

# Fatigue Level and Contributing Factors among Cancer Patients Receiving Chemotherapy

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**Abstract Background:** Cancer disease and its treatment are leading cause to fatigue, fatigue is subjective data experienced by cancer patients measured in various method in order to assisting patient to regain daily activity, restore strength, and to improve quality of life. **Aim of the Study:** The current study aimed to assess fatigue level and contributing factors among cancer patients receiving chemotherapy. **Methods and Materials:** A quantitative design cross-sectional study conducted to assess level of fatigue and contributing factors among cancer patients receiving chemotherapy at oncology and hematology center in Kirkuk city from period of July to December 2023, sampling method was purposive sampling consist of 184 patients diagnosed with cancer and prescribed chemotherapy as a treatment. A constructed questionnaire was adopted to achieve the objective of the study consist of four parts; part one demographic data (7 items), part two health status (7 items), fatigue level scale (11 items) which scaled with (always, sometime, and never), and part four contributing factors (9 items). Data collected by interview techniques with the patients after obtaining consent to participate in the current study. **Results:** The study concluded that the highest age group were 61 years and more, female, the majority having chronic diseases such as diabetes mellitus and heart disease, smokers, most of samples were diagnosed with breast cancer, almost all of cancer patients receiving chemotherapy three times per month intravenously. Regarding fatigue level, the majority of cancer patients in the current study were moderate and sever fatigue level. Concerning the most contributing factors that rises the fatigue among cancer patients were depression, lack of appetite, insomnia, anxiety, sexual dysfunction, and pain respectively. **Conclusions:** The majority of cancer patients in the current study were moderate and sever fatigue level. the most contributing factors that rises the fatigue among cancer patients were depression, lack of appetite, insomnia, anxiety, sexual dysfunction, and pain respectively.

**Key Words** Fatigue, Contributing factors, Cancer, Chemotherapy

## 1. Introduction

Cancer disease and its treatment are the leading cause of fatigue; fatigue is subjective data experienced by cancer patients measured in various methods in order to assist patients in regaining daily activity, restoring strength, accepting cancer treatment, including chemotherapy, and improving their quality of life [1]. According to the National Comprehensive Cancer Network, fatigue is defined as "A distressing persistent, subjective sense of physical, emotional and/or cognitive tiredness or exhaustion related to cancer or cancer treatment" [2]. Fatigue is a subjective symptom experienced by patients with cancerous disease undergoing chemotherapy [3].

To assess fatigue among cancer patients, physicians and nurses need to understand patients' feelings of tiredness, weakness and decreased usual activities of daily living [4]. Fatigue differs by its intensity and continuity. Fatigue affects

more than half of patients with cancer; over two-thirds of these patients describe fatigue as severe for months, and other cancer patients described as continuous for many years after treatment [5], multifactorial affect fatigue such as the presence of pain, sexual disturbance, psychological depression, and lack of appetite, Bower [6] stated that fatigue influenced by different demographic, physical, psychosocial, behavioral and biological factors. A variety of mechanisms contribute to fatigue development.

## 2. Objectives of the Study

- 1) Assess fatigue level among cancer patients.
- 2) Determining contributing factors for fatigue.
- 3) Association between fatigue level and demographical and clinical data.

### 3. Methods and Materials

- 1) **Design of the study:** The design carried out for the study was cross-sectional design using quantitative research approach from the period July- December 2023. To assess fatigue level and contributing factors among patients with cancer diseases who receiving chemotherapy.
- 2) **Study Sample:** Purposive sample (non-probability sampling) was used to select patients diagnosed with cancer, both male and female patients.
- 3) **Population of the Study:** The target population were patients diagnosed with cancer and receiving chemotherapy Scheduled by oncologist. The accessible population were 184 patients included in the study.
- 4) **Setting of the Study:** All samples included in the study were from oncology and hematology center in Kirkuk city.
- 5) **Tools:** Tools that used in the current study consist of four parts; part one demographical data which consist of seven items. Part two health status include six items. Part three fatigue level consist of eleven items related to patients' experience of fatigue scaled (always, sometime, and never). Part four contributing factor to fatigue include nine items.
- 6) **Data Collection Procedure:** Data were collected by interview technique from period 15<sup>th</sup> July to 20<sup>th</sup> August 2023. Informal consent to agree and participate in the study were obtained from the patient. Approximately 20-30 minutes was spent to complete the interview with the sample.
- 7) **Data Analysis:** Data coded and analyzed by using statistical package of social science version 26 to analyze descriptive and inferential statistic.

### 4. Results

Table 1 shows that the majority of study sample were age group 61 years and more (47.7%), female (56%), married (40.8%), most samples were primary (28.3%) and intermediate school (23.4), most patients were jobless and retired, 52% were not sufficient economic status, and most of them (68.5%) were urban residency.

Table 2 demonstrate the health status of the patients, the majority of them having chronic medical diseases (89.7%), most of chronic diseases were diabetes mellitus and heart disease, 63% were smokers, 51% of cancer were breast cancer, almost all of cancer patients receiving chemotherapy three times per month intravenously.

Table 3 the finding demonstrates that the association between fatigue level and (age, marital status, educational level, and economic status) was significant, whereas the association between fatigue level and (gender, occupation, and residency) was not significant at P-value ( $\leq 0.05$ ).

Table 4 the finding revealed that the association between fatigue level and (chronic disease, type of chronic disease, and chemotherapy delivery method) was significant, whereas the association between fatigue level and (smoking, alcohol

No.	items	F.	%	
1	Age	Less than 45 years	31	16.9
		45-60 years	67	36.4
		61 year and more	86	46.7
	total	184	100	
2	gender	Male	81	44
		Female	103	56
		total	184	100
3	Marital status	Single	22	12
		Married	75	40.8
		Divorce	36	19.5
		Widow	51	27.7
	total	184	100	
4	Educational level	Not read and write	18	9.8
		Read and write	23	12.5
		Primary school	52	28.2
		Preliminary school	43	23.4
		Institute degree	28	15.2
		College degree	20	10.9
	total	184	100	
5	occupation	Housewife	30	16.3
		Employee	25	13.6
		Free work	9	4.9
		Retired	59	32.1
		jobless	61	33.1
	total	184	100	
6	Economic status	sufficient	13	7.1
		Barely sufficient	75	40.8
		Not sufficient	96	52.1
		total	184	100
7	Residence	Urban	126	68.5
		Rural	58	31.5
		total	184	100

Table 1: Distribution of Demographic Data of the Study Sample N=184

consumption, site of cancer, and times receiving chemotherapy) was not significant at P-value ( $\leq 0.05$ ).

### 5. Discussion

The current study shows the distribution of demographic factors among a sample of 184 people, including age, gender, marital status, educational level, occupation, economic status, and residence. Regarding age, the majority of the sample is over 61 years old. In terms of gender, more than half of the participants were female. Regarding marital status, most participants are married, followed by widows.

Regarding educational level, the largest group has completed primary school, followed by preliminary school. In terms of occupation, over one-third of participants are jobless, followed closely by retired participants.

More than half of the samples needed to be more economically insufficient, then barely sufficient. Finally, there is a notable difference in residence, with the majority living in urban areas and a smaller portion in rural areas. Overall, this study is similar to [1].

These studies found that most study samples were females aged (58-69) years, and most of them were housewives with low educational levels. Chemotherapy is one of the most

No.	items	F.	%
1	Presence of chronic disease	Present	165 89.7
		not presents	19 10.3
		total	184 100
2	Type of chronic disease	No chronic disease	19 10.3
		Heart disease	51 27.7
		Diabetes mellitus	56 30.4
		Renal disease	25 13.6
		Respiratory disease	20 10.9
		Arthritis	13 7.1
		total	184 100
3	Smoking	Yes	117 63.6
		No	67 36.4
		Total	184 100
4	Alcohol consumption	Yes	36 19.6
		No	148 80.4
		Total	184 100
5	Type of cancer (cancer site)	Breast cancer	94 51
		Prostate cancer	28 15.2
		Colon cancer	15 8.2
		Lung cancer	18 9.8
		Gastric cancer	15 8.2
		Uterine cancer	9 4.9
		Bladder cancer	5 2.7
		Total	184 100
6	How many times have you received chemotherapy per month	Three times	165 89.7
		Four times and more	19 10.3
		Total	184 100
7	Chemotherapy delivery methods	Orally	28 15.2
		Intravenously	156 84.8
		total	184 100

Table 2: Health Status of the Study Sample N=184

No.	Items	Total	Calculated Chi-square	Tabulated chi-square	Df.	Sig.
1	Age	184	10.57	9.48	4	S
2	Gender	184	5.39	5.99	2	NS
3	Marital status	184	14.17	12.59	6	S
4	Educational level	184	25.04	18.3	10	S
5	Occupation	184	14.71	15.5	8	NS
6	Economic status	184	19.76	9.48	4	HS
7	Residency	184	2.64	5.99	2	NS

Df.= degree of freedom. NS= not significant. S= significant. HS= highly significant

Table 3: Association between Fatigue Level and Demographic Data of the Cancer Patients

No.	Items	Total	Calculated chi-square	Tabulated chi-square	Df.	Sig.
1	Presence of chronic diseases	184	21.63	5.99	2	HS
2	Type of chronic diseases	184	24.54	18.3	10	S
3	Smoking	184	4.13	5.99	2	NS
4	Alcohol consumption	184	1.75	5.99	2	NS
5	Type of cancer disease (site of cancer)	184	17.95	21.02	12	NS
6	Times Received Chemotherapy per month	184	2.84	5.99	2	NS
7	Chemotherapy Delivery Methods	184	17.24	5.99	2	HS

Df.= degree of freedom. NS= not significant. S= significant. HS= highly significant

Table 4: Association between Fatigue Level and Health Status of the Cancer Patients

antitumor agents used systemically to cure, control, or palliative cancer disease; fatigue severity rises as cancer disease progresses and by using chemotherapy [7]. The outcome of the present study related to the level of fatigue show (22%) of cancer patients receiving chemotherapy experienced severe fatigue levels (Figure 1), highlighting the significant impact of chemotherapy on a patient’s quality of life. Notably, most patients reported moderate levels of fatigue, suggesting that the symptom is prevalent and ongoing for many chemotherapy patients. Figure 2 also found that a few patients reported mild fatigue levels, emphasizing that even a low level of fatigue can hurt patient well-being. Several other studies have also examined fatigue’s prevalence and contributing factors among cancer patients receiving chemotherapy. Our results agree with a study by Guru et al. [8] and Lingerew et al. [9]. Muhe-Aldeen et al. [10] support the finding, which indicates that most study samples were diagnosed with breast cancer and prostate cancer.

The study found that most of the participants felt de-

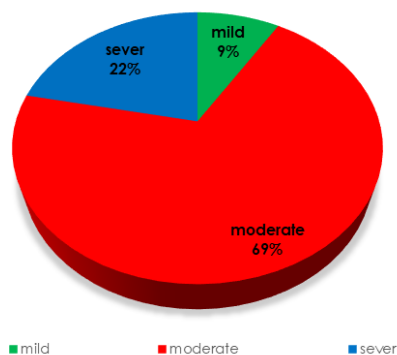


Figure 1: Level of fatigue 1 for overall study samples

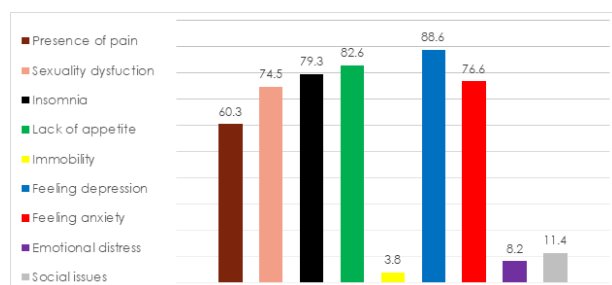


Figure 2: Percentage of contributing factors to fatigue of the samples

pressed, which was among the most significant contributory factors to fatigue. Cancer patients have to deal with the possibility of death, physical limitations, and constant medical interventions, which could contribute to feelings of helplessness, hopelessness, and a sense of loss. The study also found that more than two-thirds of the participants experienced a lack of appetite, leading to increased fatigue. Chemotherapy can impact a patient's sense of taste, making food unappealing, which reduces calorie intake. Reducing calorie intake leads to fatigue, weakness, and loss of muscle mass. Another factor reported by cancer patients that contributed to fatigue was insomnia, which could be attributed to the psychological distress associated with the cancer diagnosis. Finally, the study found that the anxiety of the participants was also a contributing factor to the high levels of fatigue experienced by cancer patients receiving chemotherapy. Our results agree with studies conducted by Bower [6]. Chemotherapy-induced peripheral neuropathy is considered a common symptoms that lead to fatigue [11].

The finding demonstrates that the association between fatigue level and (age, marital status, educational level, and economic status) was significant. In contrast, the association between fatigue level and (gender, occupation, and residency) was not significant at  $P$ -value ( $\leq 0.05$ ). Also the finding revealed that the association between fatigue level and (chronic disease, type of chronic disease, and chemotherapy delivery method) was significant. In contrast, the association between fatigue level and (smoking, alcohol consumption,

site of cancer, and times receiving chemotherapy) was not significant at  $P$ -value ( $\leq 0.05$ ). Our findings align with research conducted by Abu Obead et al. [12].

Early detection and cancer screening strategies are essential for cancer patients and improve managing fatigue and its contributing factors. As mentioned by Majeed and Atiyah [13] about early detection of prostate cancer.

Overall, the current study's findings support the need for ongoing research into the causes and treatment of chemotherapy-related fatigue. Effective symptom management strategies can significantly improve patients' quality of life and treatment outcomes.

## 6. Conclusions

The study concluded that the highest age group was 61 years and more, female, the majority having chronic diseases such as diabetes mellitus and heart disease, smokers, most of the samples were diagnosed with breast cancer, almost all cancer patients received chemotherapy three times per month intravenously. Regarding fatigue levels, most cancer patients in the current study had moderate and severe fatigue levels. The most contributing factors that raise fatigue among cancer patients are depression, lack of appetite, insomnia, anxiety, sexual dysfunction, and pain respectively.

## Conflict of Interest

The authors declare no conflict of interests. All authors read and approved final version of the paper.

## Authors Contribution

All authors contributed equally in this paper.

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