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Assessment of Quality of Life of Lung Cancer Patients Using Eortc QLQ-13 in Pakistan

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ABSTRACT

Lung cancer is one of the prime causes of cancer-related mortality worldwide. Lack of early screening and treatment options, limited financial resources, inadequate number of health care facilities, and cultural stigma associated with the disease are the major issues contributing towards the disease burden in developing countries, including Pakistan. The objective of the study was to assess the quality of life of lung cancer patients in Pakistan. A descriptive cross-sectional study design was used. A pre-validated questionnaire i.e. EORTC QLQ-C13 was self-administered to a sample of 100 lung cancer patients selected using a convenience sampling technique for measuring QoL. After data collection, data was cleaned, coded, and entered in SPSS. A significant difference ($p \geq 0.05$) in QoL scores was observed in relation to different genders, age groups, qualification levels, and socioeconomic backgrounds. Female lung cancer patients, those in the age group less than 65 years, and low socioeconomic backgrounds had poor QoL. No significant difference ($p \geq 0.05$) in QoL scores was observed among other demographic variables. The present study concluded that lung cancer patients had poor QoL despite awareness and advanced therapeutic strategies. Lung cancer had a negative outcome on quality of life across all domains. The highest score was observed for pain while the lowest score was observed for hemoptysis. Appropriate management of the disease symptoms with the help of pulmonary rehabilitation and social support can result in improved QoL of lung cancer patients.

Key words: *Lung cancer, Quality of life, EORTC QLQ-C13, Pakistan*

INTRODUCTION

Lung cancer is one of the prime causes of cancer-related mortality worldwide. Nearly 12.3% of all new cases globally account for lung cancer which is considered the second most common cancer in the world. Two out of every three patients identified with lung cancer are mostly above 65 years old, and the usual age at the time of diagnosis is nearly 70 years. Lung cancer has poor prognoses of all human malignancies with less than five years of endurance rate i.e. 12.6% in Europe and 18% in the USA [1]. The effect of chemotherapy, radiotherapy, and surgery decrease the overall quality of life and well-being of patients having lung cancer. The severity of disease-relevant symptoms has been strongly associated with psychological symptoms among the patients. Moreover, comorbidities add to the burden of disease and poor quality of life [2]. The development of modern medicine along with improving patients' quality of life (QoL), mental well-being, and pain in lung cancer has become a vital part of patient-tailored treatment plans. Several assessment instruments and tools are now accessible for this purpose and have established a good relationship with performance status, symptoms, and survival. The patient-

reported quality of life is the main element of the overall well-being of cancer patients linked to prognosis [3, 4]. A significant improvement in pain, fatigue, and dyspnea scales can lead to enhanced QoL. Dyspnea (relevant to cancer), shortness of breath, persistent cough, fatigue, diarrhea, chest pain, sleep disturbance, and anorexia are the most common symptoms affecting the QoL of lung cancer patients [5]. Furthermore, depression and anxiety contribute to poor QoL with advanced disease stages [6]. Severe fatigue has been reported as a major limiting factor in lung cancer patients. Nowicki *et al*. highlighted weakness as the most serious result of oncologic treatment in 70% of the patients [7]. Falling asleep was also found difficult in lung cancer and most of the patients suffer restless days and nights due to chronic fatigue [8].

Pulmonary function was found moderately associated with quality of life in lasting survivors and might be considered more effective in designing therapeutic strategies in lung cancer patients after surgery [9]. Moreover, a negative relationship was reported between QoL, depression, and lung cancer stigma in the USA [10]. Depression severity was reported as the strongest single predictor of poor QoL in lung cancer patients in Norway [6].

Lung cancer is mainly third most frequent cancer in Pakistan and the chief reason for cancer deaths in the country with an estimated value of 6,800 (4.6%) latest cases and 6,013 (5.9%) deaths in 2012. There is no central cancer registry in Pakistan that can give an exact picture of lung cancer patients at present so that awareness about lung cancer, its risk factors, and the impact of early screening on better treatment options selection could be planned [11]. Lack of early screening and treatment options, limited financial resources, inadequate number of health care facilities, and cultural stigma associated with the disease are the major issues contributing towards the disease burden in developing countries, including Pakistan. Moreover, the old age of patients, late diagnosis, concomitant diseases, limited therapeutic options contribute towards severe morbidity and high-symptom burden resulting in poor quality of life and depression among lung cancer patients [12]. Limited studies have been conducted in developing countries including Pakistan for the assessment of QoL of Lung cancer patients. Therefore, the present study was designed to assess the QoL of lung cancer patients in Pakistan.

MATERIALS AND METHODS

A descriptive cross-sectional study design was used. The study site for the research included public and private healthcare facilities located in the twin cities of Pakistan. Study approval was taken from the Ethical Committee of Hamdard University (Ref. No. HUIC/ERC/2020/359). Informed written consent was taken from the study respondents along with the confidentiality agreements to ensure that their personal information will not be disclosed and exploited, and all the information will be used for research purposes only. The inclusion criteria for the study were that lung cancer patients of both genders, aged above 18 years, at any stage of lung cancer were included while those suffering from other types of cancers were excluded. The determination of sample size was calculated by utilizing the Raosoft sample size calculator which gave an estimated sample size of 382 respondents (lung cancer patients) at a confidence interval of 95% and a margin of error of 5%. However, a convenience sampling technique was used to select the respondents. According to the convenient sampling technique, all the available respondents that were present at the time of data collection were included in the study. A pre-validated questionnaire was used including European Organization for Research and Treatment of Cancer QLQ-C13 (EORTC QLQ-C13) for the assessment of QoL among lung cancer patients. Pilot testing of the tool was conducted on 10 % of the sample and the value of Cronbach alpha for EORTC QLQ-C13 was 0.79. Data were collected from Feburary-May2021. A self-administered questionnaire was ensured for data collection to avoid biases. Due to the COVID-19 pandemic, the desired sample size could not be achieved and data from 100 lung cancer patients were collected. The response rate for the study was 26.18%. Data were cleaned, coded, and analyzed statistically using SPSS version 21.

RESULTS AND DISCUSSION

Out of 100 lung cancer patients, 72 % (n = 72) were males while 28 % (n = 28) were females. Moreover, 81 % (n=81) were less than 65 years while 8% (n=8) were greater than 65 years old. Out of all the patients, 51% (n=51) were illiterate/primary, 18% (n=18) were middle and 31% (n=31) were qualified. Out of all patients, 83% (n=83) had NSCLC, 4% (n=4) had SCLC, 7% (n=7) had Adenocarcinoma and 6% (n=6) had adenocarcinoma combined. Of the different stages, 11% (n=11) had stage 2, 22% (n-22) had stage 3, and 67% (n=67) had stage 4 Lung cancer. Out of all patients, 82% (n=82) were treated through chemotherapy, 2% (n=2) were treated through radiotherapy,

and 16% (n=16) were treated with a combination of chemotherapy and radiotherapy. Metastasis occurred in 18% (n=18) and recurrent disease occurred in 6% (n=6) patients **(Table 1)**.

Table 1. Demographic Characteristics of Respondents

Indicator		Patient n (%)
Gender	Male	72 (72.0)
	Female	28 (28.0)
Age	Less than 65 years	81 (81.0)
	65-74 years	11 (11.0)
	Equal to or greater than 75 years	8 (8.0)
Service of provision	In-patient	83 (83.0)
	Out-patient	17 (17.0)
Marital Status	Single	6 (6.0)
	Married	81 (81.0)
	Widow/divorced	13 (13.0)
Education level	Illiterate/Primary	51 (51.0)
	Secondary school	18 (18.0)
	Higher education	31 (31.0)
Income status	>100,000PKR	28 (28.0)
	50,000-100,000PKR	47 (47.0)
	<50,000PKR	25 (25.0)
Smoking	Yes	66 (66.0)
	No	34 (34.0)
Recurrence	Yes	6 (6.0)
	No	94 (94.0)
Metastasis	Yes	18 (18.0)
	No	82 (82.0)
Knowledge about diagnosis	Yes	71 (71.0)
	No	29 (29.0)
Histological types	NSCLC	83 (83.0)
	SCLC	4 (4.0)
	Adenocarcinoma	7 (7.0)
	Adenocarcinoma combined	6 (6.0)
Staging	I	0 (0.0)
	II	11 (11.0)
	III	22 (22.0)
	IV	67 (67.0)
Therapy	Chemotherapy (monotherapy)	82 (82.0)
	Radiotherapy (monotherapy)	2 (2.0)
	Combination of chemotherapy and radiotherapy	16 (16.0)
	Combination of chemotherapy, radiotherapy, and surgical resection	0
	Surgical resection	0

Note.%= Percentage

The results highlighted that the lowest score for the QoL domain of the symptom scale was observed for hemoptysis (14.72, ± 22.06) while the highest score was observed in the domain of arm or shoulder pain (53.04, ± 39.199) followed by other body parts pain. A detailed description is given **(Table 2)**.

Table 2. Domains of HRQOL using EORTC QLQ-LC13

Indicators	Mean	Standard Deviation (±)
Cough	46.30	27.948
Hemoptysis	14.72	22.058
Dyspnea	37.41	25.095
Sore mouth	25.91	28.799
Trouble swallowing	27.15	30.504
Neuropathy	21.57	29.118
Alopecia	47.57	28.823
Chest pain	50.00	34.817
Arm or shoulder pain	53.04	39.199
Other parts pain	50.61	40.875

A significant difference ($p \geq 0.05$) in QoL scores was observed in relation to different genders, age groups, qualification levels, and socioeconomic backgrounds. Female lung cancer patients, those in the age group less than 65 years, and low socioeconomic backgrounds had poor QoL. No significant difference ($p \geq 0.05$) in QoL scores was observed among other demographic variables **(Table 3)**.

Table 3. QoL among Lung Cancer Patients according to Different Demographic Characteristics

Demographics	EORTC QLQ - LC13 Symptom Scale			
	n	Mean rank	Test stats	P-value
Gender	Male=72 Female=28	23.79 36.31	163.000 [a]	**0.009**
Age group ranges	< 65 Y =81 65-75Y= 11 >75Y=8	23.95 45.14 34.75	11.873 [a]	**0.001**
Level of Education	Primary=51 Secondary school =18 Higher education=31	34.43 22.50 19.44	10.735 [b]	**0.003**
Monthly Income (PKR)	>100,000PKR=28 50000-100000=47 <50000 PKR=25	22.78 23.33 40.04	12.047	**0.002**
Histological type	NSCLC= 83 SCLC=4 Adenocarcinoma=7 Combined= 6	25.69 29.25 36.38 8.75	4.770[b]	0.183
Stages of Cancer	II=11 III=22 IV=67	206.3 155.1 219.2	18.4[b]	**0.001**
Knowledge about diagnosis	Yes= 71 No= 29	25.97 31.47	233.000[b]	0.253
Smoking	Yes= 66 No= 34	25.33 31.50	256.500[a]	0.173
Therapy	Chemotherapy=82 radiotherapy= 2 Combination of radio and chemotherapy=16	27.96 22.50 24.21	0.673[b]	0.933
Metastasis	Yes= 18 No= 82	31.45 25.58	0.716[a]	0.324
Recurrence	Yes= 6 No= 94	40.88 26.43	46.500[a]	0.078
Mann Whitney[a];Kruskal-Wallis Test[b] ($p \geq 0.05$)				

Lung cancer is one of the most widespread cancers globally adding to increased morbidity and mortality. Due to prolonged and expensive therapy, patients suffer from emotional, physical, social, and financial distress leading

to deprived disease results [13]. Evaluation of QoL is vital in lung cancer because it assists both physicians and patients in choosing better treatment options and in return improving the health outcomes of patients. QoL has been recognized as one of the most critical indicators of cancer prognosis and factors linked to the survival duration of patients with lung cancer [1]. On account of the EORTC QLQ LC13, the findings of the present study showed that half of the patients experienced a lot of shortness of breath when walking and climbing stairs, hair loss, and cough quite a bit and only a few were suffering from a little hemoptysis. Half of the patients did not at all experienced sore mouth and trouble swallowing and most of the patients did not at all have tingling hands or feet. Most of the lung cancer patients were suffering from pain in the chest, arms, or shoulder a little and among them, most of the patients were complaining of body aches. The majority of them took medicines which helped them a little. Most of the patients with lung cancer experience dyspnea and pain. These results are in line with a study conducted in Germany and France on the Lung Cancer Symptoms Scale which reported shortness of breath and pain as symptoms with the most negative effect on QoL of lung cancer patients [14]. The results of the present study highlighted that the females, patients aged 65-75 years, and those with low socio-economic status experienced worse symptoms on the EORTC QLQ LC13 scale, while lung cancer patients aged less than 65 years had a better quality of life and better functional scores. These findings are in line with the study from China in which female patients faced more fatigue, shortness of breath, and body pains than male patients, also elder patients and patients with low socioeconomic status reported worse symptoms than middle-aged patients and financially stable patients respectively [3].

Limitations

The results of this study are limited to mostly twin cities of Pakistan and a few other cities of Pakistan; thus, the findings might not be generalized to other parts of the country. The study was carried out during the COVID-19 pandemic, so most of the hospitals did not allow patient interaction with any out-sider due to which sample size remained less. Moreover, no significant association between quality of life, depression, and several demographic variables was observed. This might not suggest that socio-demographic variables have no impact on quality of life as the sample size of the study is relatively less or moderately sized effects might not be discovered due to inadequate statistical power.

CONCLUSION

The present study concluded that lung cancer patients had poor QoL despite awareness and advanced therapeutic strategies. Lung cancer had a negative outcome on quality of life across all domains. The highest score was observed for pain while the lowest score was observed for hemoptysis. The QoL of females and patients in the age group 65-75 years were found relatively more affected by lung cancer. Illiteracy, advanced disease stage, and poor socioeconomic status also negatively affected the symptom scale. Appropriate management of the disease symptoms with the help of pulmonary rehabilitation and social support can result in improved QoL of lung cancer patients. Moreover, the initiation of modified palliative treatment should also be considered a prime choice for improving the QoL of lung cancer patients.

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