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#### Original Article

# Comprehensive Assessment of Quality of Life and Preservation of Dignity in Cancer Patients Undergoing Radiotherapy Treatment

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### ABSTRACT

**Objectives:** Cancer patients endure a significant burden, both physically and psychologically. This burden encompasses the symptoms of the disease itself, treatment toxicity, alterations in body image, diminished performance status, pain, lack of a supportive environment and existential distress. These factors contribute to a reduced quality of life and may ultimately erode the patient's dignity. This study aims to assess the overall quality of life and dignity experienced by patients with cancer, utilising established inventories in the Greek context. In addition, the study seeks to investigate the potential impact of quality of life on patients' sense of dignity.

**Materials and Methods:** The study sample comprises 100 cancer patients undergoing definitive or palliative radiotherapy, with Eastern Cooperative Oncology Group (ECOG) performance status ranging from 0 to 3. Among the participants, 46% were male and 54% were female, with a median age of 63 years (range: 32–87 years). Assessment tools included the Greek versions of three inventories: The MD Anderson symptom inventory, the patient dignity inventory and the Functional Assessment of Chronic Illness Therapy (FACIT)-Palliative, version 4.

**Results:** Demographic analysis revealed that ECOG performance status emerged as the sole characteristic significantly impacting patients' dignity. Regarding quality of life, factors such as FACIT-emotional well-being, FACIT-physical well-being and additional concerns demonstrated a discernible influence on patients' sense of dignity.

**Conclusion:** This study underscores the significance of dignity preservation as a pertinent concern among cancer patients. Furthermore, it identifies quality of life-related factors as prognostic indicators for the erosion of patient dignity.

Keywords: Cancer patients, Chronic disease, Dignity, Palliative care, Quality of life, Radiotherapy

### INTRODUCTION

The loss of dignity among cancer patients is an unfortunate reality, often stemming from the myriad of physical and psychological challenges associated with the disease and its treatments. Factors such as treatment toxicity, changes in body image and identity, diminished self-respect, and a lack of adequate social support all contribute to this loss.<sup>[1-3]</sup>

Within the realm of palliative care, preserving dignity emerges as a central concern for patients facing chronic and lifethreatening illnesses. Central to this approach is the recognition of the patient's holistic well-being, encompassing physical, spiritual and social dimensions throughout their disease.<sup>[4,5]</sup>

In response to this growing awareness, oncologists are increasingly acknowledging the importance of identifying factors that contribute to dignity loss among cancer patients. Therapeutic interventions such as surgery, chemotherapy, immunotherapy and radiotherapy significantly impact not only the body but also patients' overall quality of life.<sup>[6,7]</sup> This decline in quality of life presents challenges to their well-being, recovery process and adherence to treatment protocols.<sup>[8,9]</sup>

Our study seeks to delve into this complex interplay between quality of life and dignity among cancer patients. We aim to investigate how various aspects of quality of life influence patients' sense of dignity and to pinpoint predictive factors associated with dignity loss. By employing appropriate assessment tools, we endeavour to identify these factors early in the disease trajectory, allowing for timely and targeted

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interventions that uphold patient dignity while optimising their quality of life.<sup>[10]</sup>

Recognising the pivotal role of early palliative care interventions in improving outcomes for patients with life-threatening diseases, such as cancer, our study aims to contribute to this vital area of research.<sup>[5,6]</sup> Specifically, we seek to assess the quality of life and dignity experienced by patients with chronic diseases, with a focus on cancer, using validated questionnaires.<sup>[7]</sup>

Furthermore, our study aims to elucidate the intricate relationship between quality of life and dignity, providing insights that can inform tailored interventions aimed at preserving patient dignity throughout their illness. By understanding and addressing these factors, we aspire to enhance the overall quality of care provided to cancer patients, while honouring their inherent dignity and humanity.<sup>[4,8]</sup>

# MATERIALS AND METHODS

## Participants

Our prospective trial included 100 consecutive patients undergoing definitive or palliative radiotherapy at our department between August 2021 and November 2021. Adult patients, regardless of age, sex, primary tumour site or disease stage, were eligible for inclusion in our study if they met the specified criteria. The median age of participants was 63 years (ranging from 32 to 87 years), with 46% being male. Most patients presented with stage I-III disease, comprising primary breast, lung, prostate, bladder, gynaecological and primary brain cancers. Approximately 30% of patients exhibited metastatic disease, with bone or brain metastases being predominant.

All patients underwent radiation therapy using an Elekta Linear Accelerator, employing conformal radiotherapy techniques to ensure precise dose distribution to the target while minimising radiation-related toxicity to surrounding normal tissue. While 3D conformal radiotherapy was utilised for patients with multiple brain metastases, more advanced techniques such as intensity-modulated radiation therapy (IMRT) and volumetric modulated arc therapy (VMAT) were employed for the remaining population. Image guidance with cone-beam computed tomography was provided to all patients, regardless of the radiotherapy technique, to enhance treatment accuracy.

Before enrolment, all patients provided written informed consent. Inclusion criteria encompassed age  $\geq 18$  years, biopsy-proven stage I-IV cancer, Eastern Cooperative Oncology Group (ECOG) performance status 0–3, absence of confusion or delirium, intact cognitive function and proficiency in the Greek language. Patients with diagnosed dementia, inability to provide informed consent or an ECOG status of 4 were excluded from the study.

## Setting

Following informed consent, participants were asked to complete three questionnaires. We utilised the Greek versions of the functional assessment of chronic illness therapy-palliative (FACIT-PAL) version 4, the M.D. Anderson symptom inventory (MDASI) and the patient dignity inventory (PDI).

The FACIT-PAL questionnaire<sup>[11]</sup> assesses health-related quality of life across physical, social/family, emotional and general performance domains, with an additional section addressing specific concerns. Responses are recorded on a numerical scale ranging from 0 to 5 and take no more than 15 minutes to complete.

The MDASI<sup>[12]</sup> evaluates the severity of cancer-related symptoms and their impact on daily activities, emotional state and functional status. It comprises scales for symptom severity, symptom interference and additional symptoms, with responses rated on a 0-10 scale.

The PDI, developed by Harvey Max Chochinov<sup>[13]</sup> examines factors affecting dignity across five subscales: psychological distress, body image and identity, self-respect, physical distress and social support. Responses are scored on a 5-point Likert scale.

Feedback from participants indicated that the majority found the questionnaires clear, comprehensible and easy to use.

# Statistical analysis

Continuous variables were described using the number of participants (n), mean values and standard deviations. Categorical variables were presented using frequencies (n)and corresponding percentages (%).

The normality of measurement distributions was assessed using the Kolmogorov–Smirnov test. Internal consistency was evaluated using Cronbach's alpha coefficient, with a threshold of 0.70 indicating sufficient reliability for research purposes.

Univariate analysis employed Pearson's or Spearman's correlation coefficient, as appropriate. Independent samples t-tests and one-way analysis of variance were utilised to explore relationships between the dependent variable (dignity questionnaire subscales) and quantitative and qualitative demographic and clinical indices, respectively.

Variables demonstrating a significance level of P < 0.20in univariate analysis were considered for inclusion in a multiple linear regression model using the enter method, whereby all variables were simultaneously entered to identify independent predictive indicators for different categories of dignity.

Assumptions for linear regression, including homogeneity, linearity, normal distribution, independence of residuals and collinearity of independent variables, were assessed. All statistical analyses were conducted using the Statistical Package for the Social Sciences version 21.00 (IBM Corporation, Somers, NY, USA), with significance set at P < 0.05. Borderline statistically significant differences (0.05 < P < 0.1) were also noted.

# RESULTS

The demographic and clinical profiles of the patients are detailed in Table 1. Participants had a mean age of 63 years (ranging from 32 to 87 years), with males constituting 46% of the sample. Among the participants, 65% were married, while 10% were divorced. The most prevalent primary cancer types included breast cancer (31%), lung cancer (22%) and cancers of the urogenital tract (19%). Most patients presented with locally advanced disease (62%), with 30% exhibiting metastatic disease. Notably, 88% of the sample had an ECOG performance status of 0–1. Before radiotherapy, 54% of patients underwent surgery, while 68% and 37% received chemotherapy or hormone therapy, respectively, either before or during radiation therapy.

According to our monoparametric/unifactorial analysis, statistically significant differences were observed between patients with ECOG performance status 0–1 and those with ECOG 3–4 (P = 0.054), as well as between those who received chemotherapy and those who did not (P = 0.001) about the index of psychological distress. Conversely, variables such as age, education level, sex, marital status, occupation, ethnicity, primary cancer type, disease stage, disease duration, metastatic status, history of surgery or hormone therapy and comorbidity showed no statistically significant correlation with psychological distress [Supplementary Figure 1].

The index of body image-identity demonstrated significant correlations with ECOG performance status (P = 0.025), chemotherapy (P = 0.039) and surgery (P = 0.025). However, no significant relationships were observed with other demographic and clinical indicators [Supplementary Figure 2]. Self-respect showed a significant correlation with chemotherapy (P = 0.002), with trends noted for surgery (P = 0.089) and hormone therapy (P = 0.076) [Supplementary Figure 3].

Physical distress exhibited significant associations with disease stage (P = 0.008), ECOG status (0–1 vs. 2–3, P = 0.004) and metastatic status (P = 0.018), while no correlations were found with other examined indicators [Supplementary Figure 4].

In the multiparametric/multifactorial analysis, FACITemotional status (P < 0.0005) and FACIT-additional concerns (P < 0.005) were identified as prognostic indicators for psychological distress [Table 2].

Regarding body image-identity, only FACIT-physical status (P = 0.022) and FACIT-additional concerns (P < 0.0005) exhibited statistically significant effects [Table 3].

In addition, the MDASI Symptom Interference Scale (P = 0.041), FACIT-Emotional State (P = 0.047), and FACIT-Additional Concerns (P < 0.0005) have a statistically significant effect on the Self-Esteem index. For the Physical Discomfort index, the FACIT-Physical Condition

(P = 0.005), ECOG (P = 0.006) and FACIT-Additional Concerns (P = 0.001) factors have a statistically significant effect. Finally, the FACIT-Social Status (P = 0.032) and FACIT-Additional Concerns (P < 0.0005) factors have a statistically significant effect on the Social Support index.

# DISCUSSION

This prospective study investigates the impact of quality of life on the dignity of cancer patients using the Greek version of three inventories: The FACIT-Pal version 4, the MDASI and the PDI. The study involved 100 cancer patients undergoing radiotherapy and examined the correlations between demographic and clinical factors with the dignityrelated subcategories of the questionnaire.

The univariate analysis highlighted significant associations between psychological distress and factors such as chemotherapy and functional status (ECOG). This aligns with previous research, such as the study by Singh *et al.*, which found that cancer patients undergoing chemotherapy experienced higher psychological distress than a control group.<sup>[14]</sup> The distress was notably greater in patients in later cycles of chemotherapy, likely due to the cumulative toxicity of treatments manifesting as vomiting, diarrhoea, pain and other side effects, which in turn increased anxiety.

Emotional distress was also linked to physical changes from chemotherapy, particularly alopecia. A Japanese study of 753 patients undergoing chemotherapy found that 80.3% were concerned about appearance changes, with women experiencing greater distress than men, especially those with breast or gynaecological cancers.<sup>[15]</sup> Similarly, a French study of 192 women with breast cancer reported that 85% experienced alopecia, which significantly contributed to emotional distress.<sup>[16]</sup> In line with these findings, functional status was identified as a key factor influencing psychological distress.<sup>[17-20]</sup> A study of 1,439 radiotherapy patients found that those with lower functional status had higher levels of distress, anxiety and depression.<sup>[21]</sup> In addition, poor functional status was a significant contributor to emotional distress in terminal cancer patients receiving palliative care.<sup>[19]</sup>

The study also explored the impact of cancer treatments on body image and identity. Chemotherapy-induced alopecia and surgery, such as mastectomy, were associated with negative body image. Research showed that mastectomy patients often had a more negative body image than those who underwent breast-conserving surgery. This effect was evident across different cultures, where the loss of physical attributes associated with femininity had profound impacts on patients' identity and self-esteem.

Self-esteem, an individual's perception of their worth, was also negatively affected by cancer treatments. The univariate analysis in this study revealed that oncological treatments, particularly chemotherapy and surgery, adversely affected patients' self-esteem. This finding is consistent with previous studies, which demonstrated that treatments such as

Table 1: Demographic and clinical characteristics of the sample.				
	п	Percentage		
Gender				
Male	46	46.0		
Female	54	54.0		
Education				
Primary	19	19.0		
Secondary	43	43.0		
Higher	38	38.0		
Marital status				
Single	9	9.0		
Married	65	65.0		
Divorced	10	10.0		
Widowed	16	16.0		
Occupation				
Employed	33	33.0		
Unemployed	12	12.0		
Retired	37	37.0		
Housework	18	18.0		
Nationality				
Greek	90	90.0		
Other	10	10.0		
Location of cancer				
Breast	31	31.0		
Lung	22	22.0		
Urogenital-prostate	19	19.0		
Gynaecological	15	15.0		
Other	13	13.0		
Stage				
I-II	32	32.0		
III-IV	62	62.0		
Not assessed	6	6.0		
ECOG				
0	58	58.0		
1	30	30.0		
2-3	9	9.0		
Duration of disease				
0–6	37	37.0		
6-12	43	43.0		
12+	20	20.0		
Metastasis				
Yes	30	30.0		
Radiotherapy				
Yes	100	100.0		
Chemotherapy				
Yes	68	68.0		

(Contd...)

Table 1: (Continued).					
	n	Percentage			
Surgery					
Yes	54	54.0			
Hormone therapy					
Yes	37	37.0			
Comorbidity					
Yes	40	40.0			
Age					
Mean±SD (min-max)	62.63±11.37 (32-87)				
SD: Standard deviation, ECOG: Eastern cooperative oncology group					

chemotherapy and mastectomy, which involve the loss of a body part with significant symbolic meanings, led to reduced self-esteem, particularly in women with breast cancer.<sup>[22]</sup>

In summary, the study underscores the significant impact of cancer treatments on patients' psychological well-being, body image and self-esteem. These factors, in turn, affect their sense of dignity, highlighting the importance of providing holistic care that addresses these psychosocial aspects to improve the overall quality of life for cancer patients.

In cancer patients with colostomies, low self-esteem is common, affecting about 77.3% of cases. This emotional distress often stems from feelings of diminished value and limitations due to the surgery. Such distress, anxiety, anger and sadness lead to a loss of positive self-regard and self-esteem.<sup>[23]</sup> In one study, 70 patients, mainly over 60 years old with colostomies due to cancer, were assessed using the Rosenberg Self-Esteem Scale. These patients experienced low self-esteem due to embarrassment and shame about their bodies.<sup>[24]</sup>

Distress in cancer patients, as defined by the National Comprehensive Cancer Network, is a multifactorial, unpleasant experience affecting physical, psychological, social or spiritual aspects and interferes with effective coping with cancer and its symptoms. Physical distress specifically relates to the discomfort from symptoms experienced by the patient. The study revealed significant correlations between functional status, disease stage, metastatic disease and the 'Dignity' index, which aligns with previous research.

In a study of 178 cancer patients receiving palliative care, the most frequently reported symptoms were lack of energy, pain, dry mouth and difficulty breathing, with lack of energy causing the greatest distress. Patients in more advanced disease stages, particularly those with metastatic disease, experienced higher levels of physical distress.<sup>[25]</sup> A Canadian study of 1,296 patients also highlighted that those with poor functional status (Karnofsky Performance Scale  $\leq$ 60) had significantly higher physical distress, with common symptoms including fatigue, pain and anorexia.<sup>[26]</sup>

The study found that multiple factors, including FACITemotional well-being, FACIT-physical well-being and

Table 2: Multifactorial analysis of the psychological distress index.						
	R <sup>2</sup> (%)	Reference category	Beta coefficient	SE	P-value	
Location (other)	< 0.5	Urogenital	0.05	0.90	0.958	
ECOG (2-3)	< 0.5	0-1	-0.64	1.01	0.527	
Chemotherapy (yes)	1.2	No	1.01	0.71	0.154	
Surgery (yes)	< 0.5	No	-0.13	0.66	0.844	
Hormone therapy (yes)	<0.5	No	-0.08	0.68	0.901	
MDASI symptom scale	<0.5		-0.02	0.02	0.409	
FACIT-emotional status	47		-0.36	0.07	<0.0005	
FACIT-additional concerns	11		-0.17	0.04	<0.0005	

ECOG: Eastern cooperative oncology group, SE: Standard errors, MDASI: M.D. Anderson symptom inventory, FACIT: Functional assessment of chronic illness therapy, Bold indicates statistically significant predictor with high explained variance

Table 3: Multifactorial analysis of the body image-identity index.						
	<b>R</b> <sup>2</sup> (%)	Reference category	Beta coefficient	SE	P-value	
ECOG (2-3)	1.8	0-1	1.31	0.76	0.085	
Metastasis (yes)	< 0.5	No	-0.26	0.51	0.615	
Chemotherapy (yes)	< 0.5	No	0.23	0.47	0.633	
Surgery (yes)	1.2	No	-0.66	0.44	0.142	
Hormone therapy (yes)	< 0.5	No	-0.22	0.47	0.649	
MDASI symptom scale	< 0.5		-0.03	0.02	0.197	
FACIT-physical status	3.4		-0.14	0.06	0.022	
FACIT-additional concerns	50.3		-0.16	0.03	<0.0005	

ECOG: Eastern cooperative oncology group, SE: Standard errors, MDASI: M.D. Anderson symptom inventory, FACIT: Functional assessment of chronic illness therapy, Bold indicates statistically significant predictor with high explained variance

FACIT-social well-being, significantly impact various dignity-related indices, such as psychological distress, body image, self-esteem and social support. These findings are consistent with other studies, such as one by Wang *et al.*,<sup>[27]</sup> which identified functional status, anxiety and symptom burden as significant predictors of dignity loss in cancer patients. In Wang's study, half of the participants experienced emotional distress, with significant correlations between psychological distress, anxiety, depression and dignity loss.

Social support plays a crucial role in cancer patients' wellbeing, positively influencing their recovery and treatment adherence. The study showed that social support, particularly from family and close friends, significantly impacts the 'Social Support' index. Literature suggests that social support improves the quality of life for cancer patients, with studies indicating that increased support is associated with better emotional states and overall quality of life.

For example, a U.S. study involving breast cancer patients found that a larger social support network correlated with better emotional well-being. Another study highlighted the importance of family support, particularly from spouses, for older patients, while younger patients benefited more from support from friends. In addition, low social support was linked to lower quality of life, higher depression and more severe symptoms, demonstrating that social support is an independent predictor of quality of life.<sup>[28]</sup>

Overall, the findings reinforce the significant role of quality of life factors, including social support, in maintaining dignity and well-being in cancer patients, aligning with the broader literature on the subject.

#### Strengths and limitations

The study's strengths include its diverse patient group, with varying primary cancer sites, disease stages and either localised or metastatic conditions, all treated with modern radiotherapy techniques (IMRT, VMAT and IGRT) that minimise toxicity and impact on quality of life. However, a limitation is that most patients had good functional status (low ECOG score), and the predominance of urban residents may limit the generalizability of the results, as different social and cultural backgrounds could influence perceptions of dignity.

### CONCLUSION

This study underscores the critical issue of dignity loss among cancer patients, revealing that it is significantly shaped by multiple dimensions of their quality of life. Key factors contributing to the erosion of dignity include the patients' emotional and physical well-being, as well as a range of additional concerns that may arise during their treatment. By identifying these influential factors through the use of targeted questionnaires, healthcare providers can better understand the unique challenges faced by each patient, enabling them to implement timely and appropriate interventions that support and preserve the patients' sense of dignity throughout their care journey.

#### Data availability statement

Anonymised data for this study are available on request from the corresponding author.

**Ethical approval:** The research/study was approved by the Institutional Review Board at Alexandra General Hospital, number 250/2021, dated 01st August 2021.

**Declaration of patient consent:** The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship: Nil.

**Conflicts of interest:** There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation: The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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How to cite this article: Nikoloudi M, Kalogeridi M, Tsatsou I, Mystakidou K. Comprehensive Assessment of Quality of Life and Preservation of Dignity in Greek Cancer Patients Undergoing Radiotherapy Treatment. Indian J Palliat Care. doi: 10.25259/IJPC\_309\_2024