Immunotherapy is one of the many types of cancer treatments that are now available. Immunotherapy is a treatment that tries to improve immune function by altering the immunological environment around the patient. This makes it possible for immune cells to target and

destroy cancer cells across a bigger number of critical nodes in a more effective manner. Cancerous growths may be recognised and eliminated by immune cells thanks to their capacity to do so. If we stimulate the immune response that the body already possesses that is specific to tumours, we are able to prevent malignancies from evading diagnosis and put a stop to their growth. This is because the immune response is specific to the cancer cells. There is evidence that cell immunotherapy might be a viable treatment option for people who are afflicted with haematological malignancies (Tan, Li & Zhu, 2020).

2.1.9.5 Targeted Therapy

Targeted therapy is a type of cancer treatment that targets proteins that control how cancer cells grow, divide, and spread (National Cancer Institute, 2022). Targeted therapies have taken their place as routine treatment because they increase survival and cause fewer side effects. However, targeted therapies are applied to patients who conform to individual parameters. Monoclonal antibodies and tyrosine kinase inhibitors are drugs in this group. They act by controlling cell division or by supporting the immune system and stimulating apoptosis. Targeted therapy also reduces the rate of invasion and metastasis. In addition to skin reactions, diarrhoea, infusion reactions, ocular, cardiac and vascular toxicities and electrolyte imbalances are among the symptoms that can be seen (Can, 2020; Ovayolu, 2016).

2.1.9.6 Hormone Therapy

Hormone therapy prevents the binding of the hormone produced by the body naturally to the cell and the growth of cancer cells (Baykara, 2016). The cancer types in which hormones are used most frequently are breast and prostate cancers (Özer, 2020). Hormone therapy causes the growth of cancer cells to stop or slow down, while at the same time relieving cancer symptoms (Benzer, 2022). Hormone therapy is used to reduce and prevent symptoms, especially in prostate cancer patients who cannot undergo surgical treatment or receive radiotherapy (National Cancer Institute, 2022).

2.1.9.7 Stem Cell Transplants

One cancer treatment option is stem cell therapy. Stem cells are special cells that can differentiate from other types of cells and have the potential to produce a new stem cell (Çerçi and Erdost, 2019). Therefore, they can be used in cell-based therapies. This method is used in cancer types such as kidney cancer, leukaemia, myeloma and lymphoma (Baykara, 2016).

2.1.10 Prognosis in cancer

Most clinicians and patients agree that discussing prognosis is challenging, and the optimum manner to communicate prognostic information to improve patient knowledge, psychological adjustment, and decision-making is unknown. Cancer prognosis is the process of estimating the prognosis of a patient's cancer, as well as the chances of recurrence and advancement. The accuracy of cancer prognostic prediction will substantially aid cancer patient clinical management. The application of improved statistical analysis and machine learning approaches, as well as the advancement of biomedical translational research, are driving forces in improving cancer prognostic prediction (Zhu *et al.* 2020).

Cancer is difficult to detect in its early stages and is prone to recurrence following therapy. Furthermore, making high-confidence predictions of disease prognosis is extremely challenging. Because of their imprecise symptoms and ambiguous tell-tale signals on mammograms and scans, certain malignancies are difficult to identify in their early stages (Huang *et al.* 2020).

2.2 Quality of Life

Quality of life (QOL) refers to a person's or population's mental and physical health as well as their level of happiness. According to the World Health Organisation (WHO), "individual perceptions of life, values, objectives, standards, and interests (Kurian and Tripathi, 2019).

Quality of life, often known as QOL, is an important health outcome metric that can only be defined in connection to the particulars of each person's circumstance. (Kumari et al., 2017) This research investigates how several aspects of a person's life are impacted by their sickness and the therapy they get (Kumari *et al.*, 2017).

The term "quality of life" refers to the degree to which an individual is able to achieve his or her own goals, ambitions, interests, ideas, and cultural and value systems while still maintaining a level of happiness. A patient's physical (mobility, physical activities, and capacity to succeed in job and family obligations), social (useful social activities), and psychological (life satisfaction, social support need, and role function) health are all evaluated as part of the quality of life assessment process. A broad variety of symptoms, such as discomfort, trouble breathing, nausea, hair loss, erectile dysfunction, and, of course, side effects, may be brought on by both the disease and the therapy for it (Üstundag and Zencirci, 2015).

After receiving a cancer diagnosis and following treatment, a significant number of patients report having trouble sleeping, experiencing feelings of depression, and having a worse quality of life overall. In order to create treatments that will improve patient outcomes, it is essential to measure quality of life (QoL) among cancer patients. In a similar manner, quality of life assessment sheds light on the influence that a person's state of health, illness, and treatment have on their overall happiness. Considering the consequences of a choice while taking into account both the potential downsides and upsides of a treatment is helpful (Alam *et al.*, 2020).

2.2.1 Health-related quality of life

In the majority of clinical investigations, outcomes of morbidity and mortality are regarded as the gold standard; nevertheless, the effect of illness on health-related quality of life is beginning to gain more attention. One difficulty is that HRQOL is challenging to comprehend and harder to evaluate. The World Health Organization defines quality of life as a person's sense of their place in life in relation to their objectives, expectations, standards, and concerns as well as the culture and value systems in which

they live. It is a wide notion that is influenced by a person's physical and mental well-being, level of independence, social connections, and interactions with key environmental elements. The discipline of cancer is where HRQOL evaluations were first developed (Jiang, Torgerson & Ayars, 2015).

2.2.2 Cancer and Quality of Life

Cancer patients may have to deal with a range of mental health difficulties, some of the commonest of which are worry, dread, and despair. There is a possibility that you may have a variety of physical symptoms, including hair loss, pain, tiredness, nausea, and vomiting. Isolation and a sense that one's life has lost its significance are two examples of the social challenges that individuals must contend with in today's world. When it comes to the battle against cancer, the objectives of treatment are not only to eliminate the disease and increase patients' chances of surviving it, but also to reduce the adverse effects of treatment and enhance patients' overall quality of life. When a patient's quality of life begins to improve, they are more likely to respond positively to treatment and to keep the drive necessary to continue working towards a full recovery (Üstündag and Zencirci, 2015).

Patients need to have a greater quality of life in order for them to effectively complete their treatment with the fewest possible negative effects, retain control of their symptoms, and recover from those symptoms. It is possible to categorise the quality of a person's life as an evaluation of their goals, objectives, hobbies, and ideas, in addition to the degree to which they are content with their culture and values. One way to do this is to use the term “quality of life”. The quality of life of a patient is affected by a variety of psychological factors. These factors play a role in the patient's ability to carry out daily activities. A few examples of these factors include the degree to which the patient is content with their life, the extent to which they can fulfil the role that society expects of them, and the amount of social assistance they need (Nayak *et al.*, 2017).

3.1.3 Cancer - quality of life and nursing

Individuals diagnosed with cancer may encounter many problems in the physiological, psychological, social and spiritual areas during the disease process (Benzer, 2022;

Karasu, 2021). Disease-related symptoms are one of them. The symptom is the patient's subjective perception of the presence of a disease or physical disorder (Düzen and Korkmaz, 2015).

It is important to keep symptoms occurring in cancer patients under control, as they affect the continuation of treatment, quality of life, and morbidity and mortality (Tarakçıoğlu Çelik, 2016). The purpose of symptom control is providing comfort, facilitating adherence to treatment, reducing pain and increasing quality of life (Henson et al, 2020; Sarman, 2019). For this reason, it is important for nurses working with cancer patients to identify systematically and in a patient-centered way the symptoms that affect the patient's quality of life, to diagnose them with a holistic approach, and to plan and implement care for the symptoms (Henson, 2020; Tuna, Ünver and Molu, 2018).

Cancer patients intensely experience many physical and emotional symptoms due to the side effects of chemotherapy and radiotherapy as well as symptoms arising from the disease process (Öğüt, 2012). Symptoms caused by chemotherapy reduce the patient's quality of life, which causes the treatment to be adversely affected and the healing process to be prolonged (Benzer, 2022). Therefore, a holistic nursing approach should be used in the evaluation of systems affected by chemotherapy treatment (Eren & İskender, 2019).

Cancer is also a health problem that includes more than one symptom and requires long-term treatment and care from its diagnosis (Şentürk, Bıçak and Akça, 2018). Therefore, individuals with cancer need multidisciplinary long-term care consisting of comprehensive health care and nursing services due to the complex nature and management of the disease (Colombani et al., 2019). Supportive care in cancer, prevention, management of symptoms and side effects of cancer, and treatment of cancer throughout the cancer process from diagnosis to end of life include support for patients and their families (Brown et al., 2021). In a study conducted by Şipal and Arslan (2023) to determine the supportive care needs and disease acceptance levels of patients with hematological cancer, it was determined that the level of disease acceptance decreased as the psychological and physical care needs of the patients increased.

The main educational role of the nurse is to provide the right health behaviors to protect and improve the health of the individual and society and to cure them in case of illness (Aydemir Geduk, 2018). Especially in diseases that require long-term treatment and care, such as cancer, the importance of education becomes more evident. Nurses can improve their quality of life by providing education to cancer patients, helping them to cope with the problems related to their diseases and treatments, and to undertake their daily life and social activities (Akçay and Gözüm, 2012; Ertürk Yavuz and Gürsoy, 2021). Relatives of patients, who are the main source of social and emotional support for patients and have an important role in managing the cancer process, should also be included in the education process (Şentürk, Bıçak and Akça, 2018). Educational content is generally information about the disease: possible problems and underlying causes, side effects of the treatment being applied (alopecia, mucositis, nausea, vomiting, fatigue, etc.), social resources that can be used, and current treatment options. Information about drugs, use of medical equipment, symptom management should include people and phone numbers to call when they encounter any problems (Ertürk Yavuz and Gürsoy, 2021; Şentürk, Bıçak and Akça, 2018). Information on the importance of adequate and balanced nutrition, ways to cope with stress, depression and fear, home care and physical needs of the patient should be included in the education (Ertürk Yavuz & Gürsoy, 2021; Paavilainen et al., 2012).

In addition, nurses have important roles and responsibilities in preventive health services such as preventing cancer in the society, adopting a healthy lifestyle for individuals and increasing the quality of life (Tarakçioğlu Çelik, 2016).

3. METHODOLOGY

This study aimed to evaluate the quality of life of cancer patients at the Najaf Governorate Oncology Centre.

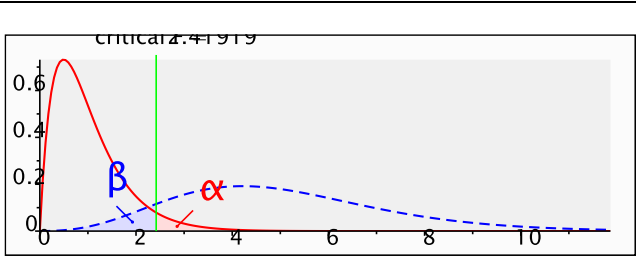
3.1 Study design

A descriptive (sectional) design study was carried out to assess the quality of life of cancer patients at the Najaf Governorate Oncology Centre for the period from 1 March 2022 to 1 June 2022.

3.2 Setting and sample of the study

3.2.1 Location and sample

This research was carried out at the Middle Euphrates Cancer Centre in the Najaf Governorate. The power of the study was calculated on the “G*Power-3.1.9.2” software package. The effect of the demographic characteristics of the participants in the study on the individual's quality of life was examined. Examining independent variables of all demographic and medical characteristics, it was observed that the age variable affected both the symptom and general health dimension, while the scale sub-dimension scores were the dependent variable. For this reason, the power of the study was calculated over age. According to the power analysis performed on the F test to determine whether the Symptoms Dimension scores differ according to age, the power of the study was calculated as 90% when the alpha was taken as 0.05, the power of the study with 195 people.



[3] -- Friday, March 17, 2023 -- 11:22:00

F tests -ANOVA: Fixed effects, omnibus, one-way

Analysis: Post hoc: Compute achieved power

Input: Effect size f = 0.2867945
 α err probe = 0.05
 Total sample size = 195
 Number of groups = 5

Output: Noncentrality parameter λ = 16,0389616
 Critical F = 2.4191872
 numerator df = 4
 Denominator df = 190
 Power ($1-\beta$ err probe) = 0.9049066

3.3 Study Instrument and Data Collection

The researcher used a questionnaire to assess the quality of life of patients with cancer. The sample was selected in a simple random manner from the total study population. The questionnaire of the quality of life of patients with cancer consisted of two sections as follows:

For the first section: The demographic data form prepared by the researchers in the light of the literature included socio-demographic data for cancer patients including the subjects' gender, educational level, residence and occupation (Nejjari *et al.*, 2014).

The second section: the EORTC QLQ-30

The EORTC quality of life questionnaire (QLQ) was created and developed in 1987. In 1993, the questionnaire was reviewed for reliability and validity in 13 countries. The results meant that the EORTC QLQ-C30 is a reliable and valid measure of cancer patients' quality of life (Cronbach's alpha ≥ 0.70 for all items) (Aaronson et al., 1993). The EORTC Quality of Life Group is one of Europe's earliest and largest organizations of its kind. This group's development of the EORTC QLQ-C30 has made it the most widely used questionnaire for cancer patients in Europe and the world at large. The EORTC QLQ-30 is a 30-question questionnaire organized into three subscales: global health status/quality of life, functional scales, and symptom/single items. On the global health status/QoL scale, there are only two questions.

Physical (PF), role (RF), emotional (EF), cognitive (CF), and social (SF) are the five subscales of the functional scale.

Fatigue (FA), nausea/vomiting (NV), pain (PA), dyspnoea (DY), insomnia/sleep (SL), appetite loss (AP), constipation (CO), diarrhoea (DI), and financial hardship due to illness are the nine discrete variables that comprise symptom/single items (FI).

The functional and symptom/single subscales are scored on a four-point Likert scale, with 1 being "not at all" and 4 being "very much." The global health status/QoL scale is an exception, as it is based on a seven-point Likert scale ranging from 1 ("very poor") to 7 ("excellent"). A higher score for Functional and Global health status/QoL indicates a better QoL. A higher score for symptoms and single items, on the other hand, indicates poorer QoL. As instructed in the manual, scores were transformed to range from 0 to 100 in order to standardize the raw score. A higher score represents a higher (better) level of functioning or a higher (worse) level of symptoms. The construct validity was assessed using exploratory factor analysis, which was carried out using the principal component analysis approach with varimax rotation. Previous studies in different Arabic-speaking populations have reported the validity and reliability of the EORTC QLQ-C30 Arabic version (Awad, Denic and, El Taji; Bener et al., 2017; Jassim &

AlAnsari, 2020). The researcher used the EORTC QLQ-30 Arabic version questionnaire (Appendix 1).

3.4 Data collection method

Data were collected between 1 March 2022 and 1 June 2022 at the Middle Euphrates Cancer Centre in Najaf Governorate, where there was a total of 195 samples. A face-to-face interview with the patient was used to collect data. The researcher introduced himself to the patient and explained the purpose of the research, as well as the confidentiality of the information. Following that, the researcher began to ask questions of patients with cancer, and the patients responded. Some patients declined the interview due to extreme exhaustion and inability to speak. Filling out the form took between 10 and 15 minutes.

3.1.1 Inclusion Criteria

Being 18 years of age or older, agreeing to participate in the study, and speaking Arabic

3.4.2 Exclusion Criteria

Refusal to participate in the study, or having a cognitive or psychological illness.

3.5 Data Analysis

Data obtained in the research was analyzed using IBM SPSS Statistics 25 (SPSS Inc., Chicago, IL). In evaluating the data, descriptive statistical methods (numerical values, percentage, min, max, median, mean and standard deviation) were used.

The conformity of the data used to normal distribution was tested. The normal distribution of the data used depends on the skewness and kurtosis values being between ± 3 . Since the skewness and kurtosis values of the scales were found to be between ± 3 , the data showed compliance with normal distribution. In this case, parametric tests were used while comparing the scale total scores. The independent sample t-test was used for comparisons of two groups in demographic comparisons with the scales used in the

study, and One-Way Analysis of Variance (ANOVA) was used for comparisons of more than two groups. The Kruskal Wallis H test was used for the variables in which the amount of data was low in the groups.

Table 3.1 Reliability analysis results of the scales and dimensions used

Scale sub-dimensions	Cronbach's Alpha
Functional Size	0.626
Symptom Size	0.540
General Health Dimension	0.716

Reliability analysis is carried out to test whether the statements in the scales are consistent with each other and whether all of the statements measure the same subject (Ural & Kılıç, 2006: 286). In the reliability analysis, the Cronbach's Alpha (α) coefficient value varies between 0-1. If it is between 0 .00 and0.40, the scale is not reliable; It is considered to be a low reliability scale between 0.40 and 0.60, a highly reliable scale between 0.60 and 0.80, and a highly reliable scale between 0.80 and 1.00 (Tavşancıl, 2005: 19). Symptoms were calculated as 0.540 for the dimension and 0.716 for the General Health dimension.

Table 3.2 Normalities for scales

	Distortion	SH	Kurtosis	SH	Conclusion
Functional Dimension	0.319	0.174	0.764	0.346	Normal
Symptom Size	0.359	0.174	0.070	0.346	Normal
General Health Dimension	-0.132	0.174	-0.549	0.346	Normal

When the skewness and kurtosis values of the sub-dimensions of the EORTC QLQ-C30 scale were examined, it was found that all sub-dimensions showed a normal distribution within the range of ± 3 .

3.6 The Ethical Dimension

Before commencing the study, consent for the use of the EORTC QLQ-30 was obtained from the EORTC through e-mail as described in Appendix 2, and the requisite formal permission was obtained from the Faculty of Health Sciences of Çankırı Karatekin University as demonstrated in Appendix 3. As can be seen in Appendix 4, the ethics committee of the Najaf Health Directorate gave the researcher their permission to proceed with the study. The ethical authorization necessary to permit data gathering from the Middle Euphrates Cancer Centre was obtained on March 23, 2022 from the Director of Health Services in Najaf. Patients were given information about the ongoing work and its advantages to society, and given the opportunity to voluntarily engage as a sample in the research study. In addition, patients gave their permission to participate in the survey after the researcher had first provided an explanation of the goal of the study and then assured them that the information would be kept private. It was ensured that the identity of the participant was concealed, that their identities would not be divulged in the course of the interview as a result of their completion of the questionnaire, and that they were free to leave at any moment, even if the interview procedure was not yet finished.

4. RESULTS

Table 4.1 Distribution of participants' demographic characteristics (n=195)

Variables		n	%
Age (years)	18 - 25 years	25	12.8
	26- 35 years	23	11.8
	36-45 years	45	23.1
	46-64 years	55	28.2
	65 years and older	47	24.1
Gender	Male	81	41.5
	Female	114	58.5
Educational status	Did not receive any education	59	30.3
	Primary-secondary school	50	25.6
	High school or equivalent	60	30.8
	University degree	26	13.3
Job	Worker	35	17.9
	Housewife	83	42.6
	Self-employed	23	11.8
	Unemployed	30	15.4
	Retired	24	12.3
Marital status	Married	169	86.7
	Single	26	13.3
Income status	Sufficient	16	8.2
	Equal to expenses	57	29.2
	Not enough	122	62.6
Do you have children?	Yes	161	82.6
	No	34	17.4
Number of children (n=161)	1-2	41	25.5
	3-4	49	30.4
	5 and above	71	44.1
Who lives at home or takes care of you?	I live with my spouse and children	165	84.6
	I live alone	6	3.1
	I live in an aged care home	2	1.0
	I'm living with my family	22	11.3

Table 4.1 provides a breakdown, per participant, of the information that pertains to the demographic characteristics of those who took part in the study. When the ages of the participants were broken down according to their distributions, it was found that 28.2% of them were between the ages of 46 and 64, 24.1% were aged 65 or older, and 23.1% were between the ages of 36 and 45. It was found that 58.5% of the persons who took part in the study were female, 30.8% had graduated from high school or an equivalent institution, 25.6% had finished elementary and secondary school, and 30.3% indicated that they had no education at all. Also, 42.6% of the participants said that they were housewives, while 17.9% said that they worked outside the home. It was seen that 86.7% of the participants were married. When the distribution of information on the financial status of the participants was analysed, it was shown that 62.6% of the participants did not have a sufficient income for their needs. It was seen that 82.6% of the participants in the study had children and 44.1% of those who had children had 5 or more children. It was found that 84.6% of the participants lived in families consisting of themselves, their spouse and their children.

Table 4.2 Distribution of patients according to their medical characteristics (n=195)

Variables		N	%
Presence of chronic disease	Yes	116	59.5
	No	79	40.5
Chronic disease type (n=116)*	Diabetes	56	48.3
	Hypertension	69	59.5
	Respiratory Diseases	23	19.8
	Heart disease	9	7.8
	Rheumatic diseases	4	3.4
Smoking status	Yes	71	36.4
	No	124	63.6
Alcohol use status	No	195	100.0
Primary cancer site	Breast	40	20.5
	Lung	33	16.9
	Gastrointestinal	36	18.5
	Urogenital system	35	17.9
	Other regions (leukaemia, lymphoma, adrenal cancer, bone cancer, eye cancer, skin cancer)	39	20.0
Treatment*	Chemotherapy	190	97.4
	Radiotherapy	59	30.3
	Surgery	87	44.6

*Multiple answers

The distribution of the participants according to their medical characteristics is given in Table 4.2. According to this, 59.5% of the participants had a chronic disease, 48.3% of those with chronic diseases had diabetes, and 59.5% had hypertension. It was observed that 19.8% had chronic diseases such as respiratory diseases. While all of the participants stated that they did not use alcohol, it was determined that 36.4% of them were smokers. When the distribution of primary cancer regions of the participants was examined, it was found that 20.5% had breast cancer, 16.9% had lung cancer, and 18.5% had gastrointestinal cancer. It was seen that 17.9% of cancers were in the urogenital region. When the treatment methods received by the participants were examined, it was found that 97.4% of the participants were being treated with chemotherapy, and 30.3% were having radiotherapy. It was determined that 44.6% had received surgical treatment.

Table 4.3 Distribution of patients' quality of life mean score (n=195)

Overall and sub-dimensions of the EORTC QLQ-C30 scale	Min	Max.	Mean±SD
Functional Size	11.11	65.43	34.23±8.84
Physical Functions	0.00	86.67	27.73±15.23
Role Functions	0.00	86.67	27.73±15.23
Cognitive Functions	0.00	83.33	25.56±19.75
Emotional Functions	5.56	83.33	41.11±15.82
Social Functions	0.00	100.00	8.21±14.20
Symptom Size	10.53	63.16	33.85±9.87
Tiredness	11.11	77.78	38.21±13.70
Nausea-vomiting	0.00	100.00	48.55±28.30
Pain	9.09	78.79	36.66±12.41
Breathing difficulty	0.00	100.00	54.70±36.68
Difficulty in sleeping	0.00	100.00	26.67±34.45
Loss of appetite	0.00	100.00	36.92±35.88
Constipation	0.00	100.00	36.41±34.87
Diarrhoea	0.00	100.00	55.90±34.57
Economic difficulty	0.00	33.33	5.64±12.53
General health dimension	16.67	100.00	68.38±18.63

In Table 3, mean scores and standard deviation values of EORTC QLQ-C30 components and sub-dimensions are given. According to the results, the mean size was 34.23±8.84 for the functional dimension and 33.85±9.87 for the symptom dimension, and for the general health dimension, it was calculated as 68.38±18.63. In addition, when the components of the sub-dimensions were examined, 27.73±15.23 was calculated for physical function, 27.73±15.23 for role function, 25.56±19.75 for cognitive function, 41.11±15.82 for emotional function and 8.21±14.20 for social function. Also, 38.21±13.70 was calculated for fatigue, 48.55±28.30 for nausea-vomiting, 36.66±12.41 for pain, 54.70±36.68 for respiratory distress, 26.67±34.45 for difficulty sleeping, 36.92±35.88 for loss of appetite, 36.41±34.87 for constipation, and 55.90±34.57 for diarrhoea, while economic difficulty was calculated at 5.64±12.53.

Table 4.4 Comparison of EORTC QLQ-C30 Functional Dimension scores by demographic characteristics of participants (n=195)

		Functional Size			Test value	p value
		Mean	SD	Median		
Age (years)	18 - 25 years	32.35	8.75	30.86	1.259F	0.288
	26- 35 years	33.76	9.02	32.1		
	36-45 years	36.68	6.73	34.57		
	46-64 years	33.67	10.66	35.8		
	65 years and older	33.75	8.11	32.1		
Gender	Male	34.77	8.82	34.57	0.718 t	0.474
	Female	33.84	8.88	34.57		
Educational status	Did not receive any education	32.87	10.29	33.33	0.802 F	0.494
	Primary-secondary school	34.25	9.25	34.57		
	High school or equivalent	35.35	7.4	34.57		
	University degree	34.66	7.55	34.57		
Job	Worker	33.65	7.21	33.33	0.475 F	0.754
	Housewife	34.23	9.37	34.57		
	Self-employed	35.53	10.97	34.57		
	Unemployed	32.84	6.75	32.72		
	Retired	35.55	9.52	35.8		
Marital status	Married	34.33	8.79	34.57	-0.434 t	0.665
	Single	33.52	9.37	33.33		
Income status	Sufficient	36.03	7.64	35.8	0.872KW	0.647
	Equal to expenses	33.96	9.98	34.57		
	Not enough	34.11	8.46	33.33		
Do you have children?	Yes	34.49	9.03	34.57	0.911t	0.364
	No	32.97	7.91	33.33		
Number of children (n=161)	1-2	35.62	8.02	34.57	0.455 F	0.635
	3-4	33.86	10.15	34.57		
	5 and above	34.29	8.81	34.57		

F: One-way analysis of variance test; t: Independent sample t test; KW: Kruskal Wallis H test

The scores obtained from the EORTC QLQ-C30 Functional Dimension do not show a statistically significant difference according to the age, gender, educational status, profession, marital status or income status of the participants, whether they had children, and the number of children ($p>0.05$).



Table 4.5 Comparison of EORTC QLQ-C30 Symptoms Dimension scores by demographic characteristics of participants (n=195)

		Symptom Size			Test Value	p value	post hoc
		Mean	SD	median			
Age (years)	18 - 25 years (1)	28.42	8.44	26.32	3.908^F	0.004*	1<3.5
	26- 35 years (2)	30.59	9.1	28.07			
	36-45 years (3)	36.53	8.69	35.09			
	46-64 years (4)	34.07	11.26	35.09			
	65 years and older (5)	35.5	9.02	35.09			
Gender	Male	34.68	10.09	35.09	0.990 t	0.323	
	Female	33.26	9.71	31.58			
Educational status	Did not receive any education	33.42	10.86	31.58	0.330 F	0.804	
	primary-secondary school	34.07	9.72	35.09			
	High school or equivalent	34.65	9.39	35.96			
	University degree	32.52	9.19	31.58			
Job	Worker	31.58	9.19	29.82	1.254 F	0.290	
	Housewife	33.97	10.01	33.33			
	Self-employed	35.01	9.65	36.84			
	Unemployed	32.75	9.36	34.21			
	Retired	36.99	10.88	38.6			
Marital status	Married	34.26	9.63	33.33	-1.488 t	0.138	
	Single	31.17	11.09	26.32			
Income status	Sufficient	34.43	9.15	34.21	0.585 kW	0.746	
	Equal to expenses	33.21	10.48	31.58			
	Not enough	34.07	9.72	33.33			
Do you have children?	Yes	34.68	9.81	35.09	2.621^t	0.009*	
	No	29.88	9.26	28.07			
Number of children (n=161)	1-2	34.7	9.72	36.84	0.285 F	0.752	
	3-4	33.8	10.63	33.33			
	5 and above	35.19	9.49	35.09			

F: One-way analysis of variance test; t: Independent sample t test; KW: Kruskal Wallis H test, *p<0.05

The scores obtained from the EORTC QLQ-C30 Symptom Dimension show a statistically significant difference according to the age of the participants ($p < 0.05$). According to the multiplicity comparison test (post-hoc test) performed to identify the groups that differ, the scores of the people between the ages of 18-25 on the Symptom Dimension were lower than the symptom scores of people aged 36-45 and those over 65.

The scores obtained from the EORTC QLQ-C30 Symptom Dimension show a statistically significant difference according to whether the participants had children ($p < 0.05$). The scores on the Symptom Dimension of the people who stated that they had children were found to be higher than those who stated that they did not have children.

The scores obtained from the EORTC QLQ-C30 Symptom Dimension do not show a statistically significant difference according to the gender, educational status, profession, marital status or income status of the participants and the number of children they had ($p > 0.05$).

Table 4.6 Comparison of EORTC QLQ-C30 General Health Dimension scores by demographic characteristics of participants (n=195)

		General Health Dimension			Test Value	p value	post hoc
		mean	SD	median			
Age (years)	18 - 25 years (1)	72.67	19.47	75.0	4.118^F	0.003*	4<2.5
	26- 35 years (2)	75.0	17.59	75.0			
	36-45 years (3)	65.19	18.06	66.67			
	46-64 years (4)	61.97	19.43	58.33			
	65 years and older (5)	73.4	15.7	75.0			
Gender	Male	68.93	15.87	66.67	0.364t	0.716	
	Female	67.98	20.43	66.67			
Educational status	Did not receive any education	70.48	20.14	66.67	0.837 F	0.475	
	Primary-secondary school	69.17	19.94	66.67			
	High school or equivalent	67.64	17.43	66.67			
	University degree	63.78	14.9	66.67			
Job	Worker	70.0	17.29	75.0	1.193 F	0.321	
	Housewife	67.87	21.59	66.67			
	Self-employed	69.93	13.7	66.67			
	Unemployed	71.67	14.12	66.67			
	Retired	62.15	18.22	58.33			
Marital status	Married	68.1	18.92	66.67	0.533 t	0.595	
	Single	70.19	16.86	66.67			
Income status	Sufficient	63.02	16.38	58.33	2.315KW	0.314	
	Equal to expenses	68.13	18.31	66.67			
	Not enough	69.19	19.07	66.67			
Do you have children?	Yes	67.49	18.73	66.67	-1.441t	0.151	
	No	72.55	17.83	75.0			
Number of children (n=161)	1-2	67.68	16.27	66.67	0.248F	0.781	
	3-4	68.88	18.3	66.67			
	5 and above	66.43	20.46	58.33			

F: One-way analysis of variance test; t: Independent sample t test; KW: Kruskal Wallis H test, *p<0.05

The scores obtained from the EORTC QLQ-C30 General Health Dimension show a statistically significant difference according to the age of the participants ($p < 0.05$). According to the multiplicity comparison test (post-hoc test) performed to identify the groups that differ, the scores on the General Health Dimension of the people between the ages of 46 and 64 were lower than the General Health scores of people aged 26-35 and people over 65.

The scores obtained from the EORTC QLQ-C30 General Health Dimension do not show a statistically significant difference according to the gender, educational status, profession, marital status or income status of the participants, their status of having children and the number of children they had ($p > 0.05$).

Table 4.7 Comparison of EORTC QLQ-C30 Functional Dimension scores according to participants' medical characteristics (n=195)

		Functional Size			Test value	p value
		mean	SD	median		
Presence of chronic disease	Yes	33.57	8.39	34.57	0.056 t	0.956
	No	35.19	9.44	34.57		
Types of Chronic Disease						
Diabetes	Yes	32.34	8.5	32.72		
	No	34.71	8.2	34.57		
Hypertension	Yes	32.85	9.22	33.33	-1.116 t	0.267
	No	34.62	6.97	34.57		
Respiratory Diseases	Yes	34.88	9.53	35.8	-0.799 t	0.426
	No	33.52	8.39	34.57		
Smoking status	Yes	33.44	8.46	33.33	-0.942 t	0.348
	No	34.68	9.06	34.57		
Primary cancer site	Breast	35.03	8.54	34.57	4.897KW	0.429
	Lung	34.04	9.11	34.57		
	Gastrointestinal System	32.13	8.26	33.33		
	Head and neck	31.07	7.96	30.25		
	Urogenital system	35.59	7.46	35.8		
	Other sites	35.23	10.62	34.57		
Types of Treatment						
Chemotherapy	Yes	34.28	8.87	34.57	0.544 t	0.587
	No	32.1	8.42	35.8		
Radiotherapy	Yes	34.59	8.41	35.8	0.376 t	0.707
	No	34.07	9.05	33.33		
Surgery	Yes	35.29	8.86	34.57	1.515 t	0.131
	No	33.37	8.78	34.57		

t: Independent sample t test; KW: Kruskal Wallis H test

The scores obtained from the EORTC QLQ-C30 Functional Dimension do not show a statistically significant difference according to the presence of chronic disease, diabetes, chronic hypertension, chronic respiratory tract disease, smoking status, primary cancer region, chemotherapy treatment type, radiotherapy status and surgical intervention status of the participants ($p>0.05$).

Table 4.8 Comparison of EORTC QLQ-C30 Symptoms dimension scores according to participants' medical characteristics (n=195)

		Symptom Size			Test value	p value
		mean	SD	median		
Presence of chronic disease	Yes	34.38	9.99	34.21	-0.058t	0.954
	No	33.07	9.69	31.58		
Types of Chronic Disease						
Diabetes	Yes	32.77	9.85	33.33	-1.688 t	0.094
	No	35.88	9.97	35.09		
Hypertension	Yes	33.33	10.84	33.33	-1.369 t	0.174
	No	35.91	8.47	36.84		
Respiratory diseases	Yes	36.4	9.54	39.47	0.094 t	0.925
	No	34.3	10.04	33.33		
Smoking status	Yes	33.43	9.65	33.33	-0.442 t	0.659
	No	34.08	10.02	33.33		
Primary cancer site	Breast	34.52	8.63	33.33	8.960KW	0.111
	Lung	35.57	10.05	38.6		
	Gastrointestinal System	30.99	9.48	30.7		
	Head and neck	28.95	8.96	27.19		
	Urogenital system	35.49	9.12	35.09		
	Other regions (leukaemia, lymphoma, adrenal cancer, bone cancer, eye cancer, skin cancer)	34.37	11.57	31.58		
Types of Treatment						
Chemotherapy	Yes	33.92	9.91	33.33	0.600 t	0.549
	No	31.23	8.36	33.33		
Radiotherapy	Yes	33.69	8.37	35.09	-0.145 t	0.885
	No	33.91	10.48	32.46		
Surgery	Yes	34.38	10.24	33.33	0.680 t	0.497
	No	33.41	9.58	33.33		

t: Independent sample t test; KW: Kruskal Wallis H test

The scores obtained from the EORTC QLQ-C30 Symptom Dimension do not show a statistically significant difference according to the presence of chronic disease, diabetes, chronic hypertension, chronic respiratory tract disease, smoking status, primary cancer region, chemotherapy treatment type, radiotherapy status and surgical intervention status of the participants ($p>0.05$).



Table 4.9 Comparison of EORTC QLQ-C30 General Health Dimension scores according to participants' medical characteristics (n=195)

		General Health Dimension			Test value	p value
		mean	SD	median		
Presence of chronic disease	Yes	68.03	17.75	66.67	-0.344t	0.732
	No	68.88	19.96	66.67		
Types of Chronic Disease						
Diabetes	Yes	68.60	17.04	66.67	0.333 t	0.740
	No	67.50	18.52	66.67		
Hypertension	Yes	68.60	19.08	66.67	0.416 t	0.678
	No	67.20	15.77	66.67		
Respiratory diseases	Yes	83.33	22.57	91.67	-1.168 t	0.247
	No	67.49	17.44	66.67		
Smoking status	Yes	72.65	15.89	75.00	2.602^t	0.010*
	No	65.93	19.68	66.67		
Primary cancer site	Breast	61.46	20.21	58.33	10.084KW	0.073
	Lung	66.92	18.1	66.67		
	Gastrointestinal system	70.14	20.16	75.00		
	Head and neck	76.39	14.58	75.00		
	Urogenital system	69.76	18.86	66.67		
	Other regions (leukaemia, lymphoma, adrenal cancer, bone cancer, eye cancer, skin cancer)	71.37	15.39	75.00		
Chemotherapy	Yes	68.03	18.68	66.67	-1.623 t	0.106
	No	81.67	10.87	83.33		
Radiotherapy	Yes	67.8	17.54	66.67	-0.285 t	0.776
	No	68.63	19.14	66.67		
Surgery	Yes	65.04	19.31	66.67	-2.269^t	0.024*
	No	71.06	17.70	75.00		

t: Independent sample t test; KW: Kruskal Wallis H test, *p<0.05

The scores obtained from the EORTC QLQ-C30 General Health Dimension show a statistically significant difference according to the smoking status of the participants ($p < 0.05$). The general health scores of people who state that they smoke are higher than those who state that they do not smoke.

The scores obtained from the EORTC QLQ-C30 General Health Dimension show a statistically significant difference according to the surgical intervention type of the participants ($p < 0.05$). It was determined that the general health scores of those who stated that they were not treated with a surgical intervention were higher than those who were treated with a surgical intervention.

The scores obtained from the EORTC QLQ-C30 General Health Dimension do not show a statistically significant difference according to the presence of chronic disease, diabetes, chronic hypertension, chronic respiratory tract disease, primary cancer region, chemotherapy treatment type and radiotherapy status of the participants ($p > 0.05$).

5. DISCUSSION

This chapter deals with a detailed interpretation of the study finding which systematically drives discussion of such findings with supporting evidences available in the literature, which was related to the topic of the study.

5.1. Demographic Information Results

The result provides demographic information about the participants in a study conducted to evaluate the quality of life of cancer patients treated at an Oncology Centre in Najaf. The result indicates that the majority of the participants were women, were married, and had children. A large proportion of participants had not received formal education, had insufficient income, and were housewives. This information suggests that there may be socioeconomic factors that could impact the quality of life of the cancer patients being studied. For instance, having insufficient income may limit access to healthcare services and impact treatment outcomes. Similarly, having low levels of education may limit access to information and resources necessary for making informed health decisions. Overall, this result highlights the importance of considering the demographic and socioeconomic characteristics of cancer patients in evaluating their quality of life and developing interventions to improve their health outcomes (Üstündag and Zencirci, 2015).

5.2. Medical Characteristics Results

The results of medical characteristics of the participants in the study, who were cancer patients treated at an Oncology Centre in Najaf, specifically show that breast cancer was the most common, followed by lung and gastrointestinal cancers. Additionally, the majority of the participants received chemotherapy as their treatment method, with a smaller proportion receiving radiotherapy and surgical treatment. When GLOBOCAN 2020 Iraq cancer statistics were examined, it was seen that breast, lung and colorectal cancers were among the most common cancer types in Iraq in 2020 (GLOBACAN, 2020). In their study, Güçlüel (2022) concluded that the most diagnosed cancer type

was breast cancer, and chemotherapy was used as a treatment method. In the light of this information, the findings of the study are similar to the literature.

It was determined that most of the patients with concurrent chronic health problems had hypertension, diabetes and respiratory diseases. In the literature, the three most common comorbid conditions among cancer survivors are congestive heart failure, chronic obstructive pulmonary disease (COPD), and diabetes (Bluethmann et al., 2016; Cohen et al., 2019). Therefore, it is seen that the results of the study are compatible with the literature findings.

According to the results, none of the participants drank alcohol, and 36.4% smoked. Similar to our study, Hardani (2022) concluded in his study with prostate cancer patients in Iraq that 62.3% did not smoke and 90.8% did not drink alcohol. Again, Alkhafaji (2022) found in a study with women with breast cancer in Iraq that 94.4% did not smoke.

5.3. Discussion - Distribution of Samples According to Demographic Information for Health Quality

According to the results, the scores obtained from the Symptom Dimension of the questionnaire showed a statistically significant difference according to the participants' age and status of having children. This finding could have several explanations. Younger patients may have fewer comorbidities or chronic illnesses that might exacerbate their symptoms. They may also have better physical resilience and coping skills to manage their symptoms, or they may be receiving more aggressive treatments that effectively manage their symptoms (Güngörmüş and Erdem, 2014; Stone et al., 2017). Moreover, the study revealed that the symptom scores of participants who had children were higher than those who did not have children. In their study, Güçlüel (2022) found that the mean scores of general health, physical and social functions of those who did not have children were significantly higher than the scores of those who had children, and the mean scores of economic hardship were significantly lower. Güngörmüş and Erdem (2014), on the other hand, determined in their study that as the number of children increased, quality of life scores decreased. This may indicate that

the burden of cancer and its treatment is felt more acutely by patients who have children, and that their role as caregivers may exacerbate their symptoms.

The results indicate that age is the only demographic factor that has a statistically significant association with the scores obtained from the EORTC QLQ-C30 General Health Dimension among cancer patients. In our study, the scores of people between the ages of 46 and 64 from the General Health Dimension were lower than the General Health scores of people aged 26-35 and over 65. According to Kutluturkan et al. (2019) in a study with cancer patients over the age of 65, the general health level average score of the patients was found to be low, while Subaşı (2010) found the general health level score of patients aged between 36 and 50 years to be higher. Kılıç-Yangın (2021) reported that although there was no statistical difference between age and general health score, the general health score of patients over 40 years of age was lower than younger patients. Güçlüel (2022) did not find a relationship between age groups and general health scores. These findings may have several implications for the assessment and management of cancer patients' quality of life. For instance, healthcare professionals can use age as a criterion to identify patients who may be at higher risk of experiencing poor quality of life and thus require additional support and interventions. For example, younger cancer patients may need more social support to help them cope with the challenges of their illness and its treatment, while older cancer patients may require more assistance with physical functioning and psychological and daily activities (Ayvat and Atlı Özbaş, 2021; Hall et al., 2012; Herr et al., 2014).

Moreover, this finding can also inform the development of age-specific interventions that target the specific needs and challenges of cancer patients in different age groups. Such interventions could be tailored to address the unique needs of each age group, potentially leading to improved quality of life outcomes for cancer patients across all age groups (Somanna *et al.*, 2022).

According to the results, no statistically significant difference was observed in the Functional Dimension scores of the EORTC QLQ-C30 according to the presence of demographic factors. Benzer (2022) found a significant relationship between functional dimension score and variables of age, gender, and occupation. Hardanı (2022), on the

other hand, found a significant relationship between age, educational status, economic status and place of residence, and the sub-components of the functional dimension. Our study result differs with the literature. It is thought that the reason for the differences may be related to factors such as psychosocial factors, social support and access to health resources, which are not examined in our study.

5.4. Discussion - Distribution of Samples According to Medical Characteristics Information for Health Quality

In addition to many effects of cancer on the individual, it is thought that the presence of additional comorbid diseases will affect the quality of life (Güçlüel, 2022). There are studies in the literature that support this idea and indicate that comorbid diseases reduce the quality of life (Güçlüel, 2022; Güngörmüş and Erdem, 2014; Kılıçkap, 2019). In addition, in parallel with our study result, there are also results that it does not affect the quality of life (Hardani, 2022). Although it is thought that having a chronic disease may have an impact on the quality of life, it is not considered appropriate to generalize because of the differences in the type of cancer and treatment options in patients.

Peppone et al. (2011) found that smoking was associated with increased symptom burden during and after cancer treatments. In a study by Hardani (2022), no relationship was found between smoking and quality of life and its sub-dimensions. Kılıç-Yangın (2021), on the other hand, found the general health status score of smokers to be statistically significantly lower than those of non-smokers and those who quit. In our study, the general health scores of those who stated that they smoked were higher than those who stated that they did not smoke. Our findings differ from the literature. İrer, Dağ and Aslan (2017) determined that the duration of smoking has a bad effect on the clinical and pathological features of bladder cancer at the time of diagnosis. Therefore, it is thought that the reason for the difference may be based on the factors of how long the patient has been smoking, which is not included in our study or in the literature discussed here.

It was determined that there was no difference between the type of cancer and the quality of life of the individuals participating in the study. Firkins et al. (2020) stated in their studies that there was no difference between cancer type and quality of life (Firkins et al., 2020). Zucca et al. (2012) in a cancer type-specific examination revealed that

among patients who were diagnosed with breast cancer, melanoma, and colorectal cancer more recently, and those who recovered from the same cancer type and survived longer, those who lived longer had a better quality of life. Güçlüel (2022) found that the physical and role function mean scores of those with hematological cancer were significantly higher than those with solid tumor cancer. Except for Güçlüel's study, our study findings are similar to the literature.

In their study, Atlı and Düger (2020) determined that the general well-being of cancer patients who received chemotherapy, surgery and radiotherapy was better than that of those who received only chemotherapy. Hardanı (2022), on the other hand, in a study with individuals with prostate cancer, concluded that those who were treated with laser therapy had a better quality of life than those who received surgical treatment. In our study, it was determined that the general health scores of the patients who did not receive surgical treatment were higher than those who received surgical treatment. It is thought that the reason why our literature and research findings are different is the differences in cancer type and treatment options.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

In view of the findings that were gathered, the study came to the following conclusions:

- Many participants were between the ages of 64-46 years, and most of them were married and female. Also, most of the study participants were graduates of high school or equivalent and most participants had insufficient monthly income, and most patients had five or more children, and lived in cities with their spouses and children.
- Sub-dimension score averages of the quality of life scale were found to be 34.23 ± 8.84 for the functional dimension 33.85 ± 9.87 for the symptom dimension, and 68.38 ± 18.63 for the general health dimension.
- The findings of the study demonstrated that there was a statistically significant relationship between quality of life symptom dimension and age and having children.
- There was a statistically significant relationship between general health dimension age, surgical treatment status, and smoking status.
- No correlation was found between gender, education level, marital status, income status, number of children, having a chronic disease, cancer region and quality of life.

6.2. Recommendations

1. Future research on the quality of life of cancer patients can draw from the findings of this study. I recommend conducting research on the same topic due to the importance of quality of life for patients, and attention to improving patients' quality of life.
2. The Iraqi Ministry of Health should organize programs to educate patients and their families on how to take care of cancer patients at home, including maintaining a good diet, following treatment instructions, and engaging in physical activity.
3. These patients in Iraq should receive psychological care and counselling through educational and training programs.
4. The state must provide financial assistance to this group of people due to the high expense of treatment in Iraq, notwithstanding the complexity of the disease and the expensive journey for treatment.

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APPENDICES

APPENDIX 1. Questionnaire

Assessment of the quality of life for patients suffering from cancer in the oncology center in Najaf Governorate.

We invite you to participate in our study titled " Assessment of the quality of life for patients suffering from cancer in the oncology center " prepared by KHULOOD MAJID ALI LAMI under the consultancy of its member Asst. Prof. AYŞE ÖZGE DENİZ. Before deciding whether or not to participate in this research, you need to know why and how you will do the research. It is very important to read and understand this form. If there is anything that you do not understand and is unclear to you, or if you want more information, ask us. Participation in this study is completely voluntary. You have the right not to participate in the study or to leave the study at any time after participation. Your response to the research will be interpreted as your consent to participate in the research. While answering the questions on the forms given to you, do not be under pressure from anyone and do not take their suggestions into account. Personal information obtained from these forms will remain completely confidential and will be used for research purposes only. Thank you for your participation.

PART 1: demographic data.

1.What is your gender?

- A) Male
- B) female

2. What is your age?

- A) 18 - 25 years
- B) 26- 35 years
- C) 36-45 years
- D) 46-64 years
- E) 65 years and over

3. Academic status

- A) I have not received any education
- B) Primary school-secondary school
- C) High school or equivalent
- D) University degree
- E) Master's/Professional qualification

4. Profession:

- A) Employee
- B) Housewife
- C) Self employed
- D) Unemployed
- E) Retired
- F) Other.....

5. What is your marital status?

- A) Married
- B) Single

6. Monthly income

- A) Enough
- B) Equal to expenses
- C) Not enough

7. Do you have any children?

- A) Yes
- B) No

8. If yes, how many children do you have?

9. Area of residence:

- A) urban
- B) rural

10. Do you have a disease other than cancer?

- A) Diabetes
- B) Hypertension
- C) Diseases of the respiratory system
- D) Rheumatic diseases
- E) Other.....

11. Do you smoke?

- A) Yes
- B) No

12. Do you drink alcohol?

- A) Yes
- B) No

13. Who lives with you or takes care of you at home?

- A) I live with my wife and children
- B) I live alone
- C) I live in an elderly care home

14. Primary cancer site

- A) Breast
- B) Lung
- C) gastrointestinal system
- D) Head and neck
- E) Other sites

15. Treatment

- A) Chemotherapy
- B) Radiotherapy
- C) Both, and surgery

PART II: EORTC QLQ-C30 (version 3) (English Version)

We are interested in some things about you and your health. Please answer all of the questions yourself by circling the number that best applies to you. There are no "right" or "wrong" answers. The information that you provide will remain strictly confidential.

		Not at All	A Little	Quite a Bit	Very Much
1	Do you have any trouble doing strenuous activities, like carrying a heavy shopping bag or a suitcase?	1	2	3	4
2	Do you have any trouble taking a long walk?	1	2	3	4
3	Do you have any trouble taking a short walk outside of the house?	1	2	3	4
4	Do you need to stay in bed or a chair during the day?	1	2	3	4
5	Do you need help with eating, dressing, washing yourself or using the toilet?	1	2	3	4
6	Are you limited in doing either your work or other daily activities?	1	2	3	4
7	Are you limited in pursuing your hobbies or other leisure time activities?	1	2	3	4
8	Are you short of breath?	1	2	3	4
9	Have you had pain?	1	2	3	4
10	Did you need to rest?	1	2	3	4
11	Have you had trouble sleeping?	1	2	3	4
12	Have you felt weak?	1	2	3	4
13	Have you lacked appetite?	1	2	3	4
14	Have you felt nauseated?	1	2	3	4

15	Have you vomited?	1	2	3	4
16	Have you been constipated?	1	2	3	4
17	Have you had diarrhoea?	1	2	3	4
18	Do you feel tired?	1	2	3	4
19	Does pain interfere with your daily activities?	1	2	3	4
20	Have you had difficulty in concentrating on things, like reading a newspaper or watching television?	1	2	3	
21	Do you feel tense?	1	2	3	4
22	Do you worry?	1	2	3	4
23	Do you feel irritable?	1	2	3	4
24	Did you feel depressed?	1	2	3	4
25	Have you had difficulty remembering things?	1	2	3	4
26	Has your physical condition or medical treatment interfered with your family life?	1	2	3	4
27	Has your physical condition or medical treatment interfered with your social activities?	1	2	3	4
28	Has your physical condition or medical treatment caused you financial difficulties?	1	2	3	4

For the following questions please circle the number between 1 and 7 that best applies to you.

29. How would you rate your overall health during the past week?

1 2 3 4 5 6 7

Very poor

Excellent

30. How would you rate your overall quality of life during the past week?

1 2 3 4 5 6 7

Very poor

Excellent

EORTC QLQ-C30 (version 3) (Arabic Version)

كثيرا جدا	بما فيه الكفاية	قليلا	إطلاقاً		
4	3	2	1	هل لديك صعوبة في بذل مجهود جسدي شاق (متعب) مثل حمل كيس مشتريات ثقيل أو حقيبة؟	1
4	2	2	1	هل لديك صعوبة بالمشي لمسافة طويلة؟	2
4	2	2	1	هل لديك صعوبة بالمشي لمسافة قصيرة خارج البيت؟	3
4	3	2	1	هل تحتاج للبقاء في السرير أو الكرسي خلال اليوم؟	4
4	3	2	1	هل تحتاج للمساعدة في الأكل، ارتداء الملابس، الاغتسال أو استخدام المراحيض؟	5
4	3	2	1	هل كنت محدود/ مقيد عند القيام بعملك أو نشاطات يومية أخرى؟	6
4	3	2	1	هل كنت محدود/ مقيد في ممارسة هواياتك أو نشاطات في اوقات الفراغ؟	7
4	3	2	1	هل شعرت بضيق بالنفس؟	8
4	3	2	1	هل شعرت بأي ألم؟	9
4	3	2	1	هل كنت بحاجة للراحة؟	10
4	3	2	1	هل عانيت من مشاكل في النوم (أرق/ صعوبة في النوم/ نوم متقطع)؟	11
4	3	2	1	هل شعرت بالضعف؟	12
4	3	2	1	هل فقدت شهيتك للطعام (القدرة على الكل)؟	13
4	3	2	1	هل شعرت بالغثيان (اللعيان)؟	14
4	3	2	1	هل تقيأت؟	15
4	3	2	1	هل عانيت من إمساك؟	16
4	3	2	1	هل كان لديك إسهال؟	17
4	3	2	1	هل كنت متعب؟	18
4	3	2	1	هل عانيت من ألم أثر سلبيا على نشاطاتك اليومية؟	19
4	3	2	1	هل كان لديك صعوبة بالتركيز في بعض الأمور مثل قراءة الجريدة أو مشاهدة التلفاز؟	20
4	3	2	1	هل شعرت بالتوتر؟	21
4	3	2	1	هل شعرت بالقلق؟	22

4	3	2	1	هل شعرت بالانزعاج؟	23
4	3	2	1	هل شعرت بالاكتماب؟	24
4	3	2	1	هل كانت لديك صعوبة بتذكر الأشياء؟	25
4	3	2	1	هل حالتك الجسدية أو علاجك الطبي أثر سلبيا على حياتك العائلية؟	26
4	3	2	1	هل حالتك الجسدية أو علاجك الطبي أثر سلبيا على حياتك الاجتماعية؟	27
4	3	2	1	هل حالتك الجسدية أو علاجك الطبي أديا إلى مشاكل مالية؟	28

في الأسئلة التالية الرجاء الإشارة بدائرة حول الأرقام بين 1 - 7 الاكثر ملائمة لك

29. كيف تُقيّم صحتك عموما خلال الأسبوع الماضي؟

1 2 3 4 5 6 7
سيء جدا ممتاز

30. كيف تُقيّم جودة حياتك عموما/ مستوى حياتك عموماً خلال الأسبوع الماضي؟

1 2 3 4 5 6 7
سيء جدا ممتاز

APPENDIX 2. Author's consent to use the study tool



APPENDIX 3. Approval of Çankırı Karatkin University

APPENDIX 4. Approval of Iraqi Ministry of health





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