EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

HEALTH-RELATED QUALITY OF LIFE AMONG CANCER PATIENTS: ASSOCIATION WITH THE CANCER TYPE AND DISEASE PROGRESSION

Dr. Pankaj Mandale*[1] and Dr. Nilesh Patel

Texila American University, Department of Clinical Research, Ebene 72201, Mauritius.

*Corresponding Author: Dr. Pankaj Mandale

Texila American University, Department of Clinical Research, Ebene 72201, Mauritius.

ABSTRACT

Background: Health-related quality of life is a multidomain evaluation that analyses how the therapy and illness progression is impacting the patient's wellbeing and general functioning. In the present study, we have evaluated the association of HRQoL with the type of cancer and the progression of the disease. **Material and Methods:** A total of 500 patients were included in this study. The data were collected systematically via the use of standardised instruments. The standard questionnaire used was EORTC-QLQ-C30 (version 3.0). **Result and Observation:** This study included a total of 500 patients. The higher number of patients (24.8%) had breast cancer, followed by GI tract cancer (20.6%), lung (19.6%), reproductive system (17%), head and neck (12.2%) and other (5.8%). Most of the participants had stage II and above and were diagnosed within 6-12 months. 20.2% of the participants were under palliative care, 26.4% were undergoing chemotherapy, and 24% had undergone surgery. The rest of the participants (29.4%) received radiation therapy treatments. The inter-relation between the QOL at different stages of cancer and types of cancer shows that various types of cancer and QOL do not significantly impact each other. Though f-values are small, there is less variability in the sample taken for the study at the significance level of 0.05. **Conclusion:** This present study reported that a maximum of the patients have average or low HRQoL. The type and location of cancer with the HRQoL of the patient showed no association.

KEYWORDS: Health-related quality of life, cancer patients, age, gender, socio-demographic parameters.

INTRODUCTION

HRQoL is one of the most concerning health problems associated with cancer patients. It is a multidimensional outcome that is usually perceived by the patients and usually encompasses the psychological, social, physical, and financial activities. In the recent past, the cancer individual's survival has enhanced mainly because of the advent of modern therapies specific to cancer type.[1,2] Many individuals are managed using intensive care protocols that extend over long periods. Meanwhile, the betterment of the survival rate is going on, and the enhancement and maintenance of life quality are equally important.[3]

Evidence is available for the burden of symptoms in individuals with cancer and reducing life quality while the cancer treatment continues.[4–7] Nearly 66% of the individuals with cancer having advanced stage of the disease are symptomatic.[4,5]

As per the GLOBOCON survey among the 172 countries worldwide, in 92 countries, cancer is the first or the second leading cause of death[8]; in India, cancer has become the leading source of disastrous healthcare costs. In India, out-of-pocket expenditure for private hospital cancer care is three times greater. Moreover, in 60% of Indian homes with cancer patients, these costs exceed 20% of annual per capita household expenditure. According to estimates, cancer-related deaths cost Indian residents $6.74 billion in 2012.[9]

In this study, the association of HRQoL with the type of cancer and the progression of the disease was evaluated. In previous studies, it was noted that the determination of HRQoL is dependent on the stage of the disease, location of the disease, and type of treatment received by the patient.[10] However, there is a lack of studies addressing this aspect of all kinds of cancer patients.

MATERIALS AND METHODS
Participants
This study was conducted with a targeting sample size of 525 patients. Patients have given written permission for the data to be gathered. For the patients, we used a questionnaire that had been carefully translated into their local language (Marathi, Hindi, and English) by the EORTC for consistency of the response. And the results were consistent. Therefore, no patient identification information was collected. The surveys were delivered to the patients after establishing a connection with them and

assuring them that they were comfortable submitting physical and mental information.

The research was started during the COVID times; it was considered enrolling the patients through Google Forms online interview/survey questionnaire. One hundred thirty-five patients were sent the questionnaire through Google forms. The consent form was also provided to the patients. The same QOL forms were sent twice a month, 15 days apart, to increase their response rate. Clear instructions were mentioned to not respond to the questionnaire if the forms were filled and submitted previously. This was done to avoid repeating and to lower the bias. Out of the 135 QOL questionnaires sent to 135 patients, only 27 responded. Out of the 27 patient respondents, only 23 patients completed the QOL questionnaire. The overall patient response in completing the questionnaire was far less than expected. As the COVID restrictions were relaxed, it was decided to have a one-on-one interview approach method with the patients visiting the hospital to achieve a statistically significant sample size.

Based on the eligibility criteria, 537 patients were screened and found 42 were ineligible to participate because of cognitive impairment and could not participate in the survey. Of 495 patients, five refused to be a part of the survey. Of 490 patients who agreed to be a part of the study, 13 patients did not complete the interview stating they felt stressed and tired.

An instrument for data collection
A standard questionnaire was used as the effective data collecting method in this research on cancer patients' quality of life. The European Organization for Research and Treatment of Cancer (EORTC) produced questionnaires to collect and analyse the quality of life data (EORTC). EORTC-QLQ-C30 (version 3.0) was utilised for the general viewpoint of cancer and to gather data on the social well-being of patients. Patients' clinical and medical histories were collected via a standardised questionnaire.

Inclusion Criteria
To participate in the research, respondents who have cancer of any kind or stage and were either outpatients or inpatients at a hospital were eligible. The study was open to all cancer patients above 18, regardless of their marital status. To participate in this research, patients who had or were currently receiving any curative treatment, such as radiation, chemotherapy, or surgery (Mastectomy, Lumpectomy, etc.) and any combination of these therapies, were eligible.

Statistical analysis
Descriptive analysis and ANOVA have been utilised. Means and standard deviations (SD) were used as summary statistics for numerical data, and then ANOVA was used to compare the results. Because parametric tests assume that data are normally distributed, they weren't applied. It was decided to apply non-parametric tests in this investigation because of the wide variation in the distribution of numerical data.

RESULTS AND INTERPRETATION
This study included a total of 500 patients. Table 1 describes the characteristics of the study participants. 53.4% were male, and 46.6% were female among the participants. Most of the participants (40.4%) were 40 to 60 years of age, followed by patients in the < 40 years age group.

Among the patients, a higher number of patients (24.8%) had breast cancer, followed by GI tract cancer (20.6%), lung (19.6%), reproductive system (17%), and head and neck (12.2%) and other (5.8%). Among all the participants, most had stage II and above and were diagnosed within 6-12 months20.2% of the participants were under palliative care, 26.4% were undergoing chemotherapy, and 24% had undergone surgery. The rest of the participants (29.4%) received radiation therapy treatments.

In table 4, the two groups are stages of cancer, types of cancer and QOL. The inter-relation between the QOL at different stages of cancer and types of cancer is shown with the help of ANOVA. The values obtained here show that various types of cancer and QOL do not significantly impact each other. Though f-values are small, there is less variability in the sample taken for the study at the significance level of 0.05. However, the stage of cancer shows a significant association with the HRQoL. It was observed that stage II and above patients have lower HRQoL. The HrQoL of the patients shows a significant association with the stage (P value< 0.05).

Table 5 shows that the patients undergoing treatment have an average overall quality of life. In addition, individuals were influenced by emotional, social, and financial challenges during the study. Education, income, economic issues, weariness, and sleeplessness were all significant variables affecting the HRQoL of cancer patients' therapy. Thus, according to the findings of this study, quality of life evaluation should be integrated into the treatment strategy for every cancer patient. Empowering patients via education should not be underestimated, as it is a critical tool in preventing unemployment and treating the psychological burden of illness. Financial help may have a substantial positive influence on the mental health of cancer patients.

DISCUSSION
HRQoL can relate to an overall assessment or assessments of specific aspects of life and the patient's subjective experience or others' assessments of the situation. This concept uses several methodological issues, particularly reliability, validity, and design.

In the present study maximum of the patients had an average HRQoL. This finding aligns with the previous

study that reported a worse outcome in advanced cancer patients.[11–13] We have observed that only 40% of participants have average HRQoL, 27% have very low, and 30% have a low quality of life.

Previous studies have reported that patients with advanced-stage cancer have a lower quality of life. The individuals with the bone metastasis had a higher prevalence and intensity of the pain, reaching 77% in moderate and 24% severe pain cases. Hence, the investigations have shown that pain is an essential feature in individuals undergoing therapy against cancer. There needs to be a systematic assessment of the pain in the individuals suffering from bone metastasis so that an early and impactful treatment against pain can be administered, including palliative radiotherapy.[14]

In the present study population maximum of the patients had breast cancer, followed by GI tract. Among breast cancer patients, the level of depression is more common.

Another study conducted among Palestinian patients with breast cancer reported that breast cancer patients have lower HRQoL. Among the study population, 136 women (56%) had stage 2 breast cancer, whereas 54 women (22%) had stage 3 breast cancer. The median EQ-5D score was 72, and the EQ-visual analogue scale (EQ-VAS) score was 70.[11]

Though the present study showed that types of cancer and QOL do not significantly impact each other, the lower level of HRQoL showed that they affected psychological well-being. It was demonstrated that disease duration has a significant impact on the quality of life in cancer patients.[15] It was also reported that irrespective of the location, the HRQoL of the patients depends mainly on the progression of the disease.[15] The present study also said the same. It was shown that irrespective of the location of the disease, patients with stage II and above have a lower quality of life. Kokkonen et al. observed that a substantial number of individuals in the cancer advanced settings had higher fatigue prevalence than the local disease individuals. This was mainly correlated with the higher burden of tumour and distress in the individuals at the advanced stages of cancer and not concerning treatment or management of cancer.[16] Additionally, Jacob et al. highlighted a stigma about advanced-stage cancer in individuals that further hurts their well-being.[17]

The present study's most significant weakness is the small sample size, which may have resulted in bias in the results. Findings of this study even though it has certain limitations, the findings of this study are significant because they will help the researchers conduct research in the future, focusing on the need for interventional studies that will strive to lessen the detrimental influence of different factors on the HRQoL of cancer patients. It is also necessary to conduct further extensive cohort studies that will aid in the identification of the underlying processes that relate diverse parameters to HRQoL in cancer patients.

Table 1: Patient characteristics in the study.

Variables	Category	Frequency	Percentage
Age	Less than 40 years	199	39.8
	Forty to sixty years	202	40.4
	Over sixty years	99	19.8
Sex	Male	267	53.4
	Female	233	46.6

Table 2: Frequency distribution of cancer type.

Variable	Category	Frequency	Percentage (%)
Cancer localization	Breast	124	24.8
	GIT	103	20.6
	Lung	98	19.6
	Head and Neck	61	12.2
	Reproductive system	85	17
	Others	29	5.8
Stage	Stage 0	78	15.6
	Stage I	122	24.4
	Stage II	143	28.6
	Stage III	107	21.4

Variable	Category	Frequency	Percentage (%)
	Stage IV	50	10
Duration of illness	Less than 6 months	100	20
	6-12 months	250	50
	More than 12 months	50	10
Treatment	Radiation therapy	147	29.4
	Chemotherapy	132	26.4
	Surgery	120	24
	Palliative therapy	101	20.2

Table 3: Association of cancer stage with the quality of life.

		Sum of Squares	Df	Mean Square	F	Sig.
Psychological well being	Between Groups	3179.464	3	1059.821	1.434	.257
	Within Groups	17737.500	24	739.062		
	Total	20916.964	27			
Physiological well-being	Between Groups	18177.679	3	6059.226	3.285	.038
	Within Groups	44268.750	24	1844.531		
	Total	62446.429	27			

Table 4: Association of quality of life with cancer staging and type.

		Sum of Squares	Df	Mean Square	F	Sig.
Head & Neck	Between Groups	2792.857	499	558.571	.228	.910
	Within Groups	2450.000	1	2450.000		
	Total	5242.857	500			
Lung	Between Groups	3600.000	499	720.000	.	.
	Within Groups	.000	1	.000		
	Total	3600.000	500			
Breast	Between Groups	5321.429	499	1064.286	.	.
	Within Groups	.000	1	.000		
	Total	5321.429	500			
GIT	Between Groups	6821.429	499	1364.286	3.032	.409
	Within Groups	450.000	1	450.000		
	Total	7271.429	500			
Cervical	Between Groups	5692.857	499	1138.571	1.423	.560
	Within Groups	800.000	1	800.000		
	Total	6492.857	500			
Stage I	Between Groups	4921.429	499	984.286	.402	.825
	Within Groups	2450.000	1	2450.000		
	Total	7371.429	500			
Stage II	Between Groups	5500.000	499	1100.000	22.000	.004
	Within Groups	50.000	1	50.000		
	Total	5550.000	500			
Stage III	Between Groups	16223.214	499	3244.643	.309	.033
	Within Groups	10512.500	1	10512.500		
	Total	26735.714	500			
Stage IV	Between Groups	7158.929	499	1431.786	.678	.021
	Within Groups	2112.500	1	2112.500		
	Total	9271.429	500			

Table 5: HRQoL status among study participants.

QOL Status	No of Respondents	Percentage
Very high	0	0
High	15	3
Average	200	40
Low	150	30
Very low	135	27

CONCLUSION

This present study reported that a maximum of the patients have average or low HRQoL. There was no significant association registered between the locations of cancer with the HRQoL of the patient. However, the cancer stage showed an association with the HRQoL in the present study population. Furthermore, it is advised that additional research be conducted to discover crucial determining elements utilising more robust study methods.

CONFLICT OF INTEREST

There is no conflict of interest among the authors.

AUTHORS CONTRIBUTION

Data collection, analysis, and writing by Dr Pankaj Mandale and Guidance provided by Dr Nilesh Patel

AUTHORS FUNDING

No external funding.

REFERENCES

1. Chia, S. K. *et al.* The impact of new chemotherapeutic and hormone agents on survival in a population-based cohort of women with metastatic breast cancer. *Cancer,* 2007; 110: 973–979.
2. Gatta, G. *et al.* Cancer survival in Europe 1999-2007 by country and age: Results of EUROCARE-5 - A population-based study. *Lancet Oncol,* 2014; 15: 23–34.
3. Lin, N. U. & Burstein, H. J. EMBRACE, eribulin, and new realities of advanced breast cancer. *The Lancet,* 2011; 377: 878–880.
4. Reilly, C. M. *et al.* A literature synthesis of symptom prevalence and severity in persons receiving active cancer treatment. *Support. Care Cancer,* 2013; 21: 1525–1550.
5. Singer, A. E. *et al.* Symptom trends in the last year of life from 1998 to 2010: A cohort study. *Ann. Intern. Med.,* 2015; 162: 175–183.
6. Färkkilä, N. *et al.* Health-related quality of life among breast, prostate, and colorectal cancer patients with end-stage disease. *Qual. Life Res. Int. J. Qual. Life Asp. Treat. Care Rehabil,* 2014; 23: 1387–1394.
7. Färkkilä, N. *et al.* Health-related quality of life in colorectal cancer. *Colorectal Dis.,* 2013; 15.
8. Bray, F. *et al.* Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA. Cancer J. Clin.,* 2018; 68: 394–424.
9. Smith, R. D. & Mallath, M. K. History of the Growing Burden of Cancer in India: From Antiquity to the 21st Century. *J. Glob. Oncol,* 2019; 1–15. doi:10.1200/JGO.19.00048.
10. Freire, M. E. M., Sawada, N. O., França, I. S. X. de, Costa, S. F. G. da & Oliveira, C. D. B. Health-related quality of life among patients with advanced cancer: an integrative review. *Rev. Esc. Enferm. USP,* 2014; 48: 357–367.
11. Al-Jabi, S. W. *et al.* Health-related quality of life in patients with breast cancer in Palestine: an assessment of a cross-sectional study using the EuroQoL-5 dimensions scale. *The Lancet,* 2018; 391: S34.
12. Zenger, M. *et al.* The relationship of quality of life and distress in prostate cancer patients compared to the general population. *Psycho-Soc. Med.,* 2010; 7, Doc 02.
13. Gokgoz, S. *et al.* Health Related Quality of Life among Breast Cancer Patients: A Study from Turkey. *Glob. J. Health Sci. Glob. J. Health Sci.,* 2011; 3.
14. Westhoff, P. G. *et al.* Quality of Life in Relation to Pain Response to Radiation Therapy for Painful Bone Metastases. *Int. J. Radiat. Oncol. Biol. Phys.,* 2015; 93: 694–701.
15. Marschner, N. *et al.* Association of Disease Progression With Health-Related Quality of Life Among Adults With Breast, Lung, Pancreatic, and Colorectal Cancer. *JAMA Netw. Open,* 2020; 3: e200643.
16. Kokkonen, K. *et al.* Cancer patients' symptom burden and health-related quality of life (HRQoL) at Tertiary Cancer Center from 2006 to 2013: A cross-sectional study. *Anticancer Res.,* 2019; 39: 271–277.
17. Jacob, J. *et al.* Health-related quality of life and its socio-economic and cultural predictors among advanced cancer patients: Evidence from the APPROACH cross-sectional survey in Hyderabad-India. *BMC Palliat. Care,* 2019; 18.