

Fatigue Management and Its Effect on Quality of Life of Patients Receiving Chemotherapy

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Abstract: Cancer-related fatigue is one of the most common symptoms experienced by patients receiving chemotherapy and/or radiation therapy. The aim of the study was to determine the effect of fatigue management on quality of life of patient receiving chemotherapy. Research design: A quasi experimental (pre and post) design was utilized. Setting: The study was carried out at in the chemotherapy outpatient clinic at Tanta University Hospital ElGharbia governorate. Subjects: A convenience sample of 100 patients with cancer related fatigue after experiencing chemotherapy. Tools: (1): structured interview questionnaire to assess patients' socio-demographic data, medical history and anthropometric measurements. (2): The Revised Piper Fatigue Scale. (3): European Organization of Research and Treatment-Related Quality of Life Core Questionnaire (EORTC-QLC30). Results: the higher percentage (48.0%) of studied patients fall in the age group from 40 to 60 years the with mean age (51.79).study revealed that there statistically significant difference between Piper Fatigue Scale (PFS)pre management and post management. Conclusion: After 1 month of intervention an enhancement of total of quality of life scale domains scores and total subscales was revealed. Recommendation:-Health education programs about the cancer, treatment modalities and self-care should be provided for cancer patients using high innovative teaching methods. Teaching programs for cancer patients about how to manage cancer related fatigue.

Keywords: Fatigue Management, cancer, Chemotherapy, Quality of Life.

I. INTRODUCTION

Fatigue is the most common symptom patients with cancer experience, with a prevalence rate that exceeds 60% in many studies. Cancer-related fatigue (CRF) is often experienced with additional symptoms, including sleep disturbance, pain, and depression. CRF may arise as a result of the cancer itself or it can be a frequently reported side effect of cancer treatment (s) such as chemotherapy, radiotherapy, surgery, and immunotherapy (Biswal et al., 2017).

Typically, CRF is more severe than the usual fatigue experienced by healthy people in that it is associated with a higher level of distress, is disproportionate to the activity or exertion level, and is not relieved by sleep or rest. CRF can compromise quality of life and a patient's ability to function optimally on a daily basis. Many patients report that CRF is more distressing and has a greater impact on activities of daily living and quality of life than other cancer-related symptoms such as pain, nausea, and depression. The U.S. National Institutes of Health has now identified treatment of CRF as a priority for advancing the care of cancer patient (Bower, 2014).

The incidence and severity of cancer-related fatigue appear to be influenced by characteristics of the patient, primary malignancy, and type/intensity of treatment. Fatigue has been reported in 80% to 99% of cancer patients who undergo treatment with chemotherapy, radiotherapy, or both. Although the relative importance of physical (e.g., anemia, cachexia), psychological (e.g., depression, anxiety), and situational (e.g., sleep deprivation) factors is usually unclear, these and other factors appear to be important in the pathogenesis and may be predominant in some cases (Wang & Woodruff, 2015).

Patients with cancer commonly report a lack of energy during the course of their disease and treatment. Fatigue may result from the disease itself, antineoplastic therapies, and/or a broad range of physical and psychologic comorbidities. Fatigue is multidimensional and can be described in terms of perceived energy, mental capacity, and psychological status. It can impair daily functioning and lead to negative effects on quality of life, self-care capabilities, and desire to continue treatment. In some cases, fatigue is the most significant barrier to functional recovery in cancer patients with stable disease who are undergoing chemotherapy (Berger et al., 2015).

Oncology nurses can play vital roles in the translation of the guidelines into practice to insure that CRF is routinely assessed, managed, and documented. Assessment/screening and measurement scales validated in patients with cancer are highlighted, and case studies reflect the vital roles that oncology nurses can play in the assessment, documentation, and ongoing monitoring of a patient with CRF the current recommendations for management of cancer related fatigue include: patient and family education, self care, non pharmacologic interventions, and pharmacologic treatment. (Mitchell, 2014).

Recommendations for fatigue management focus on identifying factors that may be contributing to fatigue. Because the only definitive causal mechanism demonstrated through research to date is chemotherapy-induced anemia, most clinical recommendations for managing fatigue caused by something other than chemotherapy-induced anemia rely on careful development of clinical hypotheses, as outlined in the National Comprehensive Cancer Network guidelines on fatigue. Much more research is needed to better define fatigue and its trajectory, understand its physiology, and determine the best ways to prevent and treat it. (NCCN, 2014).

Oncology nurses can play vital roles in the translation of the guidelines into practice to insure that CRF is routinely assessed, managed, and documented. Assessment/screening and measurement scales validated in patients with cancer are highlighted, and case studies reflect the vital roles that oncology nurses can play in the assessment, documentation, and ongoing monitoring of a patient with CRF.

The current recommendations for management of cancer related fatigue include: patient and family education, self care, non pharmacologic interventions, and pharmacologic treatment. (Mitchell, 2014). Several systematic reviews have indicated that the effectiveness of pharmacological regimens is limited and that the non pharmacologic interventions are moderately effective. (Minton, 2010)

Significance of the study:

The researcher of the present study observed that many cancer patients who receiving chemotherapy in the outpatient clinics of the oncology department at Tanta University hospital suffering from lack of energy and easily fatigued.

Cancer-related fatigue (CRF) is a significant clinical problem for more than 10 million adults diagnosed with cancer each year worldwide. No "gold standard" treatment presently exists for CRF. This research will provide a guide to improve the treatment of CRF. Nurses need to reassess and more than likely readjust the patient's fatigue management along the cancer continuum. Educating the patient to effectively manage other symptoms such as pain in addition to proper nutrition and hydration, exercise, and energy conservation will help empower patients to manage their fatigue. (Berger, 2009).

Many nursing studies documented the phenomenon of cancer related fatigue, such as the study which carried out by Abdel Raouf & Hashem (2005) who documented that fatigue was reported by 82% of the cancer patients as it's the second cancer problem priority for patients with different cancer lesion receiving chemotherapy, while a few studies enclose some guidelines that might help in reducing that fatigue. (Abdel Raouf, 2014).

II. SUBJECTS AND METHODS

The present study was conducted to fulfill the following aim:

To determine the effect of fatigue management on quality of life of patient receiving chemotherapy.

Research hypothesis:

Patients who received the fatigue management had improved quality of life post management than pre management.

Subjects & methods:

The study was portrayed under the four main designs as following:

- I. Technical Design.
- II. Operational Design.
- III. Follow up Design.
- IV. Statistical Design.

I. Technical Design

The technical design included research design, setting, subjects and tools of data collection.

(A) Research design:

A quasi experimental (pre and post) research design was used to conduct this study.

(B) -Study Setting:

The study was conducted in the chemotherapy outpatient clinic at Tanta University Hospital ElGarbia Governorate.

(C)-Subjects

A convenience sample of 100 patients with cancer related fatigue undergoing chemotherapy who visited the outpatient clinic was recruited in this study.

Inclusion criteria:

- Cancer patient undergoing chemotherapy.
- 18 years and older.
- Accept to be included in the study.

Tools of the study:

It was divided to three tools, which were adapted and modified and the other developed by the researcher based on related literature, it was written in a simple Arabic language, and filled by the researcher.

Three tools were used in the current study; it included the following tools:

Tool (1): A structured Interview Questionnaire :

This tool was divided into three parts:

- **Part one: Assessment of Socio-demographic data:** It will include name, age, gender, educational level, occupation, residence and family income.
- **Part two: Assessment of medical history:** past medical history, onset of cancer, any surgical intervention, disease related factors : (diagnosis, disease stage, duration of illness, treatment to date, chemotherapy regimen)

• Tool (2) :

The Revised Piper Fatigue Scale (PFS) developed by (piper, 1998).It contains 22 items and refers to the patient current situation, which is rated on an 10-point likert scale. The Piper scale includes four subscales: behavioral/severity (6 items), affective meaning (5 items), sensory (5 items) and cognitive/mood (6 items).

Scoring system:

A scoring system was followed to assess the Revised Piper Fatigue Scale (PFS). To calculate the total fatigue score, add the 22-item scores together and divide by 22 in order to keep the score on the same numeric "0" to "10" scale. **Mild** (1-3), **Moderate** (4-6), **Severe** (7-10).

• **Tool 3 :**

European Organization of Research and Treatment-Related Quality of Life Core Questionnaire (EORTC-QLC30) developed by (Aaranson et al., 1993). It included Thirty –items health related quality of life questionnaire that measures five functions (physical, role, cognitive, emotional, and social) and nine symptoms (fatigue, pain, nausea and vomiting, dyspnea, loss of appetite, insomnia, constipation, diarrhea, and financial difficulties). Global health status domain (2 items), Functional scale domain (15 items) and Symptom scale domain (13 items).

Scoring system:

A scoring system was followed to assess European Organization of Research and Treatment-Related Quality of Life Core Questionnaire (EORTC-QLC30). The total score of (EORTC-QLC30) were 126 grades; each item in global health status domain rated on a 1-7 -point likert scale. While, each item in other domains was evaluated as “not at all” was taken one score, “A little” was taken two score, “Quite a bit” was taken three score and “Very much” was taken four score.

Validity and Reliability:

The validity of the tool was ascertained by five experts in the field of family and community Health Nursing .Their opinions elicited regarding the format, layout, consistency, accuracy and relevancy of the tools.

Reliability analysis by measuring of internal consistency of the tool through Cronbach's Alpha test.

Tool	Cronbach's Alpha
Revised Piper Fatigue Scale	.82
Quality of Life Core Questionnaire	.70

II. Operational Design

The operational design for this study consisted of four phases, namely preparatory phase, ethical considerations, pilot study, and fieldwork.

Preparatory Phase

This phase included reviewing of literature related to fatigue management and its effect on quality of life of patients receiving chemotherapy. This served to develop the study tools for data collection. During this phase, the researcher also visited the selected places to get acquainted with the personnel and the study settings. Development of the tools was under supervisors’ guidance and also experts’ opinions were considered.

Ethical Considerations

The research approval was obtained from the Faculty Ethical Committee before starting the study.

The ethical research considerations include the following:

- An official permission was taken from the Dean of Tanta University Hospital to be submitted to the Dean of Faculty of Nursing – Menoufia University.
- Official steps were taken to obtain a permission to conduct the research, with explanation of the aim and the importance of the study to hospital authorities.
- The researcher was follow the ethical consideration in conducting the study includes subjects consent and save the anonymity and confidentiality of the participants.
- Approval of the ethical committee of faculty of nursing –Menoufia University.
- Patients were informed that they are allowed to choose to participate or not in the study and they have the right to withdrawal from the study at any time.

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Pilot Study

Carried out on 10 Patient those represent 10% of patients with cancer in the chemotherapy outpatient at Tanta University Hospital in order to test the applicability of the constructed tools and the clarity of the included questions related to Revised Piper Fatigue Scale and Quality of Life Core. The pilot has also served to estimate the time needed for each subject to fill in the questions. According to the results of the pilot, some corrections and omissions of items were performed so the pilot was not included in the main study sample.

Fieldwork

An approval was obtained from the Dean of Tanta University Hospital. A letter was issued to them from the Faculty of Nursing, Menoufia University, explaining the aim of the study in order to obtain their permission and cooperation. Data were collected in six months, from the beginning of June 2018 to the end of December 2018.

- An interview was done with the studied cancer patients to explain the purpose of study and its importance.
- A structured interviewing questionnaire was developed and used at the beginning of study (base line assessment) to the studied sample of patient contain (socio-demographic data, assessment of medical history, assessment of fatigue and assessment of quality of life.
- The researcher provided fatigue nursing management; the intervention consisted of a patient education about: Range of motion exercise, Nutrition and hydration, stress management, measures to promote the quality of sleep and rest and energy conservation methods.
- Visual and computerized written materials were used during the educational session. The intervention was supplemented by the provision of illustrated booklet.
- And after that, (post test) was used to assess the effect of fatigue management on quality of life of patients receiving chemotherapy.

Patients in the study received four sessions:

- The first session included assessment of socio demographic data, medical data, cancer-related fatigue & quality of life.
- The second session included introduction to cancer-related fatigue.
- The third session included fatigue management.
- The fourth session included collected data post intervention.
- The post test was done after 1 month of intervention for evaluating the effectiveness of the nursing management on quality of life.
- A telephone number of the researcher was given to the patients to communicate and ask questions.

III. Follow up design:

- The researcher followed up the studied patients during a month to confirm the information and provided guidance.
- The researcher connected with the studied patients via mobile every 2 weeks to give them guidance and instruction

Follow up of studied patients

IV. Statistical Analysis

The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 19, SPSS Inc. Chicago, IL, USA). For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, which describe a categorical set of data by frequency, percentage or proportion of each category, comparison between two groups and more was done using Chi-square test (χ^2). For comparison between means of two groups of non-parametric data of independent samples, Z value of Mann-whitney test was used. For comparison between means of two related groups (pre and post management) of parametric data, paired t-test was used. For

comparison between more than two means of non-parametric data, Kruskal-Wallis (2 value) was calculated. Correlation between variables was evaluated using Pearson’s correlation coefficient (r), the observed differences and associations were considered as follows:

- Highly significant at p-value ≤ 0.001 .
- Statistically significant at p-value ≤ 0.05 .
- Non-significant at p-value > 0.05 .

Limitation of the study:

Some patients refuse to participate in study.

Table (1): Socio-demographic data of the studied patients with cancer related fatigue after experiencing chemotherapy (n=100).

Socio-demographic data	The studied patients with cancer related fatigue (n=100)	
	n	%
Age years:		
23-<40	23	23.0
40-<60	48	48.0
60-79	29	29.0
Range	23-79	
Mean±SD	51.79±13.71	
Sex:		
Male	40	40.0
Female	60	60.0
Marital status:		
Married	3	3.0
Single	87	87.0
Window	10	10.0
Educational level:		
Illiterate	44	44.0
Literate	56	56.0
Job:		
Work	39	39.0
Don't work	61	61.0
Residence:		
Rural	50	50.0
Urban	50	50.0
Family income:		
<1000	100	100

Table (1): The table indicated that The studied patients age ranged between 23– 79 years with mean age 51.79±13.71, (48.0%) of them fall in the age group from 40 to- <60 years, (60.0%) of the studied patients were females, (87.0%) of the studied patients were single. Regarding education level (56.0%) were literate. According to their job, (61.0%) of the studied patients didn’t work. According to residence, (50%) of them lived in rural area, also half of them lived in urban area.

Table (2): Medical history data of the studied patients with cancer related fatigue after experiencing chemotherapy (n=100).

Medical history	The studied patients with cancer related fatigue (n=100)	
	n	%
Past history of cancer:		
No	100	100
Onset of cancer (months):		
<6	19	19.0
6 & more	81	81.0
History of surgical operation:		
No	98	98.0
Yes	2	2.0
Type of cancer:		
Breast cancer	32	32.0
Colon cancer	17	17.0
Lung cancer	16	16.0
Cancer of lymph nodes	19	19.0
Gastro-intestinal cancer	13	13.0
Bladder cancer	2	2.0
Cervical cancer	1	1.0
Stage of cancer:		
2 nd stage	15	15.0
3 rd stage	83	83.0
4 th stage	2	2.0

Table (2): indicated that all studied patients haven't past history of cancer. Table show that (81.0 %) of studied patients have cancer for more than 6 months, (98.0 %) of studied patients haven't history of surgical operations, (32.0 %) of studied patients have breast cancer. Also, (83.0 %) of studied patients has 3rd stage of cancer.

Table (3): Piper Fatigue Scale (PFS) scores among the studied patients with cancer related fatigue after experiencing chemotherapy pre and post fatigue management (n=100).

Piper Fatigue Scale (PFS) subscales (Each item scored 1-10)	Total PFS subscales scores of the studied patients with cancer related fatigue (n=100)		Paired t-test	P value
	Pre-management	Post-management		
Behavioral/severity subscale				
Range	28-49	23-40	16.123	0.0001*
Mean±SD	40.52±5.87	29.98±2.88		
Affective meaning subscale				
Range	21-40	15-35	14.099	0.0001*
Mean±SD	33.70±4.99	25.08±3.53		
Sensory subscale				
Range	22-40	15-34	13.911	0.0001*
Mean±SD	33.82±4.91	25.09±3.91		
Cognitive/mood subscale				
Range	26-49	17-40	15.472	0.0001*
Mean±SD	40.08±5.48	29.13±4.47		
Total Piper Fatigue scale scores				
Range	99-171	70-137	16.959	0.0001*
Mean±SD	148.12±18.78	109.28±13.11		

*Statistically significant (P<0.05)

Table (3): Shows comparison between Piper Fatigue Scale (PFS) mean scores among the studied patients with cancer related fatigue after experiencing chemotherapy pre and post fatigue management (n=100). Table indicated that pre management total piper fatigue scale (PFS) of the studied patients with cancer related fatigue have higher Mean±SD(148.12±18.78) than post management (109.28±13.11). Behavioral/severity subscale has the highest mean pre management (40.52) and post management (29.98), Cognitive/mood subscale has mean pre management (40.08) and post management (29.13), Sensory subscale has mean pre management (33.82) and post management (25.09) and Affective meaning subscale has mean pre management (33.70) and post management (25.08) at (P= < 0.01).

Figure (1): Mean total scores of Piper Fatigue (PFS) scale among the studied patients with cancer related fatigue after experiencing chemotherapy pre and post fatigue management (n=100).

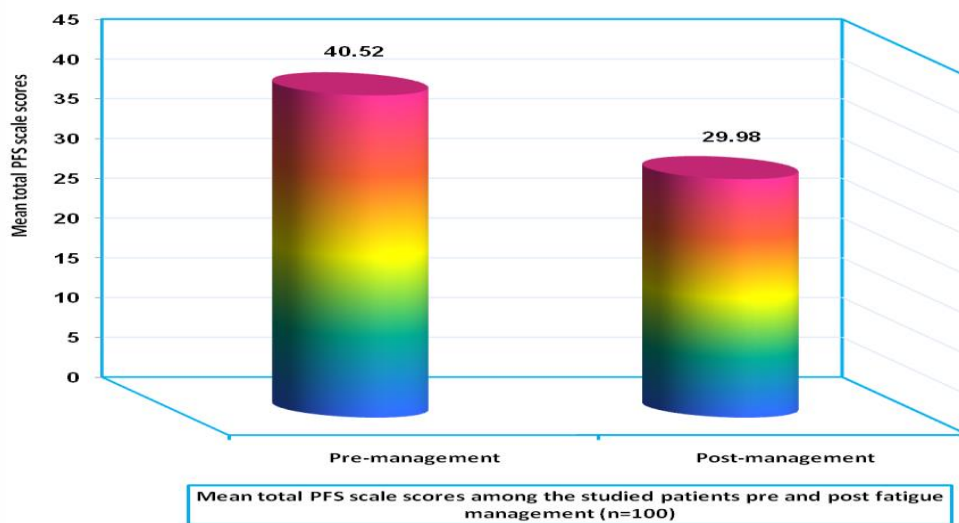


Figure (1): Shows that, there was a marked improvement in Total Piper Fatigue Scale (PFS) means score among the studied patients with cancer post implementation of fatigue management with highly statistically significant difference at (P= < 0.01) between pre(40.5)– and post (29.98)- implementation of fatigue management.

Figure (2): Mean scores of EORTC QLQ-C30 scale domains among the studied patients with cancer related fatigue after experiencing chemotherapy pre and post fatigue management (n=100).

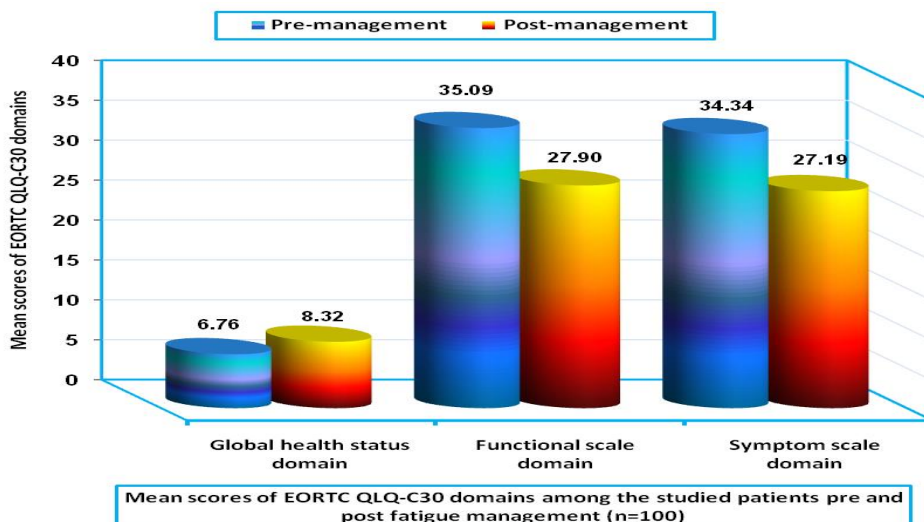
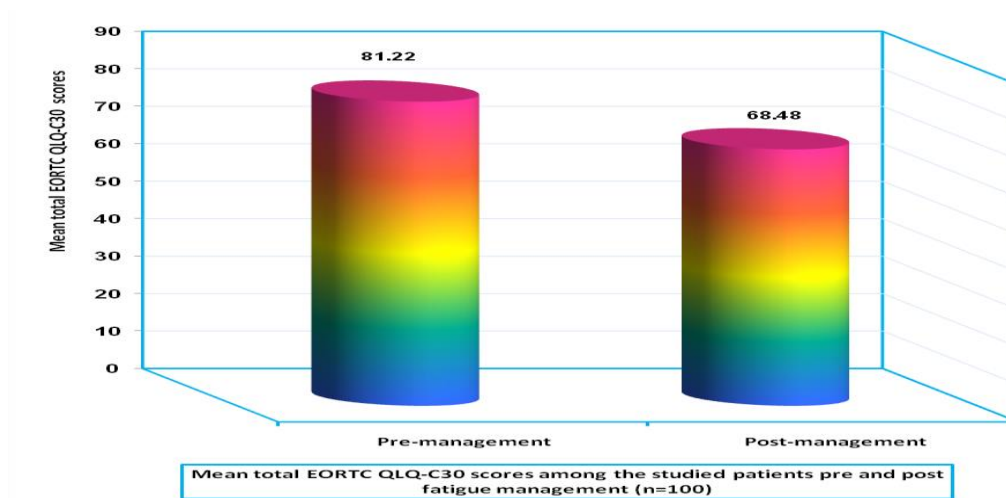


Figure (2): Shows that, there was a marked improvement in total domains of EORTC scale in functional scale domain, symptom scale domain and global health status domain among the studied patients with cancer related fatigue after experiencing chemotherapy post fatigue management.

Figure(3): Mean scores of total EORTC QLQ-C30 scale among the studied patients with cancer related fatigue after experiencing chemotherapy pre and post fatigue management (n=100).



Figure(3): Compare between Mean scores of total EORTC QLQ-C30 scale among the studied patients with cancer related fatigue after experiencing chemotherapy pre(81.22) and post(68.48) fatigue management (n=100), there was a marked improvement in total EORTC QLQ-C30 scale among the studied patients with cancer related fatigue after experiencing chemotherapy post fatigue management.

III. DISCUSSION

Patients with cancer commonly report a lack of energy during the course of their disease and treatment. Fatigue may result from the disease itself, antineoplastic therapies, and/or a broad range of physical and psychological co morbidities. Fatigue is multidimensional and can be described in terms of perceived energy, mental capacity, and psychological status. It can impair daily functioning and lead to negative effects on quality of life, self-care capabilities, and desire to continue treatment. In some cases, fatigue is the most significant barrier to functional recovery in cancer patients with stable disease who are undergoing chemotherapy (Berger et al., 2015).

Cancer is a group of more than 100 different diseases. It can develop almost anywhere in the body. Cells are the basic units that make up the human body. Cells grow and divide to make new cells as the body needs them. Usually, cells die when they get too old or damaged. Then, new cells take their place. Cancer begins when genetic changes interfere with this orderly process. Cells start to grow uncontrollably. These cells may form a mass called a tumor. A tumor can be cancerous or benign. A cancerous tumor is malignant, meaning it can grow and spread to other parts of the body. A benign tumor means the tumor can grow but will not spread. Some types of cancer do not form a tumor. These include leukemia, most types of lymphoma, and myeloma (Timby & Smith, 2017).

Therefore, this study aimed to determine the effect of fatigue management on quality of life of patient receiving chemotherapy.

The current study revealed that about half of the studied patients their age ranged between 40-<60 years with the mean age 51.79±13.71 years. This result may due to increase the number of newly diagnosed patients at this age. This result agrees with the result of study performed by Berger et al., (2015) entitled Cancer-related fatigue, who found that mean age of studied nurses was 51.12±13.71 years.

According to gender and marital status of the studied patients, the current study revealed that more than half of them were female and more than three quarters of them were single. This result may due to most cases of the studied sample suffered from breast cancer. This result approved with the study performed by O'Regan et al., (2017) entitled the importance of self-care for fatigue amongst patients undergoing chemotherapy for primary cancer, who found that more than half of patients were female. But this result indifference with the study performed by Paramanandam et al., (2015) entitled Exercise for the management of cancer-related fatigue in lung cancer, who mentioned that more than three quarters of patients were married.

According to educational level, job and family income of studied patients, the current study revealed that more than half of them were literate and don't work, and the majority of them their family income <1000. This result may due to the majority of the studied sample were female and don't work. This result agreed with the study performed by **Pearson et al., (2018)** entitled Interventions for cancer-related fatigue, who stated that more than half of patients were literate and don't work. But this result indifference with the study performed by **Schmidt et al., (2015)** entitled Effects of resistance exercise on fatigue and quality of life in breast cancer patients undergoing adjuvant chemotherapy, who found that the majority of patients their family income sufficient.

As regarding to residence of studied patients, the finding of present study revealed that half of them residing in rural areas. This result disagreement with the study performed by **Wang et al., (2015)** entitled Cancer-related and treatment-related fatigue, who mentioned that more than half of them residing in urban areas.

According to medical history data of the studied patients, the finding of present study revealed that the majority of them didn't have past history of cancer and surgical operation and onset of cancer were 6 months & more. This result agreed with the study performed by **Phillips et al., (2018)** entitled Neurologic and Medical Management of Brain Tumors, who found that the majority of them didn't have past history of cancer and surgical operation and onset of cancer were 6 months & more.

According to type and stage of cancer and type of chemotherapy of the studied patients, the current finding showed that about one third of them suffered from breast cancer, the majority of them in 3rd stage and less than one quarter of them take chemotherapy such as: Florasil, Jimsar and Taxol. This result may due to breast cancer is the most common invasive cancer in women, and the second main cause of cancer death after lung cancer. This result agreed with the study performed by **Hurria et al., (2016)** entitled Validation of a prediction tool for chemotherapy toxicity in older adults with cancer, who mentioned that one third of them suffered from breast cancer, the majority of them in 3rd stage and less than one quarter of them take chemotherapy. Related to comparison between Piper Fatigue Scales (PFS) subscales means score among the studied patients with cancer related fatigue after experiencing chemotherapy pre and post fatigue management, the finding of present study revealed that there was a marked improvement in Piper Fatigue Scale (PFS) subscales post implementation of fatigue management with highly statistically significant difference between pre and post implementation of fatigue management with highly marked change in Cognitive/mood subscale with Mean±SD-10.95±5.90 and after that Behavioral/severity subscale with Mean±SD-10.54±6.05, then Sensory subscale with Mean±SD-8.73±4.91 and finally Affective meaning subscale with Mean±SD-8.62±5.19. This result may due to effect of fatigue management program on the studied patients with cancer. This result agreed with the study performed by **Cantarero-Villanueva et al., (2014)** entitled The Piper Fatigue Scale-Revised: translation and psychometric evaluation in Spanish-speaking breast cancer survivors, who mentioned that there was a marked improvement in Piper Fatigue Scale (PFS) subscales (Behavioral/severity subscale, Affective meaning subscale, Sensory subscale and Cognitive/mood subscale) post implementation of fatigue management.

According to comparison between total Piper Fatigue Scales (PFS) means score among the studied patients with cancer related fatigue after experiencing chemotherapy pre and post fatigue management, the finding of present study revealed that there was a marked improvement in total Piper Fatigue Scale (PFS) post implementation of fatigue management with highly statistically significant difference between pre and post- implementation of fatigue management. This result may due to effect of fatigue management program on the studied patients with cancer. This result approved with the study performed by **Meneses-Echavez et al., (2015)** entitled Effects of supervised multimodal exercise interventions on cancer-related fatigue, who found that there was a marked improvement in total Piper Fatigue Scale (PFS) post implementation of fatigue management with highly statistically significant difference between pre and post implementation of fatigue management.

Related to comparison between total quality of life domains among the studied patients with cancer related fatigue after experiencing chemotherapy pre and post fatigue management, the finding of the current study revealed that there was highly statistically significant relation between total quality of life domains among the studied patients with cancer related fatigue after experiencing chemotherapy pre and post fatigue management. This result supported with the study performed by **Nicolussi et al., (2014)** entitled Health-related quality of life of cancer patients undergoing chemotherapy, who found that there was highly statistically significant difference between total quality of life domains among the studied patients with cancer related fatigue after experiencing chemotherapy pre and post fatigue management. But this result indifference

with the study performed by **Junghaenel et al., (2015)** entitled Identification of distinct fatigue trajectories in patients with breast cancer undergoing adjuvant chemotherapy, who mentioned that there was statistically insignificant difference between total quality of life domains among the studied patients with cancer related fatigue after experiencing chemotherapy pre and post fatigue management.

Concerned with mean scores of total domains of quality of life scale among the studied patients with cancer related fatigue after experiencing chemotherapy pre and post fatigue management, the finding of the current study revealed that there was a marked improvement in total domains of quality of life scale in global health status domain, functional scale domain and symptom scale domain among the studied patients with cancer related fatigue after experiencing chemotherapy post fatigue management. This result supported with the study performed by **Tomlinson et al., (2014)** entitled Effect of exercise on cancer-related fatigue, who found that there was a marked improvement in total domains of quality of life scale in global health status domain, functional scale domain and symptom scale domain among the studied patients with cancer related fatigue after experiencing chemotherapy post fatigue management.

IV. CONCLUSION

The finding of this study can be concluded that:

- There was a clear decline in total Piper Fatigue Scale (PFS) and its subscales (Cognitive/mood subscale, Behavioral/severity subscale, Sensory subscale and Affective meaning subscale) post implementation of fatigue management respectively.
- After 1 month of fatigue intervention an enhancement in total quality of life domains score and total subscales were revealed.
- A fatigue symptom scale domain was the most quality of life domains affected by the intervention.

V. RECOMMENDATIONS

In the light of the findings of the current study the following recommendations are suggested:

- Increase awareness of the public about cancer's risk factors and the importance of early detection and regular check up.
- Breast self examination teaching for women's including all ages and in all setting.
- Health education programs about the cancer, treatment modalities and self-care intervention should be provided for cancer.
- Supportive care services and rehabilitation unit should be directed towards meeting patients' needs.
- Psycho-oncology clinics should be activated to improve the quality of life and wellbeing for cancer patients.
- Further studies are needed about the effect of different nursing intervention on the patient's quality of life.

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