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The Relationship between Hope and Cancer-Related Fatigue

Farhad Azadmehr[1], Payam Emami[2], Milad Kazemi Najm[3], Mansour Arad[3*]

[1] Department of Medical-Surgical Nursing, Clinical Care Research Center, Research Institute for Health Development, Kurdistan University of Medical Sciences, Sanandaj, Iran.
[2] Department of Emergency Medical Sciences, Faculty of Paramedical Sciences, Kurdistan University of Medical Sciences, Sanandaj, Iran.
[3] Student Research Committee, Hamadan University of Medical Sciences, Hamadan, Iran.

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ABSTRACT

Cancer-related fatigue is a prevalent and distressing symptom in patients with cancer. This study aimed to assess the relationship between hope and cancer-related fatigue in patients receiving oncological care. A descriptive correlational design was employed. A convenience sample of 160 cancer patients was recruited from oncology clinics of selected hospitals affiliated with the Shahid Beheshti University of Medical Sciences. Data were collected using a demographic questionnaire, the Multidimensional Fatigue Symptom Inventory–Short Form, and the Herth Hope Index. Data were analyzed using SPSS v22. The participants' mean age was 55.51 ± 14.27 years, and most were married males. A statistically significant, moderate negative correlation was found between hope and cancer-related fatigue ($r = -0.326$, $p = 0.001$), indicating that higher hope levels were associated with lower fatigue. In conclusion, hope is inversely related to cancer-related fatigue, suggesting that it serves as a protective psychological factor. Integrating hope-enhancing interventions, such as meaning-centered counseling or goal-setting strategies, into routine oncology nursing care may mitigate cancer-related fatigue and improve patient well-being. Thus, holistic care for patients with cancer must address not only physical symptoms but also psychosocial resources, particularly hope.

Keywords: Cancer-related fatigue; Hope; Oncology nursing; Psychosocial factors; Fatigue management

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Introduction

Cancer remains a predominant cause of mortality globally. In 2022, approximately 20 million new cancer cases and 9.7 million cancer-related deaths were reported worldwide [1]. Despite substantial advancements in medical science, cancer continues to pose a significant public health challenge in the current century. In Iran, the incidence of cancer is escalating due to demographic shifts and increased life expectancy, with projections indicating a rise from approximately 112,000 cases in 2016 to around 160,000 new cases by 2025 [2]. Among the most prevalent and debilitating symptoms experienced by cancer patients at any stage of the disease is cancer-

* Corresponding Author: Mansour Arad. Student Research Committee, Hamadan University of Medical Sciences, Hamadan, Iran. email: m1372.arad@gmail.com

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related fatigue, with prevalence estimates of approximately 52% across studies [3].

Cancer-related fatigue is characterized as a distressing, persistent, subjective sensation of physical, emotional, and/or cognitive tiredness or exhaustion associated with cancer or its treatment, which is disproportionate to recent activity and interferes with usual functioning [4]. Cancer-related fatigue is a multidimensional construct that can be analyzed from physical, psychological, and social perspectives [5], significantly impacting the quality of life of cancer patients [6].

Fatigue in cancer patients is a major global concern [7]. In Iran, several studies have demonstrated that fatigue adversely affects the quality of life in patients with various types of cancer. For instance, Isfahani et al. reported that 78% of patients with breast cancer experienced fatigue to varying degrees, significantly impacting their quality of life [8].

The adverse consequences of cancer include diminished general health and quality of life, as well as heightened psychological distress, such as anxiety and depression [9]. Currently, the level of hope in cancer patients is recognized as a crucial and effective psychosocial factor across various stages of cancer treatment. Higher levels of hope are associated with better adaptation to illness, reduced psychological suffering, improved quality of life, and enhanced general health [10]. Studies have indicated that hope-based psychological interventions can enhance hope in cancer patients [11], increase general health, and reduce symptoms of psychological pathology [12]. Hope is consistently associated with lower levels of depression [13].

The significance of hope and fatigue is reflected in their inclusion as key considerations in nursing diagnoses. It is essential to differentiate between depression, despair, and cancer-related fatigue, as these factors can have overlapping negative impacts on quality of life, including symptoms such as weakness, lethargy, decreased concentration, insomnia or hypersomnia, mood disorders, and physical problems [14]. Effective management of cancer-related fatigue, along with attention to psychosocial factors such as hope, may improve patients' quality of life [15].

Although numerous studies have examined cancer-related fatigue and hope separately, fewer have investigated their direct relationships and interactions. Therefore, the present study was conducted to determine the association between hope and cancer-related fatigue in patients with cancer referred to selected oncology clinics affiliated with Shahid Beheshti University of Medical Sciences in 2021.

Materials and Methods

This study employed a descriptive-correlational design and was conducted on 160 cancer patients referred to selected oncology clinics affiliated with Shahid Beheshti University of Medical Sciences, Tehran, Iran in 2021. Ethical approval was obtained from the Ethics Committee of Shahid Beheshti School of Nursing and Midwifery and all necessary permissions were secured prior to data collection.

The inclusion criteria were as follows: age 20–80 years, confirmed diagnosis of any cancer at least 6 months prior, ability to read and write in Farsi, full consciousness and capacity to respond to questions, no bereavement in the past year, no use of psychiatric medications in the past 6 months, no substance addiction, provision of informed consent, and absence of diagnosed cognitive or mental disorders. The exclusion criteria included disease severity that prevented participation, and the presence of other major chronic diseases.

The sample size was calculated using G*Power software with $\alpha = 0.05$ (type I error), power = 0.90 ($1 - \beta$, type II error), and an expected correlation coefficient of $r = -0.34$, based on Iwase et al. This yielded a minimum required sample size of 145. To account for a potential 10% attrition rate, 160 patients were recruited. Ultimately, 160 complete questionnaires were obtained with no missing data or dropouts. Convenience sampling was performed in stages. First, all hospitals affiliated with the Shahid Beheshti University of Medical Sciences that had oncology clinics were identified. Clinics with the highest patient referral rates were selected, and eligible patients were consecutively enrolled according to the inclusion criteria and proportional to the referral volume at each center. Patients completed the questionnaires in a clinical setting.

Data were collected using a demographic questionnaire, the Multidimensional Fatigue Symptom Inventory–Short Form (MFSI-SF), and the Herth Hope Index (HHI).

The MFSI-SF is a 30-item instrument comprising five 6-item subscales: General Fatigue, Physical Fatigue, Emotional Fatigue, Mental Fatigue, and Vigor [16]. Items are rated on a 5-point scale from 0 (“not at all”) to 4 (“extremely”). The total fatigue score was computed by summing the four fatigue subscales and subtracting the vigor subscale score (possible range: −24 to 96), with higher scores indicating greater fatigue. Previous studies have reported good internal consistency (Cronbach’s $\alpha = 0.70–0.95$). and test-retest reliability ($r = 0.80$ (16).

The Herth Hope Index (HHI) is a 12-item scale designed to measure multidimensional hope [17]. Items are scored on a 4-point Likert scale (1 = strongly

disagree to 4 = strongly agree), yielding total scores ranging from 12 to 48, with higher scores indicating greater hope levels. Herth reported test-retest reliability of 0.91 and Cronbach's α of 0.97 (4). In an Iranian validation study, the test-retest reliability was 0.84, and Cronbach's α was 0.76, with confirmed content validity [18].

The content and face validity of both instruments in the current context were established by submitting the questionnaires to 10 faculty members from the School of Nursing and Midwifery at Shahid Beheshti University of Medical Sciences. Experts evaluated the comprehensibility, simplicity, ease of response, and appropriateness of the phrasing.

Internal consistency in the present sample was α = 0.81 for the MFSI-SF and α = 0.89 for the HHI, respectively.

The study objectives were explained to all participants, and written informed consent was obtained. The researcher distributed and collected the questionnaires directly from the patients. Data were analyzed using SPSS version 22, and statistical significance was set at $p < 0.05$.

Results

A total of 160 patients with cancer were included in this study.

The mean age of the participants was 55.51 ± 14.27 years, and the mean age at diagnosis was 53.69 ± 14.01 years.

The sex distribution was 61.3% male and 38.8% female. Most participants were married (85.6%,), with 6.9% single, 3.8% widowed, and 3.8% divorced status.

Employment status included self-employed (23.8%), retired (12.5%), employees (18.8%), students (2.5), workers (8.1%), housewives (28.1%), and unemployed (6.3%).

The educational levels were illiterate (14.4%), primary school (30.6%), middle school (13.8%), high school (21.9%), and university (19.4%). Additionally, 23.8% of the participants reported a history of substance use, and 35.0% had a family history of cancer.

Chemotherapy was the most common treatment modality (48.1%, n = 77). In contrast, surgery and palliative pain management were the least frequently reported (each 1%).

The cancer stage distribution is indicated in Figure 1.

The mean hope score (HHI) was 30.3 (SD 15.11). The mean overall fatigue score (MFSI-SF) was 16.16 ± 14.12. The subscale means were as follows: general fatigue, 8.00 ± 3.83; physical fatigue, 7.48 ± 4.15; emotional fatigue, 6.62 ± 4.09; mental fatigue, 4.61 ± 3.55; and vigor (the highest among the subscales), 10.57 ± 4.58.

Pearson's correlation analysis showed a significant moderate negative correlation between hope and overall fatigue ($r = -0.326$, $p = 0.001$).

Significant negative correlations were also observed with the fatigue subscales: mental fatigue ($r = -0.378$, $p = 0.001$), emotional fatigue ($r = -0.270$, $p = 0.001$), general fatigue ($r = -0.160$, $p = 0.043$), and physical fatigue ($r = -0.157$, $p = 0.048$). However, hope was positively correlated with the vigor subscale ($r = 0.197$, $p = 0.013$). This finding is consistent with the structure of the MFSI-SF, in which the vigor subscale is inversely incorporated into the total fatigue score, thus reflecting greater perceived energy (Table 1).

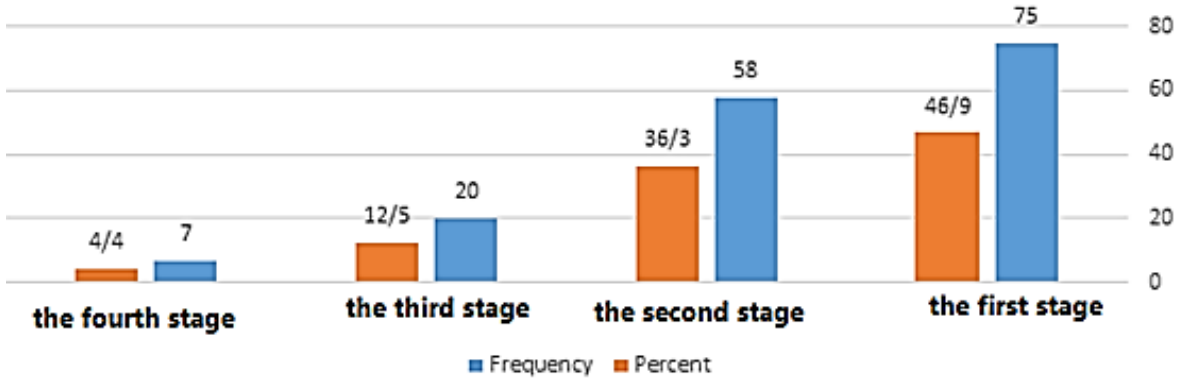

Figure 1. Frequency distribution of cancer stage among cancer patients referred to selected oncology clinics affiliated with Shahid Beheshti University of Medical Sciences in Tehran

Table 1. Pearson correlation coefficients between hope and MFSI-SF dimensions

Dimension	Correlation coefficient (r)	p-value
Overall fatigue	**−0.326**	**0.001**
Mental fatigue	**−0.378**	**0.001**
Emotional fatigue	**−0.270**	**0.001**
Physical fatigue	**−0.157**	**0.048**
General fatigue	**−0.160**	**0.043**
Vigor	**0.197**	**0.013**

Note: The positive correlation with the vigor subscale is consistent with the MFSI-SF scoring, where vigor is subtracted from the sum of fatigue subscales to compute overall fatigue (higher vigor reflects greater perceived energy)

Discussion

Cancer-related fatigue has complex and profound effects on the psychological state of patients with cancer and is associated with higher levels of depression level [19]. As cancer-related fatigue represents a subjective patient experience, healthcare providers should systematically evaluate and manage it as a key component of their professional care.

In the present study, a significant moderate negative correlation was observed between hope and overall cancer-related fatigue. This finding is consistent with previous studies. For example, Shun et al. reported significant associations between fatigue characteristics (duration, severity, and interference) and hope in newly diagnosed patients with cancer receiving chemotherapy [20]. Similarly, Berendes et al. found that higher hope was associated with lower fatigue and other symptoms among patients with lung cancer, highlighting the role of symptom burden [21]. The positive correlation observed in the present study between hope and the vigor subscale of the MFSI-SF aligns with these findings, as higher hope is associated with greater perceived energy. Lee reported a negative association between fatigue and hope in women with breast cancer [22], supporting the recommendation that nurses incorporate hope assessment and enhancement in the care of patients experiencing fatigue.

The inverse association between hope and cancer-related fatigue observed in this study suggests that higher hope levels are linked to lower fatigue severity across most dimensions. This relationship may reflect the interplay between physical and psychological symptom burden, treatment-related challenges, and social factors. Receiving emotional and social support from family and healthcare providers, particularly nurses, may mitigate psychological distress during cancer diagnosis and treatment. Future research, including mixed-methods and longitudinal designs, is recommended to explore the influence of patient/family education and nursing interventions on hope and cancer-related fatigue levels [23].

The limitations of the present study include its descriptive cross-sectional design and convenience sampling from selected oncology clinics, which limit its generalizability to broader populations. The absence of a control group precluded direct comparisons of fatigue levels between healthy individuals and patients with other conditions.

Conclusion

The findings of the present study indicate a significant inverse association between hope and cancer-related fatigue, with higher levels of hope being linked to lower overall fatigue severity and greater perceived vigor. Although the cross-sectional design precludes causal inferences, these results suggest that hope may serve as an important psychosocial resource for patients with cancer.

Therefore, in addition to physical care and standard nursing interventions, incorporating strategies to assess and enhance hope could improve the management of cancer-related fatigue. Future longitudinal and interventional studies are warranted to further explore the potential role of hope-enhancing approaches in reducing fatigue and improving patient well-being.

Authorship contribution statement

All authors have reviewed and approved the final version of the manuscript. M A conceived and designed the study. FA, MKN and PE conducted the study and collected the data; MA and FA performed the data analysis and interpretation.

Ethical Consideration

Ethical approval was obtained from the Ethics Committee of Shahid Beheshti School of Nursing and

Midwifery (code: IR.SBMU.PHNM.1396.966), and all necessary permissions were secured prior to data collection.

Declaration of Competing Interest

The authors have no conflict of interests related to this article.

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Data Availability

All data supporting the findings

Declaration of Generative AI

The authors declare that they have not used any type of generative artificial intelligence for the writing of this manuscript, nor for the creation of tables, or their corresponding captions.

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