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Evaluating Health-Related Quality of Life in Patients with Chronic Obstructive Pulmonary Disease

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A B S T R A C T

Background: Chronic Obstructive Pulmonary Disease (COPD) including both emphysema and chronic bronchitis, is the airflow obstruction along with the chronic cough, wheezing and poor quality of life. It is one of main reasons of mortality and morbidity worldwide and in Pakistan as well.

Objective: To know Health-Related Quality of Life of COPD patients in a healthcare institute.

Methodology: A cross-sectional study was conducted included 95 COPD patients. HRQoL of all enrolled patients were assessed for results. The diagnosis was done based on the Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria. Data were entered into Excell sheet and for data analysis was done using SPSS version 15.0.

Results: A total of 95 COPD patients were included in this study. Majority of the patients (63.1%) were presented with cough followed breathlessness (56.8%). Most of the patients (92.4%) were diagnosed with COPD in private healthcare institute and within the last five years (51.5%). The SGRQ median total and interquartile range was 58.7 (43.9–64.6).

Conclusion: Majority patients had poor Health-Related Quality of Life (HRQoL). At the time of survey, the presence of dyspnea and chest pain showed poor HRQoL. Therefore, the awareness regarding COPD and sensitizing healthcare workers towards the effect of COPD on HRQoL is important.

Keywords: QoL; HRQoL; Pulmonary Disease; COPD

Introduction

Chronic Obstructive Pulmonary Disease (COPD) is a respiratory condition characterized by persistent airflow obstruction and associated with an abnormal inflammatory response of the lungs to toxic particles or gases. It is a significant cause of illness and death worldwide, currently ranked as the third leading cause of mortality globally. In Pakistan, approximately 6.9 million people are suffering from COPD.[1] COPD not only imposes a significant burden on healthcare systems but also profoundly impacts the lives of affected individuals, particularly in terms of their Health-Related Quality of Life (HRQoL).[2]

The quality of life of COPD Patients is often severely compromised due to the persistent symptoms such as dyspnea, chronic cough, sputum production, and frequent exacerbations. These symptoms lead to limitations in physical activities, psychological distress, social isolation, and a decline in overall well-being.[3,4] The chronic nature of the disease and the gradual decline in lung function contribute to an ongoing deterioration in HRQoL. Moreover, the systemic effects of COPD, including muscle wasting, cardiovascular comorbidities, and malnutrition, further exacerbate the decline in quality of life. The associated factors of impaired 'Health-Related Quality of Life, are cognitive dysfunction, depression, hypoxemia and its relationships with social status. Social status, age, social networking and psychological well-being.[5] The assessment of HRQoL in COPD patients has gained increasing attention in recent years, as it provides valuable insights into the impact of the disease from the patient's perspective. Traditional clinical measures such as spirometry, while important, do not fully capture the multidimensional impact of COPD on a patient's life. HRQoL assessments, on the other hand, encompass physical, emotional, and social aspects, providing a more comprehensive understanding of the disease burden. According to McSweeney AJ et al. HRQoL being a complex concept and is subjective in context to each individual. It is affected by multiple factors in an individual's life such as the psychological functioning, daily activities, participation ability and social functioning.[6] In a review article by Atasever A and Erdinç E, reported that the questionnaire-based studies specific for the evaluation of HRQoL in COPD patients are important to strengthen the relationship between the HRQoL and the respiratory issues.[7] Several studies reported that tools such as the St. George's Respiratory Questionnaire (SGRQ), the COPD Assessment Test (CAT), and the Chronic Respiratory Disease Questionnaire (CRQ) have been widely used to evaluate HRQoL in COPD patients.[8-10]

Several factors influence HRQoL in COPD; patients, including the severity of the disease, frequency of exacerbations, comorbid conditions, and socioeconomic status. Studies have shown that patients with more severe airflow obstruction, frequent exacerbations, and multiple comorbidities tend to report poorer HRQoL. Additionally, some other factors like socioeconomic status, education, and access to healthcare also play a critical role in determining HRQoL outcomes. It is very important to know well about these factors as it play important role in developing targeted interventions aimed at improving the quality of life in COPD patients. Assessing the COPD patient's health seeking behavior shows that how it has been affected the disease outcomes and how the utilization of health services has been done, which has an impact on the patient's HRQoL.[11,12]

Despite the significant advancements in COPD management, including pharmacological and non-pharmacological interventions, there remains a substantial unmet need in optimizing HRQoL for these patients. While bronchodilators, corticosteroids, and other medications help to alleviate symptoms and reduce exacerbations, their impact on HRQoL is variable. Pulmonary rehabilitation, a key component of COPD management, has been proven to enhance exercise capacity and alleviate symptoms, but its impact on HRQoL may decrease over time. This highlights the importance of ongoing assessment and tailored interventions to address the evolving needs of COPD patients.

Chronic Obstructive Pulmonary Disease (COPD) significantly affects patients' quality of life (QoL), and outcomes can vary widely among different groups. To address this, there is a need for detailed research on QoL in COPD patients across various settings. By understanding what factors lead to poor QoL in these patients, we can create better strategies to enhance their overall well-being. This study will evaluate QoL in COPD patients using reliable assessment tools, identify the main factors affecting QoL, and investigate how disease severity and other health conditions impact quality of life. The results will add to our knowledge about COPD and offer valuable insights for doctors and healthcare policymakers to improve the management of this chronic illness.

Objective

To know Health-Related Quality of Life of COPD patients in a healthcare institute.

Methodology

This study was a cross-sectional study conducted between January 2021 to September 2021 at the Mohiuddin Teaching Hospital Mirpur, Azad Kashmir. Patients attending the Outpatient Department (OPD) and who are admitted in the Department, aged between 20-80 years with COPD diagnosis were included. The diagnosis

Table 1. Baseline clinical characteristics of study cases

Characteristics		Frequency (%)
Symptoms initially reported at the time of diagnosis	Cough	60 (63.1)
	Breathlessness	54 (56.8)
	Expectoration	39 (41)
	Chest Pain	13 (13.6)
	Fever and common cold	15 (15.7)
	Wheezing	16 (16.8)
COPD Duration (in years)	≤5	49 (51.5)
	>5	46 (48.4)
Investigations at the time of diagnosis	Routine examinations [a]	89 (93.6)
	Chest X-ray	48 (50.5)
	Sputum microscopy	43 (45.2)
	Spirometry/Bronchoscopy	9 (9.4)
	CT	11 (11.5)
	ECG/Echo	5 (5.2)
Treatment given at the time of diagnosis	Nebulization	51 (53.6)
	Oral medications	42 (44.2)
	Bronchodilators	23 (24.2)
Consultant advice at the time of diagnosis	Avoid smoking	13 (35.1)
	Avoid exertion	8 (21.6)
	Dietary modifications	5 (13.5)
	Avoid exposure to dust/biomass fuel	7 (18.9)
	No advice	58 (61)

was done based on the Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria.[13] Patients who were illiterate and had any respiratory, psychological comorbidities or severely ill were not included in the study. A minimum of 95 patients were needed to be included, with the anticipation of 13.65 standard deviation, to estimate the HRQoL mean within the 10% anticipation with a confidence interval of 95%.

Ethical approval was obtained from the hospital's Institutional Ethical Committee. The study's purpose was clearly explained to the patients, who were assured of the confidentiality and anonymity of their data. Consent was then obtained from each participant. The procedure of the study will follow the guidelines of Declaration of Helsinki.

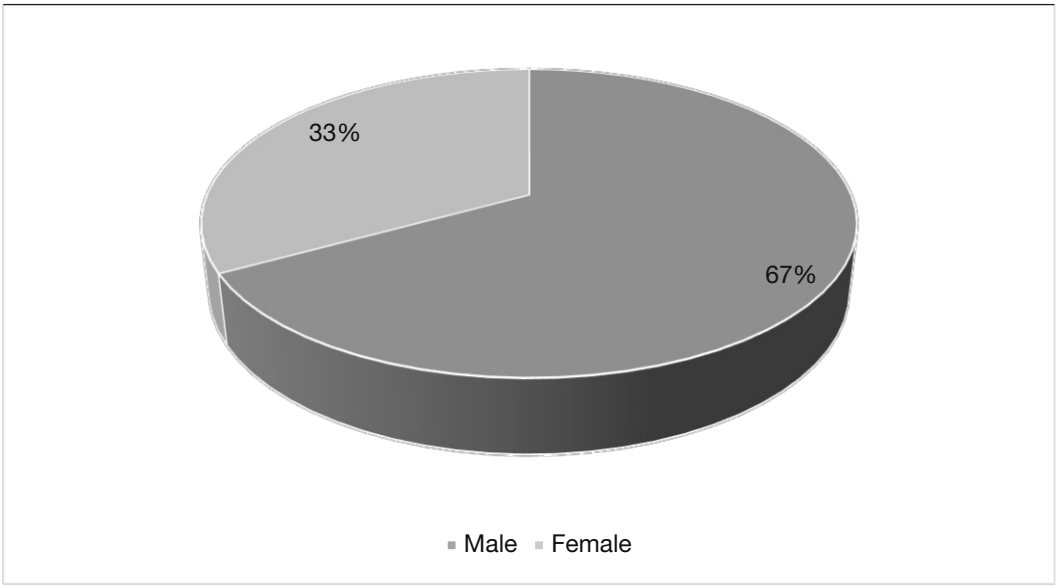

Figure 1. Gender distribution of study cases

The socio-demographic characteristics, health seeking behavior and disease specific details of the COPD patients were administered using a semi-structured and pre-designed questionnaire. Smoking history of the COPD patients was also determined. Calculations for Body mass index (BMI) for each individuals using the WHO classification. BG Prasad Scale was used to assess the participant's socio-economic status.

In this study, Health-Related Quality of Life (HRQoL) was evaluated using the SGRQ-C (St. George's Respiratory Questionnaire for COPD) tool. This instrument includes 14 questions with a total of 40 items, which are categorized into two main sections. The first section addresses the domains of symptoms, activity, and impact, while the second section focuses on limitations in social activities, physical function, and psychological issues. Each domain's scores range from 0, indicating no impairment, to 100, representing the highest level of impairment. The total and domain-specific SGRQ-C scores were calculated and then converted into standardized scores for easier comparison using established formulas. These scores were analyzed to explore their relationships with various parameters within the study population.

Initially data were entered into Excell sheet and for analysis purposes, Statistical Package for Social Sciences (SPSS) version 15.0 was used. Mean ± standard deviation or median of all the continuous data was obtained and their interquartile range was determined depending on the data skewness. The background characteristics were compared with the SGRQ scores using chi-square test. P-value of less than 0.05 was considered statistically significant.

Results

In the present study, a total of 95 COPD patients were included. Male patients were 67.0% whereas remaining 33.0% were female (Figure 1). In the study, 36.84% of the cases were in the 70–79 age group, 20% were between 60–69 years, 15.78% were in the 50–59 age group, 8.42%

Table 2. SGRQ score pattern of the study cases

SGRQ Components	Score
Activity (Median with Interquartile range)	75.5 (52.5-81.9)
Impact (Mean ± SD)	46.8 (±1.9)
Symptom (Mean ± SD)	54.7 (±0.3)
Total score (Median with Interquartile range)	58.7 (43.9–64.6)

Table 3. Association between total SGRQ scores with different symptoms

Characteristics		Normal (%)*	Abnormal (%)*	p value
Perceived current health status	Very good or Good	5 (9.6)	40 (89.3)	0.352
	Fair	0	27 (97)	
	Poor or Very Poor	0	15 (99)	
Cough	Present	2 (3.0)	72 (95.1)	0.100
	Absent	0	24 (94.5)	
Expectoration	Present	2 (4.2)	46 (89.6)	0.331
	Absent	0	47 (95.4)	
Chest pain	Present	2 (10.7)	15 (83.9)	0.026
	Absent	0	73 (98.9)	
Dyspnoea	Present	0	70 (99)	0.047
	Absent	2 (8.5)	19 (90.7)	

*Normal (SGRQ scores) = 5-7, Abnormal (SGRQ scores) = Greater than 7

were between 80–89 years, and 18.94% were under 50 years of age. Among study cases, more than 50% of them having the schooling of only one to four years and majority of them (75.7%) belonged to low or middle economic status. About 86.5% of them have occupation in which they are most of the time exposed to the fine dust and 36.5% has COPD family history. Almost 45.8% of them had the history of smoking from biomass fuel and 70% gave a history of having exposure to the incense sticks smoke. Majority of the participants were ever smokers 60.5% and 18.7% either chewed tobacco or used snuff formed tobacco 9.5%.

At the time of diagnosis, breathlessness (56.8%) and cough (63.1%) were the common symptoms. COPD diagnosis of the patients was done in private hospitals (92.4%) and 51.5% of them were diagnosed within the last 5 years. Routine examinations (93.6%), sputum microscopy (45.2%) and chest x-ray (50.5%) were the investigations that were done at the time of COPD diagnosis. Nebulization (53.6%), oral treatment (44.2%) and bronchodilators (24.2%) were the treatment given at the time of diagnosis. About 61% patients were not given any advice at the time of diagnosis from the healthcare persons (Table 1).

At the interview time, 45.6% of the participants have a normal BMI and the rest were underweight. About 69% of the participants had comorbidities such as diabetes 34.5%, hypertension 35%, bronchial asthma 28%, pulmonary tuberculosis 4% and pneumonia 5% (Figure 2).

On the assessment of the participant's health seeing behavior, it was noted that 80% of them had approached local private healthcare workers with 18% of them had tried self-medication. About 6% of them did not feel the need to consult anyone when their symptoms first appeared. Most of the participants 70% reported that they have been on allopathic medications, 15% had ayurveda treatment and 34% of them were attending tertiary care hospital for their pulmonary rehabilitation.

SGRQ-C questionnaire was used to assess the HRQoL, which showed the majority impairment score in the activity 75.5, symptom 54.7 and impact 46.8 (Table 2).

No association was found between the socio-demographic characteristics and converted SGRQ-C scores. The SGRQ-C scores ranging from 5-7 are considered healthy individuals and those having higher total scores are considered worsening HRQoL (Table 3).

Discussion

The present study offers a comprehensive analysis of the demographic characteristics, health behaviors, and quality of life among COPD patients, revealing critical

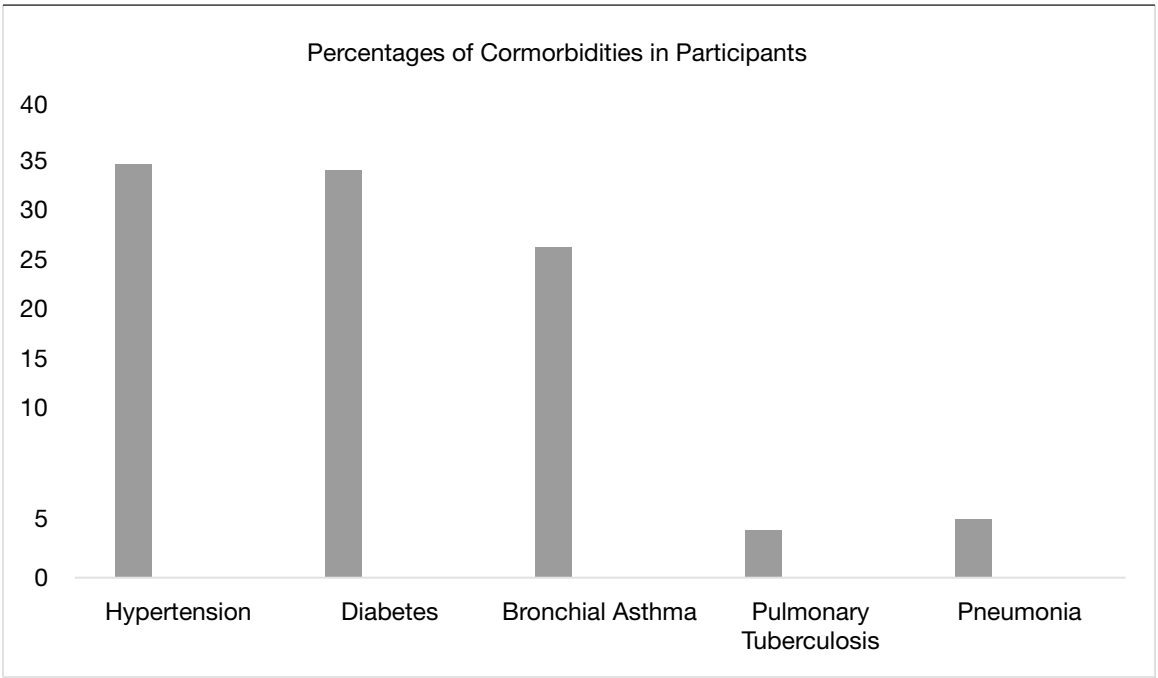

Figure 2. Rate of comorbidities in studied participants

insights consistent with both local and international findings. Approximately 36.84% of patients fall into the age group of 70-79 years; similar to Martin A's study, 35.7% of patients fall into this age group.[14] In the present study, males 67% were more than females which is similar to the previous reported studies such as the cohort study conducted in Spain (87.4%).[15] The proportion of participants in schooling were less than that reported in the study conducted in Spain (92.9%). Approximately 60.5% of participants reported smoking. This finding compares with 85.5% found in the Spanish study. According to a cross-sectional study conducted in Karachi, majority were males 54% and were living in urban area 94.4%. About 63% of the participants were smokers.[15,16] As the age is increased the volume of the lung is decreased, which makes it negatively correlated with the lung volume.[17]

According to a study conducted in Kerala, 71% of the participants had family history of COPD while this study showed 36.5% of the people with family history. The findings in Kerala are consistent with those in Odisha.[18,19] About 45.8% of the participants were exposed to the biomass fuel smoke. According to the Karachi study, 40.7% participants had the family history of COPD.[16]

Dyspnoea and cough were the common symptoms among the participants in this present study and the other studies reported that adults with smoking history has increased risk of COPD with frequent coughing.[20] In the Spain study 79.6% had received influenza vaccine and in our study 54% received it.[15] In a study influenza vaccination reduced the influenza-related hospitalization among the COPD patients.[21]

In our study, 80% of the participants visited private healthcare workers, whereas in Kerala, most of the participants visited government healthcare facilities. This is due to the well-established network of medical centers in Kerala. In the Kerala study 91% of participants received allopathy and 5.7% ayurveda treatment while in our study the 15% received ayurveda and 70% allopathy.[19]

In this study, the mean symptom score of the participants was found to be 50.89 ± 0.17. This score is higher as compared with the score of normal individuals. These scores are in contrast with a study conducted internationally 61.4 ± 21.9 (22). The median activity score that was found in this study was 71.90 which ranges between 7 and 12. Whereas, mean impact score was 47.67± 1.65, which ranges from 1 to 3. According to a study conducted in France and Spain the SGRQ total scores were significantly associated with dyspnoea, which was the major symptom during the time of admission.[15,22,23]

This study contributes to the growing body of evidence on the impact of COPD on patients' quality of life, emphasizing the importance of demographic and behavioral factors in disease progression and management. The observed differences in health-seeking behavior, particularly the preference for private healthcare over government facilities, and the reliance on self-medication, highlight the need for targeted public health interventions and improved access to standardized care.

The findings underscore the urgent need for comprehensive management strategies that address not only the medical but also the social dimensions of COPD, particularly in under-researched populations like those in Pakistan. While the study's limitations, including its small sample size and lack of data on lung function, suggest areas for future research, the insights gained provide a valuable foundation for enhancing patient care and informing public health policies aimed at improving the quality of life for individuals living with COPD.

There have been limited studies conducted in Pakistan regarding the assessment of quality of life affected by COPD. This study contributes significantly in determining the effect of COPD in the quality of life and the patient's health seeking behavior. The limitation of this study is the small sample size and lacks in determining the heterogeneity in the co-morbidity characteristics and participant's socio-demographic characteristics. This study was not able to collect data on forced expiratory volumes which could have drawn light on the COPD severity and its relationship with the participant's quality of life.

Conclusion

Most COPD participants reported a poor quality of life (HRQoL), with many experiencing chest pain and dyspnea at the time of data collection—both of which were significantly associated with a lower quality of life. Additionally, many participants indicated that they had not been advised to avoid biomass gas exposure or to quit smoking at the time of their diagnosis. A small percentage had received the influenza vaccine. Nearly a quarter of the participants did not recognize the importance of seeking medical consultation or opted to rely on home remedies instead. Raising awareness about COPD and its associated risk factors is crucial. Healthcare workers should be educated on the importance of early COPD diagnosis and treatment, as well as the need to incorporate HRQoL considerations into patient care.

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