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ORIGINAL ARTICLE

IMPACT OF CANCER AND ITS TREATMENT PROTOCOL ON THE PHYSICAL, SOCIAL AND COGNITIVE STATUS OF THE PATIENT

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ABSTRACT:

Background: To study the effect of cancer and its treatment protocol on the physical, social and cognitive status of the patient **Methods**: It was an observational study of 5 months duration. A total of 50 participants were recruited for the study with purposive sampling method diagnosed with cancer and undergoing cancer treatment. The outcome measure was Modified Fatigue Impact Scale (MFIS), Visual Analogue Scale (VAS), 6 Minute Walk Test (6MWT). **Result:** Mean was calculated for each value of the scales. The total mean value of MFIS was 69.64, from which mean score of Physical Domain (34.12), Cognitive (31.2), Psychosocial (4.32). The mean of the total distance covered by the patients in 6 MWT was 494, which was comparatively less than the normative value. Also, the mean score for VAS was 7.58. It indicated that pain complaints of severe pain. In the above study undertaken, it is found that cancer and its treatment affect the patient's physical, social, and cognitive status. **Conclusion:** This study concluded that cancer and its treatment protocol have a crucial impact on the patient's physical, social and cognitive level. This study also concluded that cancer rehabilitation is necessary for the patient's

KEYWORDS: - Cancer, Cancer Related Fatigue (CRF), Modified Fatigue Impact Scale (MFIS), Visual Analogue Scale (VAS), 6 Minute Walk Test (6MWT), Physical, Cognitive, Social.

INTRODUCTION:

There is an increasing number of cancer survivors, creating the imperative to look beyond just survival [1]. There are 28 types of cancer in 184 countries, giving a comprehensive overview of the global cancer burden in the Globocan 2012 report [2]. Cancer rehabilitation is an integral part of survivorship as a distinct phase of treatment. Patients may need physical and occupational therapy services for a variety of cancer-related or cancer-treatment-related problems, including pain, fatigue and deconditioning, etc. They may also face issues resuming their previous level of function, which can impact on activities of daily living, instrumental activities of daily living, return to last home and community activity levels and return to work. There are increasing awareness and determination from healthcare providers to address the immense rehabilitation needs of cancer survivors[3].

Many cancer patients suffer from severe fatigue when treated with chemotherapy or radiotherapy. Fatigue is associated with cancer itself and adjuvant therapies and can persist for a long time. Cancer patients present a high degree of fatigue, which dramatically affects the quality of their everyday life. There are excellent clinical guidelines for cancer-related fatigue (CRF) that the National Comprehensive Cancer Network has developed. Rehabilitation professionals may play an essential role in the management of CRF.

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Multiple treatment regimens have been shown to reduce fatigue in the oncology population. Evidence has been shown that exercise has a powerful effect on cancer-related fatigue, and fatigue levels were 40% to 50% lower in exercising participants[3]. Decreased exercise tolerance and reduced cardiorespiratory fitness have been well documented for both cancers that directly impact the cardiopulmonary systems and cancer that do not directly affect the cardiopulmonary systems[3].

A cancer diagnosis and treatment can be emotionally and physically devastating[3]. Recent literature says that there has been an increase in psychological consequences of cancer, including distress, depression, anxiety, post-traumatic stress, and demoralization. It is a stressful event with significant psychosocial implications related to physical, emotional, spiritual, and interpersonal dimensions. All aspects of life, including the parameters of time, space and existence, are altered by the diagnosis and treatment [8].

This study helps the physiotherapist understand the effects of cancer and its treatment protocol on an individual's functional and psychosocial status. As this study gives an overview of the quantitative analysis of an impairment of Physical, Social and Cognitive levels in cancer patients, it helps practitioners assess the patient's status and plan oncological treatment protocol accordingly. So, the study gives quantitative analysis, which helps in planning treatment protocol for an individual level.

METHODS:

This is an observational study of 5 months—a total of 50 cancer patients undergoing cancer treatment using the purposive sampling method. Modified Fatigue Impact Scale (MFIS), Visual Analogue Scale (VAS) and 6 Minute Walk Test (6MWT) was administered in Cancer patients. While the inclusion criteria were Patients medically diagnosed with cancer, under medical management at least for four weeks, An individual in the age group of 20 to 60 exclusion criteria were Early diagnosed case of cancer Unconscious, uncooperative individual and Individuals with Musculoskeletal Impairment.

PROCEDURE:

Permission and approval to carry out the research work were obtained from the institutional ethical committee (IEC). The purpose and procedure of the study were explained to all subject in detail and were informed about the risk in the language they understand. Demographic information was documented, including name, age, gender, occupation, residence, chief complaint, date of diagnosis, and sessions of treatment of an individual with all types of cancer. Confirmation of the diagnosis and treatment of cancer sessions had made based on medical records and laboratory findings. Then the scales had administered to an individual. The outcome measures of this study were Modified Fatigue Impact Scale (MFIS) to assess Physical, Cognitive and Psychosocial impairment, Visual Analogue Scale (VAS) to assess pain and 6 Minute Walk Test (6MWT) to assess Cardiopulmonary Endurance in Cancer patients.

RESULT:

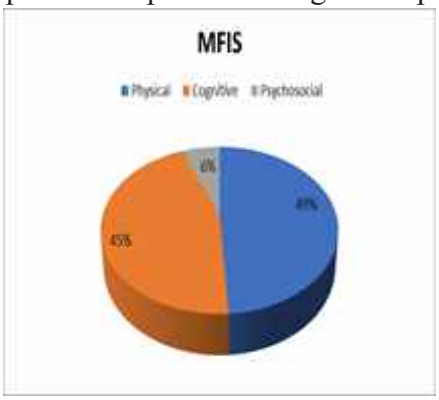
TABLE NO 1: Showing No. Of Patients & Mean Age

No. of patients	Mean age	Mean BMI
50 (30 female, 20 male)	40.9	22.5

TABLE NO 2: - Indicates the Mean of Score of Each Domain of MFIS with Its Total Mean Score.

Domain	Maximum	Mean	%
Physical	36	34.1	40.5
Cognitive	40	31.2	37.1
Psychosocial	8	4.32	5.1
Total	84	69.6	82.7

So, the result obtained from MFIS indicated that 82% impairment is present among cancer patients.

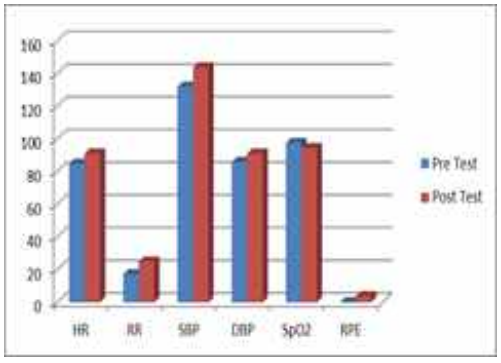


Graph 1: - Showing percentage of the mean value of all domains of MFIS

Table 3: showing the mean score of the vitals taken before and immediately after performing the 6MWT.

Vitals	Heart Rate	Respiratory Rate(C/min)	Blood Pressure (mmHg)		Spo2 (%)	RPE
			Systolic Blood Pressure	Diastolic Blood Pressure		
Pre-Vitals	84.62	17.12	131.84	85.72	97.4	0
Post Vitals	91.02	24.88	143.6	91.02	94.3	3.68

Table 3 indicated that there was an increase in values of vitals taken immediately after the test.



Graph 2: - shows the mean of all pre and post vitals for 6MWT

The mean distance covered by patients is 494, which is reduced compared to the same age, height & weight-matched individuals.

The mean score marked by the patients on the Visual Analogue Scale (VAS) was 7.58, which means that patients suffer from severe pain during & after treatment protocol of cancer.

DISCUSSION

The majority of studies have explored the physical illness followed by cancer and cancer treatment protocol; it affects the cardiopulmonary system and is a mentally devastating condition. So, in this study, MFIS has been used to evaluate the cognitive and psychosocial impairment in cancer patients.

There are 21 components in the MFIS questionnaire, divided into three domains: physical, i.e., and psychosocial. The total score ranges from 0-84. A higher score indicates the maximum disability. The scoring range of MFIS starts from 0 -4 .0 (Never), 1 (Rare), 2 (Sometimes), 3 (Often) and 4 (Almost Always). The physical domain contains nine components that assess the patients' physical condition and capacities. The range of the total score of this component is 0-36, and the obtained mean is 34.1, which indicated the deterioration of the patient's physical condition. The patient reported that they felt clumsy and usually experienced uncoordinated movements and decreased pace in performing physical activities. They frequently felt less motivated for making physical efforts and doing it for a longer time. The patient felt physical discomfort along with muscle weakness. It resulted in an inability to complete the tasks which demanded physical action. All the participants have reported that they needed to take rest more often and for more extended periods. Cancer-related fatigue (CRF is) the most widespread observable fact in individuals with cancer who receive radiation therapy, cytotoxic chemotherapy, or biological response modifiers. It is a multifactorial, multidimensional phenomenon consisting of physical, psychological, social, cognitive, and behavioural characteristics[9]. Harminder Singh, in his study, revealed that as many as 80% of the participants experienced fatigue during their course of treatment,

, irrespective of the diagnosis [9]. The cognitive domain in scale contains ten components that assess the patient's ability to think and motivate. The range of the total score of this component is 0-40, and the obtained range was 26-35. This indicated the moderate to severe deterioration of the patient's mental condition. Many patients with breast cancer receiving chemotherapy present a chemo-brain phenomenon, manifested as depression or impaired cognition [10]. Janette Vardy et al. found the result from his study that patients from the age group of 31–65 years, and 94% were women with breast cancer, 6 of 20 (30%) had moderate-severe cognitive impairment on High Sensitivity Cognitive Screen (HSCS) [12]. The last domain of MFIS is the psychosocial domain, and it contains two components. Total scoring is 0-8, and obtained range was 2-6, indicating that cancer and cancer treatment also affects the psychosocial factor in patients. The anxiety level measured by the state subscale of the STAI is high compared to the reference data of non-cancer patients. The increase of anxiety is comparably in male and female patients. N. Ernstmann et al. found 18.9% of cancer patients suffering from depression[14].

Another scale has been administered to the patient was VAS. This pain rating scale ranges from 1-10, and obtained range is 6-10. It has concluded that cancer and its treatment (radiation and chemotherapy) resulted in pain. H. Breivik et al. in their study found that their patients had reported that pain stops them from concentrating or thinking (51%), that pain creates difficulty in performing everyday activities in daily life (69%), and that cancer pain made them feel that they are a burden to others (43%). Almost a one-third of patients (30%) are in too much pain to be able to care sufficiently for themselves or others. Of those still in employment, 52% stated that their pain impacts their work performance. Pain associated with cancer was described as distressing by 67% of patients [15].

6MWT was used to assess Cardiopulmonary Endurance. Before the test was performed, BMI was calculated according to the Height and Weight of the mean patient value of the BMI is 22.5 and ranges from 16.1-26. It has been suggested that cancer patients have their BMI in average to low content. Following the review of Simon Lønbro, the average absolute weight loss in the whole study group during radiotherapy was 5.2±5.7 kg. Fifty-four per cent of all patients (259/476) lost more than 5 % of their body weight during radiation treatment, and 21 % lost more than 10 %. Baseline BMI, cancer site (non-glottic larynx), and tumour stage predicted weight loss of both 5 and 10 %, according to a recent review by Zhao et al.[17]. Before the test and immediately after the test, vitals including Heart Rate, Respiratory Rate, Blood Pressure, SPo2, and Rate of Perceived Exertion have been recorded. The mean value of Heart Rate was 84.6, for Respiratory rate -17.12, Systolic BP-131.8, diastolic BP-84.7 have been noted before the test. Then the mean values of vitals recorded immediately after the test was, for Heart Rate-91.2, for Respiratory Rate-24.8, For Systolic BP-143.6, for Diastolic BP-89.[3]

Following Elie Mouhayar et al., Hypertension has been reported to be the most common comorbidity encountered in patients with malignancy (37%). The most common chemotherapeutic agents known to cause Hypertension to include several angiogenesis inhibitors, commonly known as vascular signalling pathway (VSP) inhibitors. Hypertension is emerging as one of the most common side effects of these agents. These drugs include the anti-vascular endothelial growth factor (VEGF) antibody. The mechanism is not well understood and continues to be investigated. Several theories have been suggested, including endothelial dysfunction associated with reduced nitric oxide bioavailability and with increased vascular and renal endothelin production; increase in vascular tone; vascular rarefaction (decrease in density of microvessels); and renal thrombotic

microangiopathy with secondary glomerular structural and functional changes that lead to proteinuria and hypertension[19]. The most common treatment-associated side effects reported (in order of prevalence) were fatigue (80%), pain (48%), nausea and vomiting (48%), anxiety (46%), and insomnia (45%). In addition, approximately 37% reported having anaemia while receiving chemotherapy and radiotherapy. Fatigue was the most commonly reported treatment-associated side effect of cancer and cancer treatment [11]. The rate of perceived exertion (RPE) was measured using the Modified Borg Scale, which scored as 0 before the test and the mean score immediately after the test was 3.6. It indicated that patients felt mild to moderate breathlessness

Therefore, in cancer patients, cognitive and psychosocial impairment have been revealed along with physical impairment and reduced cardiopulmonary endurance

CONCLUSION:

This study has concluded that cancer and its treatment protocol have a crucial impact on the physical, social, and cognitive status of the patient.

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CONFLICT OF INTEREST: **None**

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