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Original Article

Health Related Quality of Life and Associated Factors in Patients with Chronic Respiratory Diseases: A Hospital-Based Cross-Sectional Study

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Abstract

Background: Chronic respiratory conditions are a serious public health issue in India. Chronic respiratory diseases have a significant effect on patients' quality of life (QOL). Understanding the factors influencing health-related quality of life (HRQOL) is essential to improving patient care and treatment strategies. Objectives: The purpose of our study was to assess the HRQOL of individuals with chronic respiratory conditions and to determine the associated factors.
Methodology: A cross-sectional observational study was conducted in a tertiary care hospital's outpatient pulmonary medicine department. 428 participants who were selected via convenience sampling were added to the study after meeting the inclusion criteria.
Results: Our research shows that patients with long-term respiratory conditions have lower HRQOL. A strong association was found with advancing age, occupation, smoking status, and comorbidity with poor HRQOL in these patients.
Conclusion: Our research concluded that several factors might impact a patient's HRQOL with respiratory disease. Determining these factors in advance can help identify individuals who are more likely to have poorer HRQOL and make interventions that could improve patient outcomes.

Keywords: Chronic respiratory diseases, Health related quality of life (HRQOL), associated factors, St George Respiratory Questionnaire (SGRQ)

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Introduction

Conditions affecting the lungs and airways, such as asthma, pulmonary sarcoidosis, interstitial lung disease (ILD), pneumoconiosis, and chronic obstructive pulmonary disease (COPD), are together referred to as chronic respiratory diseases (CRDs). As the third most common cause of death worldwide in 2019, CRD carries a significant financial burden. Reducing premature mortality from non-communicable diseases (NCDs), including CRDs, by one-third by 2030 is the United Nations' (UN) Sustainable Development Goal (SDG) target 3.4.(1,2)Compared to many cancers, advanced respiratory disease has a higher symptom burden, but neither the infrastructure nor the need for supportive and palliative care is well recognized. As a result, chronic fatigue, dyspnea, and other symptoms impair the quality of life for many individuals with advanced respiratory disease (and those closest to them).(3)

Despite accounting for 18% of the world's population, 32% of disability-adjusted life years (DALYs) worldwide are caused by CRDs, making India disproportionately affected. In India, the prevalence of COPD rose from 3.3% to 4.2%, from 28.1 million (27.0–29.2) patients in 1990 to 55.3 million (53.1–57.6) cases in 2016. In 2016, it was also shown that India had DALYs per case of COPD that were 1.7 times higher than the global average, with most States having higher rates than other places globally at comparable sociodemographic index levels. .(4)

In addition to symptoms like exhaustion and shortness of breath, patients with COPD frequently have limits in their everyday activities. People of all sexes and all ages are affected by asthma, which is a serious global public health issue. It affects one's physical and emotional well-being as well as one's performance at work and in school. The symptoms of asthma, which are caused by inflammation and restriction of the lungs' tiny airways, include coughing, wheezing, chest tightness, and difficulty breathing. An allergic reaction can also result in severe mood swings and exhaustion, as well as cognitive decline, anxiety, and depression. (4–6)

The unique concept of health-related quality of life (HRQOL), which includes dimensions pertaining to physical, mental, emotional, and social functioning, differs from physiological metrics of survival..(7) Health-related Quality of Life (HRQOL), which includes everyday activities and feelings, is a major concern in chronic illnesses and is frequently used as the outcome in observational studies and therapeutic trials. (8)Improving CRD patients' quality of life (QOL) requires examining the disease's mental, physical, and social components. A popular and regularly used tool for evaluating HRQOL in patients with respiratory conditions is the St. George's Respiratory Questionnaire (SGRQ).(9)

The majority of research on HRQL in respiratory disorders has been conducted in clinical settings, where participants typically have worse health than the general population and, as a result, exhibit an HRQL that is not representative of normal life.(7,10–12)Furthermore, the majority of earlier research concentrated on a single condition, missing the opportunity to examine the relative importance of several respiratory conditions. This study was conducted with the intention of measuring the HRQOL in patients with chronic respiratory diseases (CRD), considering the high prevalence of the disease in low- and middle-income nations like India and the potential effects it may have on a person's HRQOL.

Materials and Methods

Study design and setting

The study adopted a cross-sectional design, via personal interview using standardised tool. Data collection occurred over 1 year, spanning August 2024 to August 2025.The present study was conducted on an outpatient basis in the department of Pulmonary Medicine in a tertiary care institute, Jharkhand, India.

Study population and inclusion criteria

The study population comprised patients diagnosed with chronic respiratory diseases(COPD, Asthma, Occupational lung Diseases, Allergic and Non-allergic Rhinitis) aged 18 years & above. To be eligible, participants were required to have been diagnosed with any of the mentioned Chronic respiratory diseases by the senior consultant of the pulmonary medicine department (in view of the spirometry findings as well as chest X-ray findings) and have been on treatment since last one year or more, understand Hindi or English. Patients who are severely ill and cognitively impaired were excluded from the study.

Instrument for data collection

The current study used an interview schedule consisting of two sections, starting with sociodemographic variables and standardised tool for assessing the health-related quality of life(HRQOL). The study participants' HRQOL was assessed using the St George Respiratory Questionnaire (SGRQ). The SGRQ is a 50-item survey designed to measure the impact of obstructive airway disease on the daily lives, overall health, and perceived well-being of patients. The frequency and severity of symptoms are covered in Part 1, and activities that cause or are limited by dyspnea, as well as their impact on social functioning and psychological issues due to airway illness, are covered in Part 2. Greater restrictions are indicated by higher ratings; the values range from 0 to 100, with higher scores indicating more limitations(13). The Hindi translation tool was available from the publishers, and permission had been obtained for use. The tool had been used in Indian settings in a variety of respiratory conditions like COPD, Asthma, Allergic rhinitis and occupational lung diseases.(14–17)The sociodemographic section of the questionnaire collected information on age, gender, education level, occupation, type of residence, income, smoking status and presence of any comorbidity like Diabetes, Hypertension,Hyperlipidemia, Hypothyroidism or so on. Data was obtained after getting informed consent from each participant.

Sampling technique and sample size determination

For the present study, participants were selected using a non-probability convenience sampling technique. The estimated sample size was calculated using 5% margin of error and a 95% confidence interval, and we considered 50% prevalence as we could not retrieve such studies. Therefore, with the use of these parameters, the estimated sample size comes to 385 (by using $N=4pq/d^2$). In view of the non-response of 10%, the sample size came to 428.

Ethical considerations

The study strictly followed the ethical guidelines set forth in the revised Declaration of Helsinki. Approval to conduct the research was granted by the Institutional Research Ethics Committee. (IEC Code 2023-232-IND-03 dated 9/4/2024 in letter No.: AIIMS-DEO/RC-IEC-Full Committee/2024-April/103) Before enrolling in this study, all study participants provided informed consent. Investigators were briefed about the study's purpose, methodology, and their rights, including the assurance of anonymity and the confidentiality of their data. Additionally, participants were made fully aware that participation in the study was entirely voluntary and that they might leave at any time without incurring any penalties.

Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) software, version 26 (IBM Corp., Armonk, New York, USA), was used to analyse the data. The analysis involved both descriptive and inferential statistical techniques. The participants' sociodemographic characteristics were compiled using descriptive statistics such as frequency, percentage, mean, median, interquartile range, and standard deviation (SD). Inferential statistical methods, such as chi-square tests, were employed to explore associations between variables. A p-value of less than 0.05 was considered statistically significant.

Results

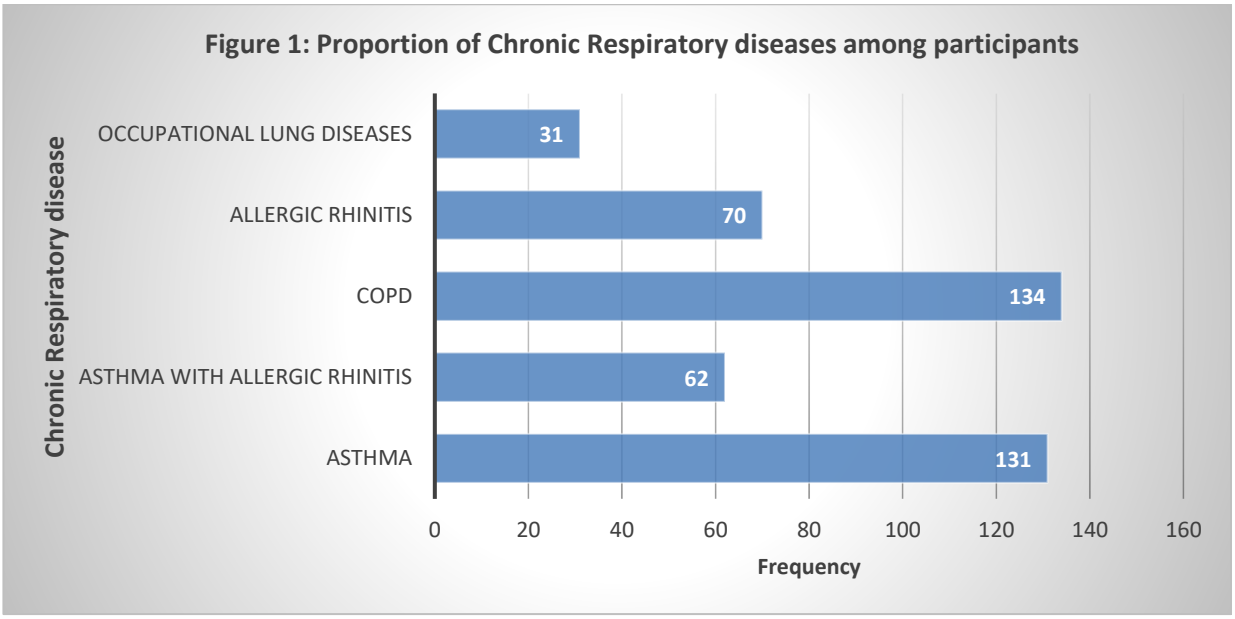
The study population consisted of 428 participants, all aged 18 years or older, with a mean age of 57.64 (SD = 16.57) years. Of them, 58.4.% were male. Most participants were residing in rural areas (83.4%). Almost 85.7 % were married. In terms of occupation, 36.4 % were employed in agriculture and 25,9 % in industrial jobs. A majority of the patients were current and ever smokers (44.1 % and 18.6% respectively). Among the participants, 55.6% had comorbidity. The details are shown in Table 1.

Table 1: Socio-demographic Characteristics of study participants(n=428)

Socio-demographic Characteristics	**Category**	**Frequency**	**Percentage**
Age in years (Mean ± SD)	57.64± 16.57 years		
Gender	Male	250	58.4
	Female	178	41.6
Family type	Nuclear	157	36.7
	Joint	232	54.2
	Extended	39	9.1
Residence	Rural	359	83.8
	Urban	69	16.2
Marital status	Unmarried	49	11.4
	Married	367	85.7
	Widowed	12	2.8
Education	Illiterate	75	17.5
	Primary	201	47
	Secondary	52	12.1
	Graduation and above	100	23.4
Occupation	Agriculture	156	36.4
	Industrial worker	111	25.9
	Professional	51	11.9
	Business	41	9.6
	Nil	69	16.1
Income level	≤ Rs 5000	90	21
	5001-9999	239	55.8
	≥10000	99	23.2
Smoking	Never	159	37.1

	Ever	80	18.6
	Current	189	44.1
Comorbidity	Yes	238	55.6
	No	190	44.4
Note n = Number of Participants, SD = Standard deviation			

The proportion of chronic respiratory diseases among participants is shown in Figure 1. Chronic obstructive pulmonary disease (COPD) and asthma were the most common disease conditions (134, 31.3%; 131, 30.6%, respectively) among the participants. Figure 2 displays the mean score for each domain of quality of life and the overall total score. The symptom score had the highest mean score (90.93), while the impact score had the lowest (77.65). The study highlighted a high overall HRQOL mean score (80.12± 12.6), which shows that patients with chronic respiratory diseases have poor HRQOL.



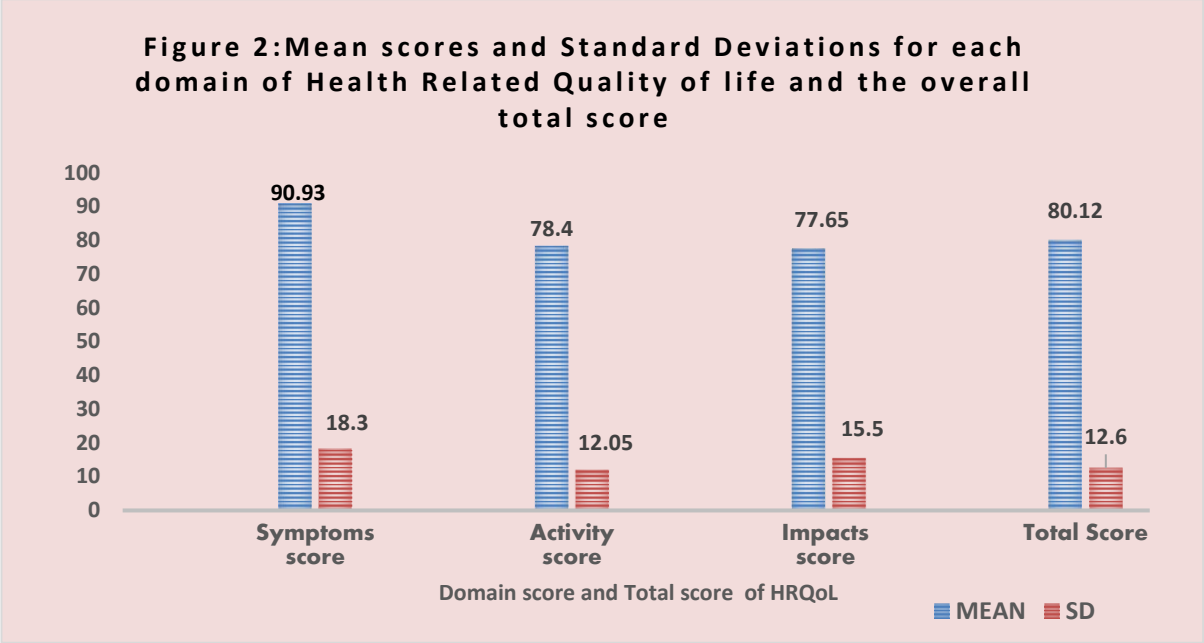


Table 2: Association of Quality of life with categorical variables (n=428)

Variables	Categories	HRQOL		Chi Square	P value
		0-50	51-100		
Age	18 to 40 years	54	58	18.559	**0.000**
	41 to 60 years	42	110		
	61 and above	41	123		
Gender	Male	19	231	0.013	0.908
	Female	13	165		
Family type	Nuclear	6	151	5.474	0.065
	Joint	21	211		
	Extended	5	34		
Residence	Rural	30	329	1.535	0.215
	Urban	9	60		
Marital status	Unmarried	9	40	1.015	0.602
	Married	28	339		
	Widowed	5	7		
Education	Illiterate	6	69	0.482	0.923
	Primary	14	187		
	Secondary	5	47		

	Graduation and above	7	93		
Occupation	Agriculture	13	143	11.412	**0.022**
	Industrial worker	4	107		
	Professional	11	40		
	Business	11	30		
	Nil	11	58		
Income level	≤ Rs 5000	10	80	1.523	0.467
	5001-9999	20	219		
	≥10000	8	91		
Smoking	Never	109	50	31.126	**0.000**
	Ever	30	50		
	Current	80	109		
Comorbidity	Yes	49	189	64.603	**0.000**
	No	111	79		
Note n = Number of Participants, p<0.05 significance level					

Table 2 shows a significant association (p<0.05) between age and HRQOL among patients with chronic respiratory diseases. In occupational status, the majority were employed in the industrial and agricultural sectors (36.4% and 25.9%, respectively), and occupation was found to have a significant association with HRQOL among participants (p=0.022). The habit of smoking and the presence of any kind of comorbidity showed a significant association with poor HRQOL among patients with chronic respiratory diseases (p<0.05).

The association between the type of chronic respiratory disease and HRQOL among the participants was revealed (p 0.003) and shown in Table 3. Asthma and chronic obstructive pulmonary disease accounted for the majority of the sample, and they accounted for high scores in HRQOL in SGRQ (which shows poor quality of life).

Table 3: Association of Chronic Respiratory Diseases with Health-Related Quality of Life (n=428)

Chronic Respiratory Disease	**HRQoL**		**Chi Square**	**P value**
	0-50	**51-100**		
Asthma	27	104	20.823	**0.000**
Asthma with allergic rhinitis	20	42		
COPD	33	101		
Allergic rhinitis	32	38		
Occupational lung diseases	15	16		

Note n = Number of Participants, $p<0.05$ significance level

Discussion

The fact that patients with chronic respiratory disease have significantly lower HRQOL at all disease severity levels, including those in the early stages of the condition (7,10,18–20), highlights the importance of determining the factors that contribute to these patients' poor QOL, which was the primary objective of the current study. According to the current study, patients with long-term respiratory conditions have significantly lower HRQOL. This finding was in line with previous research findings (7, 11), but it was worse than those reported in other studies (18).

The mean age of participants in the current study was 57.64 ± 16.57 years, which supports the results of a study carried out in Morocco. (19) As in many other previously published research (19, 22, 20, 23), there were more male patients than female patients in our study (58.4%). The majority of patients were married (85.7%), came from rural areas (84%), and belonged to joint families (54.2%). The majority of participants worked in the industrial sector (25.9%) and agriculture (36.4%), where they were more likely to be exposed to respiratory irritants such as dust, spores, silica, etc. Similar traits were found in the study population of an Indian study (24). The current study found that 44% of participants were current smokers and 18.6% had ever smoked, which is consistent with research done in South India (25).

The most prevalent medical diseases among the patients were asthma and chronic obstructive pulmonary disease (COPD) (134, 31.3% and 131, 30.6%, respectively). Our study participants had the highest mean HRQOL symptom score (90.93 ± 18.3) and the lowest mean impact score (77.65 ± 15.5). In comparison to earlier research, the current study's overall HRQOL mean score was 80.12 ± 12.6. (10, 18, 24, 25)

In the present study, advancing age, occupation, smoking status, and presence of comorbidity were found to be significant contributors to poor HRQOL. Several studies have shown similar results (10, 24–27). In contrast to our findings, a study conducted in Aligarh (28) revealed a strong correlation of lower socioeconomic status with poor HRQOL. Similarly, another study conducted in Morocco found marital status to have an association with quality of life among patients with chronic respiratory diseases (19).

Our study provides important information in this area because there are few studies from India evaluating health-related quality of life among patients with chronic respiratory disorders and their connection with various parameters. There are limitations to the research reported. Firstly, the cross-sectional design restricts the ability to establish causal relationships between variables. Secondly, this study was conducted in a single healthcare facility and convenient sampling was employed; the results cannot be applied to generalised to those suffering from chronic respiratory conditions in other settings. It is, therefore, recommended that similar studies be conducted in other locations across India or other countries. We were unable to get data on the participants' forced expiratory volumes, which could have provided additional insight into the severity of chronic respiratory disease and its relationship to quality of life. Further, studies including spirometry analysis can bring more insight into the aspects affecting HRQOL among patients with chronic respiratory diseases.

Conclusion

The study indicated that a considerable number of patients with chronic respiratory disorders had poor HRQOL, and that poor HRQOL was substantially correlated with comorbidity, smoking status, occupation, and advancing age. As a result, it is advised that the public be made aware of chronic respiratory conditions and the risk factors associated with them. Community health workers should also be made more aware of the importance of early detection and treatment of chronic respiratory conditions,

as well as the inclusion of HRQOL assessment in patient care. Furthermore, to ascertain the influence of the disease's severity and the part played by different social and familial circumstances on these patients' HRQOL, community-based longitudinal studies are essential.

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