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Research Article

**QUALITY OF LIFE IN PATIENTS WITH CHRONIC
OBSTRUCTIVE PULMONARY DISEASE**

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Abstract:

Chronic obstructive pulmonary disease is a form of pulmonary disease in which larger airways are affected which impairs air entry. The signs and symptoms of COPD are not completely reversible. The quality of life is the major point of concern in such patients. 124 COPD patients were enrolled and assessment of QOL was done by using St. George's respiratory questionnaire for COPD patients. Lung functions were assessed by using spirometry. Chronic lung disease CLD severity index was used for assessment of disease severity and dyspnea severity was assessed by using Medical Research Council Questionnaire. Demographic and social details were also collected on proforma about all participants.

Health-related quality of life (HRQOL) was markedly lowered as compared to healthy individuals. Disease severity assessment and dyspnea grades assessment had strong association with quality of life. lung function and SGRQ-C score showed negative correlation, but statistically significant. Elderly population, smoking, and poor socioeconomic status had direct relation to poor HRQOL. No association between QOL and education, nutritional status and gender was seen.

Keywords: *Health related quality of life, chronic obstructive pulmonary disease, St. George's respiratory questionnaire.*

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INTRODUCTION:

COPD is a major health problem. In a survey conducted in 2016, its prevalence is 10.4% in India [1]. No permanent reversion of symptoms is there, therefore, major point of concern in management of these patients is to provide them better quality of life. In comparison to healthy individuals the QOL is negatively correlated. It was labeled third most common cause of death among non-communicable diseases [2].

Maugeri Respiratory Failure and Severe Respiratory Insufficiency questionnaires were used in patients with COPD for HRQOL assessment. It was concluded that both tools were reliable with first one emphasizing more on daily activities and second one has more emphasis on depression and anxiety [3].

Generic and disease specific instruments were assessed in evaluation of quality of life and In 2,291 subjects in COPD GOLD grades 1–4 EQ-5D-3L utility, EQ-5D VAS, SGRQ, and CAT were found able to discriminate between COPD grades, with some limitations for the EQ-5D utility in mild disease [4]. We have used St. George's respiratory questionnaire for COPD patients in order to assess quality of life in patients.

METHODS:

The community comprising of 12,200 members was identified and chosen from study after collaboration with community medicine and research department and after taking permission from the local distinguishing non-political and political community members for effective involvement of community in the research process. Systematic Random Sampling technique was used to select community participants. The participants were explained about the purpose and methodology of study. At first disease prevalence was recorded in the targeted population. Total 124 patients with COPD were identified. Patients more than 40 years and who showed willingness for participation in the study, were enrolled. Patients who refused spirometry or were unfit for it were not considered in study. Patients with recent MI, CVA, recent surgery, known aneurysm of large vessels and uncontrolled hypertension were excluded from the study.

Portable medical international research (MIR) SPIROLAB II spirometer (MIR Co., Italy) was used for spirometry. 124 patients were diagnosed to have COPD, thus 10.4% was disease prevalence in the targeted population. Spirometry was conducted as per

American Thoracic Society Standards. SGRQ-C was used for assessment of HRQOL.

SGRQ-C is short form of its original version. 40 questions were included in it instead of 50, there were 76 weighted responses. COPD patients were questioned about dyspnea, wheezing, cough, sputum. Raw scores estimation was done and scaled from 0 to 100. Five points scale, by Medical Research Council was used for assessment of severity of dyspnea. Questions about disease duration, smoking duration and amount of cigarettes smoked per day were asked from all participants. Pack year was calculated. Body mass index was calculated after collecting height and weight information.

Demographic details like, age, education, income, number of members in home, size of house, area of residence (rural or urban) was inquired. SPSS version 17 was used for data analysis. Mean and SD of mean was calculated for HRQOL. Correlation between HRQOL and continuous variables was done by using Spearman's correlation coefficient. Kruskal-Wallis test was used to study correlation between HRQOL and categorical variables. P value <0.05 was considered statistically significant.

RESULTS:

Table 1 shows demographic details of patients with COPD. Out of 124 positive cases there were 86 males and 76 females, making 69.4% and 61.3%, belonging to rural area. 102 were uneducated, 38 females were house wives, 80 were active or ex-active smokers with mean pack year of 56.

18.9kg/m² was the mean BMI. Mean duration of disease was 2.5 years, with 29 as mean CLD index and 2.6 as mean dyspnea score rate. Spirometry results of patients are shown in table 2.

Mean symptoms, impact, activity, score was observed to be 49.5, 41.7, 33.5, and 38.8, respectively. As compared to reference values there was significant variation in all variables. Statistically significant negative correlation was seen in lung functions and QOL scores. Shown in table 3 and 4.

Age, disease duration, CLD index, dyspnea grade, smoking status has positive correlation with HRQOL. Pack year affected all domain of HRQOL, besides activity. BMI had no correlation with the HRQOL. These results are shown in table 5. Table 6 shows correlation between HRQOL and education, gender, socioeconomic status.

Characteristic	Value*
Age (mean±SD [†] in years)	61.35±9.99
Sex	
Male	86 (69.4)
Female	38 (30.6)
Area of residence	
Rural	76 (61.3)
Urban	48 (38.7)
Religion	
Hinduism	68 (54.8)
Islam	56 (45.2)
Education	
Illiterate	102 (82.3)
Up to primary	10 (8.1)
High school	6 (4.8)
Intermediate and above	6 (4.8)
Occupation	
Unemployed	30 (24.2)
Unskilled/semi-skilled worker	28 (22.6)
Skilled worker	6 (4.8)
Clerical/shop/farm	42 (33.9)
Professional	2 (1.6)
Homemaker	38 (30.6)
Standard of living	
Low	46 (37.1)
Medium	48 (38.7)
High	30 (24.2)
Smoking status	
Never	44 (35.5)
Past smoker	22 (17.7)
Current smoker	58 (46.8)
Pack year of smoking (mean±SD)	56.24±42.25
Duration of illness (mean±SD)	2.5±2.92
CLD severity index (mean±SD)	28.92±18.79
Dyspnoea (MRC scale) (mean±SD)	2.63±1.29
BMI (mean±SD)	18.68±3.53

*Figures in parenthesis denote percentages. CLD: Chronic lung disease severity index, MRC: Medical Research Council, †SD: Standard deviation

Table 1: Sociodemographic details.

Table 2

Spirometry results of the study subjects

Stage I (FEV1 ≥80% of the predicted value)	38 (30.6)
Stage II (FEV1 50%-79% of the predicted value)	40 (32.3)
Stage III (FEV1 30%-49% of the predicted value)	36 (29.0)
Stage IV (FEV1 <30% of the predicted value)	10 (8.1)
Mean FEV1% predicted±standard deviation	57.71±22.3
Mean FEV1/FVC predicted±standard deviation	57.95±9.05

Figures in parenthesis denote percentages. FEV1: Forced expiratory volume in 1 second, FVC: Forced vital capacity

Table 3

Quality of life scores of COPD[†] patients

	Symptom score	Activity score	Impact score	Total score
Mean	49.54	41.47	33.53	38.89
Standard deviation	29.84	28.78	22.67	25.07
Range	0-92.40	0-91.57	0-88.20	0-86.58

[†]COPD: Chronic obstructive pulmonary disease

Table 4

Correlation of lung function with SGRQ-C[†] scores

	Symptom score		Activity score		Impact score		Total score	
	r value	P value	r value	P value	r value	P value	r value	P value
FEV1%	-0.83	<0.001	-0.82	<0.001	-0.84	<0.001	-0.86	<0.001
FEV1/FVC	-0.69	<0.001	-0.57	<0.001	-0.69	<0.001	-0.66	<0.001

FEV1: Forced expiratory volume in 1 second, FVC: Forced vital capacity, [†]SGRQ-C: St. George's respiratory questionnaire for COPD patients

Table 5

Correlation of continuous variables with SGRQ-C scores

Variable	Symptom score		Activity score		Impact score		Total score	
	r value*	P value	r value*	P value	r value*	P value	r value*	P value
Age	0.40	<0.001	0.18	0.04	0.33	<0.001	0.28	0.002
Duration of illness	0.49	<0.001	0.48	<0.001	0.46	<0.001	0.51	<0.001
CLD index	0.78	<0.001	0.64	<0.001	0.80	<0.001	0.75	<0.001
MRC dyspnea scale	0.46	<0.001	0.64	<0.001	0.47	<0.001	0.59	<0.001
Pack years of smoking	0.31	0.006	0.15	0.18	0.24	0.04	0.22	0.048
BMI	-0.04	0.65	-0.04	0.70	-0.11	0.21	-0.04	0.76

*Spearman's rank correlation coefficient. CLD: Chronic lung disease severity index, MRC: Medical Research Council, BMI: Body mass index, SGRQ-C: St. George's respiratory questionnaire for COPD patients

Table 6

Association of HRQOL with categorical variables*

Variable	Symptom score		Activity score		Impact score		Total score	
	Mean	P value	Mean	P value	Mean	P value	Mean	P value
Area								
Rural	50.03	0.75	44.28	0.15	34.64	0.61	40.43	0.35
Urban	48.77		37.04		31.77		36.44	
Sex								
Male	52.57	0.10	40.77	0.94	34.50	0.27	39.17	0.80
Female	47.68		43.06		31.30		38.75	
Education								
Illiterate	49.53	0.67	41.50	0.68	32.53	0.44	38.75	0.58
Up to primary	46.11		34.87		36.80		34.48	
High school	61.37		50.51		50.55		51.97	
Intermediate and above	43.80		43.13		27.98		35.43	
SLI								
Low	56.01	0.03	47.22	0.18	40.73	0.009	45.05	0.03
Medium	51.28		40.32		33.17		38.99	
High	36.84		34.20		23.07		29.26	

*Kruskal-Wallis test. SLI: Standard of living index, HRQOL: Health-related quality of life

DISCUSSION:

Factors affecting QOL in COPD patients are usually, smoking, disease duration, daily habits. Age, sex, socioeconomic status, education does not affect QOL in COPD patients. Quality of life was impaired in all the domains. However, activity domain was the most affected while impact domain was least affected. Age, sex, smoking, BMI, socioeconomic status, occupation did not impact quality of life in significant [5].

The BODE index, the Charlson index, and the rate of exacerbations were found to be the major determinants of HRQL in elderly COPD patients, while in younger COPD patients, the BODE index and the rate of exacerbations were influential factors in a study conducted by Corlateanu A, et al.[6]

The current management does not put emphasis on QOL management of patients with COPD. Due to significant QOL impairment observed in majority of COPD individuals, it is recommended that HRQOL should be given as much importance as management of disease symptoms. [7]

St. George's respiratory questionnaire for COPD patients is a useful assessment tool for COPD individuals. [8] this study used similar tool for HRQOL assessment and concluded that QOL management should be added and given similar importance as symptomatic management of patients with COPD.

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