ORIGINAL RESEARCH ARTICLE

QUALITY OF LIFE AMONG PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE ATTENDING IN MEDICAL OPD OF CHITWAN MEDICAL COLLEGE, CHITWAN

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ABSTRACT

Background: Chronic obstructive pulmonary disease is a major cause of morbidity and mortality worldwide which can severely impair the individual's quality of life. The study aimed to assess the quality of life of patients having chronic obstructive pulmonary disease.

Methods: A cross-sectional hospital-based study was conducted in medical OPD of Chitwan Medical College. Purposive sampling technique was used to select 203 patients with chronic pulmonary obstructive disease for at least 3 months. Data were collected from July 16, 2021 to January 14, 2022 using a WHO Quality of Life Scale-Brief through face-to-face interview. Transformation of the scores was done to standardize the raw scores by using the formula applied for linear transformation is as follows: [(Actual raw score - Lowest possible raw score)/Possible raw score range]*100.

Results: The mean score and standard deviation of total QOL was 40.64 ± 18.41, where 52.23 ± 13.68 for physical, 47.84 ± 9.70 for psychological, 66.63 ± 9.25 for social and 54.62 ± 13.44 for environment domain showing higher impairment in psychological. Sex (0.031), type of family (0.042), educational status (<0.001), smoking habit (0.005) and duration of COPD (<0.001) were found statistically significant with total QOL of COPD patient.

Conclusions: This study showed an impaired quality of life in COPD patients. Longer disease duration and smoking habit of patient impacted negatively on their QOL. Hence, attention should be paid by health professional for enhancing QOL by addressing those factors while treating them in health care setting.

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a common progressive disease.[1] It represents an important public health challenge. COPD is likely to increase in coming years due to higher smoking prevalence and aging populations.[3] Being a chronic and non-curable illness, COPD is associated with physical, psychological, and poorer quality of life (QOL).[4,5] COPD impairs quality of life by preventing people with the condition from socializing and enjoying their hobbies.[6] Although COPD is not curable, but appropriate management can enable people to enjoy a good quality of life.[3] COPD is a global health concern and is a major cause of chronic morbidity and mortality worldwide.[7] Globally, it was estimated that 3.23 million deaths were caused by the COPD in 2019. More than 80% of COPD deaths occur in low and middle-income countries.[3]

COPD is associated with breathlessness and predisposes to exacerbations so the life of people with COPD changes dramatically and leads to significant deterioration in its quality.

Analyzing the mental, physical and social aspects of COPD is beneficial to improve the quality of life of COPD patients. In Nepal, limited study has been done in this area. QOL studies confirmed that people with COPD require holistic approach by health care workers.[8] Thus the study will be helpful for detecting potential determinants affecting the QOL in COPD patients, and identifying these factors will be helpful in planning comprehensive care plan for this group of patients. The study aimed to assess the quality of life of patient having chronic obstructive pulmonary disease.

METHODS

A cross-sectional study was conducted among 203 selected patients aged 40 years and older, who were clinically diagnosed to have COPD for at least 3 months and attending at respiratory OPD of Chitwan Medical College teaching hospital, Chitwan for follow-up visits. Data were collected by researcher and two trained enumerators who have completed MBBS through face-to-face interview from July 16, 2021 to January 14, 2022. Before data collection, an ethical approval was taken from the Institutional Review Committee of Chitwan Medical College.

Verbal informed consent was obtained from patient with COPD. Sample size was calculated for infinite population by using following formula

$n= Z^2 \sigma^2/d^2$ (Kothari, 2014)

(Where, Z= 1.96, σ = 13.83,[9] d = 2)

$n = 1.96^2 * 13.83^2 / 2^2$

$= 184$

Total sample size including 10% non-response rate is 203. Study Participants were chosen purposively for data collection.

Data analysis was done by using Statistical Package for Social Science (IBMS SPSS, version 20.0 for window). Variables were described in terms of the number and percentage. The average domain score and total QOL score were computed in mean and standard deviation.

Quality of life was assessed by using The WHO Quality of Life Scale – Brief (WHOQOL – BRIEF)[10] of 26 items with four domain (physical, social, psychological and environment) scores and two individually scored items about an individual's overall perception of quality of life and health. Each item of the QOL domains was rated in a 5-point rating scale. The four domain scores were scaled in a positive direction with higher scores indicating a higher quality of life. Only three items (2 from physical and 1 from psychological domain) were reversed before scoring. The raw score was calculated for each facet and each domain. After obtaining raw score, a linear transformation of the scores was done to standardize the raw scores by using the formula: [(Actual raw score - Lowest possible raw score)/ Possible raw score range]* 100. In this study, the responses were obtained with reference to the last three months.

Before inferential analysis, Shapiro–Wilks tests with a confidence level of 95% were conducted to assess the normal distribution of the QOL scores. The data were normally distributed (p > 0.05). Independent sample t-test was used to find out the association between QOL scores and selected demographic and disease related variables. All the statistical significance was set at p ≤ 0.05.

RESULTS

A total of 203 patients participated in this study. Out of them, 73.9 % were less than 60 years of age, 51.7% were female, 78.3% belonged to the Brahmin/Chhetri ethnicity, 56.7% came from urban and 56.6% were literate. About 43.3% were engaged in some occupation, 83.3% had habit of smoking, 19.2% suffered from COPD since more than 10 years and 69% of the participants presented with comorbidities and most common Comorbidity was cardiac problem (43.2%), 58.7% of participants had been hospitalized due to COPD problem in last 3 month. All patients were on regular medicine since 3 months where as 50.2% were on medicine more than 5 years. About 45.2% patients used oxygen at home for treatment of COPD.

The study revealed that the mean and standard deviation of total QOL of entire study participants was 40.64± 18.41. In case of various domains, the mean score of QOL of COPD patients was 52.23 ± 13.68 for physical, 47.84 ± 9.70 for psychological, 66.63 ± 9.25 for social and 54.62 ± 13.44 for environment domain . The highest impairment was observed in psychological relationship.

Table 1: WHOQOL scores of patient with chronic obstructive pulmonary disease (n=203)

Domain	Transformed score (Mean ± SD)	Min/Max	95% CI of mean
Total QOL	40.64 ± 18.41	0/75	38.09-43.19
Physical health	52.23 ± 13.68	21/71	50.34-54.13
Psychological	47.84 ± 9.70	25/63	46.5-49.19
Social relationship	66.63 ± 9.25	50/83	65.35-67.91
Environment	54.62 ± 13.44	22/75	52.76-56.48

WHOQOL-BREF: World Health Organization's quality of life abbreviated questionnaire, SD denotes standard deviation, QOL denotes quality of life

In this study, a significant difference was revealed on QOL score between sex group (p=0.031). It was found that male patients had higher QOL compared to female patients. Similarly patients belongs to nuclear family showed a significantly higher QOL score (53.8) than those who lived in joint family (36.8). Likewise literate patients showed a significantly higher QOL score (55.2) compared to illiterate patients (29.3). Furthermore a significant difference was observed on work status of patient (p= <0.001). Patients with no smoking habit showed significantly higher QOL score (59.56) than those who had smoking habit (36.8).

Similarly patients who suffered from COPD since 5 or more than 5 years showed significantly lower QOL score (27.8) compared to less than 5 years (53.59). Patient with history of hospital admission due to COPD exacerbation since 3 month had lower QOL compared to no history of hospital admission. However there was no significant difference on overall QOL score among the different age group (P= 0.381), ethnicity (0.945), residence (0.219), marital status (0.263) and presence of Comorbidity (0.083).

Table 2: Comparison of quality-of-life transferred score with some explanatory variables   **(n=203)**

Variables	Number (%)	Physical health Mean±SD	Psychological Mean±SD	Social relationship Mean±SD	Environment Mean±SD	Total score Mean±SD
Age group						
<60	53(26.1)	57.4±15.2	54.17±9.0	69.3±9.6	62.3±11.0	59.2±16.29
≥60	150(73.9)	50.4±12.7	45.6±8.9	65±8.9	51.88±13.1	34.0±14.1
Independent sample t test (p value)		0.078	2.124	0.072	0.194	0.381
Sex						
Male	98(48.3)	54.26±11.6	51.9±8.3	68.0±7.6	60.5±8.9	43.7±19.1
Female	105(51.7)	50.34±15.2	44.1±9.4	65.32±10.4	49.2±14.7	37.7±17.3
Independent sample t test (p value)		<0.001	0.92	<0.001	<0.001	0.031
Ethnicity						
Brahmin/Chettri	159(78.3)	52.5±14.2	47.27±10.1	67.1±9.3	53.9±14.2	41.3±18.4
Others	44(21.7)	51.2±11.7	49.9±7.8	64.8±8.8	56.9±9.9	38.4±18.4
Independent sample t test (p value)		0.02	0.055	0.979	0.028	0.945
Residence						
Urban	115(56.7)	55.5±13.3	50.3±8.5	69.6±8.2	56.1±12.9	42.9±17.7
Rural	88(43.3)	47.9±12.9	44.7±10.4	62.8±9.2	52.6±13.9	37.6±18.9
Independent sample t test (p value)		0.1	0.529	0.051	0.943	0.219
Type of family						
Nuclear	46(22.7)	55.4±11.5	50.3±9.2	72.1±7.1	62.4±10.1	53.8±20.5
Joint	157(77.3)	51.3±14.2	47.1±9.8	65.0±9.2	52.4±13.5	36.8±15.8
Independent sample t test (p value)		0.001	0.479	<0.001	0.18	0.042
Marital status						
Currently married	119(58.6)	53.4±13.5	49.5±8.4	70.17±9.2	57.2±12.9	44.12±18.3
Single	84(41.4)	50.64±13.9	45.4±10.9	61.6±6.7	50.89±13.4	35.7±17.6
Independent sample t test (p value)		0.393	0.064	0.002	0.239	0.263
Education status						
Literate	114(56.2)	60.7±9.9	53.9±8.6	72.5±7.8	61.7±13.9	55.2±16.3
Illiterate	89(43.8)	45.6±12.5	43.0±7.6	62.0±7.6	49.1±10.1	29.28±10.1
Independent sample t test (p value)		0.023	0.011	0.208	0.003	<0.001
Working status						
Working	88(43.3)	61.8±7.6	55.4±6.6	72.6±7.7	64.9±7.7	55.5±16.1
Not-working	115(56.7)	44.9±12.8	42.0±7.4	62.0±7.6	46.7±11.4	29.2±10.1
Independent sample t test (p value)		< 0.001	0.362	0.135	0.006	<0.001
Smoking habit						
Yes	169(83.3)	50.5±13.4	45.8±8.6	65.48±9.5	52.1±12.7	36.8±16.9
No	34(16.7)	61.0±11.6	57.9±8.4	72.3±5.3	66.9±9.7	59.56±12.7
Independent sample t test (p value)		0.028	0.98	<0.001	0.295	0.005
Duration of COPD						
<5 year	101(49.8)	58.9±11.9	52.6±7.9	71.9±6.7	61.8±9.2	53.59±16.1
≥5 year	102(50.2)	45.6±11.9	43.2±9.1	61.4±8.4	47.46±13.2	27.8±9.3
Independent sample t test (p value)		0.825	0.974	0.013	0.012	<0.001
Comorbidity						
Presence	140(69)	46.8±12.2	44.5±9.1	63.4±8.8	50.1±12.8	31.9±14.3
Absence	63(31)	64.4±7.6	55.2±6.6	73.8±5.6	64.7±8.6	60.1±9.5
Independent sample t test (p value)		<0.001	0.2	<0.001	0.082	0.083
Hospital admission in last 3 month						
Yes	121(59.6)	46.8±12.3	43.9±8.3	63.6±8.7	50.6±10.8	29.6±9.2
No	82(40.4)	60.2±11.5	53.7±8.6	71.1±8.2	60.6±14.7	57.5±15.4
Independent sample t test (p value)		0.5	0.12	0.11	<0.001	<0.001

Significant at ≤ 0.05

DISCUSSION

This study revealed impaired quality of life among COPD patients in terms of physical health, psychological function, social relationship and environment when measured by the generic questionnaire WHOQOL- BREF. In this study, the overall mean score of QOL of patient with COPD is 40.64± 18.41 which is almost similar with the study done in Nigeria.[13] The total QOL of COPD patient is lower than the finding of the study conducted in Chitwan,[9, 16] south India [17] and Kavre. [14] This finding might be supported by the fact that majority of participants in this study had presence of Comorbidities, non-working status and all participants were in regular medicine for a long time which directly affect on their physical activity, financial burden for treatment and decision making power. But the finding is higher than the study conducted in India [8,11] and North Carolina. [12]

In regard to QOL of COPD patients in different domain, this study revealed that the patient's QOL was lowest in psychological domain compared with physical health, environment and social relationship. In case of patient's quality of life in physical domain, the finding is in line with south India, [17] slightly higher than the finding of Chitwan[9], Nigeria, [13] and lower than the finding of Kavre,[14] Chitwan.[16]

According to finding of this study, there is no significant association between age and over all QOL of COPD patients which is consistent with the finding of India,[8,11, 17] and Nigeria[13] whereas the finding is not supported by study done in Chitwan[9, 16] and western Nepal [15]

Sex was identified as a significant determinant for total and physical social and environmental domain of QOL. Male had higher quality of life than female. This result in contrast with the finding of India, [8, 11] western Nepal[15] and Chitwan. [9]

There is no significant difference on QOL scores between currently married and single which is supported by other studies. [9, 15]

The finding of this study demonstrated the significant association among educational status and total, physical, psychological and environmental domain of QOL score which is similar with the study done in Chitwan. [9] On the contrary, the finding of western Nepal has not evidenced any influence of educational status on total QOL of COPD patient. [15] This variation might be due to difference in study design and sample size.

In this study, working status of participants was found to be statistically significant with the total and physical domain. Participants who were engaged in some physical activity had better QOL than those who were not. This finding is supported by study done in Chitwan.[16]

Study found statistically significant association between smoking status and QOL of patient with COPD. Patients with habit of smoking perceived poor QOL. This finding is supported by the finding of study done in Chitwan [16]and Kavre [8] but contrary with the finding of western Nepal, [15] Chitwan[9] and India, Goa. [8] This discrepancy in the finding might be due to difference in design and nature of the sample selected in the study.

With regards to duration of COPD diagnosis, this study identified significant differences between duration of COPD and total mean score of QOL. Patient with higher duration of COPD diagnosis had poor quality of life compared with lower duration. However, finding of this study is not supported by finding of Chitwan, [9,16] and Kavre. [8]

In this study, presences of comorbidities were not significantly associated with total mean score of QOL which is in line with south india. [17] and contrary with the finding of Chitwan, [16] western Nepal. [15] Hospital admissions in last 3 month due to COPD exacerbation was significantly associated with total mean QOL. This finding is in line with finding of Chitwan. [16]

In this study, data were obtained from the cross-sectional design which limits the ability to describe how QOL changes with time. Data on physician-diagnosed comorbidities were self-reported which might limit their validity. The study was done only those COPD patients who attended the outpatient department of one hospital, which could not be generalized to other settings. It is better to see the association between QOL with the Global Initiative for Obstructive Lung Disease (GOLD) standard and Spirometry test.

CONCLUSION

Patients with COPD showed significantly reduced in total QOL. Greater impairment is noted in psychological compared to physical, social and environment. Sex, duration of COPD, Hospital admission during last 3-month, smoking habit and educational status are found to be associated with total QOL of COPD patient. So, attention should be paid by health care professional for enhancing QOL by addressing those factors while treating them in health care setting.

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