Quality of Life of Patients with Chronic Obstructive Pulmonary Disease Attending a Tertiary Care Hospital, Kavre, Nepal

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ABSTRACT

Background

Chronic Obstructive Pulmonary Disease (COPD) is one of the most common chronic health conditions and is increasingly becoming a major public health problem among the elderly population. As the chronic obstructive pulmonary disease is not curable, evaluation of and methods to improve quality of life among such patients is of utmost importance.

Objective

The objective of the study was to assess the quality of life among patients living with chronic obstructive pulmonary disease.

Method

This is a cross-sectional carried out in Dhulikhel Hospital, Kathmandu University Hospital, Nepal in 2017-2018. A total of 274 patients aged 40 years and above were selected for this study. The quality of life of participants was assessed through the widely used shorter version ST George's Respiratory Questionnaire (SGRQ-C).

Result

The mean age of the participants was 68.19 (SD ± 10.36) years, with the age range of 40–94 years. More than half (55.5%) of respondents were females, 55% were from rural areas, 42.7% were illiterate and 53.3% were from joint families. Agriculture (35.4%) and homemakers (32.5%) were the most prevalent occupation. The mean total score for all domains of quality of life was 68.06 (±18.87). The mean quality of life scores for symptom, activity, and impact domains was 70.11 (±22.33), 67.59 (±20.41), 67.64 (±20.41) respectively which suggested marked impairments in quality of life in all SGRQ-C domains. The symptoms and impact domains were most affected during the activity. Among socio-demographic variables, educational status, ethnicity, number of family members, type of family and economic status had a statistically significant effect on the quality of life. Initial health condition, smoking habit, number of cigarettes smoked, and years of smoking had statistically significant effects on quality of life.

Conclusion

Patients with chronic obstructive pulmonary disease have a low quality of life in three components of symptom, activity, and impact domains. Major factors associated with poor quality of life were low educational status, large family size, poor health condition, and smoking.

KEY WORDS

Chronic obstructive pulmonary disease, Quality of life, St. George's respiratory questionnaire

INTRODUCTION

According to WHO, almost 65 million people have moderate to severe chronic obstructive pulmonary disease (COPD).[1] Globally, 10-20% of the population older than 40 years are COPD sufferers, resulting in more than 3 million deaths each year.[2,3] COPD is predicted to become the third leading cause of death worldwide by the year 2030.[4,5] According to surveys by the Asian Pacific Society of Respiratory Diseases, 6.2% of the global COPD burden is born by 11 Asian countries.[6]

In Nepal, COPD accounts for 43% of the non-communicable disease burden, and 2.56% of hospitalizations.[7] Studies have shown that smokers in Nepal have a 70% greater chance of developing COPD.[8] In Nepal, more than 85% of households still rely on biomass fuel.[9] Nepalese women are at higher risk of developing COPD through exposure to indoor air pollution; additionally, about 15% of women also smoke tobacco.[9,10]

Research shows the elderly population is growing rapidly in Nepal, the number of people affected by COPD will continue to rise.[11,12] Elderly population in Nepal also suffer from other multiple chronic diseases that can impact the disease progression of COPD.[13-15] Hence, there is an urgent need to evaluate the quality of life (QOL) of people suffering from COPD, to help set benchmarks for COPD management and evaluation. Therefore, the creation of a positive perception of health and preserving the quality of life in these patients are of utmost importance and should be an essential goal in the treatment and care of these patients.[16]

METHODS

This is a cross-sectional carried out in Dhulikhel Hospital, Kathmandu University Hospital (DH-KUH), Nepal. Data for this study was collected from February 2017 to May 2018. The participants of this study were all patients diagnosed to have COPD by the physician and admitted to the medical ward. Inclusion criteria for this study included all the COPD hospitalized patients above 40 years, who could communicate in the Nepali language. Exclusion criteria included patients with recent myocardial infarction, stroke, hemoptysis or uncontrolled diabetes, hypertension, acute exacerbation of COPD, and Alzheimer's disease. A patient who did not give consent to participate were excluded from the study.

During this study period, there were 501 patients admitted with COPD in DH-KUH; 405 participants met inclusion criteria and were eligible for this study. Among them, 302 participants spoke Nepali language, agreed to participate in this survey. There were 28 questionnaires incomplete and they were not also included in our final analysis. Thus the final sample size was 274 respondents for this study.

Before the data collection, ethical approval was taken from the Institutional Review Committee. Verbal informed consent, which is very common in these types of studies in Nepal was obtained from the study participants with an explanation of the purpose of the study.[17,18] We also obtained verbal consent from the head of the department. A face-to-face interview was used with pre-tested semi-structured questionnaire tools to carry out this survey.

Quality of life of participants was assessed in this study through the widely used shorter version of The ST George's Respiratory Questionnaire (SGRQ-C).[19] The ST George's Respiratory Questionnaire (SGRQ) (original version) has already been used in Nepal.[20] SGRQ-C contains 40 items compared to 50 itmes in the original survey, with 76 weighted responses that cover three domains: Symptoms (frequency and severity), Activity (activities that cause or are limited by breathlessness), and Impact (social functioning, psychological disturbances resulting from airway disease).[19,20] The SGRQ-C scores range from 0 (no disability) to 100 (maximum disability indicating poorer QOL. The short version (SGRQ-C) has also been used in studies in Nepal previously hence this is the valid tool to study COPD.[21] The tool was checked for statistical reliability using Cronbach's alpha; the value for the Chronbach's alpha was 0.71 in this study, which is acceptable as reported in other studies.[22,23]

Data entry and statistical analysis were performed using the Statistical Package for the Social Sciences (SPSS) software, version 16.0. The mean and standard deviation of QOL scores were calculated. The relationship between QOL scores and different variables were assessed using the Pearson correlation coefficient (r). A p-value of < 0.05 was considered statistically significant.

RESULTS

The mean age of the participants was 68.19 years, and the standard deviation of ±10.36. Patients' ages ranged from 40 to 94 years. Among 274 COPD patients, the majority of the participants were female (55.5%). More than half (55.1 %) of participants were from rural areas. Less than half of them (42.7 %) were illiterate. More than half of the respondents (52.9 %) were Hindu. Less than one third (28.5%) of respondents represented Newar ethnicity. One-third (35.4%) of patients were involved in agriculture. Regarding the type of family, more than half of the patients belonged to joint families (53.3%).

Concerning the economic condition, one third of the respondents had enough resources (food) for a year. Slightly less than half of the respondents did not produce enough resources (foods) for a year. Some of them (16.8 %) could have some financial savings as well, before their illness (Table 1).

Table 1. Socio-demographic Characteristics of Respondents (n=274)

Variables	Frequency	Percentage
Age	Mean 68.19 (SD±10.36)	
Gender		
Female	152	55.5
Male	122	44.5
Residence		
VDC	151	55.1
Municipality	123	44.9
Education		
Illiterate	117	42.7
Literate	157	57.3
Ethnicity		
Bhramin	65	23.7
Chhetri	60	21.9
Newar	78	28.5
Tamang	46	16.7
Lower Cast (Kami,Sarki, Nepali)	16	5.8
Gurung,Magar,Rai	9	3.3
Religion		
Hindu	145	52.9
Buddhist	68	24.8
Christian	57	20.7
Muslim	4	0.4
Family Type		
Nuclear	128	46.7
Joint	146	53.3
Occupation		
Agriculture	97	35.4
Home maker	89	32.5
Business	46	16.8
Service	18	6.6
Retired	7	2.6
Unemployed	17	6.2
Economic Status		
Not enough to eat for one year	133	48.5
Enough to eat for one year	95	34.7
Extra saving	43	16.8

The health-related characteristics of the respondents are shown in table 2. The majority of them (76.6%) were smokers. Nearly 80% of the respondents had been a history of previous hospital admission for COPD. The mean duration of illness is 5.79 years. Similarly, 60.9% of the respondents had other medical comorbidities. Less than 50% of the respondents used gas (43.8%) and firewood (42.7%) for cooking. More than one-third of respondents had perceived their health as poor health (36.9%) and very poor (33.2%) (Table 2).

Table 2. Health Related Characteristics of the Respondent (n=274)

Variables	Frequency	Percentage
Smoking		
Yes	210	76.6
No	64	23.4
Previous hospital admission		
Yes	211	77.9
No	60	22.1
Duration of illness	Mean years (SD) 5.79(4.53)	
Co-morbid condition		
Present	167	60.9
Absent	107	39.1
Fuel use for cooking		
Firewood	117	42.7
Gas	120	43.8
Gas and wood	37	13.8
Perceived health condition		
Very Good	3	1.1
Good	9	3.3
Fair	70	25.5
Poor	101	36.9
Very poor	91	33.2

Table 3. Overall and its components of QOL Score of Respondents (n=274)

Variables	Symptom	Activity	Impact	Total Score
Mean	70.11	67.59	67.64	68.06
SD	22.33	23.95	20.41	18.87
Minimum	9.24	0	2.54	6.81
Maximum	100	100	94.89	97.36

Quality of life scores in three domains: symptom, activity, and impact of COPD scores as determined by SGRQ-C are shown in Table 3. The mean total score for all domains of QOL was 68.06 (±18.87). The mean QOL (SD) scores for symptom, activity, and impact domains were 70.11 (±22.33), 67.59 (±23.95), and 67.64 (±20.41) respectively. It shows impairments in QOL among COPD patients in all SGRQ-C domains.

Table 4 illustrates the correlation of socio-demographic variables of SGRQ-C with scores in all three domains. Symptoms domain showed educational status, ethnicity, type of family (p=0.009), and economic-status (p<0.001) have a statistically significant positive correlation on quality of life score in our study. Similarly, the activity domains showed family size and economic status were correlated with activity-related QOL. Impact domain showed the type of family, family size, and economic status was correlated with QOL. The overall score showed factors significantly

Table 4. Correlation of Socio-demographic Characteristics with SGRQ-C Scores (n=274)

Variables	Symptom		Activity		Impact		Total	
	r value	P value	r value	P value	r value	P value	r value	P value
Age	.053	.386	.030	.620	.094	.119	.076	.212
Gender	-.047	.435	.037	.545	.023	.709	.017	.774
Residence	-.113	.062	-.023	.701	-.050	.407	-.060	.319
Educational Status	-.148*	.014	-.025	.680	-.078	.201	-.084	.166
Ethnicity	.128*	.035	.050	.412	-.023	.708	.034	.576
Religion	.013	.831	.014	.820	-.050	.408	-.020	.746
Type of Family	.158#	.009	.106	.079	.139*	.022	.152*	.012
Familysize	.070	.249	.147*	.015	.152*	.012	.157#	.009
Economic Status	-.164#	.006	-.183#	.002	-.259#	.000	-.251#	.000
Occupation	.005	.929	-.004	.947	.007	.906	.004	.949

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

related to the overall QOL of COPD patients in our study were the type of family (p=0.012), family size, and economic status (p=0.000). Age, gender, area of residence, religion, and occupation did not affect the QOL scores in a statistically significant manner.

Table 5 illustrates the correlation of clinical variables with SGRQ-C scores in all three domains. Health condition, smoking habits (p=0.000), number of cigarettes smoked (p=0.020), and years of smoking have a statistically significant positive correlation in overall QOL scores. Co morbidities, duration of illness, frequency of admission, and type of fuel use did not affect the QOL scores in a statistically significant manner.

Table 5. Correlations of Health related Variables with SGRQ-C Scores (n=274)

Variables	Symptom		Activity		Impact		Total	
	r value	P value	r value	P value	r value	P value	r value	P value
Co morbidities	.108	.075	.004	.943	-.045	.455	-.001	.982
Duration of illness	.034	.576	.048	.429	.114	.059	.090	.138
Numbers of admission	-.038	.529	.065	.281	.109	.072	.078	.196
Health Condition	.332#	.000	.317#	.000	.309#	.000	.366#	.000
Smoking Habits	.204#	.001	.194#	.001	.182#	.002	.221#	.000
Number of cigarettes / day	.147*	.033	.152*	.027	.118	.089	.160*	.020
Year of Smoking	.076	.273	.184#	.007	.170*	.014	.188#	.006
Fuel use for cooking	-.105	.084	-.073	.228	-.059	.334	-.083	.172

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

DISCUSSION

This study demonstrates that socio-demographic and clinical factors among COPD patients admitted to a tertiary care center in Nepal are positively co-related to the QOL scores as measured by the SGRQ-C across domains of symptoms, impact, and activity.

Previous studies have also looked at the association of QOL among domains (symptoms, activity, and impact) of the SGRQ-C. The current study findings are consistent with previous studies done in India where they highlighted impairment of quality of life across all domains of the SGRQ-C.[24] Symptom domains were found to be the most affected while impact domain was the least affected similar to the findings of our study.[24] A previous study from Nepal also shows patients with COPD showed significantly reduced health-related quality of life in all domains.[21]

In this current study, the COPD patients showed a higher total mean (SD) SGRQ-C scores 68.06 (±18.87) which is also consistent with a previous study done in other countries and Nepal.[24,25] However compared to previous studies, the score found in our study is slightly higher when compared with other studies carried out in Nepal and other countries.[26-28] In contrast to the previous studies, the patients enrolled in our studies were significantly older and living with illiterate family members, which can help explain these differences. It has already been demonstrated that the elderly are more vulnerable to health-related QOL and the quality of life of the Nepalese elderly is poor.[11,18] On the other hand, a previous study from Nepal by Pokharel and Pathak et al showed only two domains of QOL (symptoms and activity) were impaired compared to our finding of impairment in all three domains of QOL.[26]

Findings of this significant association of socioeconomic status with QOL among COPD patients are consistent with the results of other studies.[28] However, the results by other authors in this regard are mixed.[26-29] This study showed that age was significant associated with quality of life in COPD patients. Previous studies have shown varied results in these variables.[24,29,30] A study carried out in India found that age had no significant effect on QOL in a patient with COPD.[29] However this finding was in contrast with the study being done in Uttar Pradesh, India.[31] Other studies also reported no correlation between age and QOL while some have reported worsening of the SGRQ scores with increasing age.[22,30-32] In the present study gender did not impact QOL in a significant manner. Some studies have reported that females have poor QOL as compared to males.[24,33,34] However, some have reported no correlation between sex and QOL.[29,34] Similarly, some other authors have shown that gender plays no role in the QOL of COPD patients which is consistent with this study.[35]

This study found smoking habit, year of smoking, and the number of cigarette smoked was statistically significant with QOL score. This finding is consistent with the result of

other studies.[24,30,36] This present study found that the more years a patient has had smoked, the worst their quality of life was. Various authors have reported similar results.[27,29,30]

In the present study education, type of family, size of family, and ethnicity showed a significant relation with QOL score. Which is supported by other study.[37,38] COPD patient with having a low education level are related to worse HRQL in patients with COPD.[35] Similarly, in health-related variables, use of fuel, no of times of hospital admission due to COPD, comorbidities, and duration of illness did not significant with quality of life scores. However, some studies showed mixed results in this regard.[26] The number of comorbidities were significant factors associated with high SGRQ-C score.[35,39] This is an area that warrants further research.

The study highlights that there is an association of age, sex, and education status with the activity, impacts, and overall QOL whereas education status has a significant association with symptoms. Smoking habits, as well as monthly income, also has an association with symptoms, activity, and overall QOL. Religion, ethnicity, tobacco habits, duration of COPD, hospital admission, and co-morbidity has no association with three components of QOL.

Despite having some interesting results this study is not free from limitations. First, data were obtained from the cross-sectional design which limits the ability to describe how health-related QOL changes with time. The second, spirometry was not done at the time of the study to assess the severity of the disease. Third, we also didn't do an additional test to evaluate co-morbid disease which might have an impact on QOL. Fourth, the study was conducted in one hospital setting, which could not be generalized to other settings. Moreover, we were also not able to study QOL among severely ill patients. Fifth, ideally, the questionnaire needs to be filled out by the patient but because most of the patients were unable to read/write,

a researcher verbally asked questions and record the responses. This might introduce bias in the study. All the participants were interviewed as they comprise both literate and illiterate groups, though the self-administration of the questionnaire would be preferred more. There is a need for further research using both generic (SF-36) and a disease-specific questionnaire. It is better to see the association between QOL with the Global Initiative for Obstructive Lung Disease (GOLD) standard and spirometry test.[30]

The research findings might be helpful to some extent to improve the knowledge about areas needing for improving the quality of life of COPD patients. It will also provide some basic information to conduct further research in impact of passive smoking to the health care professional.

CONCLUSION

This study shows patients suffering from chronic obstructive pulmonary disease have a lower quality of life. The poor condition of health, smoking habits, increased quantum of smoking, and longer duration smoking was related to lower QOL of patients. While assessing COPD patients, due importance needs to be given to QOL measurement similar to that given to the spirometry test. Further research needs to be done to assess the effect of passive smoking, the impact on family and social support.

ACKNOWLEDGEMENT

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