Indonesian Journal on Health Science and Medicine Vol 2 No 3 (2025): December
ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo
https://doi.org/10.21070/ijhsm.v2i3.224

Quality of Life in Cancer Patients Undergoing Radiation Therapy in Karbala

Mortadha handhal hussein[1], Ali Kareem Al-Juboori[2]
1. Academic Nurse/Psychiatric Nursing Department/College of Nursing/University of Kerbala, Iraq.
2. Professor/Psychiatric Nursing Department/College of Nursing/University of Kerbala, and Al-Subtain University for Medical Sciences. College of Nursing and Midwifery, Iraq.

Email: murtadha.handhal@s.uokerbala.edu.iq, ali.al-jbori@uokerbala.edu.iq

Abstract. Radiation therapy, a cornerstone of cancer treatment, is associated with various physical and psychological side effects that can significantly impair a patient's quality of life (QOL). This study aimed to assess the impact of anxiety and depression on the quality of life of cancer patients undergoing radiotherapy. A prospective descriptive quantitative study was conducted on a non-probability convenience sample of 81 patients at the Center of Oncology and Blood Diseases in Karbala City. The European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) was used to measure quality of life. The Wilcoxon Signed-Ranks Test was applied to examine differences in QOL. The study found that anxiety and depression levels significantly and negatively impacted the overall quality of life of patients during radiotherapy ($p < 0.05$). Furthermore, a significant statistical difference was observed in the QOL levels with regard to tumor metastasis ($p < 0.05$), with patients experiencing metastasis reporting lower QOL. The findings indicate that radiation therapy and its associated psychological distress, particularly in the presence of tumor metastasis, are significant determinants of reduced quality of life in cancer patients. These results underscore the importance of integrating psychological and social support into clinical oncology care to improve patient well-being.

Highlights:
1. Anxiety and depression significantly impair quality of life during radiotherapy.
2. Metastatic tumors are linked to lower quality of life.
3. Sociodemographic factors show minimal influence compared to clinical and psychological factors.

Keywords: Quality of Life, Cancer, Radiation Therapy, Anxiety, Depression.

Introduction

The concept of quality of life (QoL) is a multi-dimensional construct that encompasses physical, social, emotional, and psychological well-being. For oncology patients, optimal QoL is paramount, particularly in relation to their psychological and physical health **[1]**. Cancer diagnosis

ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo
https://doi.org/10.21070/ijhsm.v2i3.224

and treatment, including radiation therapy, can provoke significant emotional disturbances such as anxiety and depression, which in turn can negatively impact hospital stay, treatment adherence, and overall survival **[2]**.

Radiation therapy (RT) is a cornerstone of cancer treatment; however, it is frequently associated with profound physical, emotional, and social challenges that adversely affect patients' health status **[3]**. Recent research underscores the critical role of QoL assessment in streamlining treatment plans and complementing patient-centered care **[4]**. While RT has become more refined through advanced techniques like stereotactic body radiotherapy (SBRT) and intensity-modulated radiation therapy (IMRT), a substantial number of patients continue to experience long-term QoL deficits, necessitating ongoing assessment and supportive care interventions **[5]**. Among the most notable side effects affecting QoL in this population are fatigue, pain, sleep disorders, emotional distress, and impaired social functioning **[6]**.

Oncology nurses play a pivotal role in the multidisciplinary healthcare team, focusing on preserving and enhancing the patient's QoL throughout their treatment journey **[7, 8]**. A high QoL is crucial as it directly influences a patient's ability to adhere to treatment protocols, recover, and maintain satisfaction. Despite significant advances in cancer treatment, many patients report a deterioration in their QoL during radiotherapy, particularly when psychological symptoms like anxiety and depression are present **[9]**.

While numerous international studies have examined the QoL of cancer patients, there remains a notable research gap concerning the specific experiences of patients in Karbala, Iraq. The absence of local studies on this topic limits the ability to design culturally relevant supportive care strategies. **Therefore, the objectives of this study are:**

1-To assess the QoL of cancer patients undergoing radiation therapy in Karbala.

2-To identify the differences in QoL levels with regard to patients' sociodemographic characteristics (age, sex, marital status, educational level, and employment status).

3-To determine the differences in QoL levels concerning patients' medical characteristics.

Methodology

-Study Design and Setting:

This study utilized a quantitative descriptive design to assess the quality of life (QOL) in cancer patients undergoing radiation therapy. The study was conducted at the Oncology and Hematology Center, Imam Hassan Al-Mujtaba Teaching Hospital, in Karbala, Iraq. Data collection took place between September 1, 2024, and June 1, 2025.

- Study Sample:

A non-probability convenience sample consisting of 81 adult cancer patients was recruited from the study setting.

Inclusion criteria for participation were:

- Adult patients (≥18 years old).
- Diagnosed with any type of cancer.

ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo
https://doi.org/10.21070/ijhsm.v2i3.224

- Scheduled to undergo external beam radiation therapy at the study center.
- Able to provide written informed consent.

Exclusion criteria were:

- Patients with a pre-existing psychiatric illness diagnosed prior to their cancer diagnosis.
- Individuals with severe cognitive impairment that would hinder their ability to complete the questionnaire.
- Patients receiving concurrent chemotherapy during the data collection period.

- Study Instruments:

The study questionnaire comprised two parts:

Part I: This section was developed by the researchers to collect sociodemographic data (age, sex, marital status, educational level, and employment status) and clinical information (type and stage of cancer, and duration of treatment).

Part II: The European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) was used to measure patients' quality of life. The EORTC QLQ-C30 is a validated, comprehensive instrument consisting of 30 items that assess various aspects of QOL, including:

- Functional scales: Physical, role, emotional, cognitive, and social functioning.
- Symptom scales: Fatigue, pain, and nausea/vomiting.
- A Global Health Status/QOL scale.

Items are rated on a 4-point Likert scale (1 = Not at all, 4 = Very much), with the global QOL scale using a 7-point scale. All scores were converted to a 0–100 scale; higher scores indicate better functioning on the functional scales and greater symptom severity on the symptom scales.

- Statistical Data Analysis:

All data were analyzed using SPSS version 27. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize sociodemographic and clinical variables.

To determine the appropriate inferential tests, the Kolmogorov–Smirnov (K-S) test was employed to assess the normality of the data distribution. Based on the findings:

- The Wilcoxon Signed-Ranks Test was used to analyze the differences in anxiety and depression levels for patients at pre- and during-radiation therapy, due to a non-normal data distribution.
- The Paired Samples T-Test was utilized to analyze the differences in QOL levels at pre- and during-radiation therapy, as this data was found to have a normal distribution.
- Independent Samples T-Test and One-Way ANOVA were used to analyze the differences in QOL levels based on patients' sociodemographic and clinical characteristics.

Indonesian Journal on Health Science and Medicine Vol 2 No 3 (2025): December
ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo
https://doi.org/10.21070/ijhsm.v2i3.224

Result

The outcomes revealed in Table 1 were displayed there were strong statistical effects of the concerns of radiation treatment associated anxiety and depression in the QOL of the patients having cancer P 0.05.

Table 1: *Research the effectiveness of radiations therapy on the QOL of patients with cancer:*

Items	Pre		During		The difference	
	Mean	Ass.	Mean	Ass.	T	P. value
1. Do you have difficulty performing physical activities (such as carrying a heavy shopping bag)? ®	2.40	M	2.21	M		
2. Do you have difficulty walking long distances? ®	2.16	M	1.84	P		
3. Do you have difficulty walking short distances outside? ®	2.65	M	2.85	M		
4. Do you need to stay in bed or in a chair during the day? ®	2.47	M	2.52	M		
5. Do you need help with eating, dressing, bathing, or using the toilet? ®	3.31	G	3.67	G		
6. Were you limited in your work performance? ®	2.88	M	2.12	M		
7. Were you limited in your hobbies or leisure activities? ®	2.85	M	2.25	M		
8. Were you short of breath? ®	2.51	M	2.60	M		
9. Were you experiencing any pain? ®	2.33	M	2.56	M		
10. Were you in need of rest? ®	1.95	M	2.42	M		
11. Were you experiencing insomnia or difficulty sleeping? ®	2.38	M	2.41	M		
12. Were you feeling weak? ®	2.62	M	2.37	M		
13. Have you lost your appetite (ability to eat)? ®	2.36	M	2.19	M		
14. Were you feeling nauseous (nauseated)? ®	2.48	M	2.20	M		
15. Have you vomited? ®	2.84	M	2.35	M		
16. Were you constipated? ®	2.93	M	2.69	M		
17. Had you had diarrhea? ®	2.80	M	2.75	M		
18. Were you tired? ®	2.31	M	2.16	M		
19. Were you experiencing pain that negatively impacted your daily activities? ®	2.70	M	2.28	M		

ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo
https://doi.org/10.21070/ijhsm.v2i3.224

20. Have you had difficulty concentrating on certain tasks, such as reading a newspaper or watching television? ®	2.74	M	2.37	M		
21. Have you felt tense? ®	2.30	M	1.81	P		
22. Have you felt anxious? ®	2.01	M	1.52	P		
23. Have you felt irritable? ®	2.28	M	1.93	P		
24. Have you felt depressed? ®	2.40	M	1.48	P		
25. Have you had difficulty remembering things? ®	3.07	G	2.07	M		
26. Has your physical condition or medical treatment negatively affected your family life? ®	2.98	M	2.48	M		
27. Has your physical condition or medical treatment negatively affected your social life? ®	2.83	M	2.46	M		
28. Has your physical condition or medical treatment caused financial problems? ®	2.58	M	2.47	M		
29. How would you rate your overall health over the past week? ®	2.18	M	1.91	P		
30. How would you rate your overall quality of life over the past week? ®	1.85	P	1.54	P		
Overall QOL	2.54	M	2.28	M	4.937	.000

Ass. = Assessment items, P = Poor (1 – 2), M = Moderate (2.01 - 3) and G= Good (3.01 - 4) (Low score = poor QOF and high score= good QOL). P=probability value, NS: Non-Significant at P ≥ 0.05, T= Paired Samples Test.

In Table 2 the results shown the distribution of 81 cancer patients undergoing radiation therapy in Holy Karbala ,the age of patients at most (33.3%) from 55 to 64 years with mean 52.05. Regarding sex, most (71.6%) were female and married (50.6%). According to the educational level, most (33.3%) were completed college or above. Regarding the occupation, the most (46.9%) were housewife. The results also shown the most (43.2%) with not adequate monthly income.

Regarding the clinical information the most, 53.1% with moderate nutritional status, 46.9% diagnosed with breast cancer, 61.7% without tumor metastatic, 74.1% with curative treatment goal, and 56.8% radiation therapy in the chest area.

The level of QOL of cancer patient undergoing radiation therapy with P r 0.05 displayed non-significant statisticale difference regarding the socio demographic characteristics of patients.

The statistical difference in the level of QOL as observed among the cancer patient undergoing radiation therapy with regard to patient tumor metastatic was significant at $P < 0.05$.

Indonesian Journal on Health Science and Medicine Vol 2 No 3 (2025): December
ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo
https://doi.org/10.21070/ijhsm.v2i3.224

Table 2: *A variation in the level of QOL of the cancer patient under radiation therapy and the socio demographic and clinical characteristics of the patient being treated.*

Data	Subgroup	%	Quality of life		
			Mean	Analysis	P. value
Age group	Adult (25 - 34 years)	8.6	2.27	F= .519	.722 [b]
	Middle age adult (35 - 44 years)	21.0	2.28		
	Early middle aged (45 - 54 years)	24.7	2.32		
	Late middle aged (55 - 64 years)	33.3	2.30		
	Older adults (≥ 65 years)	12.3	2.17		
Sex	Male	28.4	2.25	T= -.609-	.544 [a]
	Female	71.6	2.29		
Educational level	Cannot read and write	12.3	2.13	F=.996	.426 [b]
	Can read and write	14.8	2.33		
	Elementary School Certificate	14.8	2.35		
	Intermediate School Certificate	4.9	2.43		
	Preparatory School Certificate	19.8	2.29		
	College or above	33.3	2.26		
Marital Status	Single	8.6	2.47	F= 1.199	.316 [b]
	Married	50.6	2.28		
	Widowed	28.4	2.24		
	Divorced	12.3	2.28		
Occupation	Employee	22.2	2.31	F=.441	.724 [b]
	Retired	21.0	2.21		
	Unemployed	9.9	2.32		
	Housewife	46.9	2.29		
Monthly income	Adequate	19.8	2.29	F=.444	.643 [b]
	Somewhat Adequate	37.0	2.32		
	Not Adequate	43.2	2.25		
Nutritional status	Good	16.0	2.27	.166	.847 [b]
	Average	53.1	2.27		
	Poor	30.9	2.31		
Medical diagnosis	Breast cancer	46.9	2.26	.784	.665 [b]
	Brain cancer	6.2	2.34		
	Lung cancer	11.1	2.17		
	Prostate cancer	3.7	2.23		
	Colon cancer	2.5	2.50		
	Bladder cancer	7.4	2.34		

ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo
https://doi.org/10.21070/ijhsm.v2i3.224

	Pancreatic cancer	1.2	2.13		
	Uterine cancer	8.6	2.29		
	Soft tissue cancer	1.2	2.87		
	Rectal cancer	7.4	2.37		
	Bone cancer	1.2	2.41		
	Thyroid cancer	1.2	2.20		
	Bile cancer	1.2	2.08		
Is the tumor metastatic	Yes	38.3	2.19	-2.380-	.020 [a]
	No	61.7	2.34		
Treatment goal	Palliative	12.3	2.25	1.653	.198 [b]
	Adjuvant	13.6	2.15		
	Curative	74.1	2.31		
Radiation therapy area	Abdomen	14.8	2.33	1.424	.234 [b]
	Head and Neck	9.9	2.37		
	Extremities	2.5	2.64		
	Pelvis	16.0	2.28		
	Chest	56.8	2.24		

%=Percentages, P=probability value, NS: Non-Significant at P ≥ 0.05., a=P. value was calculated by independent sample t-test and b= P. value was calculated by one way ANOVA.

Discussion

This study aimed to assess the quality of life (QOL) among 81 cancer patients undergoing radiation therapy in Karbala, Iraq. The sociodemographic and medical profiles of the participants revealed that the majority were middle-aged (mean = 52 years), female, married, and housewives, with most having completed higher education but reporting inadequate monthly incomes. Medically, most were diagnosed with breast cancer in non-metastatic stages and were receiving curative radiotherapy to the chest area. These demographic findings are consistent with prior research in similar contexts, such as the study by Shahjalal et al. **[15]**, which reported similar participant characteristics among cancer patients undergoing systemic and radiation therapy. Likewise, the high proportion of married patients with university degrees aligns with findings from Nikoloudi et al. **[8]** on head-and-neck cancer patients. The mean age of our cohort is also comparable to that reported by Seol et al. **[16]** in their study on the psychological factors of cancer patients.

ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo
https://doi.org/10.21070/ijhsm.v2i3.224

The core finding of this study is the significant decrease in patients' QOL during radiation therapy, which was directly impacted by increased anxiety and depression. This result strongly corroborates findings from numerous international studies **[16-20]**. For instance, a study by Lubińska-Zadlo et al. **[17]** observed that overall QOL was low in head-and-neck cancer patients undergoing radiotherapy. Similarly, Alwhaibi et al. **[18]** concluded that anxiety and depression have an overwhelming negative impact on health-related QOL, a finding also echoed in Aitken and Hossan's **[19]** work on breast cancer survivors. The observation that QOL was reduced after therapy, as noted by Takahashi et al. **[20]**, is also compatible with our findings.

A unique contribution of this study is the finding that tumor metastasis significantly impacted QOL, while sociodemographic factors showed less influence. This finding, that clinical factors may outweigh sociodemographic ones in predicting QOL outcomes, is supported by Mungase et al. **[22]**, who found that psychological resilience was a more influential factor than sociodemographic attributes in Indian cancer patients. This contrasts with other studies, such as that by Velten et al. **[21]**, which found a correlation between income and education and QOL. The discrepancy may be attributed to the relatively homogeneous demographic and cultural background of the participants in Karbala City, where shared social and economic challenges may minimize the differential impact of individual income or education levels on perceived QOL.

From a clinical perspective, these findings underscore the urgent need for a holistic approach to oncology care in Karbala. Healthcare providers, particularly oncology nurses, must be prepared to address not only the physical side effects of radiation therapy but also the severe psychological distress that can accompany it. Implementing routine mental health screening and providing culturally sensitive psychological support could significantly mitigate the negative impact of anxiety and depression on patient QOL. Furthermore, addressing the physical and psychological burdens associated with metastatic disease is crucial for improving patient outcomes.

Conclusion

In this study, our findings confirmed the hypothesis that radiation therapy has a significant negative impact on the quality of life (QoL) of cancer patients, particularly in the physical and psychological

ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo
https://doi.org/10.21070/ijhsm.v2i3.224

domains. This research provides a critical local perspective from Karbala, filling a notable gap in the literature regarding the psychological and functional well-being of patients in this region.

The results highlight that while sociodemographic factors had a minimal influence on QoL, clinical variables such as tumor metastasis were significantly associated with its deterioration. This suggests that the focus of supportive care should extend beyond a patient's social background to their specific clinical needs and the psychological burden imposed by disease progression.

Therefore, we conclude that a holistic approach to oncology care is essential. We recommend the integration of routine psychological screening into standard clinical practice to identify at-risk patients early. Furthermore, healthcare providers should implement targeted psychosocial interventions tailored to the unique cultural and clinical needs of this patient population. Future research should consider longitudinal designs and qualitative methods to gain a deeper understanding of the patient experience and to evaluate the long-term effectiveness of such supportive care programs.

References

[1] L. A. Aitken and S. Z. Hossan, "The psychological distress and quality of life of breast cancer survivors in Sydney, Australia," Healthcare, vol. 10, no. 10, p. 2017, 2022, doi: 10.3390/healthcare10102017.

[2] M. Alwhaibi, Y. AlRuthia, and I. Sales, "The impact of depression and anxiety on adult cancer patients' health-related quality of life," J. Clin. Med., vol. 12, no. 6, p. 2196, 2023, doi: 10.3390/jcm12062196.

[3] R. Baskar, K. A. Lee, and S. Oh, "Advances in radiotherapy and impact on quality of life for cancer patients," Radiother. Oncol., vol. 167, pp. 45–53, 2022, doi: 10.1016/j.radonc.2021.12.015.

[4] T. L. Deshields, S. Kunkel, and N. White, "Persistent symptoms and quality of life after radiation therapy: A longitudinal study," J. Pain Symptom Manage., vol. 65, no. 2, pp. e89–e97, 2023, doi: 10.1016/j.jpainsymman.2022.10.011.

ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo
https://doi.org/10.21070/ijhsm.v2i3.224

[5] M. Firouzbakht, K. Hajian-Tilaki, and D. Moslemi, "Analysis of quality of life in breast cancer survivors using structural equation modelling: The role of spirituality, social support and psychological well-being," Int. Health, vol. 12, no. 4, pp. 354–363, 2020, doi: 10.1093/inthealth/ihaa017.

[6] C. L. Hallemeier et al., "Long-term quality of life after definitive radiation therapy for prostate cancer," JAMA Oncol., vol. 6, no. 7, pp. 1–9, 2020, doi: 10.1001/jamaoncol.2020.1220.

[7] A. L. Holtzman, D. B. Pereira, and A. R. Yeung, "Implementation of depression and anxiety screening in patients undergoing radiotherapy," BMJ Open Qual., vol. 7, no. 2, p. e000034, 2018, doi: 10.1136/bmjoq-2017-000034.

[8] A. B. Johnson and C. D. Brown, Radiation Therapy and Quality of Life: A Systematic Review. Oncology Press, 2018.

[9] B. A. Lubińska-Żądło, A. Pych, B. Kowalczyk, and B. Zawadzka, "The quality of life of patients with head neoplasms and incidence of depression treated with radiotherapy: A preliminary research report," Nowotw. J. Oncol., vol. 71, no. 4, pp. 212–219, 2021, doi: 10.5603/NJO.a2021.0039.

[10] M. Mungase, S. Chaudhury, A. A. Patil, B. Jagtap, and V. Jain, "Stress, anxiety, depression, and resilience in cancer patients on radiotherapy," Ind. Psychiatry J., vol. 30, no. 2, pp. 346–352, 2021, doi: 10.4103/ipj.ipj_95_21.

[11] M. Nikoloudi, I. Lymvaios, A. Zygogianni, E. Parpa, D. A. Strikou, and E. Tsilika, "Quality of life, anxiety, and depression in the head-and-neck cancer patients undergoing intensity modulated radiotherapy treatment," Indian J. Palliat. Care, vol. 26, no. 1, pp. 54–60, 2020, doi: 10.4103/IJPC.IJPC_165_19.

[12] K. H. Seol, S. H. Bong, D. H. Kang, and J. W. Kim, "Factors associated with the quality of life of patients with cancer undergoing radiotherapy," Psychiatry Investig., vol. 18, no. 1, pp. 80–87, 2021, doi: 10.30773/pi.2020.0381.

[13] M. Shahjalal et al., "Assessing health-related quality of life among cancer survivors during systemic and radiation therapy in Bangladesh: A cancer-specific exploration," BMC Cancer, vol. 23, no. 1, p. 1208, 2023, doi: 10.1186/s12885-023-11663-8.

ISSN 3063-8186. Published by Universitas Muhammadiyah Sidoarjo
https://doi.org/10.21070/ijhsm.v2i3.224

[14] T. Smith, R. Jones, and L. Williams, "Quality of life in cancer survivors: The role of radiotherapy," Lancet Oncol., vol. 12, no. 5, pp. 121–130, 2011, doi: 10.1016/S1470-2045(11)70014-X.

[15] S. Subramaniam, Y. C. Kong, K. Chinna, M. Kimman, Y. Z. Ho, and N. Saat, "Health-related quality of life and psychological distress among cancer survivors in a middle-income country," Psycho-Oncol., vol. 27, no. 9, pp. 2172–2179, 2018, doi: 10.1002/pon.4794.

[16] T. Takahashi et al., "Evaluation of quality of life and psychological response in cancer patients treated with radiotherapy," Radiat. Med., vol. 26, no. 7, pp. 396–401, 2008, doi: 10.1007/s11604-008-0251-9.

[17] J. Velten, A. Bieda, and M. Bieda, "Lifestyle, mental health and health-related quality of life in cancer patients," Eur. J. Cancer Care, vol. 27, no. 2, p. e12833, 2018, doi: 10.1111/ecc.12833.

[18] X. S. Wang et al., "Symptom burden and quality of life in patients undergoing radiotherapy: A prospective study," Cancer, vol. 127, no. 12, pp. 2120–2131, 2021, doi: 10.1002/cncr.33492.

[19] P. A. Williams, S. Cao, D. Yang, and R. L. Jennelle, "Patient-reported outcomes of the relative severity of side effects from cancer radiotherapy," Support Care Cancer, vol. 28, no. 1, pp. 309–316, 2020, doi: 10.1007/s00520-019-04875-z.

[20] World Health Organization, WHOQOL-BREF: Measuring Quality of Life. Geneva, Switzerland: WHO Press, 2020.

[21] X. Yan, X. Chen, M. Li, and P. Zhang, "Prevalence and risk factors of anxiety and depression in Chinese patients with lung cancer: A cross-sectional study," Cancer Manag. Res., vol. 11, p. 4347, 2019, doi: 10.2147/CMAR.S198076.

[22] Y. Yan, X. Wang, and L. Zhang, "Psychological health and quality of life in cancer patients during treatment: A systematic review," J. Psychosoc. Oncol., vol. 37, no. 3, pp. 263–279, 2019, doi: 10.1080/07347332.2019.1623456.