

Fatigue Levels and its Impacts on Physical, Cognitive and Psycho-social Wellbeing in Patients with Breast Cancer Undergoing Chemotherapy

Hassan Abdullah Athbi¹, Rukaya Aqeel Hassan², Ayam Abbas Ali², Baneen Fadhil Khudhr², Hussein Khelf Kitab³

¹PhD/Asst. Professor, College of Nursing/ University of Kerbala/Iraq.
hasan.abdallh@uokerbala.edu.iq

² Academic nurse/College of Nursing/ University of Kerbala/Iraq.

³ Phd/Lect, College of Nursing/ University of Kerbala/Iraq. Hussein.kh@uokerbala.edu.iq

Abstract. Fatigue is a highly prevalent and debilitating symptom among patients with breast cancer undergoing chemotherapy, profoundly affecting multiple dimensions of health and functioning. Chemotherapy-related fatigue in this population negatively influences physical capacity, cognitive performance, and psychosocial well-being, yet its multidimensional impact within the Iraqi clinical context remains insufficiently examined. Few studies have comprehensively evaluated the combined physical, cognitive, and psychosocial consequences of fatigue among Iraqi breast cancer patients, nor assessed its associations with demographic and clinical characteristics. This study aimed to determine the levels of fatigue and examine its impact on physical, cognitive, and psychosocial domains among patients with breast cancer receiving chemotherapy. A descriptive study of 106 female patients at Imam Al-Hussein Oncology Center revealed that 71.7% experienced severe fatigue and 28.3% moderate fatigue. The overall mean fatigue score was high (MS = 4.0). Fatigue showed severe impact across all domains, with 96.2% of patients classified within the severe-impact category. Physical limitations included muscle weakness, reduced functional ability, and increased need for rest; cognitive impairments involved diminished alertness, reduced attention, and slowed thinking; psychosocial effects included decreased motivation, social withdrawal, and emotional distress. A significant association was found between fatigue level and the three impact dimensions ($p = 0.003$). This study provides one of the first multidimensional assessments of chemotherapy-related fatigue among Iraqi breast cancer patients. Routine fatigue assessment and multidisciplinary management are essential to mitigate its extensive effects and improve quality of life for patients undergoing chemotherapy.

Highlights

1. Severe fatigue was highly prevalent among breast cancer patients undergoing chemotherapy, affecting 71.7% of the sample.
2. Fatigue had a significant negative impact on physical, cognitive, and psychosocial functioning, with 96.2% experiencing severe impairment.
3. A strong association was found between fatigue severity and multidimensional functional decline ($p = 0.003$).

Keywords: Breast cancer, Chemotherapy-related fatigue, Physical impact, Cognitive impairment, Psychosocial effects

Introduction

Breast cancer is the most frequently identified cancer among women, representing about one-quarter (25%) of all cancer cases globally [1]. The incidence rate of new cancer cases, in Iraqi population was increased markedly from (52.00/100,000) during 2000 to (91.66/100,000) in 2019.

Breast cancer is determined as the leading cause of mortality in Iraqi women, accounting for about one-third of all cancer cases recorded in 2019 [2].

The study breast cancer had the maximum percentage and mortality rate of all cancers in 2019 (22.58%, 6.22/100,000, respectively), as well as the maximum incidence rate and percentage among the top ten cancers (34.08%, 35.95/100,000, respectively) [2]. While developments in chemotherapy have significantly enhanced survival rates, patients frequently experience debilitating side effects, with cancer-related fatigue (CRF) being one of the most prevalent and distressing [3]. CRF is distinct from normal tiredness, it is more severe, not relieved by rest, and can continue long after management completion [4]. Fatigue still one of the most widespread symptoms in patients diagnosed with breast cancer patients undergoing chemotherapy, with 58-90% of patients undergoing chemotherapy reporting fatigue [5].

Fatigue is a predominantly common side effect of chemotherapy that's might have a weak feeling over entire body during all phases of stages of the illness and management in patients with cancer decreased energy, lack of motivation to be physically active [6]. For patients with breast cancer undergoing chemotherapy, fatigue affects various health dimensions, including physical functioning, cognitive performance, and psychosocial well-being, eventually diminishing their quality of life [7].

Fatigue extremely impairs physical abilities, decreasing patients' ability to perform activities of daily living and maintain independence. Many studies specify that 70-90% of patients undergoing chemotherapy report extreme fatigue, producing to muscle weakness, decreased stability, and functional decline [8]. This physical weakness often leads to reduced capacity for essential daily activities, such as household responsibilities, personal self-care, and physical exercise [9]. Physical weakness is associated with worse disease treatment outcomes and higher mortality rates [10], Managing and alleviating the physical decline associated with fatigue is crucial for improving patient recovery and survival.

In addition to physical limitations, chemotherapy-induced fatigue is closely associated with cognitive impairment [12]. Patients frequently report memory lapses, attention problems, slower processing speed, and impaired decision-making abilities [13]. This cognitive deficit may persist for months or even years after treatment, affecting daily functioning, decision-making, and overall mental alertness [14].

Numerous studies indicate that fatigue exacerbates cognitive impairment by reducing neural efficiency and increasing the mental effort required for routine household tasks. This cognitive problem not only decreases patients' independence but also contributes to frustration, anxiety, and diminished self-esteem [15].

The psychosocial concerns of fatigue are correspondingly debilitating, manipulating emotional well-being, social connections, and mental health. Fatigue is strongly associated with greater rates of depression and anxiety in patients with breast cancer [16]. The continuous exhaustion contributes to emotional distress, decreased motivation, and feelings of powerlessness, which can delay recovery [17].

Socially, fatigue frequently results in drawing from friends, family, and community activities, leading to strained relationships and isolation [18]. Furthermore, the economic burden of fatigue such as decreased productivity and enlarged health-care consumption increases additional level of stress [19].

While the impact of fatigue is recognised globally, there is a lack of studies exactly measuring and qualifying this impact on physical, cognitive, and psychosocial aspects within the distinctive Iraqi culture and health care facilities. Furthermore, the causal and interactions between fatigue and its impacts in Iraqi population remain unclear.

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Methods

Study design and setting: A descriptive study was conducted in Imam Al-Hussein Center for Oncology and Hematology Disease, it was initiated from the period of 1/11/2024 to 28/9/2025, to investigate the impact of fatigue on physical, psychosocial, and cognitive dimensions of patients with breast cancer undergoing chemotherapy.

Population and sampling: A purposive method of sampling involves of females 106 patients with breast cancer undergoing chemotherapy who are attending to Imam Al-Hussein Center for Oncology and Hematology Disease in Holy Kerbala.

The study instrument and data collection: the data was gathered using the interviewing technique with the subjects who were agree to realize the instrument items. The study instruments consist of closed-ended questions, it is consisting from threemain **part one socio-demographic characteristics and medical data that's** consist of 12 items, which include {age, marital status, height, weight, Tumor stage, educational level, occupation, and other information related to medical conditions}. **Part two: Fatigue assessment scale**, contained 13 items. After presenting it to the experts and taking into account the recommendations of the experts, are used to assess fatigue level of patients with breast cancer undergoing chemotherapy, all of these 13 items has a five alternative responses, ranging from not at all, a few times, somewhat, often, very often. **Part three: fatigue impact scale**, contained 21 questions, used to assess impact of fatigue on physical, cognitive and psychosocial dimensions of patients with breast cancer undergoing chemotherapy, all of these 21 items has a five alternative responses, ranging from not at all, a few times, somewhat, often, very often.

Statistical data analysis:

IBM Statistical Package of Social Sciences (SPSS) Version 26 was used to analyse the data. The patient characteristics were described using a descriptive statistical analysis which included frequencies, mean of score, and percentage. Inferential statistical analysis techniques have been used to examine or predict the associations between variables. A statistically significant p-value was defined as < 0.05 .

Ethical considerations: The study protocol was accepted by the College of Nursing ethical committee at the University Kerbala (code: IQUOKCON. 1521.18) on October, 2024. An informed consent has been documented for each patient, and all patients inform that they have the right to withdraw at any moment.

Results

Table (1): Distribution of patients based on their socio-demographical data:

Characteristics		Frequency	Percentage	Cumulative Percentage
Age groups	<40	18	17.0	17.0
	40-59	70	66.0	83.0
	≥ 60	18	17.0	100.0
	MS±SD		52.6±12.8	
Marital status	Single	4	3.8	3.8
	Married	100	94.3	98.1
	Widower	2	1.9	100.0
Educational level	Not read and not write	18	17.0	17.0
	Read and write	40	37.7	54.7
	Primary school	14	13.2	67.9
	Middle school	10	9.4	77.4
	Preparatory school	4	3.8	81.1
	Institute	8	7.5	88.7
	College or above	12	11.3	100.0
Occupation	Housewife	84	79.2	79.2
	Employee	14	13.2	92.5
	Student	8	7.5	100.0

Table (1) show that most (66.0%) of patients enrolled in this study were within the age groups of (40-59) years (the MS±SD 52.6±12.8), 94.3% of them was married, 37.7% were read and write, and the majority (79.2%) of them were housewife.

Table (2): Distribution of patients according to their medical information (n=106):

Medical information		Frequency	Percentage	Cumulative Percentage
Pre-existing Chronic disease	DM	16	15.1	15.1
	HTN	22	20.8	35.9
	Non	68	64.1	100.0
	Total	106	100.0	
Stage of Tumor	Stage 1	16	15.1	15.1
	Stage 2	32	30.2	45.3
	Stage 3	26	24.5	69.8
	Stage 4	32	30.2	100.0
Body mass index (BMI)	Underweight (BMI< 18.5)	0	0.0	0.0
	Normal (BMI=18.5 - 24.9)	22	20.8	20.8
	Overweight (BMI=25 - 29.9)	36	34.0	54.8
	Obese (BMI ≥ 30)	48	45.2	100.0

The result in table (2) illustrated that 30.2% of patients enrolled in this study were in the second and fourth stages of tumor, regarding the pre-existing chronic diseases, most of them (64.1%) does not suffered from chronic diseases, and the largest percentage (45.2%) had obesity.

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Table (4-3): Statistical analysis of the fatigue level in patients with breast cancer (n=106):

	Items	Responses										MS	Level
		Not at all		A few times		Somewh at		Often		Very often			
		f	%	f	%	f	%	f	%	f	%		
1	I feel exhausted.	0	0.0	1	1.9	3	5.7	12	22.6	37	69.8	4.6	H
2	I feel weak all over.	0	0.0	2	3.8	2	3.8	11	20.8	38	71.7	4.6	H
3	I feel listless ("washed out").	0	0.0	2	3.8	5	9.4	16	30.2	30	56.6	4.3	H
4	I feel tired.	0	0.0	3	5.7	3	5.7	18	34.0	29	54.7	4.3	H
5	I have trouble starting things because I am tired.	5	9.4	3	5.7	2	3.8	17	32.1	26	49.1	4.0	H
6	I have trouble finishing things because I am tired.	3	5.7	3	5.7	5	9.4	13	24.5	29	54.7	4.1	H
7	I have energy.	3	5.7	32	60.4	7	13.2	5	9.4	6	11.3	2.6	L
8	I am able to do my usual activities.	5	9.4	12	22.6	13	24.5	17	32.1	6	11.3	3.1	H
9	I need to sleep during the day.	1	1.9	5	9.4	6	11.3	7	13.2	34	64.2	4.2	H
10	I am too tired to eat.	2	3.8	8	15.1	5	9.4	17	32.1	21	39.6	3.8	H
11	I need help doing my usual activities.	2	3.8	7	13.2	3	5.7	16	30.2	24	45.3	4.0	H
12	I am frustrated by being too tired.	2	3.8	2	3.8	4	7.5	19	35.8	26	49.1	4.2	H

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13	I have to limit my social activities because I'm tired.	1	1.9	3	5.7	2	3.8	14	26.4	33	62.3	4.4	H
Total fatigue mean												4.0	H

H=High level of fatigue MS>3; L=Low level of fatigue MS<3.

The results in table (3) exposed that the patients with high fatigue level, the overall mean of fatigue is 4.0.

Table (4): Fatigue severity levels in patients with breast cancer undergoing chemotherapy (n=106):

Fatigue Severity Level		Frequency	Percent	Cumulative Percent
<16	Minimal or no fatigue	0	0.0	0
17-33	Mild fatigue	0	0.0	0
34-50	Moderate fatigue	30	28.3	28.3
>50	Severe fatigue	76	71.7	100.0
Total		106	100.0	

The results in the table (4) indicate that the majority (71.7%) of patients (more than two-thirds of the sample) experience severe fatigue, and 28.3% had moderate level of fatigue.

Table (5): Impact of fatigue on physical, psychosocial, and cognitive dimensions (n=106):

Items	Responses										MS
	Never		Rarely		Sometim es		Often		Almost Always		
	f	%	f	%	f	%	f	%	f	%	
I have been fewer alert.	2	3.8	10	18.9	16	30.2	19	35.8	6	11.3	3.3
I have difficult to paying attention for long periods.	2	3.8	11	20.8	11	20.8	21	39.6	8	15.1	3.4
I have unable to think clearly.	8	15. 1	7	13.2	10	18.9	23	43.4	5	9.4	3.1
I have been clumsy and uncoordinated.	5	9.4	10	18.9	13	24.5	16	30.2	9	17.0	3.2
I have been forgetful.	6	11. 3	11	20.8	13	24.5	15	28.3	8	15.1	3.1
I have had to pace myself in my physical activities.	1	1.9	2	3.8	10	18.9	25	47.2	15	28.3	3.9

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I have been less motivated to do anything that requires physical effort.	1	1.9	8	15.1	8	15.1	20	37.7	16	30.2	3.7
I have been less motivated to participate in social activities.	0	0.0	2	3.8	8	15.1	21	39.6	22	41.5	4.1
I have been limited in my ability to do things away from home.	0	0.0	1	1.9	4	7.5	13	24.5	35	66.0	4.5
I have trouble maintaining physical effort for long periods.	0	0.0	1	1.9	9	17.0	18	34.0	25	47.2	4.2
I have had difficulty making decisions.	2	3.8	9	17.0	11	20.8	20	37.7	11	20.8	3.5
I have been less motivated to do anything that requires do anything that requires thinking.	3	5.7	5	9.4	11	20.8	20	37.7	14	26.4	3.6
My muscles have felt weak.	0	0.0	1	1.9	5	9.4	7	13.2	40	75.5	4.6
I have been physically uncomfortable.	0	0.0	3	5.7	3	5.7	3	5.7	44	83.0	4.7
I have had trouble finishing tasks that require thinking.	3	5.7	8	15.1	8	15.1	11	20.8	23	43.4	3.8
I have had difficulty organizing my thoughts when doing things at home or at work.	1	1.9	6	11.3	11	20.8	12	22.6	23	43.4	3.9
I have been less able to complete tasks that require physical effort.	1	1.9	6	11.3	5	9.4	17	32.1	24	45.3	4.0
My thinking has been slowed down.	8	15.1	5	9.4	10	18.9	21	39.6	9	17.0	3.3
I have had trouble concentrating.	3	5.7	8	15.1	8	15.1	22	41.5	12	22.6	3.6

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I have limited my physical activities.	1	1.9	1	1.9	2	3.8	17	32.1	32	60.3	4.6
I have needed to rest more often or for longer periods.	0	0.0	2	3.8	2	3.8	2	3.8	47	88.7	4.7
Total impact of fatigue										3.8	

The results shown in table (5), specify that a fatigue is a multifaceted symptom with a pervasive impact across physical, cognitive, and psychosocial domains. It significantly compromises the life quality and functioning of patients with breast cancer receiving chemotherapy.

Table (6): Impact of fatigue on physical, psychosocial, and cognitive dimensions (n=106)

Impact grade	Frequency	Percent	Cumulative Percent
Minimal/Low Impact (0-28)	0	0.0	0.0
Moderate Impact (29-56)	4	3.8	3.8
Severe Impact (57-105)	102	96.2	100.0
Total	106	100.0	

More than 96.2% of the sample scoring within the severe impact level, these results indicate that chemotherapy-related fatigue does not limit to physical fatigue alone, but also includes significant psychological, cognitive, and social impacts for the majority of breast cancer patients.

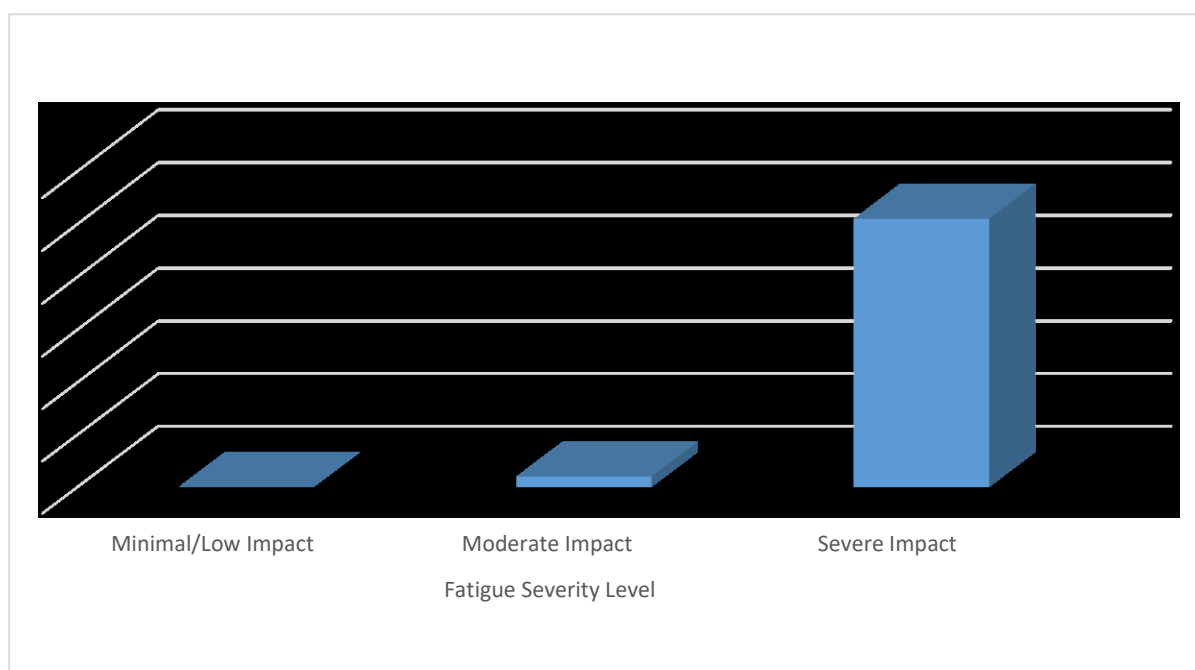


Figure (1): Impact of fatigue on physical, psychosocial, and cognitive dimensions.

Table (7): Association between fatigue level and physical, psychosocial, and cognitive dimensions:

Fatigue level		
Physical, cognitive and psychosocial dimensions	p-value	Level of association
	0.003	HS

HS= significant at p-value < 0.05.

The result in the table (7) indicate a significant association between fatigue level and physical, psychosocial, and cognitive dimensions of patients with breast cancer receiving chemotherapy, with the statistical significance level (p-value = 0.003) indicating that these dimensions are significantly affected by the level of fatigue in this type of patients.

Discussion

Fifty-three patients with breast cancer participated in this study to determine the impact of fatigue on physical, psychosocial, and cognitive dimensions. After the analyzing of the socio-demographic data as shown in table (1), the results indicate that 17.0% of the patients were aged <40, 66.0% were aged (40-59) and 17.0% were aged >60, the MS±SD of patients age were 52.6±12.8. and the majority of them (94.3%) were married. Regarding the educational level, the results indicates that 37.7% of patients enrolled in this study can read and write, and 13.2% have a primary school level. Regarding the patient's occupational status, the results revealed that 79.2% were housewives. These results may reflect the social roles or caregiving responsibilities that might affect their experience of fatigue [20]. The educational level different, with 17% being illiterate and 11.3% having a college degree or higher. This variation may affect patients' understanding of their complaint and adherence to management protocols [22].

In terms of medical data as presented in table (2), the results indicate 64.1% of patients enrolled in the present study had no pre-existing chronic diseases, while 20.8% of them had hypertension (HTN) and 15.1% had diabetes mellitus (DM). The distribution of tumor stages was fairly even, with a prevalence of 30.2% in stages two and four. Markedly, 45.2% of participants were graded as obese (BMI ≥ 30), which representing a relationship between fatigue level and obesity in patients with cancer. The high obesity prevalence may aggravate fatigue level due to metabolic and inflammatory issues [23].

The results in the table (3) presents the statistical analysis of fatigue levels in patients with breast cancer receiving chemotherapy, assessed through 13 items related to physical, emotional, and functional aspects of fatigue. The fatigue level is categorized based on the Mean Score (MS): High fatigue if MS > 3 and Low fatigue if MS ≤ 3. The vast majority of patients stated high fatigue (MS=4.6), with 69.8% selecting "very often." This shows that exhaustion is a main symptom,

supporting the previous study that was done by [23] recognized fatigue as one of the most reported chemotherapeutic agents side effects.

For patients with breast cancer receiving chemotherapy, 71.7% felt weak "very often" (MS=4.6). This systemic weakness can be predictable to the cytotoxic effects of chemotherapy that influence both the healthy and cancerous cells [25][28]. 56.6% of patients enrolled in this study experienced the feeling of washed out "very often" (MS=4.3). This high percentage reveals a common physical and psychological fatigue among patients undergoing chemotherapy due to metabolic changes and chronic stress. With a prevalence of multiple sclerosis at 4.3%, and 54.7% reporting feeling tired "very frequently," this highlights a general tendency toward extreme fatigue.

Nearly one-half of the patients (49.1%) reported "very often" anxious when starting tasks due to fatigue (MS=4.0), indicating that fatigue hinders their ability to complete tasks, reflecting a decrease in motivation and energy reserves. Similarly, over one-half of the patients (MS=4.1) reported difficulty completing their tasks. This suggests that fatigue affects endurance and concentration, impacting productivity. A low fatigue score (MS=2.6), with 60.4% responding "somewhat," indicates that while energy levels are insufficient, they are not completely depleted. This may be attributed to infrequent periods of recovery or variations in fatigue levels.

Regarding the ability to perform activities of daily living, most of participants in this study indicated a high level of fatigue, only 11.3% stated difficulty in performed their usual activities, this reveals a reduction in functional capacity. 64.2% specified a need for daytime naps, highlighting the burden of fatigue and its impact on their daily activities. Furthermore, 39.6% were "frequently" too tired to eat. This is clinically significant, as malnutrition can exacerbate fatigue and delay recovery. 45.3% of patients were need help to performing any activities. It reveals the physical restrictions in daily self-care that handled by patients receiving chemotherapy.

Regarding the frustrated to being too tired, it is confirmations a psychological burden (MS=4.2), with fatigue prominent emotional distress. This make straight with studies that link fatigue with mood conflicts such as depression and anxiety. 62.3% reported very often a social limitation because they are tired. This proposes that fatigue negatively affects patients' social life and may donate to isolation and decreased quality of life.

The overall findings illustration that the majority of patients have high fatigue levels during chemotherapy, mainly in physical and functional domains, according to the results shown in table (3) that total fatigue mean (4.0). [24] stated that the majority of patients reported clinically significant fatigue (mean score: 4.0). Fatigue was most severe in the physical aspect (e.g., weakness, reduced energy) and functional aspect (e.g., impaired activities of daily living).

The emotional impact is also evident in their frustration and social withdrawal. These findings are consistent with several studies, in a systematic study carried out by [23], reported that the prevalence of fatigue among patients with cancer undergoing chemotherapy was 49.96%, indicating that nearly one-half of patient's experience moderate to severe fatigue. The analysis showed that patients with fatigue had significantly decreased quality of life, with significant drops in measures related to physical, psychological, and social functioning compared to patients without fatigue.

The results in table (4) showed that all patients with breast cancer receiving chemotherapy (n=53) experienced variable degrees of fatigue. None of the patients fell into the "minimal or no fatigue" category (<16 points) or the "mild fatigue" category (17–33 points), indicating that fatigue was prevalent among the that patients. The majority of patients (more than two-thirds of patients) experience severe fatigue, a strong indicator of the significant negative impact of chemotherapy on patients' physical and functional energy. The absence of cases with low or no fatigue confirms that fatigue is a core clinical symptom associated with chemotherapy in patients with breast cancer, these results are come a long with several studies, in a systematic study by [26] show a significant rise was detected in the severity of fatigue during the treatment period, with a large percentage of

patients reporting moderate to severe fatigue. The mean score enlarged from 38.2 points before the start of treatment to 47.6 points midway through treatment, and to 51.1 points at the end of treatment.

The results in the table (5) provides a clear evidence of the significant impact that fatigue has impact on dimensions of physical, cognitive, and psychosocial functioning in patients with breast cancer receiving chemotherapy. In many items related to impact that fatigue has impact on dimensions of physical, cognitive, and psychosocial functioning such "I have been less alert" (MS=3.3), "I have had difficulty paying attention" (MS=3.4), and "I have been unable to think clearly" (MS=3.7) reveal a moderate to high levels of cognitive fatigue. The high percentage of responses in the "Often" and "Almost always" categories (e.g., 35.8% and 11.3% for alertness) indicates that chemotherapy-induced fatigue severely impairs concentration and cognitive processing. This often referred to as "chemo brain," is a well-documented side effect of chemotherapy, linked to both direct neurotoxic effects and secondary psychological stressors. A study conducted by [27] indicates that women who received chemotherapy for breast cancer showed higher rates of cognitive impairment.

The results also demonstrated an important impact of fatigue on the physical dimensions. Approximately, three quarter (75.5%) of patients stated "near-permanent" muscle weakness, and 88.7% reported the need for more frequent or longer rest periods. These percentages highlighting the profound impact of fatigue on physical capacity. On the other hand, items associated with discomfort and reduced activity (e.g., "I have limited my physical activities" MS=4.6) support the conclusion that fatigue leads to significant functional impairments, likely reducing patients' quality of life and independence. The study reported that 46.3% of patients with breast cancer receiving chemotherapy experienced severe fatigue, with a mean fatigue score of 42.12 ± 32.10 , representing a significant physical impact of fatigue during treatment[18].

Fatigue have been also effects the patient's motivation and participating in social gathering. For example, the patients reported a moderate level (MS=3.3) in the item "I have been less motivated to take part in social activities", while the patients reported a high score (MS=3.7) related to the item "I have been less encouraged to do everything that needs physical exertion". These results reveal how fatigue not only effects the physical ability but also decreases the emotional effort, donating to social loneliness and psychological problem. A study has shown that fatigue is meaningfully associated with reduced quality of life in patients with breast cancer undergoing chemotherapy, with a strong link between levels of fatigue and functional ability, signifying an important psycho-social influence [18].

Overall, the results specify that fatigue is a multidimensional symptom with a general influence across physical, psychosocial, and cognitive dimensions. It significantly compromises the quality of life and functioning of breast cancer with patients receiving chemotherapy, according to the results shown in table (5) that total impact of fatigue is (3.8), in a study published in 2023, fatigue was found to significantly impact quality of life in females with breast cancer during chemotherapy, with significantly higher fatigue levels and psychological distress after treatment compared to before treatment [22].

Regarding the level of fatigue impact as shown in the table (6), the results indicates that 96.2% of patients (51 patients) experienced severe fatigue (severe impact: 57–105 degrees), and only 3.8% (2 patients) experienced moderate fatigue (moderate impact: 29–56 degrees), with no patients (0%) reported minimal or low fatigue (minimal/low impact: 0–28 degrees). These results specify that chemotherapy-related fatigue is not restricted to physical fatigue alone, but also includes significant psychological, cognitive, and social impacts for the majority of patients with breast cancer. With more than 96% of the sample scoring within the severe impact level, this specifies that chemotherapy-related fatigue has an intense impact on patients' performance in numerous features

of their lives, including concentration, ability to socialize, emotional response, and participation in activities of daily living. The study specified that fatigue increases meaningfully during chemotherapy and leads to important decline in quality of life, mainly in physical and social aspects. The study verified an increase in general fatigue from 28.4 to 45.7 points, and a decrease in physical act from 85.7 to 70.3 points[15].

The result in the table (7) exposed a correlation between physical, cognitive, and psychosocial fatigue, with the statistical significance level (p -value = 0.003) indicating a highly significant relationship, meaning that these dimensions are significantly affected by the level of fatigue in these types of patients.

Conclusions

Patients with breast cancer patients receiving chemotherapy experienced high level of fatigue, with none reporting mild or moderate fatigue. This highlights the debilitating nature of chemotherapy-induced fatigue in patient with breast cancer. Fatigue extremely impacted numerous patients' dimensions, including physical (e.g., muscle weakness), cognitive (e.g., impaired thinking and difficulty concentrating), and psychosocial (e.g., decreased motivation for social activities). Additionally, a statistically significant association was found between level of fatigue and physical, psychosocial, and cognitive dimensions at a p -value of 0.003.

Recommendation: Periodic assessment of fatigue levels is proposed as part of routine patient care to early recognise fatigue and allow for timely and suitable intervention. It is important to involve multidisciplinary teams (psychiatry, physiotherapy, nursing, and oncology nutrition) to provide holistic care aimed at improving patient outcomes and quality of life. Future studies could be expanded to explore the impact of fatigue on other aspects, such as sleep quality, nutritional status, and personal psychological issues, providing a holistic view of how to restore patients' quality of life.

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