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Assess the Severity of Anorexia and Quality of Sleep among Cancer Patients Undergoing Chemotherapy

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Abstract

Background: Cancer patients undergoing chemotherapy experience numerous adverse effects from both the disease and treatment modalities. Anorexia and sleep disturbances represent the most prevalent symptoms that are linked to decreased quality of life and overall survival. necessitating proactive assessment and evidence-based interventions to optimize patient outcomes and therapeutic adherence. **Aim of the study:** The study aimed to assess the severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy. **Design:** A descriptive research design was utilized. **Setting:** The study was conducted in medical and surgical oncology departments at the National Cancer Institute, Egypt. **Sample:** A purposive sample of 86 adult cancer patients undergoing chemotherapy was recruited. **Tools:** Three tools were used for data collection: Tool 1: A structured interviewing questionnaire consisting of two parts: Part (I) patients' demographic data and Part (II) patients' health history; Tool 2: Anorexia scale consisting of two parts: Part (I) Visual Analogue Appetite Scale and Part (II) Functional Assessment of Anorexia/Cachexia Therapy-Anorexia/Cachexia Subscale; Tool 3: St. Mary's Hospital Sleep Questionnaire. **Results:** The study demonstrated that 39.5% and 51.2% of the studied patients experienced moderate and severe anorexia, respectively. Additionally, 48.9% and 39.5% exhibited poor and average sleep quality, respectively. **Conclusion:** There was a statistically significant negative correlation between the severity of anorexia and sleep quality among the studied patients ($r = -0.139$, $p = 0.016$). **Recommendations:** Healthcare providers should implement routine screening for severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy. Integration of evidence-based interventions, such as relaxation techniques, should be considered as part of comprehensive supportive care protocols to address these interconnected symptoms and improve patient outcomes.

Keywords*: Anorexia, Cancer patients, Chemotherapy, Sleep quality, Severity*

Introduction:

According to ***Siegel et al. (2024)***, cancer represents a complex disease group characterized by uncontrolled growth and dissemination of abnormal cells. These malignant cells invade and destroy normal tissues, potentially metastasizing to distant sites via bloodstream or

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lymphatic circulation. The disease encompasses over 100 distinct types, each presenting unique characteristics, therapeutic approaches, and clinical outcomes. Cancer constitutes a leading cause of global morbidity and mortality, affecting diverse populations across age groups, ethnicities, and geographical regions.

Lessa et al. (2025) represent chemotherapy as one of the cornerstone treatments in cancer management, employing cytotoxic agents to destroy malignant cells systemically. These therapeutic compounds operate through multiple mechanisms including DNA damage, cell cycle arrest, and apoptosis induction. Chemotherapy may be administered as neoadjuvant therapy to reduce tumor burden preoperatively, adjuvant therapy to eliminate residual cancer cells post-treatment, or palliatively to manage symptoms in advanced disease. Treatment protocols range from single-agent regimens to complex multi-drug combinations delivered over multiple cycles.

Contemporary clinical observations by ***Doshita et al. (2025)*** reveal that cancer-related anorexia represents a prevalent and distressing chemotherapy side effect, characterized by significant appetite loss, reduced food intake, and weight loss that severely impacts patient outcomes and quality of life, affecting up to 80% of advanced cancer patients. Similarly, ***Nissen et al. (2024)*** indicate that sleep disturbances constitute another critical concern with higher prevalence rates than the general population, encompassing insomnia, sleep fragmentation, excessive daytime sleepiness, and altered sleep-wake cycles. Both conditions involve multifactorial etiologies including inflammatory mediators, treatment side effects, pain, anxiety, and depression, creating complex symptom clusters that exacerbate fatigue, cognitive impairment, and immune dysfunction, requiring comprehensive management approach.

According to ***Oncology Nursing Society (ONS, 2024),*** Professional nurses play pivotal and multifaceted roles in the comprehensive management of cancer patients experiencing anorexia and sleep disorders, serving as patient advocates, educators, care coordinators, and direct care providers. Nursing responsibilities encompass thorough symptom assessment using validated screening tools, implementation of evidence-based interventions, patient and family education regarding symptom management strategies, and continuous monitoring of treatment responses.

Nurses occupy a pivotal role in the early identification and management of nutritional decline and sleep disturbances through their continuous patient assessment capabilities and comprehensive care approach. Their sustained clinical presence enables systematic monitoring of subtle symptom changes, while their position within the interdisciplinary healthcare team facilitates critical communication pathways between patients and specialists. The nursing profession's holistic care framework provides the foundation for addressing the multifaceted nature of anorexia and sleep quality impairments, positioning nurses as essential contributors to evidence-based interventions that optimize patient outcomes and enhance quality of life throughout the cancer treatment trajectory. This unique clinical positioning underscores the significance of nursing-led research in understanding and addressing these complex symptom clusters in oncology populations.

Significance of the study:

Based on ***Sharma et al. (2022)***, Egypt leads Africa in cancer burden, representing 12.2% of continental cases and 15.5% of deaths, with 134,632 new diagnoses and 89,042 fatalities. As Africa's most populous Arab country with over 100 million residents, Egypt's high absolute numbers reflect both demographic size and superior cancer detection capabilities through its

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National Cancer Registry Program. The nation faces a dual cancer profile of rising lifestyle-related cancers (breast, lung, colorectal) alongside persistent infection-associated malignancies, highlighting Egypt's urgent need for comprehensive cancer control measures including prevention, early detection, and treatment enhancement given projected global cancer increases by 2050.

According to ***Fuki et al. (2025)***, cancer-associated anorexia represents a significant clinical problem affecting substantial proportions of chemotherapy patients, contributing to malnutrition, compromised immune function, and reduced quality of life, with ***Blauwhoff-Buskermolen et al. (2016)*** reporting approximately 40% prevalence of appetite loss, increasing to over 50% in advanced disease. Similarly, Hu and Chen (2025) documented through systematic review and meta-analysis that sleep disturbances demonstrate equivalent prevalence with pooled rates of 60.7% (95% CI 58.1–63.3%), while ***Gyawali et al. (2024)*** reported 56% prevalence of significant sleep disorders. Both conditions substantially exceed general population rates and create complex symptom interactions that compromise recovery, treatment tolerance, and overall well-being through disease-related factors, treatment side effects, and psychological distress.

From a research perspective, this study addresses a critical gap in oncology care by systematically assessing two interconnected symptoms that significantly impact patient outcomes. With cancer cachexia detected in more than 80% of gastrointestinal or pancreatic cancer patients and anorexia-induced weight loss being the direct cause of death in up to 20% of all cancer patients, coupled with sleep disorder prevalence rates up to three times higher in patients undergoing chemotherapy, this research fills a vital evidence gap in understanding symptom severity and correlation. The significance lies in both the high prevalence and clinical implications, as sleep disturbance may influence cancer development and treatment responses while being closely tied to recovery and quality of life. By establishing severity patterns and relationships between anorexia and sleep quality. Therefore, this study aims to assess the severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy.

Aim of the Study

This study aimed to assess the severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy.

Research Questions:

1. What is the severity of anorexia among cancer patients undergoing chemotherapy?
2. What is the quality of sleep among cancer patients undergoing chemotherapy?
3. What is the relation between the severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy?

Subjects and method:

Research design:

A descriptive research design was utilized to conduct the study. Descriptive research is a research approach that aims to accurately and systematically describe the characteristics, distribution, and patterns of phenomena without manipulating variables or establishing causal relationships. This design is suitable when the research objective is to discern characteristics, frequencies, trends, and categories without manipulating variables, providing foundational

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knowledge through structured data collection methods such as surveys, observations, and cross-sectional analyses ***(Villamin et al., 2024).***

Setting:

This study was conducted in the medical and surgical oncology departments at the National Cancer Institute (NCI), affiliated with Cairo University Hospitals, Cairo, Egypt. The medical department, located on the sixth floor, contains five rooms: three four-bed rooms and two five-bed rooms. The surgical department, located on the fourth floor, has an identical layout with five rooms: three four-bed rooms and two five-bed rooms. Both departments maintain a nurse-to-patient ratio of 1:5.

Sampling:

A purposive sample of 86 adult cancer patients from both genders undergoing chemotherapy. They were recruited from the above-mentioned setting enrolled in current study.

The patients were selected according to the following criteria.

Inclusion criteria:

1. Patients aged between 20-60 years.
2. Cancer patients who received at least one chemotherapy cycle.
3. Patients having the ability to communicate.
4. Willing to participate in the study.

Exclusion criteria:

1. Patients take an appetite stimulant as megestrol acetate, corticosteroids, thalidomide.
2. Patients take hypnotics, opioid analgesics and anxiolytics.
3. Patients who use sleeping pills or those with side effects causing sleep.
4. Patients taking hormonal therapy such as tamoxifen
5. Patients with chewing problems

Tools for data collection:

Three tools were utilized to collect data pertinent to the study:

Tool 1: A structured Interviewing Questionnaire:

This tool was developed by the researcher after reviewing recent relevant literature and scientific references ***(Efendi et al., 2022; Harorani et al., 2020; Borner et al., 2018)*** and was completed by the researcher. It included two parts to cover the following data:

Part (I) Patients' demographic data: This part was used to address the personal data of the patients and consisted of characteristics of studied patients to collect baseline data which includes age, gender, marital status, educational level, occupation, residence, activity levels, smoking and sleep troubles.

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Part (II) Patients' health history: This part was devoted to assessing past and present health history, which included presence of chronic disease, previous types of cancer, previous history of chemotherapy, period of chemotherapy completion, past cancer treatment modalities, current diagnosis (types), staging, duration of cancer, number of prescribed and received chemotherapy cycles (treatment line), most common chemotherapy protocols, duration of anorexia, types of hospital visits, weight, height, and body mass index (BMI).

Tool 2: Anorexia Scale:

This scale was adapted from ***Sheta and Ali (2022)***. This scale aimed to examine the severity of anorexia and includes two parts as follows:

Part (I): Visual Analogue Appetite Scale (VAS): This scale was adapted from ***Van Elsacker et al. (2017)*** to assess the severity of anorexia among cancer patients undergoing chemotherapy. This scale consists of a 10 cm ruler on which one side shows "good appetite = 0" and the other side shows "anorexia = 10". Patients can self-report their appetite using this scale.

Scoring system: The total scores of the visual analogue appetite scale range from 0 to 10, where:

- 0 was considered "no anorexia & good appetite"
- 1-3 was considered "mild anorexia"
- 4-6 was considered "moderate anorexia"
- 7-10 was considered "severe anorexia"

Part (II): The Functional Assessment of Anorexia/Cachexia Therapy- Anorexia/Cachexia Subscale (FAACT–A/CS):

This tool was adapted from ***Gelhorn et al. (2019)*** and validated by ***Blauwhoff-Buskermolen et al. (2016)*** (4th version, Dutch) for qualitative and quantitative diagnosis of anorexia.

Scoring system: This FAACT–A/CS consists of 12 questions related to appetite and food intake. Each question is rated on a 5-point Likert scale (0 = not at all, 1 = a little bit, 2 = somewhat, 3 = quite a bit, 4 = very much). The sum score ranges from 0 to 48, whereby a lower score indicates less appetite, and a higher score indicates good appetite. A total score of ≤37 was considered to indicate the presence of anorexia, while a score of ≥38 was considered to indicate the absence of anorexia (good appetite). The scores of negatively worded items were reversed, which were items 3 to 11, with the rating scale having the following grades for negative responses (not at all = 4, a little bit = 3, somewhat = 2, quite a bit = 1, very much = 0). The scale includes an anorexia symptoms subscale (5 items: 1-5), an anorexia concerns subscale (4 items: 8-11), and other items related to the scale (3 items: 6^{th}, 7^{th}, and 12^{th}).

Tool 3: St. Mary's Hospital Sleep Questionnaire (SMHSQ):

This tool was adapted from ***Harorani et al. (2020)***. The researcher divided this questionnaire into two sections; section one illustrated in questions (1,2,3,4,7,8and14) and presented sleep quantity while section two illustrated in questions (5,6,9,10,11,12, and13) and presented sleep quality. St Mary's Hospital Sleep Questionnaire involved fourteen questions (both Likert type and open- ended questions) to evaluate patients' previous night's sleep quantity and quality among cancer patients undergoing chemotherapy. Its validity and reliability have been measured and confirmed in many previous studies.

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Scoring system: This questionnaire divided into two sections; section one illustrated in questions (1,2,3,4,7,8and14) and represented sleep quantity while section two illustrated in questions (5,6,9,10,11,12, and13) and represented sleep quality. Scores ranged between 6 and 38, which reflected section two of the questionnaire. A score from 6 to 16 was defined as poor sleep quality; a score from 17 to 27 was defined as average sleep quality and a score from 28 to 38 was defined as good sleep quality.

Validity:

Five experts in medical-surgical nursing, faculty of nursing, Helwan university reviewed the developed tools and assessed the content validity, and needed modifications were made.

Reliability:

The reliability of the tools was assessed by measuring their internal consistency with Cronbach's alpha coefficient test. The researcher used a valid reliable standard tool. The statistical equation of Cronbach's alpha reliability coefficient normally ranges between 0 and 1; higher values (more than 0.7) denote acceptable reliability. The Visual Analogue Appetite Scale (VAS) showed a reliability score of 0.808. The Functional Assessment of Anorexia/Cachexia Therapy-Anorexia/Cachexia Subscale (FAACT–A/CS) showed a reliability score of 0.828. St. Mary's Hospital Sleep Questionnaire (SMHSQ) showed a reliability score of 0.967. These results demonstrate that all tools are instruments with high reliability

Ethical considerations:

Before the commencement of the study, ethical approval was obtained from the Scientific Research Ethical Committee at the Faculty of Nursing, Helwan University **(Session Number 36, dated 3 October 2023).** Additional approval was granted by the director of the National Cancer Institute, Cairo, Egypt. Informal oral and written consent was obtained from all patients after they were thoroughly informed about the study's purpose, procedures, and anticipated outcomes. Participation was entirely voluntary, and patients were assured that they could withdraw at any time without any negative consequences. They were also assured that the study posed no physical or psychological harm. The patient's participation was treated with full ethical integrity. The study procedures were designed to be entirely harmless to the patient, ensuring their comfort, safety, and dignity throughout. Confidentiality and anonymity were strictly maintained by all participants.

Pilot study:

The pilot study was conducted on nine patients (10%) of the sample studied to examine the clarity of questions and the time needed to complete the study tools. Based on the results, modifications were made. Subjects of the pilot study were included in the study because no significant modifications were required.

Fieldwork:

The study was conducted over eight months, beginning in April 2024 and completed in January 2025. The researcher visited the selected setting during the day shift three days per week. Patients' oral consent to participate in the study was obtained after explaining the purpose and nature of the study, and the interview questionnaire was completed. The researcher recruited approximately 2-3 patients per day. Individual patient assessments were conducted after at least one chemotherapy cycle. The researcher assessed demographic data and health history using Tool I. Weight and body mass index were measured using a standard digital scale (180kg capacity,

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0.1kg accuracy) based on ***Binkley et al. (2023)*** at baseline after at least one chemotherapy cycle. Anorexia severity was assessed using Tool III (Anorexia Scale). Sleep quality was similarly evaluated using Tool IV. Each patient assessment required approximately 15-20 minutes to complete according to the patient's tolerance. Every patient was allowed to ask questions to clarify any misunderstandings before completing the interview questionnaire.

Results:

Table (1): Distribution of studied patients according to their demographic characteristics (n=86).

Demographic characteristics	Studied patients (n=86)	
	No.	%
Age / years		
Mean ± SD	**41.12±9.29**	
Gender		
Male	65	**75.6**
Female	21	24.4
Marital status		
Single	16	18.6
Married	58	**67.5**
Divorced	7	8.1
Widow	5	5.8
Educational levels		
Do not read and write	10	11.6
Read and write	10	11.6
Secondary education	44	**51.2**
University education	22	25.6
Activity levels		
Independent	17	19.8
Need assistant	48	**55.8**
Dependent	21	24.4
Smoking		
Yes	57	**66.3**
No	29	33.7
Sleep troubles		
Restlessness	46	**53.5**
Stomach pain	17	19.8
Noise	9	10.5
Light	8	9.3
Nightmare	6	6.9

Table 1 shows that the mean age of studied patients was 41.12 ± 9.29 years. Regarding gender, 75.6% were male. Concerning marital status, 67.5% were married. With respect to education, 51.2% had secondary education. In terms of activity levels, 55.8% needed assistance with activities. Additionally, 66.3% of studied patients were smokers. Finally, 53.5% reported restlessness as a sleep trouble.

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Table (2): Distribution of studied patients according to their present medical history (n=86).

Present medical history	Studied patients (n=86)	
	No.	**%**
Current diagnosis of cancer		
Breast	15	**17.4**
Colorectal	13	**15.1**
Liver	2	2.3
Brain	6	7
Leukemia	18	**20.9**
Lymphoma	5	5.8
Cancer metastasis	3	3.5
Lung	4	4.7
Prostate	6	7
Pancreas	10	11.6
Osteosarcoma	4	4.7
Stages of cancer		
I	18	20.9
II	18	20.9
III	30	**34.9**
IV	20	23.3
Duration of cancer		
Less than 1 years	20	23.3
Less than 2 years	44	**51.2**
From 2 to 3 years	22	25.5
Numbers of prescribed chemotherapy cycles		
≤ 5 cycles	15	17.4
> 5 cycles	71	**82.6**
Numbers of received chemotherapy cycles		
≤ 5 cycles	65	**75.6**
> 5 cycles	21	24.4
Suffered from anorexia as a side effect of chemotherapy		
Since the first dose	86	100.0

Table 2 reveals 20.9% of studied patients were diagnosed with leukemia, whereas 20.9% and 17.4% and 15.1 % were diagnosed with leukemia, breast and colorectal cancer, respectively. Also, 34.9% had the third stage of cancer. Additionally, 51.2% had cancer for less than 2 years. Bedsides, Regarding the number of prescribed chemotherapy cycles, 82.6% were prescribed more than 5 cycles**.** In contrast, when considering the number of chemotherapy cycles received, 75.6 % had received 5 cycles or fewer. In terms of anorexia, 100% reported experiencing anorexia since the first dose of chemotherapy.

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Table (3): Distribution of studied patients according to their severity of anorexia (n=86).

Severity of Anorexia	Studied patients (n=86)	
	No.	%
• Mild	8	9.3
• Moderate	34	**39.5**
• Severe	44	**51.2**

Table 3 demonstrates that 39.5% and 51.2% of the studied patients exhibited moderate and severe anorexia, respectively.

Table (4): Distribution of studied patients according to their total quality of sleep (n=86).

Total level of sleep quality	Studied patients (n=86)	
	No.	%
Poor	42	**48.9**
Average	34	**39.5**
Good	10	11.6

Table 4 demonstrates that 48.9% and 39.5% of the studied patients exhibited poor and average sleep quality, respectively

Table (5): Correlation between the severity of anorexia and quality of sleep among the studied patients (n=86).

Items	Severity of anorexia	
	r	P-value
Quality of sleep	-0.139	**0.016***

Table 5 shows that there was a statistically significant negative correlation between the severity of anorexia and quality of sleep among the studied patients at (r = -0.139) and (P-value = 0.016*).

Table (6): Correlation between the severity of anorexia and body weight among the studied patients (n=86).

Items	Severity of anorexia	
	r	P-value
Body weight	-0.319	**0.031***

Table 6 shows that there was a significant statistical negative correlation between severity of anorexia and body weight among the studied patients at (r = -0.319) and (P-value = 0.031*)

Discussion

Doshita et al. (2024) demonstrated that chemotherapy-induced anorexia and sleep disorders represent one of the most common prevalent syndromes clusters affecting cancer patients, with significant implications for quality of life and survival outcomes. Recent evidence

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indicates that one third to three quarters of cancer patients experience anorexia after receiving chemotherapy, with prevalence rising to up to majority of those with advanced cancer. Since this condition can lead to weight loss, malnutrition and impaired immune function, potentially impacting both survival and quality of life often accompanied by concurrent sleep disturbances that create a complex syndrome requiring comprehensive management, therefore, early diagnosis and intervention are pivotal. Therefore, this study was conducted to assess the severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy.

Regarding demographic characteristics. The current study demonstrated that mean age of the studied patients was (41.12±9.29) years. The present study finding validates that the mean age of forty-one years reflects current oncology epidemiological trends. This finding was supported with ***Shiels et al. (2025)***, who conducted a comprehensive National Institutes of Health (NIH) analysis in the United States entitled "Trends in cancer incidence and mortality rates in early-onset and older-onset age groups." The study found that the incidence of fourteen cancer types increased among people under age fifty, with data analyzed across age groups including those aged forty to forty-nine years specifically. This study directly validates the prominence of the 40s age group in contemporary cancer research.

Conversely, other studies report different age trends. ***Johannessen et al. (2023)*** conducted a longitudinal study in Norway that evaluated age-related differences in the occurrence, severity, and distress of symptoms in older patients at the initiation of chemotherapy and found that patients aged 65–74 and 75+ reported significantly higher symptom burdens and distress compared to younger adults, indicating greater vulnerability and higher representation among older age groups in oncology settings. **From the researcher's point of view**, these variations in age distribution across studies may reflect differences in cancer types, healthcare access, cultural factors, and study settings.

As regards, gender, the present study revealed that males were more prevalent than females, with the majority of the studied patients being male. This predominance may be attributed to regional or cultural differences in healthcare access, gender-specific cancer types (e.g., higher rates of gastrointestinal cancers, lung cancer, or acute myeloid leukemia in males), or patterns of healthcare-seeking behavior (e.g., smoking).

This finding was in agreement with findings from several regional studies. ***Qattan (2023)*** conducted an observational descriptive population-based epidemiological study from the Saudi cancer registry that analyzed the incidence rate of non-Hodgkin's lymphoma in Saudi Arabia. The study demonstrated that the majority of cancer patients were male. Likewise, ***Wang et al. (2024)*** conducted a cross-sectional study in China that assessed the symptom burden and clusters during chemotherapy in patients with lung cancer. The study revealed that the majority of cancer patients were male. The researchers attributed this to the higher incidence of certain cancers among men, as well as gender differences in health behavior and occupational exposure.

Conversely, other studies contradicted these findings, reporting higher female representation**.** ***Kang et al. (2023)*** conducted a cross-sectional study in Seoul, Korea that evaluated the burden of symptoms in patients with various types of cancers during chemotherapy or radiation therapy using the PRO-CTCAE (Patient-Reported Outcome Version of the Common Terminology Criteria for Adverse Events) and its impact on quality of life. The study found that the majority of cancer patients receiving chemotherapy were females, likely due to breast and gynecological cancers being more prevalent and often treated with aggressive chemotherapy.

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Concerning marital status, the present study demonstrated that more than two thirds of the studied patients were married. This predominance may be attributed to the fact that marriage often provides a support system that facilitates engagement with comprehensive cancer care, including relaxation interventions that can improve quality of life during treatment.

This finding was corroborated by similar studies. Likewise, ***Daralina et al. (2024),*** who assessed the relationship between spirituality and resilience among patients who suffered from breast cancer and are undergoing chemotherapy at Aceh Provincial General Hospital in Indonesia, demonstrated that married patients tend to have stronger psychological resilience and better adherence to treatment regimens, making them more likely to participate in structured care programs."

Challenging this view, ***Alyabsi et al. (2021)*** conducted a retrospective cohort study using data from the Cancer Registry of the Ministry of National Guard-Health Affairs in Saudi Arabia, entitled "The effect of marital status on stage at diagnosis and survival in Saudis diagnosed with colorectal cancer." The study reported a more varied marital status distribution among cancer patients in Saudi Arabia, with a notable proportion being unmarried (single or widowed). These individuals reportedly experienced greater emotional distress and were less likely to participate in supportive interventions. The findings indicated that unmarried patients have a higher risk of late presentation and cancer-specific mortality.

From the perspective of clinical measurement, regarding the severity of anorexia of studied patients using Visual Analog Scale. The present study revealed that more than half of those studied patients experienced severe anorexia and slightly less than two fifths reported moderate anorexia. Cancer patients undergoing chemotherapy commonly experience anorexia (loss of appetite) due to a complex interplay of physiological, psychological, and treatment-related factors. This phenomenon significantly impacts patient outcomes, nutritional status, and quality of life.

This finding was consistent with ***Sandhya et al. (2023)***, who conducted a randomized, double-blind, parallel-group, placebo-controlled trial in a tertiary care center in South India, published in the American Society of Clinical Oncology Journal entitled "Randomized double-blind placebo-controlled study of Olanzapine for chemotherapy-related anorexia in patients with locally advanced or metastatic gastric, Hepatopancreatic biliary, and lung cancer," and demonstrated that anorexia is remarkably prevalent among cancer patients, indicating that majority of cancer patients experienced anorexia.

Additionally, this finding was affirmed by ***Molfino et al. (2021)***, who conducted a cross-sectional study involving 438 cancer patients from seven cancer centers worldwide in Rome, Italy, entitled "Cancer-associated anorexia: Validity and performance overtime of different appetite tools among patients at their first cancer diagnosis." The study demonstrated that prevalence of anorexia was around two fifths and more than two fifths when assessed by FAACT-score and VAS, respectively, confirming the reliability of visual analog scales and FAACT for assessment severity of anorexia.

Concerning the assessment of sleep quality, the current study demonstrated that less than half of studied patients reported poor sleep quality and slightly less than two fifths exhibited average sleep quality. Sleep disturbances among cancer patients undergoing chemotherapy result from a complex interplay of psychological factors (anxiety, restless), physical symptoms (pain,

medication side effects), treatment-related factors (chemotherapy neurotoxicity, steroids), and environmental disruptions (hospital noise, lighting, routine interruptions).These findings were strongly supported with ***Sarı et al. (2024),*** who conducted a randomized controlled study in Türkiye entitled "The effect of progressive muscle relaxation exercises on sleep quality in cancer patients undergoing chemotherapy." The study reported majority of participants experience poor sleep disturbances.

Additionally, ***Al Maqbali et al. (2022)***, who conducted a systematic review and meta-analysis from the following databases: PubMed, CINAHL, MEDLINE, EMBASE, PsycINFO in North Umbria University, Newcastle-Upon-Tyne, UK, entitled "Prevalence of Sleep Disturbance in Patients with Cancer." The study demonstrated that majority of cancer patients reported sever sleep disturbance during anti-cancer treatment due to same factors.

From the perspective of correlational analysis. The current study demonstrated that there was a statistically significant negative correlation between severity of anorexia and quality of sleep among studied patients at (r = -0.139) and (P-value = 0.016*). This finding indicates that as the severity of anorexia decreased, sleep quality correspondingly improved, suggesting a bidirectional relationship between these two critical symptoms in the cancer care continuum.

This finding was closely supported with recent studies examining the effect of Benson's relaxation technique on cancer populations. ***Harorani et al. (2020)*** conducted a randomized controlled trial study in Iran about "The effect of Benson's relaxation response on sleep quality and anorexia in cancer patients undergoing chemotherapy," demonstrating that there was a significant statistical negative correlation between anorexia and sleep quality, which indicates that as the severity of anorexia decreased, sleep quality correspondingly improved, directly supporting the observed correlation in the present study.

Besides, concerning correlation between the severity of anorexia and body weight among the studied patients. The current study demonstrated that there was a significant statistical negative correlation between severity of anorexia and body weight among the studied patients at (r = -0.319) and (P-value = 0.031*). This finding indicates that as the severity of anorexia decreased, weight correspondingly improved, suggesting a bidirectional relationship between these two critical symptoms. As anorexia becomes more severe, patients experience progressively reduced appetite, food aversion, and decreased caloric intake. Since the body still requires energy for basic metabolic functions, it begins breaking down stored fat and muscle tissue to meet these needs, resulting in weight loss. The more severe the anorexia, the more pronounced this effect becomes.

This explanation was highly supported with ***Molfino et al. (2023)*** who conducted an observational study published in Frontiers in Nutrition journals in Rome, Italy about "Early impairment of food intake in patients newly diagnosed with cancer." The study showed that cancer patients with anorexia have significantly greater weight loss compared to those without anorexia. For example, patients with anorexia had a higher percentage of weight loss, and statistical analysis confirmed a negative correlation between food intake (which is reduced in anorexia) and percentage of weight loss (r = –0.40 for calorie intake, r = –0.34 for protein intake).

Conclusion:

Based on the current study's findings, this study reveals that slightly less than two fifths and more than half of the studied patients experienced moderate and severe anorexia, respectively. Additionally, less than half and slightly less than two fifths exhibited poor and

average sleep quality, respectively. Also, there was a statistically significant negative correlation between the severity of anorexia and sleep quality among the studied patients (r = -0.139, p = 0.016). Besides that there was a significant statistical negative correlation between severity of anorexia and body weight among the studied patients at (r = -0.319) and (P-value = 0.031*).

Recommendations

In light of the findings of this study, the following are recommended:

- Healthcare providers should implement routine screening for severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy. Integration of evidence-based interventions, such as relaxation techniques, should be considered as part of comprehensive supportive care protocols to address these interconnected symptoms and improve patient outcomes.

Further studies

- Conduct further research with larger sample sizes and other geographic regions to confirm the findings or to identify other variables that may influence to severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy.

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