Introduction

Chronic obstructive pulmonary disease (COPD) is used to describe chronic lung diseases that cause limitations in lung airflow which includes “chronic bronchitis” and “emphysema.” The Global Burden of Disease Study reported 251 million cases of COPD in 2016 and an estimated 3.17 million deaths in 2015. More than 3 million people died of COPD in 2005 corresponding to 5% of all deaths globally. In 2002, COPD was the fifth leading cause of death globally and in the next 10 years, total deaths are projected to increase by more than 30% that will bring it to the third position of leading cause of death worldwide in 2030. Low and middle-income countries are known to shoulder much of the burden of COPD with almost 90% of COPD deaths taking place in these countries.

In India, noncommunicable diseases (NCDs) were estimated to have accounted for 53% of all deaths and 44% of disability-adjusted life-years (DALYs) lost in 2005. Of these, chronic respiratory disease (CRD) accounted for 7% deaths and 3% DALYs lost. India roughly has a burden of 30 million COPD patients.

Symptoms commonly encountered by COPD patients are breathlessness, excessive sputum production, and a chronic cough. However, COPD is not simply a “smoker’s cough,”

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is a chronic respiratory disease characterized by the presence of persistent respiratory symptoms and airflow limitation due to airway and/or alveolar abnormalities owing to significant exposure to noxious particles or gases. Restricted activities of daily living as a result of reduced pulmonary function or dyspnea, impair quality of life in such patients. Methods: A cross-sectional study was conducted in a tertiary care hospital of Lucknow with 250 COPD patients to assess their health-related quality of life (HRQOL) using the St. Georges Respiratory Questionnaire (SGRQ). Study participants were selected using a systematic random sampling method. Results: HRQOL of participants was significantly impaired. Employment status and airflow limitation severity of study participants had a statistically significant negative correlation whereas, duration since diagnosis of disease was seen to have a statistically significant positive correlation with SGRQ scores. Conclusion: COPD deteriorated the quality of life of patients. The activity score was the most affected. Urban residents had a comparatively poor HRQOL.

Keywords: Chronic obstructive pulmonary disease, health-related quality of life, St. Georges Respiratory Questionnaire

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but an underdiagnosed, life-threatening lung disease that may progressively lead to death.[3] The easily identifiable risk factor so far is cigarette smoking.[8] Others include occupational exposures to dust and chemicals, indoor and outdoor air pollution, genetic factors (e.g., alpha-1-antitrypsin deficiency), increasing age, lower socioeconomic status, and history of severe childhood respiratory infection.[8]

Previously, the disease affected men commonly, but with increased tobacco use among women in high-income countries and increased exposure to indoor air pollution in low-income countries, COPD now affects both genders almost equally.[7]

Quality of life of COPD patients can be severely impaired and deteriorates with increasing severity of disease as there is an accelerated decline in lung function and progressive impairment of the physical performance of the patient.[5] The disease restricts people from socializing and enjoying their hobbies, which makes many feel frustrated and angry. Patients fight for air while doing simple tasks and struggle to stay physically active and risk early death.[5]

**Objectives**

The objectives of the study were to assess the quality of life of COPD patients and its distribution and relationship with various factors.

**Methods**

**Study area**

The study was conducted in Lucknow, Uttar Pradesh.

**Study period**

The study was conducted from September 2018 to August 2019.

**Study unit**

Individual COPD patient.

**Study setting**

Respiratory Medicine OPD of King George’s Medical University, Lucknow, Uttar Pradesh.

**Inclusion criteria**

Subjects above 18 years, diagnosed with COPD for ≥3 months and residents of Lucknow for ≥6 months were included in the study.

**Exclusion criteria**

Those with severe mental illness and/or vocal disability or mental retardation, acute exacerbation, organ failure, and those currently on treatment for pulmonary tuberculosis were excluded from the study.

**Sampling technique**

A systematic random sampling method was used to select the patients for the study and a target to enroll five patients per day was set. Every fourth COPD diagnosed patient attending Respiratory Medicine OPD for follow-up was included in the study and, if the selected subject did not fulfill the inclusion criteria then the next COPD diagnosed subject was considered. Patients were approached considering the inclusion criteria of the study after they finished a consultation with the physician. Patients were explained about the purpose and objectives of the study clearly before starting the interview. Written informed consent was taken from the patients. At the end of the interview queries of the patients were addressed.

**Sample size estimation**

The sample size was calculated using following formula

\[ n = \left( \frac{Z_{1-\alpha/2} \cdot \sigma}{d} \right)^2 \]

keeping confidence interval 95%, standard deviation 19.3, and margin of error 2.5, the minimum sample size according to the above formula is 229, for this study a sample size of 250 was calculated.[9]

**Pretesting**

The designed schedule was pretested on 10% of the total sample. Relevant modifications were made in the schedule to overcome the difficulties faced during pretesting.

**Ethical consideration**

The ethical clearance was obtained from the Institutional Ethics Committee of King George’s Medical University UP, Lucknow before commencing the study (Ref Code: 93rd ECM II B-Thesis/P40).

**Data analysis**

Data were tabulated and analyzed by using the Statistical Package for Social Sciences (SPSS) version 24.0.

**Results**

The mean age of the study subjects was 59.55 ± 10.1 years. Out of the total 250 subjects, a majority (69.6%) were males, married (92.8%), Hindus (86.0%), and 70.8% belonged to a joint family. A majority (82.4%) of subjects were unemployed at the time of the interview and 60% belonged to the upper socioeconomic class backgrounds. More than half (58.4%) had a history of smoking. The mean duration of the disease since diagnosis was 2.32 ± 0.96 years. Almost half (53.6%) of the subjects had moderate airflow limitation [Table 1].

Descriptive statistics of HRQOL [Table 2], shows the mean total SGRQ score of 45.66 (SD ± 13.9) of urban subjects and 37.39 (SD ± 13.3) of rural subjects. Among all the components of SGRQ, the activity score was the most affected (55.82 [SD ± 19.5]), whereas, impacts score was the least affected (31.04 [SD ± 15.5]). The activity score showed maximum variability with a range from zero (best possible status of health) to a hundred (worst possible status of health).

In the associations between HRQOL and clinical profile of study subjects [Table 3], it is seen that the mean SGRQ scores were...
higher in smokers. HRQOL of COPD patients deteriorated with increased duration and severity of the disease. A statistically significant association was observed across all components of SGRQ and clinical profile of study subjects.

Table 4 shows the correlation of different variables with components of SGRQ. Employment status and airflow limitation severity of study subjects were found to have a significant negative correlation whereas duration since diagnosis was found to have a significant positive correlation with all components of SGRQ.

**Discussion**

The present study showed an impaired HRQOL across all components of SGRQ; where the activity component was the most affected while the impacts component was the least affected. This study highlights that Indian COPD patients...
Table 3: Relation between Health-Related Quality of Life and Clinical Profile of Study Subjects

| Variables                  | Symptom Score  | Activity Score  | Impacts Score | Total Score |
|----------------------------|----------------|-----------------|---------------|-------------|
|                            | Mean±SD        | Mean±SD         | P             | Mean±SD     | P           | Mean±SD    | P          |
| Status of Smoking          |                |                 |               |             |             |             |            |
| Never smoker               | 38.05±13.1     | 0.009           |               | 48.63±17.3  | <0.001      | 25.21±15.5 | <0.001     | 34.44±13.6 | <0.001     |
| Current and Former smokers| 42.75±14.4     |                 |               | 60.95±19.5  | <0.001      | 35.20±14.1 | 44.26±13.0 |
| Duration since diagnosis   |                |                 |               |             |             |             |            |
| ≤1                         | 35.93±13.1     | <0.001          |               | 48.63±18.4  | <0.001      | 29.97±13.7 | 0.001      | 33.96±12.6 | <0.001     |
| >1-5                       | 38.90±12.9     |                 |               | 52.66±17.1  | <0.001      | 29.78±14.5 | 38.23±12.7 |
| >5-10                      | 42.17±13.8     |                 |               | 60.81±20.8  | <0.001      | 36.09±17.9 | 44.59±15.9 |
| >10                        | 50.62±14.1     |                 |               | 67.19±19.8  | <0.001      | 37.44±13.8 | 47.58±12.1 |
| Airflow Limitation Severity|                |                 |               |             |             |             |            |
| Mild                       | 34.72±13.8     | <0.001          |               | 31.91±12.7  | <0.001      | 10.66±5.1  | <0.001     | 21.10±5.5  | <0.001     |
| Moderate                   | 37.55±12.1     |                 |               | 54.96±18.1  | <0.001      | 29.62±13.7 | 38.62±12.5 |
| Severe                     | 43.98±14.3     |                 |               | 55.08±16.6  | <0.001      | 31.67±13.4 | 40.81±11.3 |
| Very Severe                | 57.52±14.8     |                 |               | 92.00±10.4  | <0.001      | 60.10±13.6 | 69.34±8.9  |

#Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

Table 4: Correlation of Components of SGRQ* with Different Variables

| Variables                     | Symptoms Score | Activity Score | Impacts Score | Total Score |
|-------------------------------|----------------|---------------|---------------|-------------|
| Marital status                | -0.290**       | 0.084         | 0.011         | -0.011      |
| Education                     | -0.113         | -0.117        | -0.203**      | -0.181**    |
| Employment status             | -0.179**       | -0.235**      | -0.348**      | -0.336**    |
| Airflow limitation severity   | -0.345**       | -0.380**      | -0.441**      | -0.475**    |
| Duration since diagnosis      | 0.331**        | 0.292**       | 0.248**       | 0.321**     |

*SGRQ: St. George’s Respiratory Questionnaire
**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)

Conclusion

HRQOL is impaired in COPD patients. The majority of the study subjects belonged to upper socio-economic status (SES), which is a confirmation that the COPD epidemic is not limited to a lower socioeconomic class. A few of study subjects had mild airflow limitation, indicating that patients tend to ignore the illness until they experience major symptoms, also a few of subjects in the study had a very severe limitation in airflow, indicating that majority of them might be admitted in the hospital or could not survive the disease. The study revealed that the disease is not restricted to smokers only but was seen in non-smokers too indicating first-hand tobacco smoke is not the only cause of COPD but several other factors also contribute majorly. As, the chronic respiratory disease is a major contributor to all NCD deaths that are largely preventable through effective interventions, this calls for an urgent need to strengthen primary healthcare approaches against NCDs for early diagnosis and prompt treatment.

Ethical approval

The study was approved by the Institutional Ethics Committee.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

References

1. https://goldcopd.org/wp-content/upl oads/2018/11/ GOLD-2019-POCKET-GUIDE-FINAL_WMS.pdf. [Last accessed on 2020 Mar 14].
2. WHO_news-room/feature s/news-room/fact-shee ts/detail/chronic-obstructive-pul monary-disease-(copd). [Last accessed on 2020 Mar 14].
3. COPD/en. Available from: https://www.who.int/feature s/2007/copd/en/. [Last accessed on 2020 Mar 13].
4. WHO_COPD. Available from: https://www.who.int/ respirator y/copd/en/. [Last accessed on 2020 Mar 16].
5. Upadhyay RP. An overview of the burden of non-communicable diseases in India. Iran J Public Health 2012;41:1-8.
6. Salvi S, Agrawal A. India needs a national COPD prevention and control programme. The Journal of the Association of Physicians of India 2012;60:5.

7. COPD_Burden. Available from: https://www.who.int/respiratory/copd/burd/en/en/. [Last accessed on 2020 Mar 13].

8. Zamzam MA, Azab NY, El Wahsh RA, Ragab AZ, Allam EM. Quality of life in COPD patients. Egyptian J Chest Diseases and Tuberculosis 2012;61:281-9. Available from: http://dx.doi.org/10.1016/j.ejcdt.2012.08.012. [Last accessed on 2020 Mar 13].

9. Wang C, Xu J, Yang L, Xu Y, Zhang X, Bae C, et al. Prevalence and risk factors of chronic obstructive pulmonary disease in China (the China Pulmonary Health [CPH] study): a national cross-sectional study. The Lancet 2018;391:1706-17.

10. Jones PW, Prince M, Wijkstra PJ, Patel V, Saxena S, Maj M, et al. Quality of life in patients with chronic obstructive pulmonary disease. Eur Respir Mon 2006;38:375-86.

11. Arne M, Lundin F, Boman G, Janson C, Janson S, Emtner M. Factors associated with good self-rated health and quality of life in subjects with self-reported COPD. Int J Chron Obstruct Pulmon Dis 2011;6:511-9.

12. Tsiligianni I, Kocks J, Tzanakis N, Siafakas N, van der Molen T. Factors that influence disease-specific quality of life or health status in patients with COPD: A review and meta-analysis of Pearson correlations. Prim Care Respir J 2011;20:257-68.

13. Hany Assal H, Kamal E. Body mass index and its relation to GOLD grade in chronic obstructive pulmonary disease patients. Egypt J Chest Dis Tuberc 2016;65:411-4.

14. Castelino F, Prabh M, Pai MS, Kamath A, Mohapatra AK, Devi ES, et al. Original article Socio-demographic and clinical characteristics of Chronic obstructive pulmonary disease (COPD) patients. Manipal J Nurs Health Sci (MJNHS) 2017;3:55-8.

15. Ahmed MS, Neyaz AN, Aslami A. Health-related quality of life of chronic obstructive pulmonary disease patients: Results from a community based cross-sectional study in Aligarh, Uttar Pradesh, India. Lung India 2016;33:148-53.

16. Bhardwaj G, Jain VK, Mishra M, Nayyar P, Sharma A. Status of Body mass index (BMI) & Waist circumference (WC) in patients of chronic obstructive pulmonary disease (COPD) & relationship with severity. IOSR J Dent Med Sci 2017;16:72-4.

17. Wu Z, Yang D, Ge Z, Yan M, Wu N, Liu Y. Body mass index of patients with chronic obstructive pulmonary disease is associated with pulmonary function and exacerbations: A retrospective real-world research. J Thorac Dis 2018;10:5086-99.

18. Jangpangi DS, Singh A, Rawat J, Adhikar T. A comparison of clinical profile and prevalence of comorbidities among biomass and tobacco smoke-induced copd patients at a Tertiary care centre in North India. J Evol Med Dent Sci 2018;7:1945-8.