

Original Article

Effects of Chemotherapy on Fatigue levels and Quality of life in Cancer patients

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Abstract

Objective: To determine the effects of chemotherapy treatment on fatigue and quality of life among cancer patients.**Study design:** It was a descriptive cross-sectional survey study.**Place and duration of study:** The study participants were the cancer patients enrolled at NORI hospital, Islamabad from July, 2022 to December, 2022.**Material and Methods:** A descriptive cross-sectional survey was performed on the sample size of 50 cancer patients calculated on Rao Software. Tools used were Piper fatigue scale, and Short form health survey instrument (SF-36) to determine the effect of chemotherapy treatment on fatigue and quality of life. The study participants were the cancer patients enrolled at NORI hospital, Islamabad, aged between 30 to 55 years. Data was analyzed through SPSS version 22.**Results:** Results showed that 4(8%) participants lie in the mild fatigue category, 22(44%) lie in the moderate, and 24(48%) lie in the severe fatigue category. Based on the scoring of Short form Health Survey (SF-36), 36 participants showed a significant decline in quality of life, while 14 participants had no significant changes in quality of life during chemotherapy treatment.**Conclusion:** Chemotherapy has a significant effect on quality of life and fatigue in cancer patients.**Keywords:** Chemotherapy, Cancer, Fatigue, Quality of life.

1. Introduction

Cancer can form when the immune system becomes weak or the number of cells produced exceeds the ability of the immune system to remove old or abnormal cells.⁽¹⁾ The rate at which DNA and RNA mutate is too high under certain conditions such as; an unhealthy internal or external environment.⁽²⁾⁽³⁾ Chemotherapy in cancer treatment has emerged as a possible and effective treatment option and has merged the disease from terminal results into a single, treatable, and sometimes curable disease through the appropriate methods. The term chemotherapy was created by German chemist Paul Ehrlich, who studied the ability of medicinal drugs to overcome Effects of chemotherapy treatment on quality of life and fatigue in cancer patients. Researches on cancer suggests that arsenicals were used through the entire 20th century. Radiotherapy and surgery dominated the field of cancer management throughout the 1960's. As cancer cells began recurring after undergoing surgery and

radiotherapy cancer treatment, combination chemotherapy was considered an appealing option.⁽⁴⁾

Chemotherapy is a very effective option for combating cancer; nonetheless, it has its side effects. The side effects of chemotherapy among cancer patients are common to develop into life-threatening ailments and are commonly discovered when patients are at home. The negative effects of chemotherapy are often attenuated in patients going through cancer treatment. Those consequences can negatively influence the course of treatment, and may even impair a patient's quality of life.⁽⁵⁾⁽⁶⁾

Few data is available concerning the transmission of chemotherapy side effects in clinical trials, and even less literature is available concerning the progression of those side effects in routine care.

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A study revealed that after a follow-up of 5 months, 449 eligible individuals kept a list of side effects that they had been experiencing. Over the course of follow-up, 86 individuals reported at least one side effect, with 27 stating that they had been experiencing grade IV side effects, most often dyspnea or fatigue. In 85% of people, fatigue was the most common side effect reported, followed by constipation or diarrhea in 74% of people.⁽⁵⁾

In a study, the most common findings, including fatigue 79.7%, nausea and vomiting 73.3% were amongst the most commonly reported side effects. Additional symptoms that are commonly reported are decreased appetite (64.5%), changed taste (60.8%), alopecia (hair loss) (58.6%), xerostomia (dry mouth) (52.7%), and constipation (51.7%). Over fifty percent of the individuals in this trial reported these adverse effects. The results of this investigation aligned with those of an earlier study.⁽⁶⁾ Someone who is worn out and fatigued finds it difficult to focus or become motivated, and his mind becomes cloudy.⁽⁷⁾ It includes all three types of fatigue: psychological, physical, and emotional.⁽⁸⁾

Insidious fatigue may also be a consequence of anemia secondary to these treatment drugs.⁽⁹⁾ This is because Chemotherapy may prohibit your body's capability to produce new red blood cells for a while.⁽¹⁰⁾ The number of red blood cells gradually drops within a short period of time after your chemotherapy drugs. It may continue to lower than normal until after your treatment is complete. You may feel the most tired when your red blood cell count is at its lowest. Whether it lasts 7 to 14 days or several months, this is the amount of time it takes for blood cell levels to resume after the cancer therapy is over. Chemotherapy-induced fatigue also affects basic quality of life. The negative impact on quality of life of chemotherapy-induced fatigue may be extreme in some instances.⁽¹¹⁾

The psychological effects of long-term chemotherapy can be as damaging as the physical ones. A depressed emotional state and feelings of isolation may contribute to a greater risk of injury and poor quality of life. The fear of failed chemotherapy and recurrence of cancer

can also have a major impact on quality of life, as patients may live in constant fear of the cancer coming back.⁽¹²⁾ Suffering a reduced quality of life due to tiredness and lack of vigor is common among cancer patients for a considerable period of time after receiving chemotherapy treatment. Normally, the symptoms associated with cancer treatment are mild-to-moderate in nature and typically temporary. Recovery is frequently observed in a matter of months or even years after completing chemotherapy. However, some cancer survivors may still experience fatigue while it is getting energy from the beginning.⁽¹³⁾

This study focused to determine the effects of chemotherapy on the fatigue levels and quality of life in cancer patients through a survey.

2. Materials & Methods

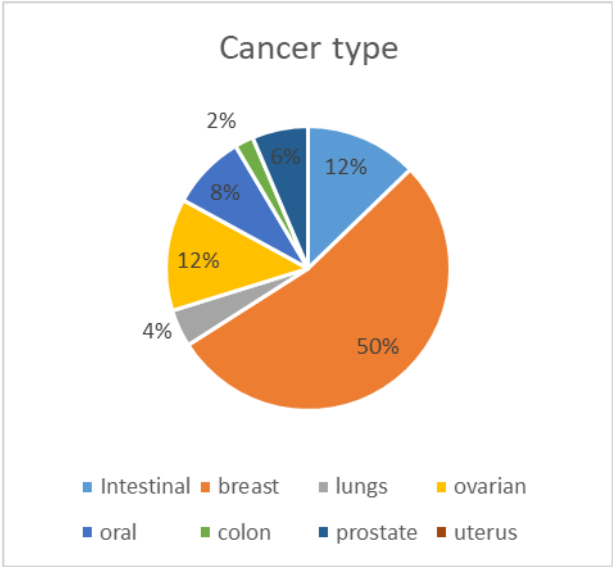
This descriptive cross-sectional study was performed on cancer patients at Nuclear Medicine, Oncology and Radiotherapy Institute (NORI) cancer hospital, Islamabad from July, 2022 till December, 2022. The data was collected from the cancer patients using the Piper Fatigue Scale^(14,15) and SF-36 Questionnaire⁽¹⁶⁾ to determine the effects of chemotherapy treatment on quality of life and fatigue in cancer patients. All the participants were informed of the objectives of the study and informed consent was signed. Non-probability convenience sampling was used to select the participants. The participants included patients receiving chemotherapy treatment. Both male and female patients were included. Patients with other comorbidities, and patients receiving only radiotherapy were not included. The data were analyzed using SPSS version 22.

3. Results

In our study, total 50 study cancer patients were included. Out of total 50 participants, 40 were females and 10 were male. 6 (12%) participants were in the category of intestine cancer, 25(50%) participants had breast cancer, 2 (4%) participants had lung cancer, 6(12%) participants had ovarian cancer, 4(8%) participants had oral cancer, 1(2%) participant had

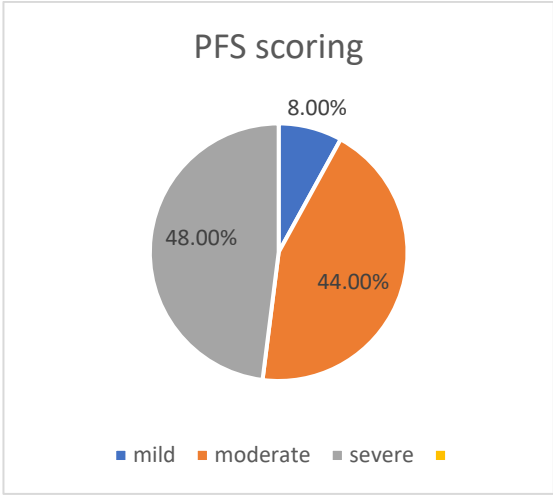
colon cancer, 3(6%) participants had prostate cancer, and 3(6%) participants had uterine cancer.

Figure 1: Cancer Type



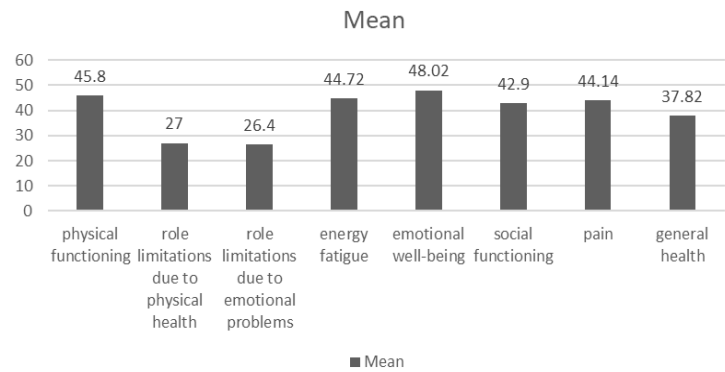
Piper Fatigue Scale is a brief, valid tool to measure fatigue.(15) We found out the frequencies of fatigue levels in the participants based on the tool scoring system. Results showed that 4(8%) participants lie in the mild fatigue category, 22(44%) lie in the moderate, and 24(48%) lie in the severe fatigue category.

Figure 2: Piper Fatigue Scale



The well-researched, self-reported Short Form Health Survey (SF-36) is a tool used for measuring outcomes in relation to quality of life.(17) SF-36 is divided into 8 domains, and the mean value of each domain is shown in the table below. Results showed that 36 participants showed a significant decline in quality of life, while 14 participants had no significant changes in quality of life during chemotherapy treatment.

Chart 1: Short-form Health survey (SF-36)



4. Discussion

Marques at el sought to assess how fatigue and quality of life were affected by chemotherapy for breast cancer patients. Three out of eight quality of life domains were found to be inferior among the individuals. These findings support earlier research on the adverse consequences of chemotherapy treatment.(23,24) Additionally, they imply that patients with breast cancer who have finished three of four chemotherapy rounds may have a lower quality of life. Three domains of fatigue—behavior, sensory, and general—were found to have medium impact sizes.. However, in our research, there was a significant decline in quality of life in all eight health domains. 44% of participants showed symptoms of mild fatigue, and 48% of participants showed severe fatigue.(18)

According to Akin, patients with breast cancer undergoing chemotherapy or radiation therapy had a lower quality of life when they had less social supports and experienced significant levels of symptom distress throughout treatment. The findings indicate a considerable positive correlation between cancer patients' weariness and their quality of life. In a similar

vein, a study found that the biggest factor impairing psychological well-being in lung cancer patients was weariness. Our study also showed that chemotherapy significantly affects fatigue and quality of life is also disturbed.⁽¹⁹⁾

Sonkaya et al came to the conclusion that chemotherapy side effects can be common, potentially fatal, and frequently happen at home for cancer patients. Chemotherapy side effects are a diminishing and frequently invisible clinical barrier in the treatment of cancer. They may have an adverse effect on a patient's quality of life and the decision to continue therapy. Hence, cancer care providers must identify the side effects that their patients are experiencing and, when feasible, assist in finding solutions. This study found that weariness (74.7%) and nausea and vomiting (%79.3) were the most often reported adverse effects. Other frequently reported prominent side effects include decreased appetite 65.5%, changes in taste 60.9%, hair loss 60.0%, dry mouth 51.7% and constipation 51.7% (indicating poor quality of life in all domains). Each of these side effects was experienced by more than 50% of the patients.⁽²⁰⁾ However, our study also showed that chemotherapy causes fatigue in the patients, and health is disturbed physically, emotionally, and psychologically. All these symptoms were observed more in women than in men.

In a study the authors deeply explore the idea of cancer-induced fatigue. He also studied the impact of chemotherapy and fatigue on the quality of life in patients diagnosed with advanced-stage prostate cancer. His work shed light on how fatigue develops in these patients and the severity of the symptoms regarding chemotherapy. The study results showed that fatigue is relatively common in patients with prostate cancer who are in advanced stages and undergoing chemotherapy. These results were supported by a significant complaint of fatigue in study participants - almost two-thirds (66.9%) of patients confirmed the report. The problems that appeared to be severely affecting the quality of life in these patients were related to physical functioning - such as feeling fed up, exhausted, tired, and reluctant - and affective functioning - such as lack of energy, interest, or concentration). A slightly diminished quality of life

score was recorded in patients with cognitive problems - such as becoming forgetful or making errors while speaking. The scale of fatigue affecting cognitive impairment was less severe than physical functioning or affective functioning.⁽²¹⁾ Our study is quite similar to this study showing that fatigue is significant in cancer patients which affects physical, psychological and functional domains of patients undergoing chemotherapy treatment.

Conclusion:

We concluded that there is a significantly high prevalence of fatigue among cancer patients, and their quality of life is also affected.

References:

1. Mongraw-Chaffin ML, Cirillo PM, Cohn BA. Preeclampsia and Cardiovascular Disease Death. Hypertension [Internet]. 2010 Jul 1;56(1):166–71.
2. Berglund A, Holmberg L, Tishelman C, Wagenius G, Eaker S, Lambe M. Social inequalities in non-small cell lung cancer management and survival: a population-based study in central Sweden. Thorax [Internet]. 2010;65(4):327–33.
3. Fromer M. New SEER Report Documents High Risk of Second Cancers in Cancer Survivors. Oncol Times [Internet]. 2007;29(5).
4. Amjad MT, Chidharla A, Kasi A. Cancer Chemotherapy [Internet]. StatPearls Publishing, Treasure Island (FL); 2022.
5. Pearce A, Haas M, Viney R, Pearson S-A, Haywood P, Brown C, et al. Incidence and severity of self-reported chemotherapy side effects in routine care: A prospective cohort study. PLoS One [Internet]. 2017 Oct 10;12(10):e0184360.
6. Altun İ, Sonkaya A. The most common side effects experienced by patients were receiving first cycle of chemotherapy. Iran J Public Health. 2018;47(8):1218–9.
7. Harrington ME. Neurobiological studies of fatigue. Prog Neurobiol [Internet]. 2012;99(2):93–105.
8. Parse RR. The Lived Experience of Feeling Very Tired: A Study Using the Parse Research Method. Nurs Sci Q [Internet]. 2003 Oct 1;16(4):319–25.
9. Groopman JE, Itri LM. Chemotherapy-Induced Anemia in Adults: Incidence and Treatment. JNCI J Natl Cancer Inst [Internet]. 1999 Oct 6;91(19):1616–34.
10. Cannavale K, Xu H, Xu L, Sattayapiwat O, Rodriguez R, Bohac C, et al. Epidemiology of Chemotherapy-Induced Anemia in Patients with Non-Hodgkin Lymphoma. Perm J. 2019;23.

11. Karthikeyan G, Jumnani D, Prabhu R, Manoor UK, Supe SS. Prevalence of fatigue among cancer patients receiving various anticancer therapies and its impact on quality of life: a cross-sectional study. *Indian J Palliat Care*. 2012 Sep;18(3):165–75.
12. Gielissen MFM, Verhagen CAHHVM, Bleijenberg G. Cognitive behaviour therapy for fatigued cancer survivors: long-term follow-up. *Br J Cancer* [Internet]. 2007;97(5):612–8.
13. Lange M, Joly F. How to Identify and Manage Cognitive Dysfunction After Breast Cancer Treatment. *J Oncol Pract* [Internet]. 2017 Dec 1;13(12):784–90.
14. Gledhill JA, Rodary C, Mahé C, Laizet C. [French validation of the revised Piper Fatigue Scale]. *Rech Soins Infirm* [Internet]. 2002;(68):50–65.
15. Piper BF, Dibble SL, Dodd MJ, Weiss MC, Slaughter RE, Paul SM. The revised Piper Fatigue Scale: psychometric evaluation in women with breast cancer. *Oncol Nurs Forum* [Internet]. 1998;25(4):677–84.
16. Pinar R. Reliability and construct validity of the SF-36 in Turkish cancer patients. *Qual Life Res* [Internet]. 2005;14(1):259–64.
17. Brazier JE, Harper R, Jones NM, O’Cathain A, Thomas KJ, Usherwood T, et al. Validating the SF-36 health survey questionnaire: new outcome measure for primary care. *Br Med J* [Internet]. 1992 Jul 18;305(6846):160 LP – 164.
18. Courneya KS, McKenzie DC, Mackey JR, Gelmon K, Reid RD, Friedenreich CM, et al. Moderators of the effects of exercise training in breast cancer patients receiving chemotherapy. *Cancer* [Internet]. 2008 Apr 15;112(8):1845–53.
19. Polanski J, Jankowska-Polanska B, Rosinczuk J, Chabowski M, Szymanska-Chabowska A. Quality of life of patients with lung cancer. *Onco Targets Ther* [Internet]. 2016 Dec 31;9:1023–8.
20. Chan HK, Ismail S. Side effects of chemotherapy among cancer patients in a Malaysian general hospital: Experiences, perceptions and informational needs from clinical pharmacists. *Asian Pacific J Cancer Prev*. 2014;15(13):5305–9.
21. Okuyama T, Tanaka K, Akechi T, Kugaya A, Okamura H, Nishiwaki Y, et al. Fatigue in Ambulatory Patients with Advanced Lung Cancer: Prevalence, Correlated Factors, and Screening. *J Pain Symptom Manage* [Internet]. 2001;22(1):554–64.