Open Access

Original Article

Health Related Quality of Life in Chronic Obstructive Pulmonary Disease Patients

Aimen Sabir, Shazia Nisar, Khalid Mahmood Raja, Ayesha Anwer, Marriam Hussain Awan, Maria Tariq

Department of Medicine, Pak Emirates Military Hospital/National University of Medical Sciences (NUMS) Rawalpindi Pakistan

ABSTRACT

Objective: To determine the health-related quality of life among patients suffering from chronic obstructive pulmonary disease.

Study Design: Cross sectional analytical study.

Place and Duration of study: Medicine/pulmonology department of Pak Emirates Military Hospital, Rawalpindi Pakistan, from Jan 2019 to Jan 2020.

Methodology: Two hundred and fifty patients of chronic obstructive pulmonary disease diagnosed for more than one year by a consultant medical specialist or pulmonologist were included in the study. Health related quality of life was assessed by using the chronic obstructive pulmonary disease Assessment Test (CAT). Socio-demographic factors in the study were correlated independently with the decline in quality of life by using the binary logistic regression.

Results: Out of 250 patients of chronic obstructive pulmonary disease, 122(48.8%) had normal health related quality of life while 128(51.2%) had compromised quality of life. Mean age of the study participants was 50.71±2.26 years. Advancing age of the patients and long duration of chronic obstructive pulmonary disease had statistically significant association with compromised health related quality of life (p-value<0.05) when binary logistic regression was applied.

Conclusion: Health related quality of life was found compromised among more than half of the chronic obstructive pulmonary disease patients in our study. Patients who were elderly or those who were having symptoms of chronic obstructive pulmonary disease for more than five years had more chances of having compromised health related quality of life as compared to patients with lesser age and short duration of illness.

Keywords: Chronic obstructive pulmonary disease, Health related quality of life, Socio demographic factors.

How to Cite This Article: *Sabir A, Nisar S, Raja KM, Anwer A, Awan MH, Tariq M. Health Related Quality of Life in Chronic Obstructive Pulmonary Disease Patients. Pak Armed Forces Med J 2023; 73(Suppl-1): S205-208. DOI: https://doi.org/10.51253/pafmj.v73iSUPPL-1.4685*

INTRODUCTION

COPD as evident from the name is a chronic disease which causes various changes in the oxygenation of tissues which affects the overall physiological well-being of the body.[1] It is a highly prevalent pulmonary disorder especially among the middle aged and elderly. It has a strong association with cigarette smoking and with the rise in smoking trends it has a rise in incidence and prevalence as well in all parts of the world.[2] As oxygenation of tissues is a critical phenomenon, not only linked to the proper functioning but also with their survival.[3]

Health related quality of life has been a wide term used to cover all the aspects which have been associated with physical, physiological and psychological well being of an individual.[4] All the health related conditions which disrupt the homeostatic mechanisms of the body in any way affect the health related quality of life. Literature around the world has shown compromised quality of life in all the chronic diseases including the diseases of pulmonary system.[5]

Patients suffering from this chronic disease of airways have been evaluated for health related quality of life in different phases of the illness. Long *et al.* in 2019 published a comprehensive metanalysis in this regard highlighting health coaching has a significant positive effect on HRQoL (SMD=−0.69, 95% CI: −1.28, −0.09, p=0.02, from k=4) and leads to a significant reduction in COPD related hospital admissions (OR=0.46, 95% CI: 0.31, 0.69, p=0.0001, from k=5), but not in all cause hospital admissions (OR=0.70, 95% CI: 0.41–1.12, p=0.20, from k=3). Three of four studies reported significant improvements to selfcare behaviors such as medication adherence and exercise compliance.[6] Brandl *et al.* in 2018 published a cross sectional survey concluding that mental health has been a factor affecting HrQOL the most and focusing on patient reported outcomes and screening for depression and anxiety with potential successive treatment might be promising approaches to improve HRQOL in patients with COPD.[7] Pati *et al.* in our neighboring county, India assessed patients of COPD for quality of life at a tertiary care hospital and concluded that COPD has considerable negative impact on the QoL with advan-

Correspondence: Dr Aimen Sabir, SU-19, Askari-11, Near Qasim Market, Rawalpindi Pakistan

Received: 30 Jun 2020; revision received: 26 Aug 2020; accepted: 04 Sep 2020

cing age and is worse among the geriatric age group population.[8] Chai *et al*. from Malaysia came up with the interesting study covering the clinical phenotypes of COPD and health-related quality of life and revealed that Patients who were chronic bronchitis phenotype had significantly poorer HRQoL than other clinical phenotypes and recorded the worst score in each of the COPD Assessment Test items. Therefore, chronic bronchitis phenotype patients may warrant a different treatment approach that focuses on the exacerbation and chronic bronchitis components.[9]

The situation is not different in our part of the world. Cigarette smoking in urban and huqqa smoking in rural population makes the various populations equally vulnerable to develop this irreversible respiratory condition making the lives of the patients really miserable.[10] We therefore planned this study to look at this respiratory phenomenon and see its effect on overall health of the individual. Main objective of this study was to determine the health-related quality of life (HrQOL) among patients suffering from chronic obstructive pulmonary disease (COPD).

METHODOLOGY

The cross-sectional analytical study was conducted at Medicine and Pulmonology departments of Pak Emirates Military Hospital, Rawalpindi Pakistan, from January 2019 to January 2020. Non probability consecutive sampling was done from the patients of COPD reporting in the medical and pulmonology outpatient department of Pak Emirates military hospital Rawalpindi. Sample size was calculated by using the WHO sample size calculator and population prevalence of compromised quality of life in COPD patients as 18.5%.[9] COPD was diagnosed by consultant pulmonologist on the basis of clinical criteria supported by relevant investigations.[11]

Inclusion Criteria: All the patients between the age of 35 and 60 years who had been suffering from COPD for at least one year and have given written informed consent were included in the study.

Exclusion Criteria: Patients with allergies secondary to identifiable causes and other medical conditions which may affect the quality of life were not included in the study. Patients with any psychiatric illness and illicit substance use were also excluded from the study. Patients of COPD admitted in medical ward due to any reason were also excluded from the study.

The COPD Assessment Test (CAT) questionnaire consists of eight items, namely, cough (CAT-1), phlegm (CAT-2), chest tightness (CAT-3), breathlessness (CAT-4), activity limitation (CAT-5), confidence in leaving home (CAT-6), sleep (CAT-7), and energy (CAT-8).[12] The score for each of these items ranges from 0-5 with the total score ranging from 0-40. The total CAT score in a healthy subject is ≤6, with a higher score reflecting a greater or worse impact of COPD on HRQoL.[13]

The sample was drawn from the patients of COPD reporting in medical and pulmonology OPD of PEMH Rwp and fulfilling the inclusion and exclusion criteria. After getting ethical approval from the hospital ethical review board committee and written informed consent from all the participants of this study COPD Assessment Test (CAT) questionnaire was applied to the patients under the supervision of a health professional who translated or explained the questionnaire to those who had ambiguity in any point. Subjects were asked to answer the questions according to their condition in last one month. Confounding variables were identified and adjusted by detailed history taking, examination and review of all the old documents possessed by the patient.

Descriptive statistics were used to describe the characteristics of participants and the distribution of CAT score. Variables in this study included age, gender, place of living and duration of illness. Between group variances in categorical correlates were determined using chi-square. All statistical analysis was performed using Statistics Package for Social Sciences version 24.0. Chi-square test was used and differences between groups were considered significant if *p*-values were less than or equal to 0.05. Binary logistic regression analysis was done to find the relationship between variables and compromised HrQOL.

RESULTS

A total 257 patients of chronic obstructive airway disease were approached to participate in this study. All were of the age between 25 and 60 years. Three did not give consent for enrolment in the study. Four were ineligible due to inclusion/exclusion criteria (01 was using illicit substance, 01 had clinical depression prior to diagnosis of COPD, 02 had symptoms of acute exacerbation and were admitted in the ward). Thus, 250 patients of COPD were included in the study analysis. Out of these two hundred and fifty patients of COPD, 122(48.8%) had normal health related quality of life while 128(51.2%) had compromised quality of life. Mean age of the study participants was 50.71±2.26 years. Mean duration of COPD among the patients in

this study was 5.15±4.21 years. Pearson chi-square test revealed the association of advancing age and long duration of illness with compromised quality of life (*p*-value <0.05) (Table-I). Advancing age of the patients and long duration of COPD had statistically significant association with compromised health related quality of life (*p*-value<0.05) while gender and place of living had no such statistically significant association (*p*-value >0.05) when binary logistic regression was applied on the data generated during the analysis (Table-II).

Table-I: Characteristics of the Chronic Obstructive Pulmonary disease patients and their Chronic Obstructive Pulmonary Disease Assessment Test Score (n=257)

Socio Demographic Factors	Good Quality of Life	Compromised Quality of Life	*p*-value
Age			
25-40 years	64(52.4%)	37(28.9%)	<0.001
>40 years	58(47.6%)	91(71.1%)	
Gender			
Male	93(76.2%)	94(73.4%)	0.611
Female	29(23.8%)	34(26.6%)	
Duration of Illness			
<5years	70(57.4%)	44(34.4%)	<0.001
>5 years	52(42.6%)	84(65.6%)	
Place of living			
Rural	54(44.3%)	60(46.9%)	0.678
Urban	68(55.7%)	68(53.1%)	

Table-II: The Factors relating to presence of compromised Health Related Quality of life among the patients of Chronic Obstructive Pulmonary Disease(n=257)

	p-value	Odds Ratio	Confidence Interval	
			Lower	Upper
Age(ref. was <25-40 years)	0.003	2.284	1.320	3.950
Duration of illness (reference was <5 years)	0.007	2.085	1.220	3.563
Gender (ref. was male)	0.399	1.302	0.706	2.402
Place of living (ref. was urban living)	0.794	0.932	0.550	1.579

DISCUSSION

Chronic illnesses like DM, COPD, hypertension etc. have a drastic effect on the overall physiology of the body. All the biological functions of the body are affected in one way or the other. Therefore, health related quality of life is expected to be affected negatively in such patients to an extent that may require intervention in more than one domains. Around 50% of COPD patients who filled CAT questionnaire in our study showed the presence of compromised quality of life. Limited data has been available regarding the overall impact of this chronic disease on the life of individual but recent studies done by Khan *et al.* and Himani *et al.* published in 2015 and 2018 highlighted the high prevalence of COPD in our population and psychosocial impact of this illness on the sufferers.[10,14] We therefore planned this study with the objective to determine the health-related quality of life (HrQOL) among patients suffering from chronic obstructive pulmonary disease (COPD).

Wu *et al.* in 2015 conducted a study in our neighboring country China in four main cities with the objective to look for the quality of life and its association with direct medical costs for COPD. They concluded that a large number of patients had poor quality of life and poor quality of life was directly linked to increased medical cost and expenditure.[15]

Brown *et al.* in 2010 and Antwi *et al.* in 2013 studied HrQOL among patients of COPD in north and south Carolina respectively.[16,17] Results of both studies highlighted the fact that most patients with COPD had poor HrQOL and various parameters emerged as predictors of poor HrQOL among these patients. Results of our study with more than half of the patients showing compromised HrQOL highlights that situation is not different in our part of the world. Ahmad *et al*. in 2016 in their study on Indian population generated similar findings and elderly patients were more at risk of having poor quality of life as compared to young patients.[18] Reason may be that young patients have lesser chances of having comorbidities or other senile changes in physiology of the body which could add to poor quality of life.

Increased duration of COPD was also a consistent corelate with compromised HrQOL on both the statistical tests applied in our study. Ahmed *et al.* in 2016 concluded that Indian patients with COPD had reduced HRQOL. Poor lung function, increased disease duration and smoking, and worsening symptoms impacted HRQOL negatively.[18] Reason for this finding may be more disability associated with long duration of illness especially among those with frequent exacerbations of COPD. Long term medications may pose side effects and may add to overall compromised HrQOL, though helping in control of respiratory symptoms.

LMITATIONS OF STUDY

Our study has few limitations due to various reaons. Randomized selection of study subjects from all the COPD patients from all over the country was not done. Therefore, the results of the present study cannot be generalized. Cross-sectional study design was used which cannot confirm the cause and effect relationship between the variables. HrQOL

was not estimated before the onset of COPD so we cannot conclude that compromised HrQOL has been due to COPD. Results of our study could be used as baseline for future studies designed to overcome these limitations.

CONCLUSION

Health related quality of life was found compromised among more than half of the chronic obstructive pulmonary disease patients in our study. Patients who were elderly or those who were having symptoms of COPD for more than five years had more chances of having compromised HrQOL as compared to patients with lesser age and short duration of illness.

Conflict of Interest: None.

Author's Contribution:

Following authors have made substantial contributions to the manuscript as under:

AS & SN: Study design, drafting the manuscript, data interpretation, critical review, approval of the final version to be published.

KMR & AA: Data acquisition, data analysis, approval of the final version to be published.

MHA & MT: Critical review, concept, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

REFERENCES

1. Collins J-A, Rudenski A, Gibson J, Howard L, O'Driscoll R. Relating oxygen partial pressure, saturation and content: the haemoglobin–oxygen dissociation curve.Breathe 2015;11(3):194-201. https://doi:10.1183/20734735.001415.
2. Sutradhar I, Das Gupta R, Hasan M, Wazib A, Sarker M. Prevalence and Risk Factors of Chronic Obstructive Pulmonary Disease in Bangladesh: A Systematic Review. Cureus 2019; 11(1): e3970. https://doi:10.7759/cureus.3970
3. Oussedik F, Khelafi R, Skander F. The impact of acute exacerbations of COPD on mortality. Rev Mal Respir 2019; 36(1): 7-14. https://doi: 10.1016/j.rmr.2017.12.005.
4. Sitlinger A, Zafar SY. Health-related quality of life: The impact on morbidity and mortality. Surg Oncol Clin N Am 2018; 27(4): 675–684. https://doi:10.1016/j.soc.2018.05.008
5. Cappa V, Marcon A, Di Gennaro G, Chamitava L, Cazzoletti L, Bombieri C et al. Health-related quality of life varies in different respiratory disorders: a multi-case control population based study. BMC Pulm Med 2019; 19(1): 32. https://doi:10.1186/s12890-019-0796-8
6. Long H, Howells K, Peters S, Blakemore A. Does health coaching improve health-related quality of life and reduce hospital admissions in people with chronic obstructive pulmonary disease? A systematic review and meta-analysis. Br J Health Psychol 2019; 24(3): 515–546. https://doi:10.1111/bjhp.12366
7. Brandl M, Böhmer MM, Brandstetter S, Finger T, Fischer W, Pfeifer M et al. Factors associated with generic health-related quality of life (HRQOL) in patients with chronic obstructive pulmonary disease (COPD): a cross-sectional study. J Thorac Dis 2018; 10(2): 766–775. https://doi:10.21037/jtd.2018.01.122
8. Pati S, Swain S, Patel SK, Chauhan AS, Panda N. An assessment of health-related quality of life among patients with chronic obstructive pulmonary diseases attending a tertiary care hospital in Bhubaneswar City, India. J Family Med Prim Care 2018; 7(5): 1047–1053. https://doi:10.4103/jfmpc.j fmpc_ 37_18
9. Chai CS, Liam CK, Pang YK, Ng TLC, Tan SB, Wong TS et al. Clinical phenotypes of COPD and health-related quality of life: a cross-sectional study. Int J Chron Obstruct Pulmon Dis 2019; 14(1): 565–573. https://doi:10.2147/COPD.S196109
10. Khan MA, Ahmed M, Anil S, Walley J. Strengthening the delivery of asthma and chronic obstructive pulmonary disease care at primary health-care facilities: study design of a cluster randomized controlled trial in Pakistan. Glob Health Action 2015; 8(1): 28225. https://doi:10.3402/gha.v8.28225
11. Singh D, Agusti A, Anzueto A. Global strategy for the diagnosis, management, and preven-tion of chronic obstructive lung disease: the gold science commi-ttee report 2019. Eur Respir J 2019; 53(5): 1900164. https://doi: 10.1183/13993003.00164-2019.
12. Jones PW, Harding G, Berry P. Development and first validation of the COPD assessment test. Eur Respir J 2009; 34(3): 648–654.
13. Pinto LM, Gupta N, Tan W, Li PZ. Derivation of normative data for the COPD assessment test (cat) Respir Res 2014; 15(1): 68.
14. Himani G, Badini A, Nanji K. Depression and its associated factors among patients with chronic obstructive pulmonary disease in Karachi, Pakistan. Cureus 2018; 10(7): e2930. https://doi:10.7759/cureus.2930
15. Wu M, Zhao Q, Chen Y, Fu C, Xu B. Quality of life and its association with direct medical costs for COPD in urban China. Health Qual Life Outcomes 2015; 13(1): 57-62. https://doi.org/10.1186/s12955-015-0241-5
16. Brown DW, Pleasants R, Ohar JA. Health-related quality of life and chronic obstructive pulmonary disease in North Carolina. N Am J Med Sci 2010; 2(2): 60-65. https://doi: 10.4297/najms.2010.260.
17. Antwi S, Steck SE, Heidari K. Association between prevalence of chronic obstructive pulmonary disease and health-related quality of life, South Carolina, 2011. Prev Chronic Dis 2013; 26(10): E215. https://doi: 10.5888/pcd10.130192.
18. Ahmed MS, Neyaz A, Aslami AN. 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(2): 148-153. https://doi:10.4103/0970-2113.177438.