Journal JBB
ISSN:2958-0528

Journal of Biomedicine and Biochemistry
Volume 1 Issue 2 (2022), pp. 34–40

ORIGINAL A R T I C L E

Assessment of Fatigue among Patients with Cancer at Euphrates Cancer Hospital

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Received:July 16, 2022,
Revised:July 19, 2022,
Accepted:July 20, 2022,

DOI: 10.57238/jbb.2022.5278.1002

OPEN ACCESS

Abstract

Background: Fatigue is a condition characterized by a subjective feeling of a decrease in energy, and it has both physical and psychological aspects. Many authors have pointed out the overlap between fatigue and depression.
Methods: A Descriptive correlational Design is used to study the relationships between the variables and how such relationships are analyzed to assess the research objectives. The study is conducted throughout the period of October 20 th 2021 to 15st June 2022. A Non-Probability (Purposive Sample) of (250) cancer patients, those who visited Al-Euphrates Cancer Hospital/ Al-Najaf/Chemotherapy and hormonal ,Radiation ,Surgery for treatment or follow up or both, are included in the study sample.The data are collected through the utilization of the developed questionnaire by using an interview technique after the estimation of the validity and reliability of the study instrument.
Result: the overall assessment was (high) for the domains (physical fatigue) and (moderate) for the domain (mental fatigue). The overall assessment of fatigue is also (moderate). In addition, other variables were studied and the study found a significant relationship between educational level, the monthly income/IQ, occupation, residence, cancer type on the patient's fatigue. Conclusion: Overall the patients with cancer exhibited a high percentage of physical fatigue and a moderate percentage of mental fatigue. In addition, other variables were studied and the study found a significant relationship between educational level, the monthly income/IQ, occupation, residence, cancer type on the patient's fatigue.

Keywords: Fatigue, Patients with Cancer, Physical Fatigue, Mental Fatigue

1 Introduction

Fatigue is a condition characterized by a subjective feeling of a decrease in energy, and it has both physical and psychological aspects. Many authors have pointed out the overlap between fatigue and depression. Not only somatic illness but also depression often contributes to a patient's fatigue. For patients with cancer, in particular, fatigue can be a chronic problem caused by a combination of physical, psychological, and situational factors [1]. Cancer tiredness might last a few weeks (acute) or months or years (chronic)

(chronic). Cancer tiredness can have a negative impact on your quality of life. Chronic and persistent fatigue experienced prior to a cancer diagnosis or by long-term cancer survivors is not always connected to or caused by cancer and its therapies. These people exhibit a kind of weariness comparable to that experienced by patients suffering from CFS, as defined by the Centers for Disease Control (CDC) [2] . Moreover ,Cancer-related fatigue (CRF) is a frequent and curable condition that has a significant impact on the quality of life of cancer patients [3]. The World Health Organization (WHO) emphasizes the need of relieving unpleasant symptoms in patients suffering from a life-shortening condition in order to enhance quality of life (QoL)[4]. Chemotherapy, one of the most extensively used medicinal regimens in oncology, has been found to be effective in a range of malignancies, including breast, colorectal, pancreatic osteogenic sarcoma, testicular, ovarian, and lung cancers. Aside from the benefit of destroying cancer cells, cytotoxic agents can also harm normal cells that are rapidly spilt, resulting in a variety of health issues. These cells are similar to those found in the mouth cavity, lower digestive system, and cells involved for hair development. Damage to healthy blood cells might result in fatigue and increased susceptibility to illness[5]. The precise physiological mechanism that induces cancer-related fatigue is not fully understood; however, psychological factors, such as depression and anxiety, and sociocultural factors, such as biorhythm, act together with these physiological factors[6]. Fatigue can be a symptom that persists for months to years in this population after CT; in one study, a third of the patients that had been cured from cancer still experienced fatigue five years after the end of treatment and in another study, fatigue was referred by 60% of patients with Hodgkin's disease[7]. The primary processes of fatigue have been divided into two categories: peripheral and central.Peripheral tiredness, which occurs in neuromuscular connections and muscle tissues, causes the peripheral neuromuscular apparatus to be unable to accomplish a task in response to central stimulation. A shortage of adenosine Triphosphate and the accumulation of metabolic byproducts are two mechanisms implicated in peripheral weariness. Central tiredness develops in the central nervous system (CNS) as a result of the increasing inability of motor neuron impulses to transmit [8]. Central fatigue is characterized as difficulties initiating or maintaining voluntary activity. In the absence of observable cognitive failure or motor weakness, central weariness shows as "a inability to accomplish physical and mental activities that need self-motivation and internal signals." Fatigue can be caused by peripheral signals transmitted by afferent neurons in muscles or closely related tissues (e.g., tendons and joints) or by activation of central pathways in the cerebral cortex. Individuals' perceptions of effort, on the other hand, appear to be connected more to the effort necessary to create force than to the size of the force exerted. The impression of effort may entail a central signaling system involving the motor cortex and the primary somatosensory cortex [9].

Objective of the Study

1. To measure the level of fatigue among patients with cancer.
2. find out the relationship between the severity of patients' fatigue and their demographic data.

2 Methods

2.1 Ethical Considerations and Administrative Agreements

To conduct the study, the researcher obtained consent from the Nursing/University of Kufa faculty. The ethical committee of the Faculty of Nursing provides further authorisation. These permissions are one of the most basic requirements to adhere to while collecting data in order to respect the participant's values and dignity. In addition, formal clearance from the Ministry of Planning/Central Council for Statistics is necessary to approve the study questionnaire and protect the rights of the researcher and participants . Al-Najaf Al-Ashraf Health Directorate/Euphrates Cancer Hospital also gives their consent in order to conduct interviews with each subject Finally, the researchers got subject permission from the patients themselves after explaining the goal of the study and obtaining informed consent. The confidentiality of the participants is respected, and the patients are notified that their participation is entirely optional, and they are not required to complete the survey or answer the interview questionnaire items.

2.2 Design of the Study

A descriptive correlational design is used to study the relationships between the variables and how such relationships are analyzed to assess the research objectives. The study is conducted throughout the period of of October 20 th 2021 to 15st June 2022

2.3 Sample of the Study

A non-probability (purposive sample) of 250 cancer patient. These patients are selected from those who visited Al-Euphrates Cancer Hospital/Al-Najaf/Chemotherapy and hormonal, Radiation, Surgery for treatment or follow up or both.

2.4 Including Criteria:

The study sample was selected using the following criteria for specifying the study subjects who are included in the study.

1. All participants are diagnosed with different stages of cancer disease undergoing different treatment stages, such as chemotherapy, radiation, and other types of treatments, with no associated chronic diseases except cancer, and are willing to participate in the study voluntarily.
2. All definitive participation diagnoses of cancer are based on the information contained in the medical records, having been diagnosed with cancer from six months or older.
3. The age of all participants are over 18 years old and older because self-care and self-efficacy activities differ from adolescence to adult and with advanced ages.
4. Because the investigation needs subjective measures, patients must be alert and free of any changes in consciousness.
5. No prior history of psychological problems as disclosed by the patient or their family.

2.5 Data Collection methods

The data has been collected through the utilization of the adapted and developed questionnaire by the researcher after the validity and reliability are estimated. The data gathered using structured interview techniques with the subjects who are individually interviewed. Arabic version of the questionnaire is used. All those subjects who are included in the study sample are interviewed in the same way. The data collection process has been performed from January 3st to February 28th, 2022. Each subject spends approximately (20-25) minutes to complete the interview.

2.6 Statistical Analysis

The following statistical data analysis approaches is used in order to analyze the data of the study under application of the statistical package (SPSS) ver. (25), and the Microsoft excel (2010):

1. **Descriptive Statistical measures :** this included use of tabular data through tables, figures. Further the researcher also utilized the mean, frequency, percentage and stander deviation to present the data.
2. **Inferential Statistical measures :** This approach is used to accept or reject the statistical hypothesis, which included the following:

(a) The reliability of questionanair was evaluated using internal consistency test (test-retest).

(b) Correlation coefficient testing (r): The coefficient value ranges from zero (total no correlation) to one (perfect correlation), with the higher r value close to one indicating stronger correlation, the positive (no sign) r value indicating a direct(positive) correlation, and the negative signed r value indicating an inverse correlation. A significant difference or correlation was defined as a difference or correlation with a level of significance of 0.05.

(c) Chi-Square test for testing the independency distribution of the observed frequencies, and for measuring the association between the studies variables according to its type.

3 Result

Demographic data	Rating and intervals	Frequency (N=250)	Percentage
Age / years	18-34	43	17.2
	35-51	90	36.0
	52-68	94	37.6
	69-85	23	9.2
Gender	Male	101	40.4
	Female	149	59.6
Marital Status	Married	199	79.6
	Single	27	10.8
	Divorced	3	1.2
	Widowed	21	8.4
Family Type	Extended	169	67.6
	Nuclear	81	32.4
Educational Level	Unable Read and Write	73	29.2
	School Graduated	141	56.4
	Institutes and above	36	14.4
Monthly Income/ IQ	100000-499000	174	69.6
	500000-999000	49	19.6
	$\geq$ 1000000	27	10.8
Occupation	Employed	29	11.6
	Free Job	197	78.8
	Retired	18	7.2
	Student	6	2.4
Residence	Urban	147	58.8
	Rural	103	41.2
House Ownership	Own	200	80.0
	Rent	50	20.0
Smoking	Smoker	35	14.0
	Non-smoker	165	66.0
	Ex-smoker	50	20.0
Number of packs/day	0	215	86.0
	1	16	6.4
	2	15	6.0
	3	2	0.8
Total= 250			

Table 1: Number and Ratio of isolated Bacterial Types

Demographic data	Rating and intervals	Frequency (N=250)	Percentage
Duration of diagnosis	1-3	194	77.6
	4-6	41	16.4
	≥7	15	6.0
Family history of cancer	Yes	107	42.8
	No	143	57.2
Stage of Tumor	Progressive	157	62.8
	Non-progressive	93	37.2
BMI	Normal	99	39.6
	Overweight	65	26.0
	Underweight	26	10.4
	Obese	60	24.0
Cancer Type	Blood	90	36.0
	Breast	58	23.2
	Lung	47	18.8
	Bowel	17	6.8
	Lymphoid Nodes	16	6.4
	Liver	15	6.0
	Bone Marrow	13	5.2
	Bone	13	5.2
	Prostate	12	4.8
	Uterus	8	3.2
	Bladder	7	2.8
	Head & Neck	6	2.4
	Stomach	5	2.0
	Oral	3	1.2
	Pancreas	1	0.4
	Kidneys	3	1.2
	Rectum	2	0.8
	Ovaries	1	0.4
	Esophagus	1	0.4
Total= 250			

Table 1: Number and Ratio of isolated Bacterial Types *(continued)*

The demographic data of patients are presented in Table 1, this table shows that the majority of the patients' subgroups are : those with ages ranging between (52-68) years (37.6%); female patients (59.6%); those that school graduated (56.4%), those who are married (79.6%); those that live in urban area (58.8%); those who are free jobs (78.8%); those with extended family (67.6%); those with monthly salary less than 500 thousand; those that have their own houses (80%); those who are non-smoker; those with (1-3) years of disease duration (77.6%); those with no family history of cancer (57.2%); those with progressive cancer (62.8%); those with normal BMI (39.6%). The distribution of patients according to cancer type has shown that (36%) of the patients' have blood cancer; (23.2%) have breast cancer; (18.8%) of them have bowel cancer; other types of frequency are less found.

No.	items	MS	SD	Assessment
	Physical Fatigue			
1	Do you become tired easily?	2.60	0.56	High
2	Do you have the urge to lie down?	2.65	0.58	High
3	Do you feel exhausted?	2.59	0.56	High
4	Does your body felt heavy and tired?	2.36	0.65	High
5	Do you feel such fatigue that you don't know what to do with yourself?	2.24	0.61	Moderate
	Mental Fatigue			
6	Do you feel that you more often make derrors while speaking?	1.43	0.71	Low
7	Do you feel you have become forgetful?	1.99	0.88	Moderate
8	Can you concentrate on certain things?	2.69	0.59	High
9	Do you feel reluctant?	1.72	0.72	Moderate
10	Do you feel that your thinking has become slow?	1.20	0.40	Low
11	Do you have trouble remembering?	1.26	0.60	Low

MS: Mean of Scores; SD: Standard Deviation; Low: MS= 1-1.66; Moderate: MS =1.67-2.33; High: MS ≥2.34.

Table 2: Assessment and mean of scores of patients' physical and mental fatigue.

Table (2) show the assessment and mean of scores of patients' physical and mental fatigue. This table shows that most of the patients have (high) physical fatigue, while some items exhibited (low) mental fatigue, other have (moderate) and (high) mental fatigue assessment. This assessment is based on the statistical scoring system, in which the item is classified as (low) if the mean of scores between (1-166); it is considered (moderate) if the mean of scores between (1.67-2.33); while it is considered (high) if the mean of scores is more than (2.34).

No.	items	MS	SD	Assessment
1	Physical Fatigue	2.49	0.59	High
2	Mental Fatigue	1.72	0.65	Moderate
Total Fatigue		2.10	1.60	Moderate

MS: Mean of Scores; SD: Standard Deviation; Low: MS= 1-1.66; Moderate: MS =1.67-2.33; High: MS ≥2.34.

Table 3: Assessment and mean of scores of overall patients' physical and mental fatigue.

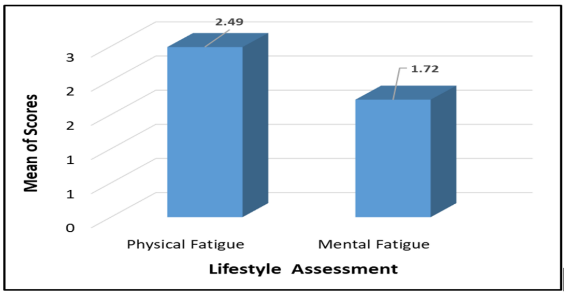

Table (3) is about assessment and mean of scores of overall patients' physical and mental fatigue. This shows that the overall assessment was (high) for the domains (physical fatigue) and (moderate) for the domain (mental fatigue). The overall assessment of fatigue is also (moderate) (see Table 4 and Figure 4).

Demographic data	Chi Square (x^2)	Correlation Coefficient	df	P value	Significance
Age / years	6.92	0.16	6	0.32	NS
Gender	1.11	0.06	2	0.57	NS
Marital Status	5.82	0.15	6	0.44	NS
Family Type	2.68	0.15	2	0.26	NS
Educational Level	13.75	0.22	4	0.008	HS
Monthly Income/ IQ	9.57	0.19	4	0.04	S
Occupation	16.43	0.24	6	0.01	HS
Residence	5.11	0.23	2	0.05	S
House Ownership	3.28	0.11	4	0.51	NS
Smoking	5.33	0.14	6	0.50	NS
Number of packs/day	4.23	0.12	4	0.52	NS
Duration of diagnosis	4.35	0.13	4	0.36	NS
Family history of cancer	1.93	0.08	2	0.38	NS
Stage of Tumor	3.71	0.12	2	0.15	NS
BMI	5.74	0.15	6	0.45	NS
Cancer Type	42.5	0.22	36	0.02	S

df= degree of freedom; NS: Non-significant at P value > 0.05 ; S: Significant at P value < 0.05.

Table 4: Association between the overall assessment of patients' fatigue and their demographic data.

Concerning table [4], it shows the association between the overall assessment of patients' fatigue and their demographic data, it shows that there is a non-significant association (P>0.05) between the overall assessment of patients' fatigue and their demographic data; except: educational level, monthly income, occupation, residence and cancer type, in which there was a significant association (P<0.05) between the overall assessment of patients' fatigue and their demographic data.

4 Discussion

In table 1 The present study shows that most participant of the study ages ranging (52-63) years (37.6%) according to sample selection method. Furthermore, it comes because the cancer incidence is increased as the patients' age increase. This fact is related to many factors: lifestyle factors, decrease metabolism rate and increase catabolic rate. This impairment leads to impaired patients physical activity and may cause deterioration in the body organs functions and inequalities in access to and awareness of screening programs. This result agrees with [9] reveals that among all samples majority of (39.73%) were from 46-65years of age, and more than two half are female patients (59.6%). Because it is the interaction of many factors together that produces cancer . the factors involved may be genetic, and envirnmental lead to the risk of disease development , such as exposure to radioactive materials and chemicals in war and its waste which is also a major cause of cancer as well as use of postmenopusal hormone therapy medications that combine estrogen and progesteron to treat menopausal signs and symptoms have a higher risk of developing breast cancer . and stressing that women's awareness of the seriousness of the disease is not enough yet. This result agrees [10, 11] In addition educational level, the results show that more than half third the study are school graduated (56.4%), and more than three quarters are married (79.6%). Because their living and social and cultural setting made the Iraqi people more prone to marry young, they were unable to finish their study. Furthermore, such outcome might be the result of our country's ongoing economic and political problems and conflicts since the early 1980s till now.This result agrees with [12], whose study results indicate that most participants are school graduate. This may be because that more than one third of the participants are old age between (52-63) years. and female(58.9%) whose results indicate that the majority study subjects is married. less than two thirds (62.8%) of the study participant have progressive cancer according to sample selection method after having diagnosed with cancer from 6 months or year. In Table 1 also presents the distribution of the selected patients according to the cancer types. It shows that that sample majority of 36% is blood cancer and the second majority of 23.2% is breast cancer, and 18.8% of the sample have bowel cancer. which agree with earlier published results [13] whose results indicate that the Majority of patients were diagnosed with stage IV (72.7In Table 2. the actual survey questions used to gather the research data for both physical and mental fatigue are presented together with the mean score (MS) and the Standard Deviation (SD). The analysis showed that majority of the participants used in the study have physical fatigue The patients with cancer generally suffer from both physical and mental fatigues. These fatigues are normally associated with weak physical activity, poor sleep quality, worries about the future, and ability to obtain required cancer treatment (such as chemotherapy, radiation, bone marrow, and immunotherapy). All these issues make cancer patients feel tired and overwhelmed. Particularly if the cancer treatment harms their healthy cells in addition to the cancer cell. Further, the fatigues may occur while the body is working hard to repair the damage caused by the treatment causing side effects such as anemia, insomnia, and change mood. This result confirmed with earlier publications by [14] who state The majority of the cancer patients showed moderate physical fatigue. Furthermore, The analysis showed that majority of the participants in the study have physical fatigue as shown in Figure 3. in Table 3. high for the domains (physical fatigue) and moderate for the domain (mental fatigue) Possible explanations for observing moderate fatigue in all cancer patients may results from any or combination of the following factors which are most patients seem to have accepted the illness and adjusted their lives accordingly. Further,as part of our religious believes, the patients consider their illness as a test by Allah and they must adopt and hope for better rewards after death.and The social support from family members, children, relatives, and neighbors also contribute to reducing the effect of physical and mental fatigue on the cancer patients. This result confirmed with earlier publications by [15] who state The majority of the cancer patients showed moderate physical fatigue. Moreover, In (Table 4)The study results show that there is a significant association (P<0.05) between the patients' fatigue and their educational level, monthly income, occupation, residence and cancer type, while there is a non-significant correlation patients' fatigue and their other demographic data. Because socio-economic inequality in employment, health, income, in general, as well as access to health care. Emphasizing that higher the level of education of individuals, the less likely they are to die from cancer. Inaddition because money and effort are the origin of the existence of life. These results are in agreement with published literature [16, 17].

5 Conclusions

Cancer most commonly occurs in females rather than males. most commonly occurs in patients of old age ranging between (52-68) years.and Patients living in urban residences exhibited higher percentages of cancer compared with those living in rural areas.In addition,The correlation between the patients' fatigue and their lifestyle is positive and statistically significant, Overall the patients with cancer exhibited a high percentage of physical fatigue and a moderate percentage of mental fatigue. and the ' level of education, occupation Residence and Monthly Income/ IQ , type cancer is significant affect on Patients' fatigue.

Conflict of Interest: None

Ethical consideration: from ethical committee in the Conflict of Interest: None

Ethical consideration: from ethical committee in the Ministry of Health of Iraq, Najaf, Iraq.

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How to cite

Abdel-Hussein Z. H.; Khdair F. W. ; Al-fahham A. A.; Assessment of Fatigue among Patients with Cancer at Euphrates Cancer Hospital. Journal of Biomedicine and Biochemistry. 2022;1(2):34-40.doi: 10.57238/jbb.2022.5278.1002