

ASSESSMENT OF EXERCISE TOLERANCE AND QUALITY OF LIFE IN CANCER PATIENTS

Nabeeha Asif¹, Abida Arif², Mah Noor Nadeem³, Vinesh Kumar⁴, Komal Jamil⁵

¹Deewan Institute of Rehabilitation Sciences (DIRS), Shaheed Benazir Bhutto Deewan University

²Department: Bahria University College of Physical Therapy, Bahria University Health Sciences Campus, Karachi

³Department of Physical Therapy, University of Health Sciences

⁴Jinnah College of Rehabilitation Sciences, Sohail University

⁵Bahria University College of Physical Therapy, Bahria University Health Sciences Campus, Karachi

¹nabeehaasif1973@gmail.com, ²abida.bucpt@bahria.edu.pk, ³mahnoormirza52@gmail.com,

⁴vinesharyaveer@gmail.com, ⁵komaljamil.bumdc@bahria.edu.pk

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Corresponding Author: *

Komal Jamil

Abstract

Background

Cancer is not an individual disease because it is a group of diseases that affect the person. In Pakistan, around one lakh and eighty-five thousand are new cases of this disease, and annually more than one lakh twenty-five thousand deaths are reported. The most common cancers are breast cancer, around 16.5 percent of cases; cancer of the lip and oral cavity, around 8.6 percent; and lung cancer, reported in 5.1 percent of cases.

Objective

To evaluate the exercise tolerance and quality of life in cancer patients.

Methodology

The cross-sectional study was conducted between Feb 2026 to July 2026. The sample size of the study was 255, calculated by Raosoft software. The validated questionnaire named as: EORTC QLQ-C30 (version 3) was used to assess the quality of life of cancer patients and exercise tolerance was measured by 6 Minute walk test. Data was analyzed through SPSS version 23.

Result

There were 255 cancer patients recruited from Karachi. The exercise tolerance of the participants by performing the 6-minute walk test reported as: 72 (28.23%) participants showed severely decreased. While response of questions regarding the quality of life reported as: around 102 (40%) of the participants faced problems during long walk. Around 97 (38.08%) need help during eating or dressing, 91 (46.66%) had problems remembering things during the past week.

Conclusion

There is a significant effect of exercise tolerance in the quality of life of cancer patients and physical therapy may improve both variables.

INTRODUCTION

Cancer is not an individual disease because it is a group of diseases that affect the person. Cancerous cells can multiply themselves and spread to any part of the body. [1] There are two types of cancerous cells: benign and malignant. A benign tumor does not spread to other healthy tissues; it should be localized, means they stays in one place only, and it can grow more slowly than cancerous cells. [2] A metastatic cancerous cell spreads into healthy tissue and can travel to any part of the human body. [3] In Pakistan, around one lakh and eighty-five thousand are new cases of this disease, and annually more than one lac twenty-five thousand deaths are reported. The most common cancers are breast cancer, around 16.5 percent of cases; cancer of the lip and oral cavity, around 8.6 percent; and 5.1 percent reported lung cancer. [4] Most of the patients do not recognize the early signs and symptoms, and it may lead to the serious and advanced stage of the cancer, which can affect the survival rate of the patient and recovery outcome. [5]

Exercise tolerance is an individual's ability to handle physical exertion, reflecting the overall function of the lungs, heart, and muscles. [6] An exercise tolerance test measures how the heart handles its workload. The heart's response to increased workload and the demand for blood supply. It uses a treadmill, cycling, or a 6-minute walk test to assess exercise tolerance. [7] The six-minute walk test is used to assess the functional exercise capacity of an individual. If any person reports or complains about shortness of breath, dizziness, or chest pain, stop the walk immediately. [8] Cancer is the most common cause of death, and the treatment of these patients and their signs and symptoms will affect the quality of life of the patient because it creates many hurdles to performing daily task of the life. Cancer patients live with different symptoms of the disease. [9] According to the World Health Organization (WHO) explains the quality of life (QOL) is defined as complete physical, mental, and social well-being, and not merely the absence of disease. [10] This high symptom load has always been associated with higher levels of emotional

suffering, poor physical & societal functioning, and deteriorated quality of life. [11] Effective clinical management of these symptoms can improve the quality of life in cancer patients. [12] The quality of life of a patient may vary from patient to patient because limited access to healthcare services, lack of knowledge, limited healthcare professionals, and insufficient cancer treatment centers severely restrict patients from receiving timely and effective care. [13] Many experience lengthy wait times, delayed or incorrect diagnoses, and restricted access to necessary treatments like radiation or chemotherapy. [14] A large percentage of the population is forced to either forgo treatment or rely on alternative, frequently inefficient ways due to the lack of accessibility and expense, which leads to premature and avoidable deaths. [15] Early screening and detection of the diseases, and treatment of these diseases may improve the survival ratio of the patient. [16] The aim of the study to assess the exercise tolerance and quality of life in patients with cancer.

METHODOLOGY

The cross-sectional study was done among the cancer patients of Karachi. The duration of the study was Feb 2026 to July 2026. The sample size of 255 was calculated from Raosoft.com software. To select the research participants for the study non-probability convenient sampling was used. The inclusion criteria of the study were both male and female genders, age group 20 to >51 years, The cancer patients undergoing treatment like: surgery, radiation and chemotherapy, both hospitalized and non- hospitalized patients. The exclusion criteria consist of those cancer patients who have unstable vitals and who were not willing to participate in the study. The validated questionnaire named as: EORTC QLQ-C30 (version 3). [17] was used to assess the quality of life of cancer patients and exercise tolerance was measured by 6 Minute walk test. Data was analyzed through SPSS version 23.

RESULT

A total number of 255 participants were recruited for the study from different tertiary care hospitals of Karachi. The demographic data were categorized into Age of the participants between 20 and more than 50 years of age, female

participants around 163 (63.92%), status of marriage around 117 (45.88%) participants were married, economic status, hospitalization in the last 30 days, and the treatment around 103(40.39%), they were treated through surgery, as shown in Table No.1:

Table No.1: Demographic representation

S.no.	Variables	Frequency (n)	Percentage (%)
1	Age of Participants		
	20-30	30	11.76
	31-40	54	21.17
	41-50	63	24.7
	>51	108	42.35
2	Gender		
	Male	92	36.07
	Female	163	63.92
3	Marital Status		
	Single	53	20.78
	Married	117	45.88
	Divorced	39	15.29
	Widowed	46	18.03
4	Financial Status		
	Good	61	23.92
	Average	102	40
	Poor	92	36.07
5	Hospitalization in last 30 days		
	Not hospitalized	84	32.94
	1-7 days	117	45.88
	8-14 days	39	15.29
	>15 days	15	5.88
6	Treatment Type		
	Surgery	103	40.39
	Radiation Therapy	83	32.54
	Chemotherapy	69	27.05

We assessed the exercise tolerance of the participants by performing the 6-minute walk test, in which 72 (28.23%) participants showed severely decreased functional exercise capacity of the

cancer patients, and around 27 (10.58%) were lie in normal exercise tolerance level, as shown in Figure No.1:

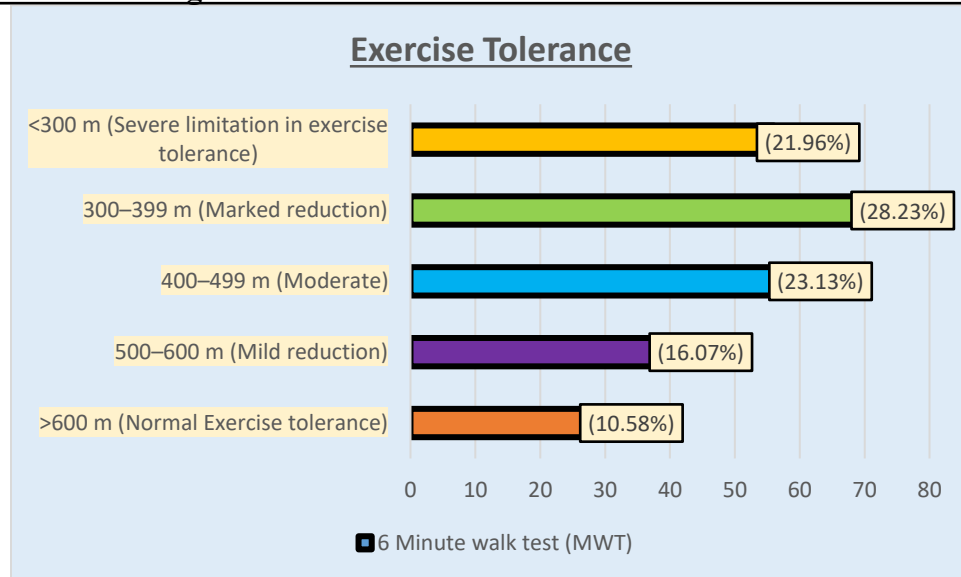


Figure No.1: Exercise Tolerance by 6- MWT

The status of life was assessed by filling out the EORTC quality of life questionnaire, in which we asked the participants whether they faced any problems in a long walk, and they replied that around 102 (40%) of the participants said yes, they

faced very much complications in walking on a long route.

When we asked the research participants if they needed any help while they were eating or dressing, they replied yes, around 97 (38.08%) as shown in Figure No.2:

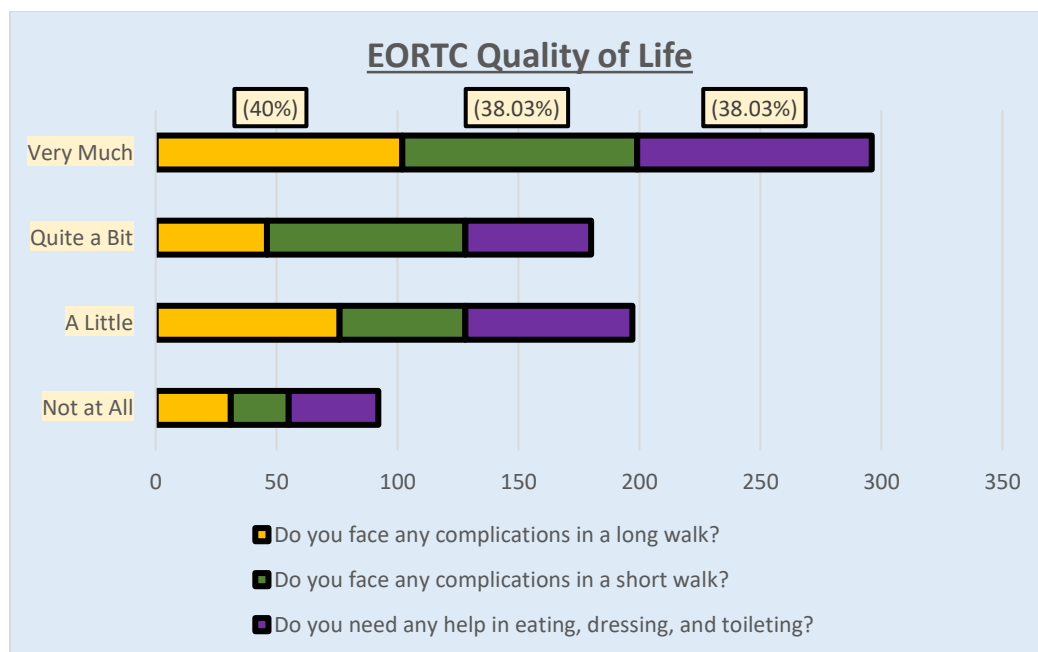


Figure No.2: Quality of life of the participants

When we asked the research participants about their health status during the past week, according to the EORTC quality of life questionnaire, around 91 (46.66%) said they had problems remembering things during the past week.

When we asked the research participants whether they had a diarrhea problem during the past week, they replied that around 9 (38.03%) did not have diarrhea, as shown in Figure No.3:

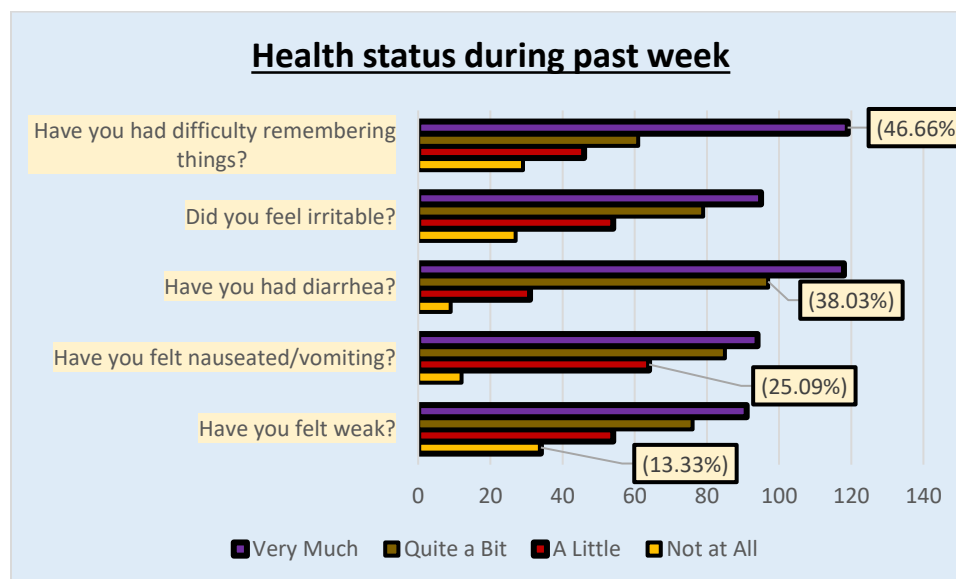


Figure No.3: Health status of the participants in the past week

DISCUSSION

The exercise tolerance and quality of life of oncological patients can be improved by active lifestyle and daily exercise.[18] The symptoms of cancer patient can be reducing by the aerobic and resistance training. It can improve the strength of muscle, improve endurance, reduce depression during the cancer treatment. [19]

A study highlighted the causes of reduced exercise tolerance in patients with cancer and the role of molecular-targeted therapy in the reduction of negative effect created by the components which causes exercise limitation. They showed the possibilities of exercise-regulated gene expression to increase the effectiveness of cancer treatment. [20] Another study stated, Cancer therapies such as: novel and conventional cancer therapy can help in the improvement of the diagnoses and assessment of cancer patients who were at risk of cardiovascular diseases, mortality, disability, and improve the outcomes of the treatment. [21] In the current study, exercise tolerance and quality of life is observed among 255 cancer patients who were

selected from multiple hospitals of Karachi. The results of the study showed, exercise tolerance is reduced among the participants. According to the assessment of exercise tolerance through exercise tolerance test 28.23% showed severe limitation, 21.96% showed marked reduction, 23.23% showed moderate reduction, while 10.58% showed normal in the level of tolerance during exercise. These findings represent the effects of cancer treatment in the functional status of the patients although reduction in the level of tolerance during exercise reduces the overall activities of daily leaving as well as making the patient dependent for performing daily task.

According to the study, cancer patients showed many symptoms which reduces the quality of life, mostly they included head and neck cancer participants 40% and their patients were presented with stage three disease and their quality of life was reduced by 82.3%. They reported the need of an effective treatment to control the quality of life of cancer patients. [22] In comparison to this our study, quality of life of

cancer patients is limited among the 40% of research participants and they faced very difficult during walking, eating, etc. Additionally, 38.08% patients need assistance during eating, dressing and walking. The health status of patients also effected among 46.66% participants and they have the problem of remembering things as well. The findings of our study showed the reduction off physical fitness in performing the daily task. Therefore, the study highlights the importance of exercise tolerance among cancer patients which ultimately affect the quality of life because the health status of patients is directly depends upon these two variables.

A study promoted the importance of physical activity and exercise in oncological patient during and after the completion of cancer treatment in any type of cancer with any stage of disease. The combination of aerobic and resistance exercises can specifically improve the fitness, and functional status of a patient. They also addressed the nutritional demand of patients as well as the family support regarding the physical activity and exercise. [23] The role of physical activity and rehabilitation in the treatment of cancer patients is crucial and the study highlights the importance of active lifestyle and exercise which can improve the exercise tolerance and quality of life. [24] Furthermore, aerobic exercise and resistance exercises causes the improvement in muscle strength, endurance and reduce the depression during the treatment of cancer. [25] According the study, the proportion of participants need physical therapy and rehabilitation program along with the regular follow up of patients with functional capacity and health status during the cancer treatment.

CONCLUSION

According to the study's findings, a significant percentage of cancer patients had worse exercise tolerance and worse quality of life. Many participants' functional exercise ability was found to be markedly to severely limited by the 6-Minute Walk Test. Additionally, quality of life was impacted, especially in terms of daily activities and physical functioning. These results emphasize the

necessity of routinely evaluating cancer patients' functional ability and quality of life. Physical function, endurance, and general well-being may be enhanced by exercise-based rehabilitation, which includes resistance and aerobic workouts. Thus, physiotherapy can be crucial to the full recovery of cancer patients.

Author's Contribution

NA: Concept, Idea. & Manuscript Writing

AA: Manuscript Writing, Data Collection

MNN: Data Collection, Manuscript Writing

VK: Analysis & Result Interpretation

KJ: Data Collection & Final Draft

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