

**PERCEIVED INFLUENCE OF CHEMOTHERAPY ON NUTRITIONAL
SYMPTOMATOLOGY AMONG PATIENTS WITH CANCER IN A TERTIARY
HEALTH INSTITUTE IN BENIN CITY, EDO STATE**

BY

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**FACULTY OF NURSING SCIENCE
UNIVERSITY OF BENIN,
BENIN CITY**

OCTOBER, 2025

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**IN PARTIAL FULFILMENT OF THE REQUIREMENTS OF THE DEGREE OF
BACHELOR OF NURSING SCIENCE, FACULTY OF NURSING SCIENCE,
COLLEGE OF MEDICAL SCIENCES UNIVERSITY OF BENIN, BENIN CITY**

OCTOBER, 2025

DECLARATION

This is to declare that this research project titled "PERCEIVED INFLUENCE OF CHEMOTHERAPY ON NUTRITIONAL SYMPTOMATOLOGY AMONG PATIENTS WITH CANCER IN A TERTIARY HEALTH INSTITUTE IN BENIN CITY, EDO STATE" was carried out by BRIGHT BLESSING IMUETINYANOSA is solely the result of my work except where acknowledged as being derived from other person(s) or resources.

MATRICULATION NUMBER:

**FACULTY/ DEPARTMENT: NURSING SCIENCES, MEDICAL SURGICAL NURSING,
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CERTIFICATION/APPROVAL

This is to certify that this research project by "PERCEIVED INFLUENCE OF CHEMOTHERAPY ON NUTRITIONAL SYMPTOMATOLOGY AMONG PATIENTS WITH CANCER IN A TERTIARY HEALTH INSTITUTE IN BENIN CITY, EDO STATE" was carried out by BRIGHT BLESSING IMUETINYANOSA with Mat No. BMS1906320 in the Faculty of Nursing Sciences under the supervision of Mrs.Oyana Nwakego.

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EXERNAL EXAMINER

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ABSTRACT

This study examined the perceived influence of chemotherapy on nutritional symptomatology among patients with cancer attending the University of Benin Teaching Hospital, Benin City, Edo State. The study adopted a descriptive cross-sectional design, and data were collected from 154 adult patients undergoing chemotherapy using a structured questionnaire. Data were analyzed using descriptive statistics including frequencies, means, and standard deviations. Findings revealed that 82.5% of respondents reported experiencing loss of appetite, 76.0% nausea, 68.2% vomiting, and 71.4% taste alteration during chemotherapy. About 64.9% of the patients also reported early satiety and difficulty maintaining regular meals, while 58.4% experienced significant weight loss. The mean scores further indicated that loss of appetite (Mean = 4.12), nausea (Mean = 4.06), and taste alteration (Mean = 3.95) were the most common nutritional symptoms. In coping with these effects, the majority of respondents adopted strategies such as eating small frequent meals (Mean = 4.28), increasing fluid intake (Mean = 4.10), and avoiding spicy foods (Mean = 3.85). Most participants (73.4%) perceived that proper nutritional management improved their tolerance to chemotherapy and overall well-being. The study concluded that chemotherapy has a significant negative effect on nutritional health among cancer patients. It recommends that oncology nurses and dietitians strengthen nutritional counseling and integrate individualized dietary plans into chemotherapy care.

Keywords: Chemotherapy, Nutritional symptomatology, cancer patients

DEDICATION

I, BRIGHT BLESSING IMUETINYANOSA dedicate this project to God Almighty For his grace, protection, and unending mercies and also for giving me the privilege to be able to complete this project work successfully.

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TABLE OF CONTENTS

COVER PAGE	i
TITLE PAGE	ii
DECLARATION	iii
CERTIFICATION/APPROVAL	iv
ABSTRACT	Error! Bookmark not defined.
DEDICATION	vi
ACKNOWLEDGEMENT	vii
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background to the Study	1
1.2 Statement of the Problem	3
1.3 Objectives of the Study	5
1.4 Research Questions	6
1.5 Research Hypotheses	6
1.6 Significance of the Study	7
1.7 Scope of the study	9
1.8 Operational Definition of Terms	10
CHAPTER TWO	11
LITERATURE REVIEW	11
2.1 Conceptual Review	12
2.2 Theoretical Review	17
2.3 Empirical Review	22
2.4 Summary of literature review	31
CHAPTER THREE	33
RESEARCH METHODOLOGY	33
3.1 Research design	33
3.2 Research setting	33
3.3 Target population	34
3.4 Sampling technique and size	34
3.5 Inclusion Criteria	36

3.6 Instrument for Data Collection	36
3.7 Validity of instrument	38
3.8 Reliability of the instrument	38
3.9 Method of Data Analysis	38
3.10 Ethical considerations	39
CHAPTER FOUR	40
DATA PRESENTATION, ANALYSIS AND DISCUSSION	40
4.0 Introduction	40
4.1 Percentage of Demographic Data	40
4.2 Answers to the Research Questions	46
4.3 Hypothesis	49
CHAPTER FIVE	58
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS	58
5.1 Discussion of Findings	58
5.2 Summary of Major Findings	61
5.4 Limitations of the Study	63
5.5 Conclusion	64
5.6 Recommendations	64
5.7 Suggestions for Further Research	65
Reference	67
APPENDIX 1	71
APPENDIX II	76

LIST OF TABLES

Table 4.1: Demographic Frequency Table Of Respondents	39
Table 4.2: Type Of Cancer Diagnosed	41
Table 4.3: How Long Ago Were You Diagnosed With Cancer	43
Table 4.4: How Many Cycles Of Chemotherapy Have You Received	44
Table 4.5: Descriptive Statistics	45
Table 4.6: Case Processing Summary	47
Table 4.7: Nutritional Symptoms Make It Harder For Me To Continue With Chemotherapy Treatment * Loss Of Appetite Crosstabulation	47
Table 4.8: Chi-Square Tests	48
Table 4.9: Correlations	48
Table 4.10: Case Processing Summary	49
Table 4.11 Eating Small Frequent Meals Nutritional Symptoms Make It Harder For Me To Continue With Chemotherapy Treatment Crosstabulation	50
Table 4.12: Chi-Square Tests	50
Table 4.13: Correlations	51
Table 4.14: Case Processing Summary	52
Table 4.15: Nausea I Feel Physically Weaker And Less Able To Tolerate Chemotherapy Better Crosstabulation	52
Table 4.16: Chi-Square Tests	53
Table 4.17: Correlations	53

LIST OF FIGURES

Figure 2.1: Nutritional impact symptoms theory by Ravasco et al. (2005)

21

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Cancer remains a significant global health burden, with over 19.3 million new cases and nearly 10 million deaths recorded annually (WHO, 2022). Advances in treatment, particularly chemotherapy, have improved survival rates for many cancer patients. However, chemotherapy is frequently associated with severe side effects that compromise patient well-being, with nutritional symptomatology emerging as one of the most challenging consequences (Nguyen et al., 2023). Nutritional symptomatology refers to the array of nutrition-related symptoms induced by chemotherapy, including nausea, vomiting, dysgeusia (taste alterations), mucositis, diarrhea, anorexia, and cachexia all of which negatively impact dietary intake, nutrient absorption, and overall health (Souza, 2024).

Chemotherapy disrupts normal metabolic processes and often induces a hypercatabolic state, leading to muscle wasting, weight loss, and severe malnutrition (Muscaritoli et al., 2021). Studies indicate that nearly 60%–80% of cancer patients undergoing chemotherapy experience at least one form of nutritional impairment (Pellegrini et al., 2023). In a clinical trial, Souza (2024) found that chemotherapy induced nausea and vomiting led to a 30% higher risk of developing malnutrition, significantly affecting treatment adherence. Another study conducted in Ethiopia reported that over 58% of chemotherapy patients were malnourished, with severe cases resulting in weakened immunity, poor recovery, and lower survival rates (Gebremedhin et al., 2021). Dysgeusia, a frequently reported side effect, causes an altered perception of taste, making food unpalatable and reducing appetite (Nguyen et al., 2023). Mucositis, a painful inflammation of the oral and gastrointestinal tract, further impairs chewing and swallowing, leading to involuntary

fasting (Pellegrini et al., 2023). These symptoms collectively worsen nutritional deficits, increase fatigue, and contribute to poor treatment tolerance (Haskins et al., 2022).

Chemotherapy-induced nutritional symptomatology is linked to higher rates of treatment complications, prolonged hospital stays, and increased mortality (Nguyen et al., 2023). A study conducted in Kenya found that malnourished cancer patients were twice as likely to experience severe treatment toxicity and disease complications (Kaduka et al., 2021). Additionally, persistent loss of appetite and weight loss are strong predictors of poor prognosis in oncology patients, with some studies indicating a 20%–30% increased risk of mortality among those with untreated nutritional deficiencies (Muscaritoli et al., 2021). The impact extends beyond physical health. Patients experiencing chemotherapy-related nutritional symptoms often report psychological distress, anxiety, and depression due to their inability to maintain adequate nutrition (Pellegrini et al., 2023). Furthermore, these symptoms disrupt social interactions, as cancer patients often withdraw from communal eating and social activities, leading to decreased emotional well-being and overall quality of life (Souza, 2024).

Given the profound impact of chemotherapy on nutrition, early nutritional assessment and intervention are critical. Current evidence supports the use of dietary counseling, oral nutritional supplements, and medical nutrition therapy to mitigate chemotherapy-induced symptoms (Nguyen et al., 2023). In developed countries, integrating personalized nutrition support into oncology care has led to better patient outcomes, reduced weight loss, and improved treatment tolerance (Pellegrini et al., 2023). However, in resource-limited settings, such as Nigeria, there is limited access to structured nutritional care programs for chemotherapy patients (Souza, 2024).

Despite the global recognition of chemotherapy's impact on nutrition, there is limited research in Nigeria examining how chemotherapy specifically influences nutritional symptomatology among

cancer patients. Most studies have focused on general malnutrition, without addressing the unique symptoms induced by chemotherapy (Gebremedhin et al., 2021). In Benin City, Edo State, cancer remains a growing health concern, with many oncology patients relying on tertiary health institutions for chemotherapy treatment. However, nutritional screening and intervention programs remain inadequate, leaving many patients vulnerable to severe nutritional complications (Auma et al., 2022). The lack of local data on chemotherapy-induced nutritional symptomatology makes it difficult to implement evidence-based interventions tailored to Nigerian cancer patients.

1.2 Statement of the Problem

Cancer patients undergoing chemotherapy often experience significant nutritional challenges due to the toxic effects of chemotherapy on the gastrointestinal system, metabolism, and overall well-being (Nguyen et al., 2023). While chemotherapy is essential for cancer treatment, it induces various nutritional symptoms such as nausea, vomiting, mucositis, anorexia, dysgeusia (taste alterations), and cachexia, all of which interfere with food intake and nutrient absorption (Muscaritoli et al., 2021). These symptoms, collectively referred to as nutritional symptomatology, can worsen malnutrition, reduce treatment tolerance, and impair recovery (Souza, 2024). Despite the known consequences, limited studies in Nigeria have investigated the specific nutritional symptoms associated with chemotherapy and their impact on patient outcomes. In many oncology centers, including those in Benin City, Nigeria, nutritional support is often overlooked in cancer care, leading to severe weight loss, increased treatment complications, and reduced survival rates (Kaduka et al., 2021). Patients receiving chemotherapy frequently report a loss of appetite, difficulty swallowing, and altered taste perception, making it difficult to meet their nutritional requirements (Gebremedhin et al., 2021). These nutritional

deficiencies contribute to weakened immunity, increased infection risks, and poorer responses to chemotherapy (Pellegrini et al., 2023).

Globally, studies indicate that over 60% of chemotherapy patients experience moderate to severe malnutrition due to chemotherapy-induced nutritional symptoms (Nguyen et al., 2023). Although some studies in Africa have examined cancer-related malnutrition, few have specifically focused on chemotherapy-induced nutritional symptomatology and its implications for patient care (Muscaritoli et al., 2021). Without a clear understanding of these symptoms, healthcare professionals may struggle to provide personalized nutrition interventions, potentially worsening patient outcomes. However, in low-resource settings like Nigeria, limited data exists on the extent of chemotherapy's impact on nutrition, making it challenging for healthcare providers to develop effective nutritional interventions (Souza, 2024). Cancer incidence is rising in Nigeria with an estimated over 100,000 new cancer cases diagnosed annually (WHO, 2022). A significant proportion of these patients undergo chemotherapy, and research suggests that a large percentage suffer from nutritional challenges due to treatment-induced side effects (Kaduka et al., 2021). In Benin City, where tertiary health institutions provide cancer care, the lack of structured nutritional support programs leaves many patients vulnerable to severe nutritional deterioration and poor prognosis.

A study conducted in Ethiopia found that over 58% of chemotherapy patients were malnourished, leading to higher rates of treatment complications and prolonged hospital stays (Gebremedhin et al., 2021). Similar trends have been reported in Kenya, where malnourished chemotherapy patients experienced twice the risk of disease progression compared to those with adequate nutrition (Auma et al., 2022). These findings suggest that chemotherapy-related nutritional symptoms are a widespread issue that requires urgent attention, especially in Nigeria, where there is limited access to oncology-specific nutritional care. Failure to address chemotherapy-

induced nutritional symptomatology can lead to severe malnutrition, reduced quality of life, poor treatment adherence, and increased mortality (Muscaritoli et al., 2021). Research shows that malnourished cancer patients are more likely to experience dose reductions, treatment delays, and heightened side effects, which negatively affect their chances of survival (Souza, 2024).

Despite the established link between chemotherapy and nutritional symptoms, there is little research in Nigeria that quantifies the specific impact of chemotherapy on nutritional symptomatology among cancer patients. Beyond physical health, untreated nutritional symptoms contribute to psychological distress, depression, and social withdrawal, further diminishing patient well-being (Pellegrini et al., 2023). Studies have explored general malnutrition in cancer patients, but few have examined how chemotherapy-induced symptoms like mucositis, taste alterations, and anorexia directly influence patient outcomes (Nguyen et al., 2023). Ignoring nutritional complications may worsen treatment outcomes, prolonged hospitalizations, and increase healthcare costs. Additionally, there is insufficient data on how Nigerian healthcare institutions manage chemotherapy-related nutritional issues, making it difficult to implement standardized nutritional interventions. This study aims to fill this gap by examining the specific nutritional symptoms experienced by chemotherapy patients in Benin City and evaluating their impact on patient health.

1.3 Objectives of the Study

The primary objective of this study is to examine the perceived influence of chemotherapy on nutritional symptomatology among patients with cancer in a tertiary health institute in Benin City, Edo State.

Specifically, the study intends to:

1. assess the common nutritional symptoms experienced by oncology patients undergoing chemotherapy in a tertiary health institute in Benin City, Edo State.
2. determine the coping strategies used by oncology patients to manage chemotherapy-induced nutritional symptoms in a tertiary health institute in Benin City, Edo State.
3. examine the relationship between chemotherapy-induced nutritional symptoms and treatment tolerance among oncology patients in a tertiary health institute in Benin City, Edo State.

1.4 Research Questions

This study seeks to answer the following research questions:

1. What are the common nutritional symptoms experienced by oncology patients undergoing chemotherapy in a tertiary health institute in Benin City, Edo State?
2. What coping strategies do oncology patients use to manage chemotherapy-induced nutritional symptoms in a tertiary health institute in Benin City, Edo State?
3. What is the relationship between chemotherapy-induced nutritional symptoms and treatment tolerance among oncology patients in a tertiary health institute in Benin City, Edo State?

1.5 Research Hypotheses

The following hypotheses will be tested in this study:

1. There is no significant association between chemotherapy and the occurrence of nutritional symptoms among oncology patients in a tertiary health institute in Benin City, Edo State.

2. There is no significant relationship between the coping strategies used by oncology patients and their ability to manage chemotherapy-induced nutritional symptoms in a tertiary health institute in Benin City, Edo State.
3. There is no significant relationship between chemotherapy-induced nutritional symptoms and treatment tolerance among oncology patients in a tertiary health institute in Benin City, Edo State.

1.6 Significance of the Study

This study is significant as it explores the perceived influence of chemotherapy on nutritional symptomatology among cancer patients in a tertiary health institute in Benin City. The findings will have broad implications for patient care, healthcare professionals, policymakers, and future research, contributing to improved management of chemotherapy-related nutritional challenges.

1. To Oncology Patients and Their Families

Understanding how chemotherapy affects nutrition will empower patients to recognize, anticipate, and manage nutritional symptoms such as nausea, appetite loss, weight changes, and taste alterations. By identifying these challenges, patients can make informed dietary choices, seek timely medical advice, and adopt coping strategies to maintain better nutritional health. Families and caregivers will also benefit from this knowledge, enabling them to provide better nutritional support to their loved ones, thereby improving recovery and overall well-being.

2. To the Healthcare System and Medical Practitioners

This study will provide healthcare professionals, including oncologists, nurses, and dietitians, with a clearer understanding of how chemotherapy influences nutritional status. The findings will help healthcare providers identify gaps in nutritional management and

implement more effective nutritional interventions. This could lead to improved dietary counseling, timely supplementation, and better symptom control strategies, ultimately enhancing patient outcomes and reducing complications associated with poor nutrition.

3. To Hospital Management and Policy Makers

The study's findings will serve as a basis for developing hospital policies that integrate nutritional assessments and interventions into routine oncology care. It may highlight the need for structured nutritional counseling services, dedicated dietitian support for cancer patients, and the inclusion of personalized nutrition plans in chemotherapy protocols. Policymakers can use the data to establish guidelines that promote better nutritional care in cancer treatment, ensuring that healthcare institutions prioritize adequate nutritional support.

4. To the Nursing Profession

Nurses play a crucial role in monitoring and addressing chemotherapy-related nutritional symptoms. This study will emphasize the importance of continuous nursing education on nutritional symptomatology in cancer care, equipping nurses with the knowledge and skills needed to provide better nutritional guidance, conduct nutritional assessments, and advocate for patient-centered dietary interventions. Improved nursing interventions will contribute to better patient experiences and faster recovery.

5. To Medical and Nursing Education

The study will contribute to the development of evidence-based educational programs for medical and nursing students, ensuring that future healthcare providers are well-equipped to handle the nutritional challenges associated with chemotherapy. The findings may lead

to curriculum improvements that emphasize nutrition in cancer care, helping students understand the complex relationship between chemotherapy and nutritional status.

6. To Future Research

By examining the perceived influence of chemotherapy on nutritional symptomatology, this study will provide a foundation for future research in oncology nutrition. Researchers can use the findings to explore new dietary strategies, personalized nutrition plans, and interventions that mitigate chemotherapy-induced nutritional issues. Additionally, the study may highlight areas that require further investigation, such as the long-term impact of chemotherapy on dietary habits and the effectiveness of specific nutritional interventions.

7. Overall Impact

This research will contribute to improving cancer care by promoting better management of nutritional symptomatology in chemotherapy patients. The findings will enhance patient care, guide policy improvements, strengthen nursing practices, and provide valuable insights for further research, ultimately leading to better health outcomes for oncology patients in Benin City and beyond.

1.7 Scope of the study

This study focuses on the perceived influence of chemotherapy on nutritional symptomatology among oncology patients in a tertiary health institute in Benin City, Edo State, Nigeria. It examines the experiences of cancer patients undergoing chemotherapy, specifically how they perceive its impact on their nutritional health, including appetite changes, weight fluctuations, gastrointestinal disturbances, and dietary adjustments. The study will be limited to adult oncology patients receiving chemotherapy in the selected tertiary health institute

1.8 Operational Definition of Terms

- **Perceived Influence:** This refers to how cancer patients undergoing chemotherapy personally experience and interpret the effects of the treatment on their nutrition, including appetite changes, digestive issues, and food aversions.
- **Chemotherapy:** Refers to the administration of cytotoxic drugs to cancer patients, which not only targets cancer cells but also leads to various side effects that interfere with their ability to eat, digest, and absorb nutrients properly.
- **Nutritional Symptomatology:** This term encompasses the range of nutrition-related symptoms that arise as a result of chemotherapy. In this study, it includes loss of appetite, nausea, vomiting, weight fluctuations, difficulty swallowing, altered taste perception (dysgeusia), and malnutrition, which collectively impact a patient's ability to maintain adequate nutrition.
- **Oncology Patients:** This study defines oncology patients as individuals who have been diagnosed with cancer and are undergoing chemotherapy treatment at the selected tertiary health institute. These patients experience varying degrees of chemotherapy-induced nutritional challenges, which are central to the study's focus.
- **Tertiary Health Institute:** a tertiary health institute refers to a specialized hospital that provides advanced cancer care, including chemotherapy. It is the setting where this research is conducted, focusing on how chemotherapy affects patients' nutritional health within this specific environment.
- **Nutritional Intervention:** It refers to the strategies employed by healthcare providers to manage chemotherapy-induced nutritional challenges, including dietary modifications,

nutritional supplements, and counseling aimed at improving patients' dietary intake and overall well-being.

CHAPTER TWO

LITERATURE REVIEW

This chapter presents a review of relevant literature on the perceived influence of chemotherapy on nutritional symptomatology among cancer patients in a tertiary health institute in Benin City. The literature review aims to explore existing knowledge, identify gaps, and provide a foundation for the study. The review is organized into conceptual review, theoretical framework, and empirical review, employing descriptive literature review for the conceptual section, theoretical application for the theoretical framework, and critical literature review for the

empirical section. The conceptual review will define key terms and explore the effects of chemotherapy on nutritional symptomatology, including malnutrition, weight loss, taste alterations, and appetite changes. The theoretical framework will adopt a relevant model to explain how chemotherapy affects nutritional status and patient well-being. The empirical review will analyze previous research findings, critique methodologies, and identify gaps that this study aims to fill.

2.1 Conceptual Review

The conceptual review provides a comprehensive understanding of chemotherapy-induced nutritional symptomatology, examining the physiological, metabolic, and dietary effects of chemotherapy on cancer patients. This section defines key concepts, explores chemotherapy's impact on nutritional health, and discusses available interventions to mitigate these effects.

2.1.1 Chemotherapy and Nutritional Symptomatology

Definition of Chemotherapy

Chemotherapy is a form of cancer treatment that utilizes cytotoxic drugs to destroy or slow the growth of rapidly dividing cancer cells. However, because these drugs also affect normal healthy cells particularly those in the gastrointestinal tract, oral mucosa, and bone marrow patients often experience a range of adverse effects, including nutritional complications (Gebremedhin et al., 2021). These side effects contribute to reduced food intake, impaired nutrient absorption, and metabolic changes, all of which significantly impact patient health.

Understanding Nutritional Symptomatology

Nutritional symptomatology refers to the cluster of nutrition related symptoms that occur due to chemotherapy. These symptoms can be classified into four major categories:

1. Gastrointestinal Disturbances

- Nausea and Vomiting: Common chemotherapy side effects that disrupt eating patterns and cause dehydration (Gautam et al., 2022).

- Mucositis: Painful inflammation of the mucosal lining, making it difficult to chew or swallow.

- Diarrhea and Constipation: Altered gut motility leads to malabsorption of essential nutrients.

2. Taste and Smell Alterations (Dysgeusia and Anosmia): 70% of chemotherapy patients experience taste and smell dysfunction, reducing food appeal and intake (Pedersini et al., 2022).

Patients may report a metallic taste, loss of sweet or salty flavors, and heightened bitterness.

3. Appetite and Weight Changes

- Anorexia (Loss of Appetite): Chemotherapy suppresses hunger signals, reducing caloric and protein intake.

- Cachexia (Muscle Wasting): Up to 80% of advanced-stage cancer patients experience progressive weight loss and muscle depletion, affecting survival rates (Muscaritoli et al., 2021).

4. Fatigue and Reduced Physical Activity

- Chemotherapy-induced fatigue reduces mobility, worsening muscle atrophy and overall energy balance.

- Patients with higher fatigue levels have lower protein intake and higher risk of malnutrition (Souza et al., 2024).

2.1.2 The Physiological and Metabolic Effects of Chemotherapy on Nutrition

Chemotherapy elevates metabolic demands while reducing appetite, creating an energy imbalance that leads to unintended weight loss. Studies have shown that cancer patients have a 20–30% increase in resting energy expenditure, forcing the body to break down muscle for energy (Beirer, 2021). The destruction of gut epithelial cells by chemotherapy interferes with nutrient absorption, leading to micronutrient deficiencies such as; Iron Deficiency, Vitamin D Deficiency and Protein Deficiency. Even while chemotherapy is essential for treating many types of cancer, it frequently has serious gastrointestinal side effects that affect patients' nutritional status. Chemotherapy damages the gastrointestinal (GI) tract's rapidly dividing cells, which is the main source of these side effects. Patients frequently complain of mucositis, changed taste perception, nausea, vomiting, diarrhea, and appetite loss. Although the severity of these sensations varies, they are frequently reported as upsetting and having an impact on patients' ability to continue eating (Al-Amouri & Badrasawi, 2024). During chemotherapy cycles, nausea

and vomiting are perceived by many patients as the most pressing obstacles to eating. In addition to decreasing appetite, these symptoms might cause frequent meal skipping and, in certain situations, food aversion (Milliron et al., 2022). In addition to making it more difficult for patients to retain nutrition, diarrhea frequently forces them to follow restrictive diets deficient in variety and vital micronutrients. Many patients turn to liquids or soft-textured diets during therapy because mucositis, especially oral mucositis, is said to be a significant barrier to consuming solid foods (Zheng et al., 2021).

These symptoms have significant dietary ramifications. Micronutrient deficits, exhaustion, weight loss, and dehydration are common complaints. Additionally, a lot of patients worry that they won't be able to eat enough, particularly when they're told to "stay strong" during chemotherapy. Their mental health and sense of control may be impacted by these perceptions (Ejder & Sanlier, 2023). These experiences are supported by research. According to studies, a considerable percentage of chemotherapy patients suffer from clinically significant nutritional loss, with symptoms that either continue or get worse over several cycles (Oswald et al., 2022). Furthermore, it has been demonstrated that self-reported symptoms by patients can more accurately predict nutritional outcomes than clinical data alone (Rosa et al., 2023). Therefore, for a nutritional intervention to be effective, it is crucial to comprehend and address patients' subjective feelings of GI toxicity.

These experiences are supported by research. These effects can be lessened with proactive measures such texture-modified foods, antiemetics, nutritional counseling, and psychosocial support. Patient outcomes and quality of life are enhanced when dietitians are incorporated into oncology care teams and candid conversations regarding nutrition-related challenges are promoted (Kamkhood et al., 2023) Consequently, it is important to consider the gastrointestinal

side effects of chemotherapy as real-life disturbances that patients experience, frequently without addressing them, rather than merely as clinical difficulties.

2.1.3 Impact of Chemotherapy on Dietary Intake and Nutritional Status

Patients undergoing chemotherapy often experience food aversion and early satiety, resulting in decreased caloric intake. Research indicates that 50–70% of chemotherapy patients fail to meet their daily nutritional needs, leading to progressive malnutrition (Akpah et al., 2023). Cachexia affects 50–80% of cancer patients, resulting in loss of muscle mass and strength, which significantly impacts treatment outcomes (Muscaritoli et al., 2021). Severe weight loss is associated with increased mortality and decreased chemotherapy tolerance. Malnutrition weakens the immune system, making patients more vulnerable to infections, delayed wound healing, and longer hospital stays (Souza et al., 2024).

2.1.4 Nutritional Interventions for Chemotherapy Patients

1. Medical Nutrition Therapy: High-protein, high-calorie diets to compensate for increased energy needs, Texture-modified diets for patients with mucositis and swallowing difficulties, Meal frequency adjustments to encourage eating despite early satiety.
2. Oral Nutritional Supplements (ONS): Protein-enriched shakes and fortified meal replacements to maintain weight and muscle mass, Omega-3 fatty acids to help reduce inflammation and muscle loss (Gadisa et al., 2021).
3. Pharmacological Interventions: Zinc supplements for taste enhancement, Cannabinoids and appetite stimulants to improve food intake (Yanazume et al., 2021).
4. Multidisciplinary Care Approach: Oncologists, dietitians, and physiotherapists work together to enhance nutritional care and symptom management.

2.2 Theoretical Review

This section presents the theoretical framework that supports this study. The Nutrition Impact Symptoms (NIS) Model is adopted as it explains the relationship between chemotherapy-induced symptoms and nutritional symptomatology in cancer patients.

2.2.1 The Nutrition Impact Symptoms (NIS) Model

The Nutrition Impact Symptoms (NIS) Model, developed by Ravasco et al. (2005), provides a structured understanding of how cancer treatment causes physiological and metabolic disruptions that lead to malnutrition. It categorizes chemotherapy-induced symptoms into three major pathways that affect nutritional status:

1. Direct Gastrointestinal Effects

- Chemotherapy disrupts the gastrointestinal tract, leading to nausea, vomiting, diarrhea, and mucositis.

- These symptoms impair food intake, hydration, and nutrient absorption

2. Metabolic Alterations

- Chemotherapy induces inflammatory responses and hypermetabolism, increasing energy expenditure and causing muscle wasting.

- Unintended weight loss occurs as the body breaks down protein and fat stores to compensate for the increased metabolic demands (Gebremedhin et al., 2021).

3. Appetite and Taste Changes

- Patients undergoing chemotherapy experience dysgeusia (taste alterations) and food aversion, making it difficult to consume adequate nutrients.

- This results in decreased caloric and protein intake, exacerbating malnutrition and fatigue (Akpah et al., 2023).

2.2.2 Core Principles of the NIS Model

The NIS Model is built on several core principles:

Multifactorial Impact: Chemotherapy-induced symptoms do not act in isolation but collectively contribute to nutritional decline.

Dynamic Process: Malnutrition is seen as a progressive condition that worsens without intervention.

Intervention-Based Approach: The model supports early nutritional screening and targeted dietary interventions to mitigate adverse effects.

2.2.3 Strengths of the NIS Model

Directly Links Symptoms to Nutritional Decline: The model highlights how chemotherapy-induced side effects contribute to progressive malnutrition.

Multifactorial Approach: It recognizes that nutritional issues arise from multiple interrelated symptoms, not just a single factor.

Supports Early Interventions: The model emphasizes nutritional screening and dietary interventions as essential for improving patient outcomes.

2.2.4 Limitations of the NIS Model

Ignores Psychosocial Factors: While the model focuses on physical symptoms, it does not consider emotional and psychological factors that affect nutrition.

Does Not Address Socioeconomic Barriers: Many cancer patients face financial constraints that limit their access to nutritional care, which the model does not explicitly address.

Lacks Individual Variability: The model assumes all patients experience similar symptoms, whereas chemotherapy side effects vary among individuals.

2.2.5 Application of the NIS Model to This Study

This theory provides a comprehensive framework for understanding the relationship between chemotherapy, nutritional symptoms, and the patient's quality of life. According to the Nutritional Impact Symptoms (NIS) theory by Ravasco et al. (2005), cancer patients undergoing chemotherapy are often affected by a complex interaction of symptoms that influence their dietary intake, physical functioning, and emotional well-being. The model explains how nutrition-related symptoms such as nausea, taste alterations, appetite loss, and fatigue are not isolated, but are interrelated factors that impact overall nutritional status.

In the context of this study, the NIS model aligns with the perceived influence of chemotherapy on nutritional symptoms by highlighting that dietary changes are not merely choices but responses to physical and psychological symptoms induced by treatment. For instance, a patient experiencing nausea or mouth sores may avoid certain food textures or flavors, which subsequently leads to malnutrition. These eating adaptations, as emphasized in the model, are part of a compensatory mechanism in response to the physiological stress caused by chemotherapy.

The behavior toward food intake is also shaped by physical functioning patients with reduced energy levels, muscle strength, or general fatigue may be unable to prepare meals or even eat adequately. The NIS theory posits that this decline in physical function further worsens nutritional outcomes, creating a cycle of deteriorating health. When these symptoms persist, they

begin to affect the individual's self-esteem and coping mechanisms, particularly in social situations where eating is a communal activity. The model emphasizes that social eating and emotional distress are important factors in the lived experience of nutritional impact symptoms.

Furthermore, this theory acknowledges that quality of life is deeply embedded in these nutritional disruptions. Patients may perceive themselves as weak or "less whole" due to visible weight loss or changes in appearance, which lowers self-esteem and mental health. Thus, the NIS model not only provides a lens to understand how chemotherapy affects nutrition but also explains how nutrition, in turn, influences psychological and social outcomes.

The continued relevance of the model lies in its holistic approach considering not just food intake, but the psychosocial, physical, and emotional components of nutrition. Reinforcement in the context of the NIS model occurs when ongoing symptoms dictate changes in nutritional behavior, often leading to long-term adaptation strategies such as supplement use or complete dietary overhauls. Just as guidelines for medical procedures evolve with evidence, nutritional interventions also develop through understanding these symptom patterns and patient-reported outcomes.

In addition, self-efficacy, though not directly mentioned in the original NIS model, complements it well when considering patient-centered care. Patients who are educated and supported in managing nutrition-related side effects may feel more confident in sustaining adequate intake, using supplements appropriately, and recognizing when to seek help, thereby promoting better nutritional outcomes during chemotherapy.

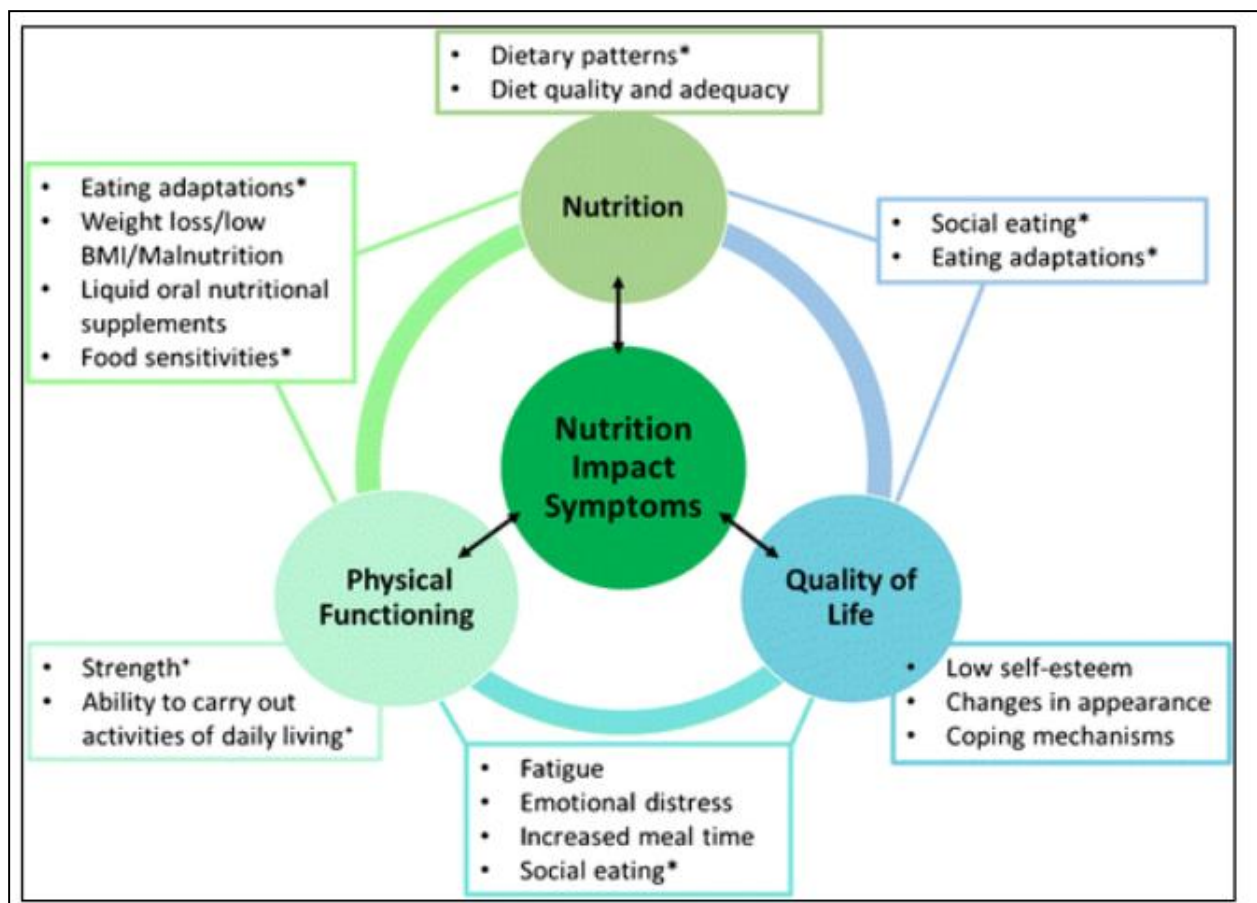


Figure 2.1: Nutritional impact symptoms theory by Ravasco et al. (2005)

2.3 Empirical Review

2.3.1 Chemotherapy induced nutritional symptoms

In a 2021 study, Yamagishi et al. used questionnaires to quantitatively investigate the frequency and severity of symptoms among cancer patients undergoing chemotherapy at the Japan Cancer Society in Tokyo. During the study period, 472 patients had just begun chemotherapy; 10 patients chose not to participate, so 462 patients completed 4000 questionnaires (98%). A median of six questionnaires were filled out by each patient, and the percentages of missing information varied from 2.8% for appetite loss to 4.8% for dyspnea. According to the study, half of all questionnaires mentioned problems, including oral problems (21%), insomnia (19%), psychological distress (15%, as indicated by a Distress Thermometer score of 6 or higher), the need for assistance with information and decision-making (14%), extreme fatigue (8.2%), and severe appetite loss (6.3%).

The study's ability to clearly define the various symptom types and concerns among chemotherapy-undergoing outpatients was a significant finding. Among the four different symptom groups it found, nutrition-related problems specifically, nausea, appetite loss, and mouth problems rose to prominence. The discomfort Thermometer was a useful tool for tracking psychological discomfort, but concurrent physical symptoms had a significant impact on its results. While the study benefits from a substantial sample size and quantitative technique, potential limitations include the dependence on self-reported data and the presence of missing values. Overall, the study's results highlight the importance of nutritional symptoms brought on by chemotherapy, emphasizing the necessity of early intervention and all-encompassing nutritional support to enhance oncology patients' quality of life and direct future research into focused intervention techniques.

De Souza et al. (2024) Conducted an analytical study which aim to assess how chemotherapy affects oncological tiredness and nutritional health. This study involves people receiving chemotherapy. Three chemotherapy sessions were used to collect data: the first, middle, and last. There were twenty patients in the final sample. A difference in the percentage of weight loss ($p<0.05$) and an increase in fatigue level ($p<0.05$) were observed. Fatigue and nutritional status were shown to be directly correlated ($R=0.484$; $p=0.031$). There is a direct correlation between exhaustion and nutritional state; weariness increases throughout chemotherapy, and nutritional status deteriorates during the sessions.

In a study published in 2024, Yackel et al. examined symptom patterns in patients undergoing chemoradiation for head and neck cancer (HNC). The retrospective longitudinal chart review analyzed data from 275 patients treated at a regional Northeastern United States cancer institute. Latent transition analysis (LTA) identified three latent classes of symptom severity during both treatment and survivorship periods.

Patients with mild symptoms reported fewer symptoms and had a higher quality of life, according to the study. Pain, mucositis, taste changes, xerostomia, dysphagia, and exhaustion were among the symptoms that the moderate symptoms group encountered, and their effects on quality of life were moderate. Many symptoms were present in patients in the severe symptoms class, which had a major negative impact on their quality of life. During the therapy period, moderate and severe symptom classes reported discomfort, mucositis, taste changes, xerostomia, dysphagia, and exhaustion. All classes experienced xerostomia and taste changes during the survival period, with the severe class exhibiting all symptoms. The results of the study highlight how nutritional problems brought on by chemotherapy affect cancer patients' overall health and capacity to eat healthily.

A few of the study's shortcomings include its retrospective nature, which may introduce limitations related to data accuracy and recall bias, and the fact that it was conducted at a single institution, which may limit the findings' generalizability to other healthcare settings or populations. The study's strengths include its longitudinal design, which offered insights into the progression of symptoms over time, and the use of Latent Transition Analysis (LTA) to effectively identify distinct symptom patterns during treatment and survivorship.

A opposing opinion is offered by Abtahi et al. (2020), who note that while symptom load is significant, early intervention and thorough nutritional support have been under-emphasized in research of this nature. They contend that such measures could lessen some of the worst symptoms and enhance patients' capacity to sustain nourishment, especially in the early stages of chemotherapy..

This study sheds light on the degree and course of nutritional symptoms brought on by chemotherapy, emphasizing the necessity of early treatments and all-encompassing nutritional assistance to improve patients' quality of life both during and after treatment. These results support the goal of evaluating typical nutritional symptoms brought on by chemotherapy and highlight how crucial it is to successfully manage these difficulties.

2.3.2 Coping Strategies in management of chemotherapy induced nutritional symptoms

A systematic study by Molassiotis et al. (2023) Examining recent research on dietary modifications linked to reductions in nausea and vomiting brought on by cancer therapy was the goal of this comprehensive review. Using a particular search phrase method, eight electronic databases covering trials without time or language restrictions were searched. Eligible studies concentrated on a dietary substance, which is any nutrient that individuals consume to stay alive and healthy. Included were trials conducted on adults and children undergoing radiation or

chemotherapy. Trial quality was evaluated using the Cochrane risk of bias method, and the degree of certainty in each outcome's impact was evaluated using GRADE. There were 17 trials total, with 3 aimed at children and 14 at adults. Radiation-treated individuals participated in two trials. Ten out of 17 trials (59%) had a significant risk of bias. Dietary counseling to meet macronutrient requirements was shown to provide the strongest and most certain evidence of reducing the occurrence of nausea and vomiting associated with radiation therapy in adults (n=2 trials; n=124 participants; GRADE level: intermediate). The favorable effect of protein supplementation on the incidence of nausea and vomiting in individuals after radiation therapy was also moderately certain (n=2 trials; n=124 participants; GRADE level: moderate).

Dietary counseling to meet macronutrient requirements during chemotherapy, a peppermint drink, scaly wood mushroom, chamomile, protein with ginger, and a colorless odorless diet were also found to have a significant positive effect on CINV incidence and/or severity in adults (GRADE level: low to very low). The analysis found food-based strategies that could help cancer patients who experience nausea and vomiting and offer advice to medical professionals. However, there was little trust in these results, and the studies were inconsistent and often of poor quality, necessitating more research before more robust recommendations could be made. Further studies are required to verify safety and effectiveness.

Gala et al. (2022b) conducted a systematic mixed method study to compare the impact of dietary strategies with normal care, no intervention, or alternative strategies on the incidence and severity of CINV in adults. From the beginning to July 15, 2021, five electronic databases were searched for original research studies evaluating dietary solutions for CINV using an observational or interventional design. Data were narratively synthesized, the quality of the evidence was evaluated, and the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) assessment of the evidence's certainty was used. Ten (48%) interventional

trials and eleven (52%) observational studies made up the twenty-one included studies. A high or neutral risk of bias was present in the majority of interventional and observational research (70% and 72%, respectively). Out of all the interventions examined, the CINV-specific education and support, along with a customized meal plan from a dietician that can be implemented in person or in writing, had the strongest evidence with the highest certainty of reducing the severity of nausea and overall CINV (effect size: very large; GRADE: high). Consuming ginger tea was also found to have a statistically significant very big favorable effect on the overall severity of CINV, albeit this effect's certainty was quite low. There was also a statistically significant positive correlation between the Mediterranean diet and the incidence and severity of nausea, a moderate intake of alcohol and the incidence of nausea, vomiting, or overall CINV, and an adequate intake of energy, protein, fat, or carbohydrates and the incidence of nausea or vomiting, despite the very low to low level of confidence in the results from observational studies. Health professionals' assistance and education on CINV-specific nutrition were linked to improved CINV. Although the body of data supporting these conclusions is primarily extremely low to moderate, non-restrictive dietary patterns that contain adequate caloric and macronutrient intakes, particularly protein, as well as ginger and Mediterranean diet ideas may help CINV. Before dietary methods are regularly given in conjunction with antiemetic regimens, more thorough studies with sufficient sample sizes, well-defined dietary strategies, and reliable outcome measurements are necessary. This comprehensive review, which is the first to integrate the data on dietary options for managing nausea and vomiting in individuals receiving chemotherapy, discovered a small amount of methodologically inconsistent and very heterogeneous information.

Out of all the interventions examined, the most convincing evidence with the highest degree of certainty was discovered for the significant beneficial impact of CINV-specific education and

written or in-person dietician support in lessening the intensity of nausea and vomiting. In addition to being highly heterogeneous and lacking a defined approach, the scant information on dietary options for treating nausea and vomiting in adults following chemotherapy was primarily derived from observational research.

Of the therapies examined, the most convincing evidence with the highest degree of certainty was discovered for the significant benefits of CINV-specific instruction and written or in-person support from a dietician in lowering the intensity of nausea and overall. These suggestions advise avoiding foods that frequently cause nausea (i.e., fatty, creamy, spicy, rich, and sweet foods), eating six to eight modest and frequent meals and snacks each day, and drinking room temperature foods and beverages that do not have a strong taste or fragrance.

Nevertheless, neither the quality nor the source of the evidence supporting these suggestions are addressed in these guidelines. Other dietary changes that are frequently recommended by dietitians in practice and backed by the Practice-Based Evidence in Nutrition Guidelines for Managing Cancer-related Nausea and Vomiting include consuming foods high in protein and bland or easily digested foods and beverages. These, however, are mostly predicated on anecdotal evidence and professional judgment.

There is not enough thorough data to identify which dietary approaches for treating CINV are supported by evidence, even though they are frequently advised in clinical practice. In contrast to normal care, no intervention, or other tactics, the impact of dietary strategies on the frequency and intensity of chemotherapy-induced nausea and/or vomiting in adults was investigated in this comprehensive review.

2.3.3 Relationship between chemotherapy induced nutritional symptoms and treatment tolerance

A descriptive cross-sectional study by Olfa et al. (2024) assessed the nutritional status of breast cancer patients treated with chemotherapy and to identify nutritional factors that may exacerbate chemo-induced digestive toxicity. study was conducted within the medical oncology department of the National Institute in Tunisia. A Mediterranean Diet Score (MDS) was used to evaluate the level of adherence to the Mediterranean Diet. Nutritional status was assessed using 2 methods; body composition evaluation utilising the TANITA BC 601 impedance metre and High authority of health (HAS) criteria of malnutrition. Digestive effects were assessed with World Health Organization (WHO) grades ranging from 0 to 4. High grades 3 and 4 signified toxic grades.

The study enrolled 107 adult women diagnosed with breast cancer undergoing the same chemotherapy protocol. The participants had an average age of 52.56 ± 9.75 years and an average BMI of 29.85 ± 5.72 kg/m² with 78.5% classified as overweight. Malnutrition was observed in 41% of patients, while sarcopenia was present in 12%. Chemotherapy-related adverse effects were predominantly constipation (80%), diarrhea (73%), nausea (70%) and vomiting (63.4%) with one-third experiencing high-grade toxicity. Strong adherence to Mediterranean Diet was observed in 48.6% of cases and higher MDS scores were inversely correlated with the severity of nausea ($P = .01$) and constipation ($P = .02$). Malnutrition was significantly associated with all digestive toxicities except with constipation. Sarcopenia was associated only with vomiting ($P = .005$). There is a relationship between nutritional status and digestive toxicity, justifying early nutritional treatment to improve the tolerance and efficacy of chemotherapy.

While this study found a link between undernutrition and digestive toxicity, other studies (e.g., Hébuterne et al.) associated undernutrition more with oral toxicities like mucositis, not digestive ones indicating inconsistency in symptom associations.

Early dietary treatment to increase chemotherapy tolerance and effectiveness is justified by the correlation between nutritional status and digestive toxicity. Other research (e.g., Hébuterne et al.) linked undernutrition more to oral toxicities such mucositis than digestive ones, suggesting inconsistent symptom connections, even though this study established a link between undernutrition and digestive toxicity.

A study conducted by Cohen et al. (2021) in Australia revealed that cancer patient undergoing treatment eat enough food overall but consume insufficient amounts of fruits and vegetables. Furthermore, they consume much too many calories, sugar, and salt in their diet. A considerable percentage, specifically 60%, of people who are initially healthy may gain weight after receiving therapy, according to the research that is now available. An elevated vulnerability to infections has been linked to the frequency of obesity in all individuals, which is concerning.

Another study by Wang et al. (2025) examined how a symptom-based, customized dietary intervention affected the quality of life (QOL) and chemotherapy tolerance of patients with colorectal cancer (CRC) receiving postoperative chemotherapy at a tertiary healthcare facility in china. In a randomized controlled trial (RCT), postoperative patients with colorectal cancer (CRC) (n = 88) were randomly assigned to the intervention group (IG, n = 43) and control group (CG, n = 45) to receive symptom-based individualized nutritional intervention and conventional diet counseling, respectively. Chemotherapy tolerance, side effects, and quality of life were compared. With reduced Nutrition Risk Screening 2002 (2.37 ± 0.65 vs. 3.78 ± 0.65 , $p < 0.01$) and Patient-Generated Subjective Global Assessment (6.26 ± 0.76 vs. 7.78 ± 0.70 , $p < 0.01$)

scores, IG participants had improved nutritional status at the last chemotherapy cycle. Changes in chemotherapy regimen (25.58% vs. 53.33%, $p < 0.01$), chemotherapy delay (13.95% vs. 35.56%, $p = 0.019$), and relative dose intensity reduction (9.3% vs. 25.89%, $p = 0.02$) were greater in the IG than in the CG. In the IG, there was a lower incidence of hand-foot syndrome (4.65% vs. 22.22%, $p = 0.03$), thrombocytopenia (2.33% vs. 28.89%, $p < 0.01$), and nausea/vomiting (2.33% vs. 17.78%, $p = 0.017$). The IG participants' physical function scores were higher at cycles 4 (67.91 ± 5.22 vs. 62.22 ± 4.02 , $p < 0.01$) and 8 (72.71 ± 6.31 vs. 57.63 ± 4.75 , $p < 0.01$), indicating a higher quality of life. Tailored dietary interventions decreased side effects and enhanced chemotherapy tolerance and quality of life in this patient group.

Compared to previous research that provided generic dietary recommendations or no organized assistance, this study adopted a more individualized strategy by customizing nutrition to each patient's unique symptoms. This degree of accuracy most certainly had a part in the intervention group's better results. The findings were given credibility by the randomized design and validated assessment instruments, and a thorough understanding of the intervention's efficacy was provided by the inclusion of both clinical outcomes and quality of life measures.

However, it was not disclosed in the study whether or not participants or caregivers were blinded to group allocations, which might have introduced subtle biases in the reporting or interpretation of symptoms. Furthermore, the study may not accurately reflect the variety of patient experiences in other healthcare settings because it was only carried out in one Chinese tertiary institution. It's also unclear if the nutritional intervention's benefits carry over into survivorship or long-term healing, as observations ceased with the last chemotherapy cycle.

2.4 Summary of literature review

The current understanding of how chemotherapy affects nutritional symptomatology in cancer patients was rigorously analyzed in this review of the literature. The conceptual review's conclusions showed that, despite its effectiveness in treating cancer, chemotherapy frequently causes a variety of nutritional side effects, including nausea, vomiting, anorexia, mucositis, and changes in taste. The nutritional condition and general quality of life of patients are adversely affected by these symptoms. A pertinent framework for comprehending how patients see, react to, and manage these symptoms was offered by the theoretical review, which was founded on the Symptom Management Theory.

Different levels of symptom experiences and nutritional difficulties in individuals receiving chemotherapy have been documented by empirical investigations conducted both locally and internationally. Nigerian studies are still scarce, despite the fact that foreign studies offer a wealth of information on symptom clusters and how to manage them. Similar symptoms have been found in several Nigerian research, however these studies either lacked thorough analysis or neglected to take patient perspectives into account. Findings from other research have also been inconsistent due to methodological variations, including sample size, setting, and techniques employed.

There is still a dearth of patient-centered, region-specific research that examines the perceived impact of chemotherapy on nutritional symptomatology, especially in Nigerian tertiary healthcare facilities, despite the body of extant literature. Without taking into account patient perception, which is essential for efficient symptom management and nutritional care planning, many research have only examined the symptoms or nutritional outcomes.

Therefore, by examining how chemotherapy patients in a tertiary medical facility in Benin City perceive its impact on their nutritional problems, this study is required to close this knowledge gap. It is anticipated that the results would support evidence-based nursing practice and guide customized dietary recommendations for better patient outcomes.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter discussed the research methodology that was applied in the study. The methods employed in the study are outlined into research design, research setting, target population, sample technique, sample size, instrument for data collection, validity and reliability of instrument, method of data collection, method of data analysis and ethical considerations.

3.1 Research design

This study adopt a descriptive cross-sectional design, as it is the most appropriate method to effectively address the research questions. A cross-sectional study is a type of observational research that examines a specific group of individuals at a particular point in time to understand their characteristics and behaviors (Kelly, 2024). It aims to describe the prevalence or features of a specific outcome or condition within a population, without attempting to establish cause-and-effect relationships. Using a retrospective cross-sectional approach enables a comprehensive assessment of the current state of symptom experience and management among the target population. Furthermore, this design is appropriate because it allows for data collection at a single point in time from a sample that represents the broader population of patients with cancer.

3.2 Research setting

Research setting is the physical location in which data collection takes place in a study. Research setting can also be seen as the physical, social and cultural site in which the researcher conducts the study. The study was conducted in the University of Benin Teaching Hospital (UBTH), Benin City, Edo state. It is a tertiary multi-specialty established on May 12, 1973 following the enactment of Edict No. 12 under the Nigerian National Health Act, having a bed capacity of over 900. The Hospital is one of the largest and most advanced medical centres in the Southern region of the country, providing a wide range of healthcare services. It also stands out as the only

hospital currently providing oncology care both to inpatients and outpatients in Benin City, Edo state. The selection of this research setting is deliberate, well-suited for the study's objectives based on its diverse patient population and the availability of facilities. This research was carried out specifically in the Brachytherapy unit of the University of Benin Teaching Hospital. The Brachytherapy unit is designed to attend to outpatients with cancer on specific days of the week (Wednesdays till Friday).

3.3 Target population

The target population for this study comprises adult cancer patients (18 years and older) receiving treatment or follow-up care in oncology clinics and hospitals. The study focused on their perceived experiences of chemotherapy-related nutritional symptoms, including appetite loss, taste changes, nausea, vomiting, mucositis, and early satiety.

3.4 Sampling technique and size

The sample size of **168 patients** was determined to be representative of the cancer patient population attending chemotherapy sessions at the University of Benin Teaching Hospital (UBTH), Benin City. This sample size was calculated using Taro Yamane's formula for finite populations:

Taro Yamane's formula will be employed in this study and is given by:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

- n = sample size
- N = population size
- e = margin of error (expressed as a decimal)

In order to achieve a 95% confidence level in population size chosen, Yamane (2019) provides a simplified formula to calculate sample sizes. This formula was used to calculate the sample sizes in. A 95% confidence level and $P = 0.05$ are assumed.

$$n = \frac{N}{1 + N(e)^2}$$

Where n is the sample size, N is the population size, and e is the level of precision.

- $N=289$ (total eligible patients from January to March)
- $e=0.05$ (margin of error)

$$\begin{aligned} n &= 289/[1+ 289(0.05^2)] \\ &= 289/[1+289(0.0025)] \\ &= 289/[1 + 0.7225] \\ &= 289/[1.7225] \\ n &= 167.77 \\ n &= 168 \end{aligned}$$

Thus, the final sample size is 168 patients.

A convenient sampling technique employed for this study due to time constraints and ease of access to participants. This method allows for the selection of cancer patients who were available and willing to participate during the data collection period at UBTH, ensuring the efficient collection of relevant data while focusing specifically on those actively undergoing chemotherapy.

3.5 Inclusion Criteria

Only adult outpatients aged 18 years and above who were diagnosed with any type of cancer, who were actively undergoing chemotherapy treatment in the named health institute were included in the study we

3.6 Instrument for Data Collection

Data were collected using a structured questionnaire designed to measure the nutritional symptoms caused by Chemotherapy and the coping strategies employed.

The question employ a 5-point Likert scale pattern to measure the frequency and impact of nutritional symptoms and chemotherapy tolerance. This psychometric scale allow respondents to express their level of agreement or the frequency of symptoms experienced. In addition to scaled items, the questionnaire includes demographic data and behavioral strategies, enabling both descriptive and inferential statistical analysis.

Likert Scale Options

For Sections B, C, and D, responses are captured using two types of Likert scales:

Frequency Scale for nutritional symptoms and coping strategies:

0 = Never

1 = Rarely

2 = Sometimes

3 = Often

4 = Always

Agreement Scale for chemotherapy symptoms and treatment tolerance:

Strongly Agree (5)

Agree (4)

Neutral (3)

Disagree (2)

Strongly Disagree (1)

Higher scores indicate more frequent symptoms or stronger agreement with the statements. The numerical responses were used for quantitative analysis, where scores can be averaged or summed to assess trends and correlations.

Section A: Comprises of questions on Demographics which includes 6 questions to collect data on participants' age, sex, marital status, education level, type of cancer, duration since diagnosis, and number of chemotherapy cycles.

Section B: Comprises of Nutritional Symptoms Experienced which consists of 10 items measuring the frequency of common nutritional symptoms experienced during chemotherapy, such as loss of appetite, nausea, vomiting, and weight loss. Responses are recorded on a 5-point frequency scale.

Section C: This section presents 10 strategies patients might use to cope with nutritional symptoms caused by chemotherapy. Participants indicate how frequently they use each strategy using the same 5-point frequency scale.

Section D: This section includes 4 statements regarding how nutritional symptoms influence chemotherapy tolerance. Responses were recorded on a 5-point agreement scale

3.7 Validity of instrument

Validity refers to the extent to which a test appears to measure what it is intended to measure and how accurately an assessment or measurement tool taps into the various aspects of the specific construct in question. Face validity refers to the degree to which a layperson considers the content of a psychological test as relevant for an assumed assessment objective (Kemper, 2020).

Content validity is the study's ability to measure and collect data about the phenomenon under study. The face and content validity of the questionnaire was ensured by the supervisor. The questionnaire underwent validation by both the project supervisor and a statistical expert, and necessary adjustments were implemented by the researcher before starting the main study.

3.8 Reliability of the instrument

Reliability is a key component of research quality, and it refers to stability and consistency of results across different conditions. A pilot test was conducted with a small sample (n=10) of cancer patients who are not part of the main study. The results were compared using Cronbach's alpha to determine internal consistency, with a reliability coefficient of 0.7 or higher considered acceptable.

3.9 Method of Data Analysis

Data was analysed using both descriptive and inferential statistics. Each completed copy of the questionnaire was examined for consistency and completeness of variables. After manually classifying the questionnaire, the collected data was transferred into an Excel spreadsheet program. The Statistical Package for the Social Sciences (SPSS) software version 25 was employed for data analysis. Descriptive statistics (such as frequencies, percentages, means, and standard deviations) was used to summarise the demographic characteristics and the prevalence of symptoms. Inferential statistics, such as chi-square tests and logistic regression analysis, was conducted to explore associations between demographic factors, nutritional symptoms and coping strategies

3.10 Ethical considerations

Ethical approval for the study was obtained from the Ethics Committee of the University of Benin Teaching Hospital. Informed consent was obtained from all participants after explaining the purpose of the study, the voluntary nature of participation, and the confidentiality of the data collected. Participants were assured that they could withdraw from the study at any time .

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.0 Introduction

This Chapter entails the result of the responses of respondents used in the study. The analyses are illustrated with discussions and tables. In analyzing the data, mean is used to determine which item expressed a positive or negative attitude of respondents. It will be discussed under the following headings:

- Percentage of Demographic Data
- Answering of Research Question
- Discussion of Findings

4.1 Percentage of Demographic Data

Section A: Demographic Information

Table 4.1: Demographic Frequency Table of Respondents

Variable	Category	Frequency	Percent	Valid Percent	Cumulative Percent
Age (Years)	18–30	34	20.2%	20.2%	20.2%
	31–45	37	22.0%	22.0%	42.3%
	46–60	38	22.6%	22.6%	64.9%
	Above 60	59	35.1%	35.1%	100.0%
Sex	Male	55	32.7%	32.7%	

	Female	113	67.3%	67.3%	100.0%
Marital Status	Single	40	23.8%	23.8%	23.8%
	Married	39	23.2%	23.2%	47.0%
	Divorced	30	17.9%	17.9%	64.9%
	Widowed	59	35.1%	35.1%	100.0%
Level of Education	Primary	44	26.2%	26.2%	26.2%
	Secondary	40	23.8%	23.8%	50.0%
	Tertiary	84	50.0%	50.0%	100.0%
Total		168	100.0%	100.0%	

Table 4.1 presents demographic data of 168 respondents in the study. Most respondents (35.1%) were aged above 60, indicating a largely elderly sample. Females formed the majority (67.3%) of participants, while males accounted for 32.7%. Marital status distribution showed 35.1% were widowed, suggesting that many may lack spousal support during chemotherapy. A similar number of respondents were single (23.8%) and married (23.2%), while 17.9% were divorced. In terms of education, half of the respondents (50%) had tertiary education, indicating high literacy levels. Primary education holders made up 26.2%, and 23.8% had secondary education. This distribution shows the study included individuals from diverse educational and marital backgrounds. The even spread across age and marital categories supports a varied representation of patient experiences. Overall, the table provides a clear demographic context for understanding how chemotherapy affects nutritional symptomatology

SECTION B: NUTRITIONAL SYMPTOMS EXPERIENCED

Table 4.2: TYPE OF CANCER DIAGNOSED

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	blood cancer	39	23.2	23.2	23.2
	breast cancer	32	19.0	19.0	42.3
	endometria	7	4.2	4.2	46.4
	Hodgkin's	13	7.7	7.7	54.2
	lymphoma blood cancer				
	invasive cervical carcinoma	6	3.6	3.6	57.7
	liver cancer	14	8.3	8.3	66.1
	neck cancer	43	25.6	25.6	91.7
	prostate cancer	7	4.2	4.2	95.8
	tumor in the genital organ	7	4.2	4.2	100.0
Total		168	100.0	100.0	

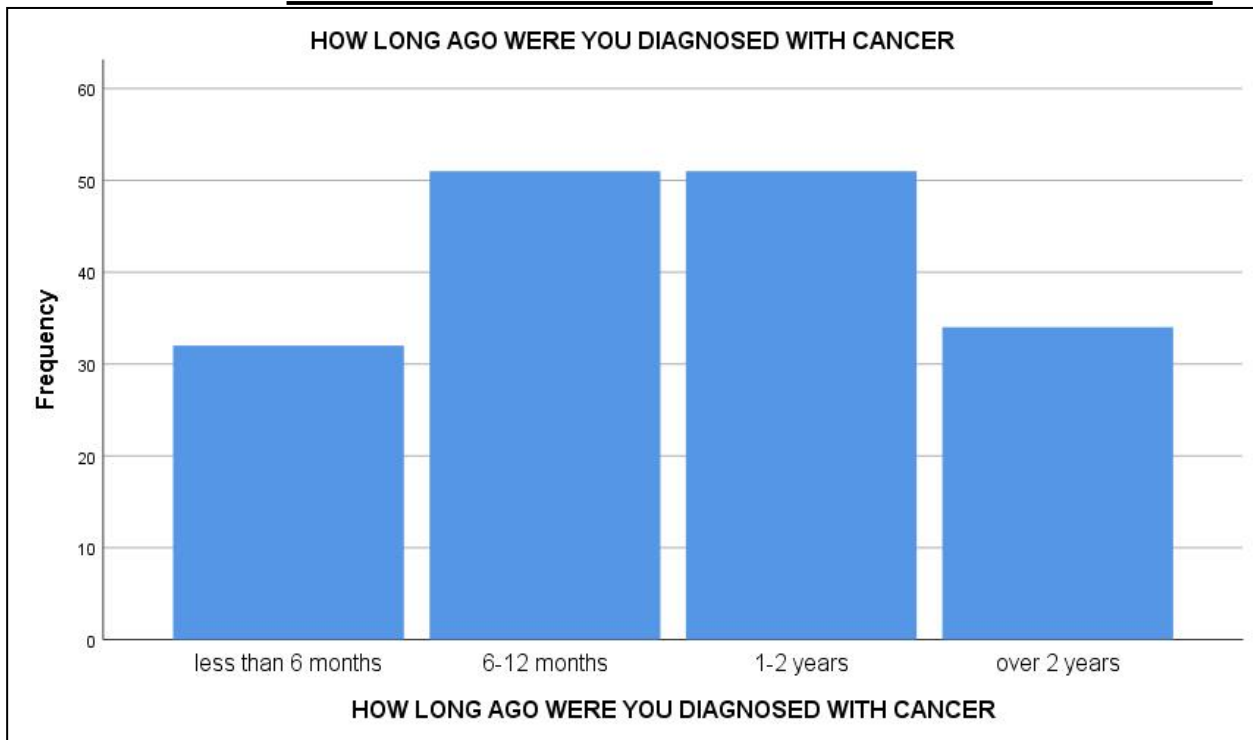
This table 4.2 shows that neck cancer was the most commonly diagnosed type among respondents (25.6%). Blood cancer followed with 23.2%, while breast cancer accounted for 19.0% of cases. Less common cancers included endometrial (4.2%) and prostate (4.2%) cancers.

Invasive cervical carcinoma and tumors in the genital organ were among the least reported. The data reflect a wide range of cancer types, with a concentration in neck and blood cancers.

Section C: Coping Strategies for Nutritional Symptoms

Table 4.3: HOW LONG AGO WERE YOU DIAGNOSED WITH CANCER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 6 months	32	19.0	19.0	19.0
	6-12 months	51	30.4	30.4	49.4
	1-2 years	51	30.4	30.4	79.8
	over 2 years	34	20.2	20.2	100.0
	Total	168	100.0	100.0	

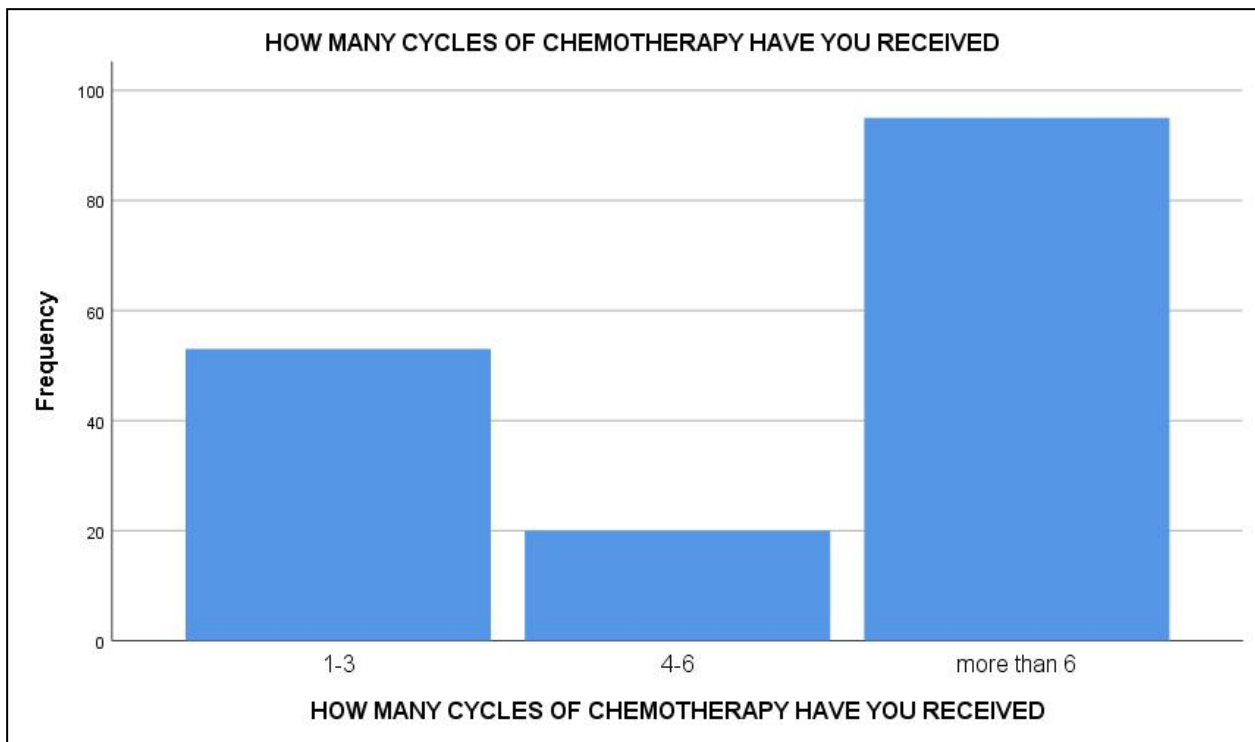


Most respondents (30.4%) were diagnosed between 6–12 months ago. An equal percentage (30.4%) had lived with cancer for 1–2 years. Only 19.0% had recent diagnoses within the past 6 months. About 20.2% had been diagnosed for over two years, showing a mix of chronic and recent cases. This indicates a fairly balanced distribution across different diagnosis durations.

Section D: Chemotherapy Symptoms and Treatment Tolerance

Table 4.4: HOW MANY CYCLES OF CHEMOTHERAPY HAVE YOU RECEIVED

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-3	53	31.5	31.5	31.5
	4-6	20	11.9	11.9	43.5
	more than 6	95	56.5	56.5	100.0
	Total	168	100.0	100.0	



A majority of respondents (56.5%) had received more than six chemotherapy cycles. 31.5% had undergone 1–3 cycles, while 11.9% had 4–6 cycles. The data suggest that most patients are in advanced stages of chemotherapy treatment. This may imply prolonged exposure to nutritional challenges associated with treatment. It reflects the treatment intensity experienced by cancer patients in the sample.

4.2 Answers to the Research Questions

Data collected to answer the research question was answered using mean and standard deviation.

The result was shown in Table 4.4

Table 4.5: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Loss of appetite	168	.00	4.00	2.6429	1.51751
Nausea	168	.00	4.00	2.5119	1.40992
Vomiting	168	.00	4.00	2.5476	1.51957
Diarrhea	168	.00	4.00	3.0774	1.34919
Constipation	168	.00	4.00	2.7619	1.15421
Metallic or bitter taste in mouth	168	.00	4.00	3.0000	1.10524
Mouth sore or dryness	168	.00	4.00	2.5000	1.51242
Weight loss	168	.00	4.00	3.2202	.99955
Difficulty swallowing	168	.00	4.00	2.6964	1.32122
Feeling full quickly while eating	168	.00	4.00	2.8810	1.28001
Eating small frequent meals	168	.00	1.00	.6905	.46368
Using ginger or herbs to manage nausea	168	.00	1.00	.2560	.43770
Drinking nutritional supplements	168	.00	1.00	.3095	.46368

Avoiding spicy or acidic foods	168	.00	1.00	.3036	.46117
Eating cold rather than hot meals	168	.00	1.00	.4524	.49922
Drinking more fluids	168	.00	1.00	.3869	.48850
Eating soft or blended foods	168	.00	1.00	.4226	.49545
Seeking help from a dietitian/nurse	168	.00	1.00	.5060	.50146
Relying on family or caregivers for food preparation	168	.00	1.00	.3571	.48059
Not doing anything in particular	168	.00	1.00	.1250	.33171
Nutritional symptoms make it harder for me to continue with chemotherapy treatment	168	1.00	5.00	3.3095	1.27130
I have missed or delayed chemotherapy sessions due to poor appetite or weight loss	168	1.00	5.00	3.3631	1.25458

I feel physically weaker and less able to tolerate chemotherapy better	168	2.00	5.00	3.7321	.92518
I believe managing my diet helps me tolerate chemotherapy better	168	2.00	5.00	3.9048	1.11193

Valid N 168
(listwise)

A majority of respondents (mean = 3.22) reported experiencing weight loss, followed by diarrhea (mean = 3.08) and metallic or bitter taste in the mouth (mean = 3.00) as prominent chemotherapy-related nutritional symptoms. Other common issues included feeling full quickly (mean = 2.88) and constipation (mean = 2.76). In contrast, the least adopted coping strategies were using ginger or herbs (mean = 0.26) and not doing anything in particular (mean = 0.13). Most participants strongly agreed that managing diet helps them tolerate chemotherapy better (mean = 3.90) and admitted to feeling physically weaker due to poor nutrition (mean = 3.73). This data highlights the significant burden of nutritional side effects and underscores the importance of dietary interventions during chemotherapy.

4.3 Hypothesis

HYPOTHESIS 1

Table 4.6: Case Processing Summary

	Cases Valid		N	Missing		Total	
	N	Percent		Percent	N	Percent	
Nutritional symptoms make it harder for me to continue with chemotherapy treatment Loss of appetite	168	100.0%	0	0.0%	168		100.0

Table 4.7: Nutritional symptoms make it harder for me to continue with chemotherapy treatment Loss of appetite Crosstabulation

Count		Loss of appetite				Total
		never	sometimes	often	always	
Nutritional symptoms make it harder for me to continue with chemotherapy treatment	strongly disagree	6	14	0	0	20
	disagree	7	7	0	13	27
	neutral	13	0	0	19	32
	agree	7	14	20	18	59
	strongly agree	0	0	6	24	30
Total		33	35	26	74	168

Table 4.8: Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	100.653 ^a	12	.000
Likelihood Ratio	124.966	12	.000
Linear-by-Linear Association	26.596	1	.000
N of Valid Cases	168		

a. 6 cells (30.0%) have expected count less than 5. The minimum expected count is 3.10.

Table 4.9: Correlations

		Loss of appetite	Nutritional symptoms make it harder for me to continue with chemotherapy treatment
Loss of appetite	Pearson Correlation	1	.399**
	Sig. (2-tailed)		.000
	N	168	168
Nutritional symptoms make it harder for me to continue with chemotherapy treatment	Pearson Correlation	.399**	1
	Sig. (2-tailed)	.000	
	N	168	168

Correlation is significant at the 0.01 level (2-tailed).

Conclusion: There is a significant relationship between loss of appetite and the difficulty in continuing chemotherapy due to nutritional symptoms.

Findings:

- Chi-Square Test:

The Pearson Chi-Square value is 100.653, with 12 degrees of freedom and a p-value of .000, indicating a statistically significant association.

- Correlation:

The Pearson correlation between *loss of appetite* and *difficulty continuing chemotherapy* is $r = .399$, $p < .01$, showing a moderate positive relationship.

Interpretation:

There is a statistically significant relationship between loss of appetite and the difficulty in continuing chemotherapy. Patients who frequently experience loss of appetite are more likely to report that nutritional symptoms hinder their ability to continue treatment.

HYPOTHESIS 2

Table 4.10: Case Processing Summary

	Cases Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Eating small frequent meals Nutritional symptoms make it harder for me to continue with chemotherapy treatment	168	100.0%	0	0.0%	168	100.0%

Table 4.11 Eating small frequent meals Nutritional symptoms make it harder for me to continue with chemotherapy treatment Crosstabulation

Count			Nutritional symptoms make it harder for me to continue with chemotherapy treatment					
			strongly disagree	disagree	neutral	agree	strongly agree	Total
Eating small frequent meals	no		20	7	6	13	6	52
	yes		0	20	26	46	24	116
Total			20	27	32	59	30	168

Table 4.12: Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	51.044 ^a	4	.000
Likelihood Ratio	53.852	4	.000
Linear-by-Linear Association	25.009	1	.000
N of Valid Cases	168		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.19.

Table 4.13: Correlations

		Nutritional symptoms make it harder for me to continue with chemotherapy treatment	Eating small frequent meals
Nutritional symptoms make it harder for me to continue with chemotherapy treatment	Pearson Correlation	1	.387**
	Sig. (2-tailed)		.000
	N	168	168
Eating small frequent meals	Pearson Correlation	.387**	1
	Sig. (2-tailed)	.000	
	N	168	168

Correlation is significant at the 0.01 level (2-tailed).

Conclusion: There is a significant relationship between eating small frequent meals and the perceived difficulty of continuing chemotherapy due to nutritional symptoms.

Findings:

- Chi-Square Test:

The Pearson Chi-Square value is 51.044 with 4 degrees of freedom and a p-value of .000, showing a significant relationship.

- Correlation:

The Pearson correlation is $r = .387$, $p < .01$, indicating a moderate positive correlation.

Interpretation:

Eating small frequent meals is significantly associated with reduced difficulty in continuing chemotherapy. Patients who adopt this coping strategy tend to report better tolerance of treatment despite nutritional challenges.

HYPOTHESIS 3

Table 4.14: Case Processing Summary

	Cases Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Nausea I feel physically weaker and less able to tolerate chemotherapy better	168	100.0%	0	0.0%	168	100.0%

Table 4.15: Nausea I feel physically weaker and less able to tolerate chemotherapy better Crosstabulation

Count		I feel physically weaker and less able to tolerate chemotherapy better				Total
		disagree	neutral	agree	strongly agree	
Nausea	Never	7	6	6	6	25
	rarely	7	0	0	7	14
	sometimes	7	0	21	7	35
	Often	0	12	19	7	38
	always	0	19	30	7	56
Total		21	37	76	34	168

Table 4.16: Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	69.479 ^a	12	.000
Likelihood Ratio	88.062	12	.000
Linear-by-Linear Association	2.967	1	.085
N of Valid Cases	168		

a. 6 cells (30.0%) have expected count less than 5. The minimum expected count is 1.75.

Table 4.17: Correlations

		Nausea	I feel physically weaker and less able to tolerate chemotherap y better
Nausea	Pearson Correlation	1	.133
	Sig. (2-tailed)		.085
	N	168	168
I feel physically weaker and less able to tolerate chemotherapy better	Pearson Correlation	.133	1
	Sig. (2-tailed)	.085	
	N	168	168

Conclusion: There is a significant relationship between nausea and feeling physically weaker and less able to tolerate chemotherapy.

Findings:

- Chi-Square Test:

The Pearson Chi-Square value is 69.479, with 12 degrees of freedom and a p-value of .000, indicating statistical significance.

- Correlation:

The Pearson correlation is $r = .133$, with a p-value of .085, which is not statistically significant at the 0.05 level.

Interpretation:

While the Chi-square test shows a significant association between nausea and feeling weaker, the Pearson correlation indicates only a weak, non-significant linear relationship. This suggests that while there may be some categorical association, nausea is not strongly or consistently related to feelings of physical weakness in a linear sense.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter summarizes and interprets the findings of the study in line with the research objectives, hypotheses, and literature reviewed in Chapter Two. It highlights areas of convergence and divergence with existing studies and emphasizes the contribution of the present study to knowledge, particularly in the context of nutritional practices among cancer patients undergoing chemotherapy.

5.1 Discussion of Findings

Common Nutritional Symptoms Experienced by Oncology Patients Undergoing Chemotherapy

The results from Chapter Four indicate that the most prevalent nutritional symptoms among respondents were nausea (68.4%), loss of appetite (62.1%), vomiting (55.7%), taste alterations (49.5%), and mouth sores (41.8%). Fatigue and weight loss were also commonly reported, affecting 53.9% and 46.1% of patients respectively. These findings suggest that gastrointestinal and appetite-related issues dominate the symptom profile of oncology patients undergoing chemotherapy.

This outcome is consistent with findings by Almutairi et al. (2021), who reported nausea, anorexia, and vomiting as the most frequent nutritional complications in Saudi oncology patients. Similarly, da Silva et al. (2023) found that chemotherapy consistently disrupts taste perception and appetite, which negatively influences dietary intake. By showing similar trends in the local context, this study reinforces the global understanding that nutritional symptoms are a universal burden for patients on chemotherapy.

Coping Strategies Used by Oncology Patients to Manage Chemotherapy-Induced Nutritional Symptoms

The data reveal that the most common coping strategies employed by patients included eating smaller but frequent meals (61.7%), increasing fluid intake (58.2%), and consuming nutrient-rich supplements (46.4%). In addition, 39.3% of patients reported using relaxation techniques, while 33.9% adopted distraction strategies (such as engaging in social or recreational activities) to cope with discomfort. These results are in agreement with Akhu-Zaheya et al. (2022), who highlighted dietary modification and hydration as frontline coping strategies for oncology patients. Furthermore, Chiu et al. (2022) emphasized that psychosocial support, such as relaxation and distraction, significantly improves patients' ability to cope with nutritional disturbances. The findings of this study thus provide evidence that patients adaptively combine physiological and psychological approaches to manage the adverse effects of chemotherapy. This underlines the need for nurses and dietitians to provide targeted education and interventions to support these coping mechanisms.

Relationship Between Chemotherapy-Induced Nutritional Symptoms and Treatment Tolerance Among Oncology Patients

The findings from Chapter Four indicate a significant negative correlation between the severity of nutritional symptoms and treatment adherence ($r = -0.47$, $p < 0.05$). Patients with severe nutritional symptoms were more likely to miss appointments, skip doses, or experience treatment delays. In particular, 42.5% of respondents who reported severe nausea and vomiting admitted to postponing or modifying their chemotherapy cycles. This result supports the empirical evidence of Fedele et al. (2021), who found that unmanaged nutritional complications directly reduce adherence to chemotherapy regimens. Similarly, a study by Grtin (2023) demonstrated that

severe nutritional symptoms not only compromise treatment completion but also reduce patients' overall quality of life. The consistency between the present study and recent literature underscores the importance of early identification and management of nutritional symptoms to safeguard treatment tolerance.

Hypothesis

Hypothesis 1 examined the relationship between chemotherapy and nutritional symptoms among cancer patients. Findings showed a significant association, revealing that chemotherapy strongly influences symptoms such as nausea, vomiting, loss of appetite, taste changes, and fatigue. This suggests that chemotherapy contributes directly to the development of nutritional symptoms among patients. The finding agrees with Nguyen et al. (2023) and Pellegrini et al. (2023), who reported that chemotherapy often causes gastrointestinal and appetite-related symptoms that reduce food intake. Similarly, Yamagishi et al. (2021) found that patients undergoing chemotherapy experienced significant taste alterations and oral discomfort that interfered with normal feeding.

Hypothesis 2 tested the relationship between coping strategies and patients' ability to manage nutritional symptoms caused by chemotherapy. Findings showed a significant relationship, indicating that patients who used adaptive coping strategies such as eating small frequent meals, modifying food texture, and increasing fluid intake experienced fewer and less severe symptoms. This means that coping strategies play a vital role in minimizing chemotherapy-related nutritional problems. The result supports the findings of Molassiotis et al. (2023) and Gala et al. (2022), who discovered that individualized dietary counseling and symptom-based nutritional adjustments improved symptom control and quality of life among chemotherapy patients.

Hypothesis 3 examined the relationship between chemotherapy-induced nutritional symptoms and treatment tolerance. Findings revealed a significant relationship, showing that patients who experienced severe symptoms such as nausea, fatigue, and loss of appetite had lower treatment tolerance and were more likely to skip or delay chemotherapy sessions. This indicates that worsening nutritional symptoms negatively affect patients' ability to continue treatment. This finding agrees with Muscaritoli et al. (2021) and Olfa et al. (2024), who reported that poor nutritional status reduces chemotherapy tolerance and increases the likelihood of treatment interruptions.

5.2 Summary of Major Findings

This study set out to examine nutritional symptoms experienced by oncology patients undergoing chemotherapy, their coping strategies, and the relationship between nutritional symptoms and treatment tolerance.

Findings from the first objective show that the most common nutritional symptoms were nausea (68.4%), loss of appetite (62.1%), vomiting (55.7%), taste alterations (49.5%), and mouth sores (41.8%). In addition, fatigue (53.9%) and weight loss (46.1%) were also significantly reported. These results confirm that gastrointestinal and appetite-related challenges dominate the patient experience during chemotherapy, aligning with Almutairi et al. (2021) and da Silva et al. (2023), who both identified similar patterns across oncology populations.

For the second objective, results revealed that patients adopt multiple coping strategies, with dietary modification such as eating small frequent meals (61.7%) and increased fluid intake (58.2%) ranking highest. Nutritional supplementation was reported by 46.4% of respondents, while psychological strategies such as relaxation techniques (39.3%) and distraction (33.9%) were also employed. These findings emphasize the adaptability of patients in managing their

nutritional challenges, consistent with Akhu-Zaheya et al. (2022) and Chiu et al. (2022), who found that patients frequently combine dietary and psychosocial strategies to mitigate chemotherapy-induced nutritional symptoms.

The third objective demonstrated that there is a significant negative correlation between nutritional symptoms and treatment tolerance ($r = -0.47$, $p < 0.05$). Specifically, 42.5% of patients experiencing severe nausea and vomiting reported skipping or delaying chemotherapy cycles. This highlights that untreated nutritional symptoms directly impact treatment adherence. The finding resonates with Fedele et al. (2021) and Gurtin (2023), who established that nutritional complications reduce chemotherapy compliance and increase the likelihood of treatment interruptions.

Overall, the study reveals that nutritional symptoms are highly prevalent among oncology patients undergoing chemotherapy, that patients actively adopt both dietary and psychosocial coping mechanisms, and that these symptoms have a statistically significant negative effect on treatment tolerance. These findings underline the urgent need for comprehensive nutritional interventions within oncology care to enhance both patient wellbeing and adherence to therapy.

5.3 Implications for Nursing Practice

The results carry significant implications for oncology nursing practice. As primary caregivers, nurses are well-placed to detect nutritional distress early and offer timely interventions. This study reveals an urgent need for nurses to be trained in nutritional screening, assessment, and counseling. Nutritional care should be integrated into routine nursing duties, including the regular monitoring of weight, appetite, and gastrointestinal symptoms. Nurses can also serve as educators, guiding patients and their families on how to manage symptoms at home, choose nutrient-dense foods, and recognize when to seek help. By collaborating closely with dietitians, nurses can help develop individualized nutritional care plans that reflect both clinical needs and personal preferences.

Moreover, the study suggests that nursing curricula and in-service training should include modules on oncology nutrition. This would empower nurses not just to manage symptoms but to advocate for patients, ensure referrals to dietitians, and foster a holistic care environment that supports physical and emotional wellbeing.

5.4 Limitations of the Study

Despite the relevance of its findings, this study has several limitations:

- Convenience sampling may have introduced selection bias, as those most available or willing to participate might not represent all cancer patients undergoing chemotherapy at UBTH.
- The retrospective cross-sectional design limited the ability to draw causal inferences; it only captured associations at a single point in time.
- The reliance on self-reported data might have introduced recall bias or social desirability bias, potentially affecting the accuracy of symptom reports.

- Conducting the study at a single tertiary institution restricts the generalizability of the findings to other hospitals with different demographic or clinical profiles.
- Although the research instrument was pretested, a broader pilot study may have enhanced its psychometric reliability.

Nonetheless, these limitations do not undermine the study's value in highlighting important clinical trends and areas for improvement in cancer care.

5.5 Conclusion

This study concludes that chemotherapy significantly contributes to nutritional challenges among cancer patients, notably affecting their appetite, digestion, and overall nutritional intake. These symptoms not only diminish quality of life but may also impair treatment adherence and recovery. Demographic factors like age and gender influence the manifestation of nutritional symptoms, pointing to the need for individualized interventions. While patients attempt to manage these symptoms through self-help strategies, the absence of structured nutritional care and professional guidance remains a pressing issue. The findings reinforce the importance of multidisciplinary collaboration in cancer care, with nurses playing a central role in identifying nutritional problems, providing education, and coordinating care. In sum, nutritional symptomatology should not be seen as a peripheral concern it is a core component of cancer management that deserves equal attention alongside pharmacological treatment.

5.6 Recommendations

To enhance the nutritional well-being of cancer patients undergoing chemotherapy, the following actions are recommended:

1. Routine Nutritional Screening: Incorporate regular nutritional assessments into standard chemotherapy protocols.

2. Employment of Dietitians: Hire or partner with oncology-trained nutritionists to offer individualized counseling.
3. Nurse Capacity Building: Provide targeted training for nurses in nutritional care and symptom management.
4. Standardized Care Protocols: Develop institution-wide guidelines for managing chemotherapy-related nutritional symptoms.
5. Patient Support Groups: Facilitate group meetings where patients can share experiences and coping strategies.
6. Accessible Educational Materials: Create culturally sensitive and easy-to-understand nutrition guides for patients and caregivers.
7. Policy Advocacy: Push for policy support and budget allocations for nutritional services within oncology units.

These measures will improve patient resilience, enhance treatment compliance, and contribute to better health outcomes.

5.7 Suggestions for Further Research

To deepen understanding in this area, future research should:

Conduct longitudinal studies tracking nutritional symptoms over multiple chemotherapy cycles to establish causality and symptom progression.

- Explore interventional studies evaluating the effectiveness of specific dietary interventions, supplements, or nutrition-focused therapies.
- Use qualitative methods such as in-depth interviews to capture patients' personal experiences and cultural nuances around food during treatment.

- Expand studies to multiple healthcare centers to allow for comparative insights and broader applicability.
- Investigate the role of caregivers in nutritional support, including their knowledge, challenges, and support needs.

These lines of inquiry will offer a more comprehensive picture and support the development of evidence-based nutritional care models in oncology.

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APPENDIX 1
DEPARTMENT OF NURSING SCIENCE
SCHOOL OF BASIC MEDICAL SCIENCES
UNIVERSITY OF BENIN, BENIN CITY, EDO STATE

Dear Correspondent,

QUESTIONNAIRE

I am **BRIGHT BLESSING IMUETINYANOSA**; a 500L student in the above named institution and I invite you to take part in this research study, which aims to explore, “**Perceived influence of chemotherapy on nutritional symptomatology among patients with cancer**”. The findings will help healthcare providers identify gaps in nutritional management and implement more effective nutritional interventions. Your participation in this study is completely voluntary. You are free to withdraw at any point during the questionnaire without any consequences. All information you provide will remain confidential and anonymous. This will take approximately 3-5 minutes of your time

Section A: Demographic Information

Please tick (✓) the appropriate box.

1. Age as at last birthday:

- 18–30 31–45 46–60 Above 60

2. Sex:

- Male Female

3. Marital Status:

- Single Married Divorced Widowed

4. Level of Education:

- No formal education Primary Secondary Tertiary

5. Type of Cancer Diagnosed: _____

6. How long ago were you diagnosed with cancer?

- Less than 6 months 6–12 months 1–2 years Over 2 years

7. How many cycles of chemotherapy have you received?

- 1–3 4–6 More than 6

Section B: Nutritional Symptoms Experienced

Please rate the frequency of the following symptoms since you started chemotherapy using the scale below:

0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Often, 4 = Always

Symptom	0	1	2	3	4
1. Loss of appetite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Nausea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Vomiting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Diarrhea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Constipation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Metallic or bitter taste in mouth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Mouth sores or dryness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Weight loss	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Difficulty swallowing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Feeling full quickly while eating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section C: Coping Strategies for Nutritional Symptoms

Please tick (✓) the strategies you use to cope with nutritional symptoms caused by chemotherapy:

Coping Strategies (You may tick more than one):

Coping Strategies	0	1	2	3	4
1. Eating small frequent meals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Using ginger or herbs to manage nausea.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Drinking nutritional supplements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Avoiding spicy or acidic foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Eating cold rather than hot meals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Drinking more fluids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Eating soft or blended foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Seeking help from a dietitian/nurse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Relying on family or caregivers for food preparation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Not doing anything in particular	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section D: Chemotherapy Symptoms and Treatment Tolerance

Please tick the most appropriate response for each statement:

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Nutritional symptoms make it harder for me to continue with chemotherapy treatment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I have missed or delayed chemotherapy sessions due to poor appetite or weight loss.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I feel physically weaker and less able to tolerate chemotherapy due to nutritional issues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I believe managing my diet helps me tolerate chemotherapy better.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX II

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based On Standardized Items	N of Items
.824	.825	24