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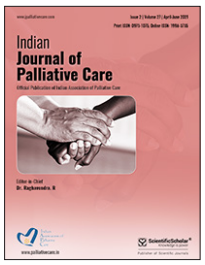

Letter to the Editor

Myriad of Cancer-related Fatigue: A Concept Model on Multifactorial Causation and Impact

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Received : 17 January 2021
Accepted : 09 June 2021
Published : 12 August 2021

DOI
10.25259/IJPC_19_21

Dear Sir,

Cancer-related fatigue is the most common, prevalent, distressing and disabling symptom manifested by patients with cancer and cancer survivors on various treatment modalities such as chemotherapy and radiation therapy or both.

According to the National Comprehensive Cancer Network (2020), cancer-related fatigue is distressing, persistent, subjective sense of physical, emotional and/or cognitive tiredness or exhaustion related to cancer or cancer treatment that is not proportional to recent activity and it interferes with usual functioning.[1] According to Cella *et al*., 1998, cancer-related fatigue is the subjective state of overwhelming, sustained exhaustion and decreased capacity for physical and mental work that is not relieved by rest.[2]

The prevalence of cancer-related fatigue is different in different cancer types and ranges from 25% to 100%.[3,4] Experience of fatigue is highly associated to period before, during and even after treatment.

Fatigue experienced by the patients with cancer varies in terms of intensity and severity throughout the day and follows a style related to treatment.[1] The pattern involves the waxing and waning of fatigue that is, severe fatigue after a few days and after a few weeks in patients undergoing chemotherapy/immunotherapy and radiation therapy, respectively. Whereas fatigue usually lessens or even goes away overtime as they convalesce from surgery.[5,6]

Cancer-related fatigue is a multifaceted phenomenon affected by various factors. We propose a model that depicts multifactorial causation and impact of cancer-related fatigue. The model emphasises an interplay between various factors affecting CRF and its impact on life of patients with cancer. This model depicts the individual factors, contextual factors, experiences and impact of fatigue [Figure 1].

Individual factors include demographic, genetic, immunity, psychological and social factors. Demographic variables include age, gender, socioeconomic status, marital status and employment status (income). Psychological factors comprise personality, stress, depression, anxiety and coping styles, while social support plays an important role as a social factor.[7-9]

Cancer, its type, stage and duration of cancer, cancer treatment (surgery, chemotherapy, radiation therapy and immunotherapy), comorbid conditions such as anaemia, malnutrition, EBV infections, cardiopulmonary disorders, liver failure, renal diseases, neurological disorder and

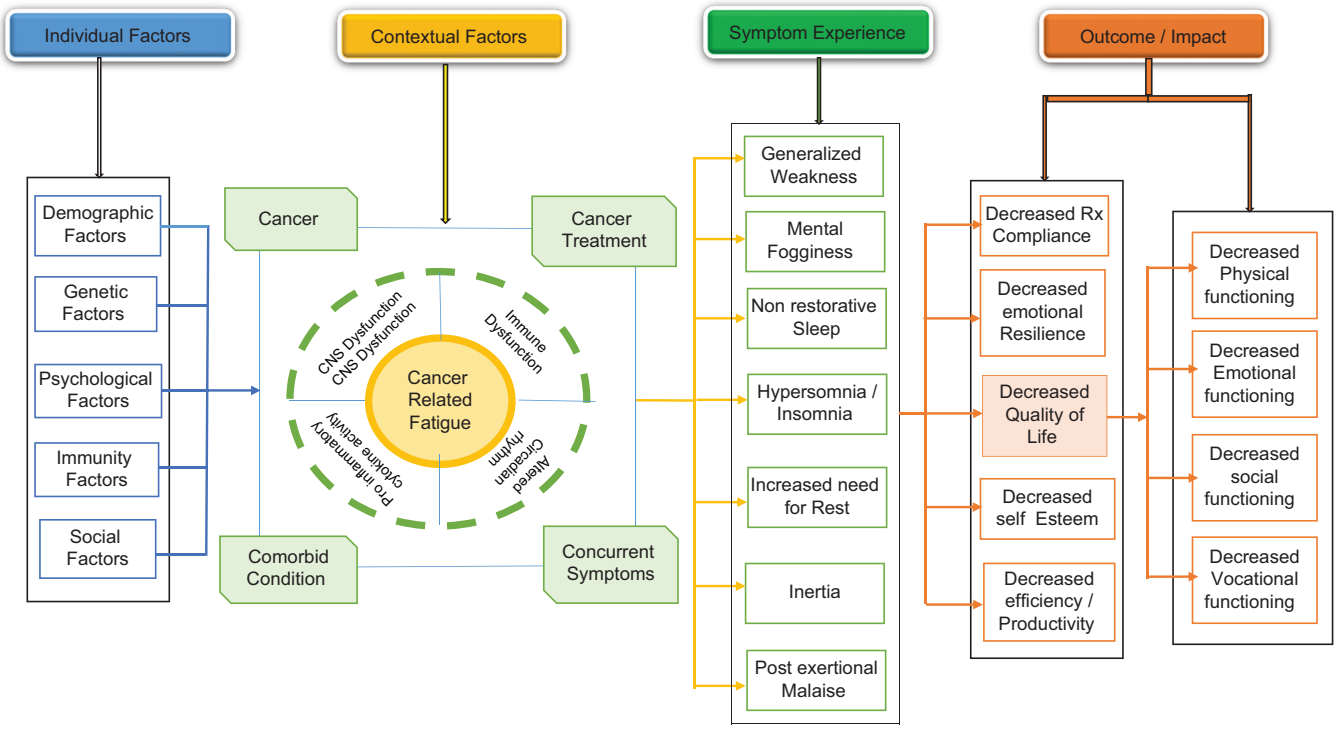

Figure 1: Multifactorial causation and impact of cancer-related fatigue (researchers conceptualised the model for multifactorial causation and impact of cancer-related fatigue).

fluid and electrolyte imbalances and concurrent symptoms such as pain, dyspnoea, nausea, hypoxemia and insomnia are found to be highly associated with cancer-related fatigue.[7,8]

Symptoms experienced comprise generalised weakness not relieved by rest, increased need for rest, reduced concentration with mental fogginess, non-restorative sleep with hypersomnia or insomnia, inertia and post-exertional malaise.[10]

Cancer-related fatigue has a wide range of impact which ranges from affecting quality of life to decreased treatment compliance. Quality of life is affected in the form of reduced physical and vocational functioning, decreased emotional and social well-being. Decreased treatment compliance, reduced emotional resilience, decreased self-esteem and decreased productivity/efficiency are the other under reported impact of fatigue associated with cancer.[11-15]

Different strategies that can be adopted by the clinicians for the management of cancer-related fatigue include non-pharmacological and pharmacological measures. Non-pharmacological measures include aerobic exercises in the form of walking, cycling, running or bowing for at least 150 min/week of moderate intensity or 75 min/week of vigorous intensity.[16,17] Complementary therapies such as yoga, asana, mindfulness,[18] massage[19] and aromatherapy, foot soak with reflexology,[18] acupressure and acupuncture[20] and Reiki therapy[21] are found to be effective in managing the cancer-related fatigue and improve the quality of life of patients. Dietary counselling, psychoeducation,[22] cognitive behavioural therapy[23] and sleep therapy[24] have a positive impact on fatigue. More research studies have to be conducted to evaluate the effectiveness of different interventions such as polarity/energy therapy, bright light therapy,[1] restorative therapy[25] and eurythmic therapy.[26] Pharmacological agents such as recombinant human erythropoietin,[27,28] high-dose Vitamin C,[29] L carnitine,[30] paroxetine,[31] methylphenidates[32] and ATP infusion[33] have significantly improved the cancer-related fatigue.

In summary, cancer-related fatigue is a multifarious phenomenon and it negatively affects the quality of life and activities of daily living. Identification of determinants and impact of cancer-related fatigue aid in the delivery of individualised, holistic and quality care to the patients with cancer and cancer survivors.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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How to cite this article: Javeth A, Silva FD, Singh P. Myriad of cancer-related fatigue: A Concept model on multifactorial causation and impact. Indian J Palliat Care 2021;27(2):354-6.