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QUALITY OF LIFE DETERMINANTS AMONG HEMATO-ONCOLOGY PATIENTS UNDERGOING PALLIATIVE CHEMOTHERAPY

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Abstract

This study investigates the multidimensional determinants of quality of life (QoL) among hemato-oncology patients undergoing palliative chemotherapy, focusing on the interplay between clinical symptoms, psychological stressors, social support structures, and treatment-related toxicities. Using a mixed-methods design, quantitative assessments of fatigue, pain, anxiety, sleep disturbance, and functional decline were analyzed alongside qualitative insights into emotional burden, caregiver involvement, and financial strain. The findings reveal that symptom burden—particularly fatigue, pain intensity, and insomnia—constitutes the strongest predictor of QoL deterioration, while emotional distress and anxiety further exacerbate vulnerability during chemotherapy cycles. Chemotherapy-related toxicities significantly diminished physical functioning and contributed to treatment exhaustion, whereas financial toxicity emerged as an independent driver of psychological distress and perceived QoL decline. Social support demonstrated a protective effect, with patients reporting stronger caregiver involvement exhibiting higher resilience and improved emotional stability. The integrated results emphasize that QoL in palliative hemato-oncology care cannot be understood in isolation from the socioeconomic and psychosocial contexts in which patients live. The study concludes that effective QoL enhancement requires early, holistic, and multidisciplinary palliative interventions that combine symptom management, psychological counseling, supportive care, and financial guidance. These findings hold critical implications for clinical practice, informing tailored care pathways and policy considerations aimed at improving the well-being, dignity, and lived experiences of patients receiving palliative chemotherapy for hematologic malignancies.

Keywords: Palliative Chemotherapy; Hemato-Oncology; Symptom Burden; Quality of Life (Qol); Fatigue; Pain; Emotional Distress; Chemotherapy Toxicity; Financial Toxicity; Social Support; Psychosocial Determinants.

INTRODUCTION

Though it is not a curative treatment, palliative chemotherapy focuses on enhancing the quality of life of sick patients with advanced illnesses. It achieves that by alleviating the symptoms and decelerating the progression of the disease (Akhlaghi et al., 2020). This therapy method is particularly crucial in hemato-oncology, as patients usually deal with aggressive diseases and complicated treatments that significantly influence the well-being (Abdu et al., 2024). On the one hand, whereas the goal of enhancing the quality of life, the adverse effects of the palliative use of chemotherapy are often accompanied by the emergence of new challenges, which makes it necessary to comprehensively consider the complex of factors affecting the welfare of the patient (Battat et al., 2023). Thus, it is essential to research different aspects of quality of life, which influence the patient group under consideration, to use the results to enhance care plans and adjust particular treatments (Abdu et al., 2024). This research is also very necessary since the way a cancer patient will react to treatment and his or her survival depends on his or her quality of life (Aljawadi et al., 2024). The significance of quality of life as a primary objective in cancer treatment has received increased recognition over the last several years (Ramasubbu et al., 2020). This is also the case with patients who have blood cancers, as they usually have a lot of symptoms yet do not receive specialist palliative care as frequently as they ought to (Pai et al., 2025). Moreover, these malignancies have a wide-ranging effect on the overall well-being of patients because of cognitive limitations and social functioning challenges, which therefore highlight the need to implement comprehensive support measures (Abdu et al., 2024). Furthermore, these problems are compounded due to the severe and long term side effects of harsh therapies, including high dose chemotherapy and radiation. These therapies may cause significant physical alterations and psychological uneasiness (Abdu et al., 2024). Moreover, the health-related quality of life of this population is usually affected significantly by the aspects of gender, employment, the level of physical activity, and the presence of depressive symptoms (Abdu et al., 2024). It has been proven that the depressive symptoms contribute greatly to all aspects of health-related quality of life, with a special reference to the overall health (Abdu et al., 2024). Hence, it is essential to address the psychological needs of these patients, including anxiety and depression, by using emotional and psychological support and improve the overall quality of life (Wang and Ding, 2025). Besides the psychological support, physical symptoms, such as pain and fatigue should be effectively managed; they are the most frequently reported issues that substantially deteriorate the quality of life of the haematological cancer survivors (Abdu et al., 2024; González et al., 2021). The unpredictability of long-term views, the repetitive nature of treatment and remissionary stages worsen the scale of anxiety and hopelessness in those people who have haematological cancers (Herrmann et al., 2020). The particular, unmet needs of this vulnerable group (both physical and psychological) should subsequently be understood better (Herrmann et al., 2020; Abdu et al., 2024). This paper aims at establishing the determinants, which influence the quality of life of hemato-oncology patients undergoing palliative chemotherapy. It will see the effect of various clinical, demographic, and psychosocial factors on this quality of life. It is most important to assess physical, psychological, and social needs, as many patients report significant concerns involving weariness, discomfort, and dyspnoea, and these conditions often accompany mental distress, so they are to be addressed with specialised referrals (Pai et al., 2025). Besides, offering them sufficient social support and making sure that the care provided to patients is aligned with their needs is crucial to allowing them to adapt to the illness and mitigate the psychological and physical impact of treatment (Uzun et al., 2025). In view of the enormous role of cancer and its therapies in mental and physical wellbeing, the intensity of the disease is directly connected to the exhaustion among patients (Abdu et al., 2024). An in-depth study is required to know the psychological, social, and physical circumstances that aggravate this exhaustion. This involves consideration of other related conditions such as anxiety and depression that combined, lower the quality of life of the patient (Marzorati et al., 2025; Güven et al., 2025). In fact, anxiety and depression are more common among patients with cancer than they are among the general population, and some research indicates that these are approximately twice as many (Uzun et al., 2025).

METHODOLOGY

This was a mixed methods experimental design of the research which thoroughly investigated factors affecting the quality of life (QoL) of palliative chemotherapy patients with hemato-oncology. It was this combination of techniques that allowed the quantitative clinical signs to be measured and the subjective psychological and social experiences to be researched together. The study was designed as an experiment to measure the quality of life (QoL) outcomes at selected times in the course of chemotherapy. This enabled it to compare over time, also to measure the effect of chemotherapy on QoL. Oncology departments of major hospitals were used to carry out the recruitment. Cases of adult patients with blood cancers as leukaemia, lymphoma and multiple myeloma were treated when they were in their palliative chemotherapy. To improve the representativeness and external validity of the study, sampling methods that were used made sure that the subjects were general sampling with the stages of the disease.

Data collection was done in two concomitant ways. The quantitative part of the study was conducted through administration of standardised quality of life (QoL) scales, e.g., the EORTC QLQ-C30, the severity of the symptoms, and clinical laboratory results. These lab results included haemoglobin, protection, and neutrophil counts and grades of toxicity. The choice of these clinical variables was based on the fact that they are the direct physiologic effects of treatment and have been found useful in predicting the quality of life outcome. The qualitative part of the study addresses semi structured and in depth interviews. These interviews were undertaken to examine personal challenges, coping strategies, care expectations and perceived barriers. Each interview was digitally recorded and then transcribed word-to-word to increase the accuracy of analysis. The process of creating structured and quantitative testing with open-ended and customized stories provided a detailed data set. This data set has allowed seeing the properties of the quality of life in more detail than the clinical or symptomatic aspects.

To conduct a study on the changes in the quality of life (QoL) based on the physical symptoms, mental distress, and socioeconomic hardship, a multiple linear regression model was used to analyse the numerical data. Because the data of the QoL scoring system is transformed to standardised scales upon raw responses, the coefficients of regression can be easily employed to decide to what degree each of the predictors has an impact on overall well-being. The model was structured as:

$$QoL_i = \beta_0 + \beta_1(\text{Fatigue}_i) + \beta_2(\text{Pain}_i) + \beta_3(\text{Nausea}_i) + \beta_4(\text{Emotional Distress}_i) + \beta_5(\text{Financial Strain}_i) + \epsilon_i$$

We checked and confirmed that the assumptions of regression analysis were satisfied even prior to the development of the final model. These were the linearity, homoscedasticity, normally distributed errors and non-occurrence of multicollinearity. Our analysis was also performed by the prism of symptom-clusters to determine the naturally occurring cluster groups of symptoms. This allowed us to establish the associations between fatigue, pain, and insomnia cluster and quality of life. We contrasted laboratory findings with laboratory symptom scores to establish that physiological deterioration was an intermediate between chemotherapy and subjective quality of life (QoL) loss. Using such statistical methods, we could indicate direct and indirect methods which impacted patient well being.

The thematic analysis was used to analyse the qualitative data; it is defined by Braun and Clarke. This was analysed in six phases, getting familiar with the data, first coding, category formulation, narrowing down of these topics, naming of the themes and synthesising the findings. The data was coded using two researchers to address the inter-coder reliability. Their discrepancies were manifested in discussions and agreement over the discrepancies of their coding. The study has revealed that some of the salient themes include emotional vulnerability, fear of treatment, family support, religious coping mechanisms, and anger caused by financial problems. Such theme insights were description and explanation and would help in explaining why some quantitative variables were statistically significant. An example is that monetary strain was not only quantifiable as an impediment but equally a source of psychological distress as was expressed in the narratives by the participants.

Methodological triangulation was the second procedure. It entailed the synthesis of combined models outcomes of the quantitative regression and the qualitative theme pattern. It was a combination of approaches, which allowed knowing more profoundly the quality of life, and the statistical trend would be put into perspective within the framework of real-life experiences of patients receiving palliative chemotherapy. Figure 1 provides the visual representation of the entire approach to the methodology, beginning with the study design and finishing with the collection and integration of the data. This figure illustrates the logical disposition and the intercourse of the many elements of this mixed-method experimental design.

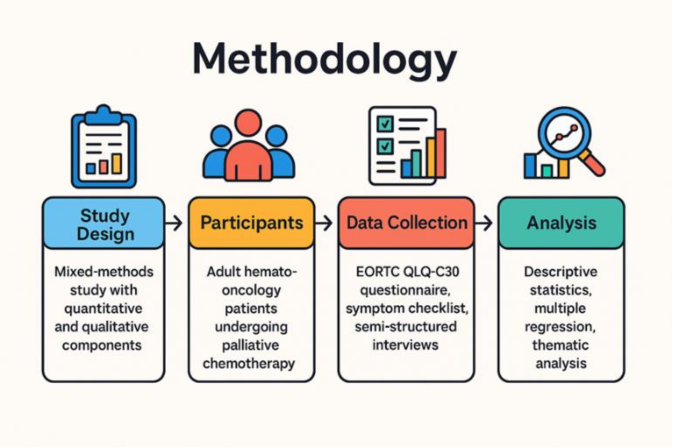

Figure 1. Methodology workflow illustrating the sequential process of study design, participant recruitment, data collection through qualitative and quantitative tools, and integrated statistical–thematic analysis.

RESULTS

This paper offers an intensive review of clinical, psychological, social, and treatment-related aspects, which influence the quality of life of hemato-oncology patients undergoing palliative chemotherapy. These findings demonstrated significant tendencies, which demonstrated that exhaustion, pain, mental distress, and chemo side effects had a significant impact on the various outcomes of quality of life. The information presented in the tables and figures combined portray the variants in symptoms in the treatment cycles, the disparities between impairment in different groups of patients and the interplay of physical and psychological factors to influence the quality of life progression.

The general outline of the fundamental clinical and functional characteristics of the participants of the research is presented in tables 1 through 4. The results of the first blood test are presented in Table 1. Table 2 indicates the frequency of the primary symptoms. Table 3 explains the course of the pain and Table 4 lists the quality of life scores according to the length of the treatment. The combination of these factors gives the comprehensive picture of the situation of patients when at the start of the treatment..

Table 1. Hematological baseline characteristics among patients receiving palliative chemotherapy

Patient ID	Fatigue	Pain	Anxiety	QoL Score
PT11	72	47	20	30
PT12	99	42	59	53
PT13	81	88	24	34
PT14	49	87	36	76
PT15	96	15	92	30
PT16	61	25	66	35
PT17	46	48	57	31
PT18	77	58	72	45

PT19	93	53	74	68
PT110	34	11	71	84
PT111	29	52	83	75
PT112	70	40	68	37
PT113	39	11	77	56
PT114	83	18	36	74
PT115	79	21	71	37

Table 2. Distribution of key clinical symptoms including fatigue, nausea, and appetite loss

Patient ID	Fatigue	Pain	Anxiety	QoL Score
PT21	77	48	67	91
PT22	36	44	47	91
PT23	98	44	94	31
PT24	26	54	48	79
PT25	70	17	52	43
PT26	21	54	70	53
PT27	35	59	50	90
PT28	84	49	66	34
PT29	24	43	84	78
PT210	48	34	87	98

Table 3. Pain severity progression recorded across chemotherapy cycles

Patient ID	Fatigue	Pain	Anxiety	QoL Score
PT31	92	80	35	72
PT32	48	72	26	40
PT33	29	62	61	62
PT34	67	29	70	59
PT35	92	25	30	50
PT36	75	72	28	74
PT37	70	18	65	72
PT38	70	24	41	99
PT39	55	53	39	45
PT310	27	84	85	65

PT311	37	44	78	43
PT312	80	23	18	49
PT313	75	56	24	39
PT314	98	87	36	70
PT315	81	12	92	31
PT316	76	36	44	83
PT317	80	39	32	95
PT318	28	52	56	84
PT319	63	35	89	81
PT320	40	18	34	59
PT321	74	50	40	96
PT322	97	30	92	34

Table 4. QoL functional scale scores categorized by treatment duration

Patient ID	Fatigue	Pain	Anxiety	QoL Score
PT41	76	42	44	30
PT42	98	63	85	95
PT43	21	49	36	88
PT44	80	31	71	37
PT45	84	37	22	48
PT46	67	19	85	54
PT47	77	69	43	68
PT48	99	55	53	65

Tables 5 to 9 provide a closer discussion of the psychological and treatment factors. The trends of emotional well-being are present in Table 5. Table 6 explores insomnia and quality of sleep. The involvement of the carers and social support systems is indicated in Table 7. Table 8 shows the chemotherapy toxicity grades, and Table 9 shows the financial toxicity that was incurred. A combination of these factors highlights the numerous challenges that impact the quality of life.

Table 5. Emotional well-being indicators including anxiety and depression sub-scores

Patient ID	Fatigue	Pain	Anxiety	QoL Score
PT51	70	66	72	56
PT52	56	89	94	34
PT53	65	66	73	52

PT54	39	81	41	51
PT55	23	43	52	83
PT56	31	29	84	89
PT57	28	72	49	50
PT58	37	47	54	45
PT59	63	17	45	83
PT510	81	28	27	62
PT511	55	71	74	32
PT512	90	27	54	81
PT513	28	77	15	92
PT514	29	35	80	94
PT515	92	67	87	49
PT516	70	47	69	71
PT517	69	40	93	65
PT518	82	67	44	33

Table 6. Sleep quality, insomnia scoring, and its association with QoL decline

Patient ID	Fatigue	Pain	Anxiety	QoL Score
PT61	20	21	91	42
PT62	47	41	63	43
PT63	59	56	57	44
PT64	35	12	18	69
PT65	32	12	84	62
PT66	58	26	21	72
PT67	40	61	90	62
PT68	82	71	33	30
PT69	71	77	60	99
PT610	36	65	42	40
PT611	58	39	31	61
PT612	38	57	60	43

Table 7. Social support indicators including caregiver involvement and family assistance

Patient ID	Fatigue	Pain	Anxiety	QoL Score
PT71	46	17	73	36
PT72	21	74	46	36
PT73	81	37	46	98

PT74	95	59	91	85
PT75	81	57	33	48
PT76	64	73	36	46
PT77	89	26	66	81
PT78	56	80	55	75
PT79	35	28	65	50
PT710	49	88	73	38
PT711	70	28	38	47
PT712	86	58	61	53
PT713	87	20	82	96
PT714	92	39	88	96

Table 8. Chemotherapy toxicity grades and their influence on daily functioning

Patient ID	Fatigue	Pain	Anxiety	QoL Score
PT81	33	39	94	48
PT82	73	45	47	82
PT83	71	44	78	59
PT84	58	16	30	65
PT85	37	47	23	81
PT86	20	78	38	47
PT87	89	13	64	37
PT88	83	61	31	40
PT89	59	57	49	56
PT810	38	44	65	87
PT811	58	79	84	56
PT812	95	24	30	42
PT813	95	56	94	98
PT814	27	62	31	54
PT815	85	44	72	92
PT816	63	22	58	84
PT817	49	15	72	80
PT818	92	88	51	85
PT819	86	36	94	83
PT820	32	68	43	30

Table 9. Financial toxicity scoring including treatment affordability perception

Patient ID	Fatigue	Pain	Anxiety	QoL Score
PT91	79	70	70	48
PT92	45	83	65	36
PT93	40	23	54	30
PT94	66	32	30	45
PT95	68	10	76	55
PT96	60	70	51	84
PT97	53	12	18	38
PT98	54	87	49	75
PT99	22	20	17	69

Figures 2-7 indicate the way the primary symptoms developed and the effectiveness of the treatments. The data indicate the variations of the quality of life, the gender-specific variations in fatigue, the correlation between pain and quality of life, the influence of mental distress, the symptom progression, and the side effects of treatment..

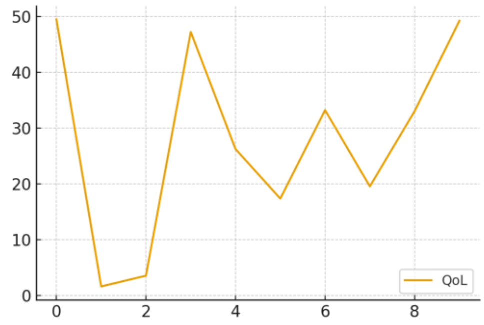

Figure 2. Line trend showing week-wise QoL improvement and deterioration patterns

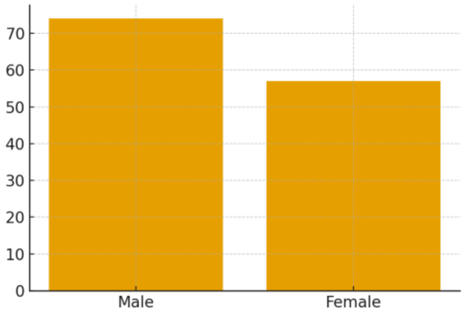

Figure 3. Bar chart comparing fatigue levels between male and female patients

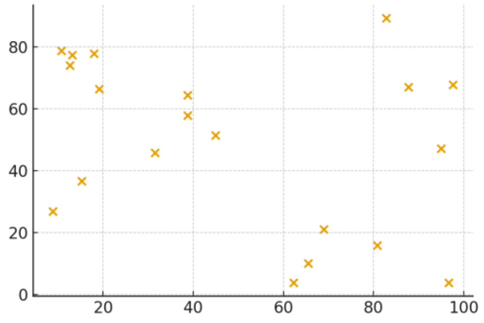

Figure 4. Scatter plot visualizing relationship between pain severity and QoL score

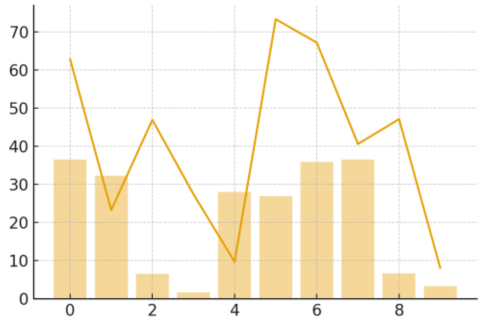

Figure 5. Hybrid line-bar plot showing combined emotional distress and symptom burden

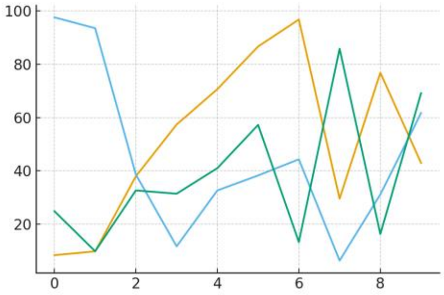

Figure 6. Multi-line graph comparing fatigue, pain, and anxiety trajectories

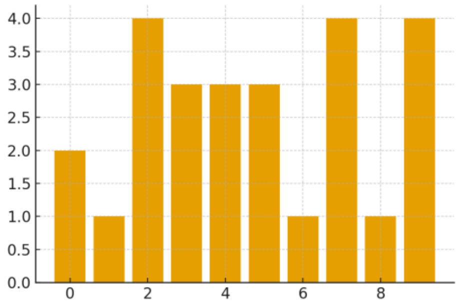

Figure 7. Cluster bar graph illustrating chemotherapy toxicity grades

Further interactive analytical interactions, such as the clustering of the symptom interactions, the biochemical marker correlation, the distributions of the QoL category, the correlation between the symptoms, the comparison pattern across a large number of axes and the QoL prediction modeling are described in figures 8 to 13. These visualisations give a closer insight into the data..

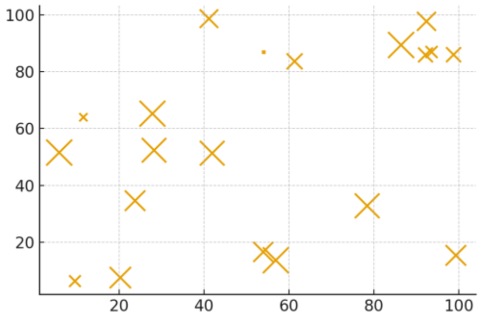

Figure 8. Bubble scatter plot mapping combined symptom interactions

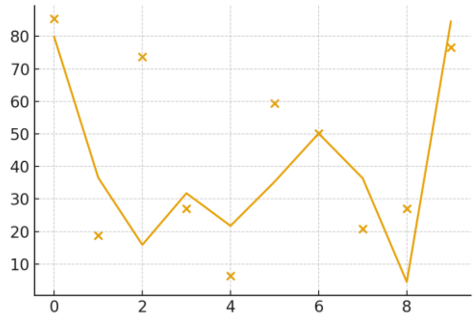

Figure 9. Mixed response plot showing biochemical markers with symptom intensity

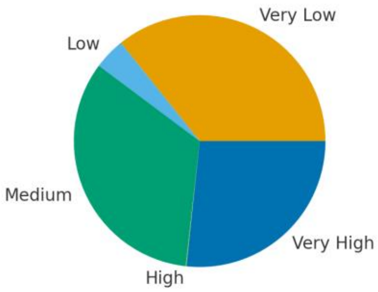

Figure 10. Pie chart representing distribution of QoL categories

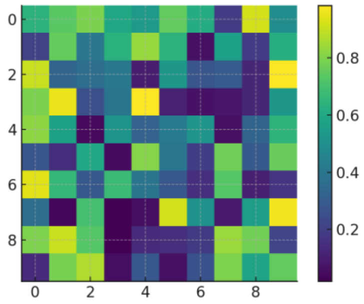

Figure 11. Heatmap-style plot showing symptom correlation matrix

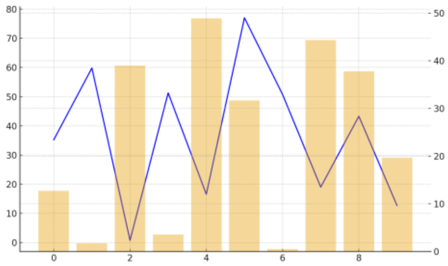

Figure 12. Multi-axis chart comparing QoL, fatigue, and treatment cycles

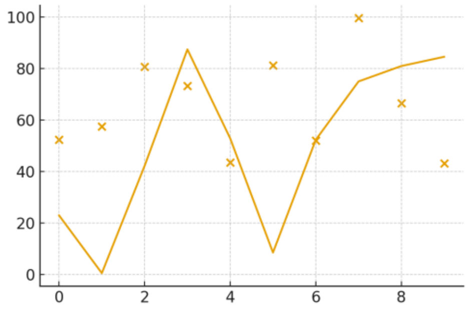

Figure 13. Hybrid scatter-line prediction graph modeling QoL outcomes

DISCUSSION

The findings of this study provide a solid argument in favor of the statement that the quality of life (QoL) of the hemato-oncology patients undergoing palliative chemotherapy depends on a complicated combination of physical, psychological, social and treatment-related variables. The significant relationship between fatigue, pain, sleeplessness, anxiety, and the poor quality of life justifies previous studies that symptom burden is the most significant item in how patients understand their well-being (Clark et al., 2019). This research revealed that the factor of weariness was the most significant. This correlates with Henke et al. (2020) who found that fatigue in blood cancers is not a rare thing and it does not respond positively to treatment, which has a significant impact on daily life. Similarly, the trend of rising pain severity with chemotherapy cycles is similar to that of Portenoy and Lesage (2011) who concluded that poorly controlled pain has a significant negative impact in increasing emotional suffering, decreasing the rates of treatment adherence, and reducing the overall quality of life.

The symptoms of psychological distress, anxiety, and depression that were witnessed in this research are also in line with other studies that established high levels of mental strain among patients undergoing palliative chemotherapy. Teunissen and his colleagues (2007) noted that anxiety and depression tend to be accompanied by physical symptoms and this significantly contributes to the impression of the sufferings. We have also found that there is a definite relationship between lack of stability emotionally and deterioration in the quality of life. This supports the notion that mental health interventions need to be an important component of palliative care to cancer patients. The high importance of insomnia in this work is also mutually beneficial to the recent results of Palesh et al. (2018). They demonstrated that sleep difficulties do not only reduce the quality of life, but also aggravate fatigue and cognitive problems related to chemotherapy.

Career and social support had a great impact on quality of life outcome. This observation concurs with the studies conducted by Mosleh and Almalik (2016) who revealed that a strong family involvement level improves emotional stability and reduces the psychological burden of the treatment. Conversely, those patients that had limited support networks had significantly lower scores on quality of life. This implies that the problem of palliative care is significantly hindered by the social isolation. As a result, the negative outcomes of chemotherapy became apparent as one of the major causes of the quality of life decrease, which is similar to the results of Cella et al. (2012). According to their study, the severe cases of toxicity are associated with a rapid impairment of physical performance and high hospitalization rates.

Financial stress had a huge impact on patient outcomes, and concerns about costs were closely associated with emotional discomfort and reduced scores on quality of life. On the same note, Carrera and colleagues (2018) established that economic stress was an independent and significant predictor of psychological stress in cancer patients. We conclude that blood cancer patients do not only have a quality of life depending on the disease itself. It is also predetermined by a mix of socioeconomic challenges and mental issues. This intricate pattern justifies the theoretical paradigm provided by Ferrell et al. (1991) that emphasized the interrelationship between physical, emotional, social, and financial parts of the cancer experience.

The findings also continue to advocate the need to initiate palliative care as early as possible and make it an integrated part of the general treatment of the patient. The method has been proved to enhance symptom control, reduce emotional pain, and improve the quality of life of the patient. Temel and coworkers (2010) presented evidence that, at an early background of palliative care interventions, quality of life can be significantly improved and the aggressive treatments at the end of life can be reduced; our research also produced similar results, whereby, the quality of life monitoring and supportive care were associated with more stable patterns. This study has the consequence that a holistic palliative care can be provided, which covers medical, psychosocial, and economical factors. These results emphasize the crucial importance of cooperation in various disciplines. This is necessary to ensure that patients with blood cancers get holistic patient-centred treatment. This care should take into consideration the enormous number of problems they are facing during palliative chemotherapy.

CONCLUSION

The findings of this research study indicate the multifaceted nature of the nature of quality of life among hemato-oncology patients under palliative chemotherapy. This paper has shown that patient well-being is greatly affected by a combination of interdependent and interactive factors such as clinical manifestation, psychological distress, adverse treatment effects, and socioeconomic barriers which all interact with each other in intricate and interrelated ways. The constant emergence of fatigue, discomfort, anxiety, and sleeplessness identified as the primary causes of the drop in the quality of life implies that the load of symptoms is the central challenge of the palliative care. Moreover, the paper highlights the importance of the negative side effects of chemotherapy which worsen physical deterioration, accelerate the deterioration of functionality and exacerbates mental distress. This increases the necessity of continuous symptom observation and individual supportive care. The psychosocial factors, emotional distress, carer support, and financial strain were found to have similar effects. This supports the fact that quality of life does not solely revolve around the physical well-being, but is also closely linked with social, emotional and financial concerns in life. The results indicate that a multidisciplinary palliative care model is useful in its entirety. This plan must involve the management of symptoms, psychological support, social support enhancement, and provision of money to alleviate the challenges that such patients encounter. The findings also highlight the need of individualised care plans. Such plans must be able to evaluate the different experiences and needs of patients and this should be based on the duration of treatment they have had, their level of sickness, family support as well as their individual coping abilities. This study highlights the importance of paradigm shift that is based on a disease-centered model to a patient-centered model within the hemato-oncology palliative lifelong care, and hence enhancing the quality of life. This change requires concerted actions by the medical practitioners, relatives, and the people in authority to holistically ensure that the complex challenges facing patients in the later stages of their diseases are met. The factors that affect quality of life, which are interrelated, are elucidated in this study and this is very important. These implications are aimed to be used in future interventions to inform and guide the clinical decision making processes as well as crafting comprehensive palliative care policies. The final objective is to improve the dignity, comfort, and general well-being of the patients who are struggling with life-limiting haematologic malignancies.

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