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Relationship between Quality of Life and Disease Severity in Patients with Chronic Obstructive Pulmonary Disease

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Abstract

Introduction: Chronic obstructive pulmonary disease is currently the fourth cause of mortality worldwide. Patients with chronic obstructive pulmonary disease experience periods of dyspnea and disability, which lead to a worsening of their quality of life. This study aimed to evaluate correlation between quality of life and disease severity in patients with chronic obstructive pulmonary disease.

Materials & Methods: In this cross-sectional study, 40 patients with chronic obstructive pulmonary disease referred to the hospitals affiliated to Ahvaz Jundishapur University of Medical Sciences were recruited. St. George's quality of life questionnaire was applied to collect data. Data was analyzed using descriptive and analytical statistics in SPSS software version 16.

Results: The result revealed that the quality of life in patients with chronic obstructive pulmonary disease is low in all levels of disease. There was a significant relationship between total scores of the quality of life and its two dimensions (activity and symptom) with disease severity ($p<0.05$). Whereas no significant relations were observed between the impacting dimension and disease severity.

Conclusion: The quality of life in patients with chronic obstructive pulmonary disease deteriorates by increasing disease severity.

Keywords: Quality of life, Chronic obstructive pulmonary disease, Disease severity

Introduction

The chronic obstructive pulmonary is one of the most common chronic and complex diseases. World Association of Chronic Obstructive Pulmonary Disease (COPD), and Global Organization Lung Disease (GOLD) has expressed general definition of the disease: COPD is a blockage of the airway that is not fully reversible; this restriction of airway has progressive nature, and is associated with an abnormal inflammatory response of the lungs to noxious and hazardous particles and gases (1).

According to the report of the World Health Organization (WHO), 80 million people are suffering from COPD ranged from moderate to the sever level throughout the world. In 2005, more than 3 million deaths due to the disease have been reported that included approximately 5% of all deaths worldwide. The disease incidence over the past 25 years was increasing, and appears to be the third-leading cause of death worldwide by 2020(2). The disease is responsible for the high costs of health care. These patients experience a trend of decline in lung function and exercise capacity associated with worsening symptoms and recurrent episodes of disease. This causes the symptoms of depression and deterioration of mental status of individual (3). For majority of the patients there is no effective treatment, therefore the aim of interventions are mostly improving the personal function (4) and quality of life (5).

Quality of life is a standard concept that has different meanings for different people. This is a multi-dimensional concept with physical, mental, social and spiritual aspects. Several factors are affecting the quality of life. Diseases can cause the physical, social, economic disorders, and could change persons' quality of life (6).

COPD causes many problems such as shortness of breath, decreased activity tolerance, lack of clean airway, lack of effective breathing pattern, gas exchange abnormalities, cyanosis, cough, sputum, poor diet and sleep patterns and also disrupts the life quality of patients (7-9). Paying attention to the quality of life of the patients rather than focusing on the symptoms and signs is arising from a holistic perspective that recently has been widely used in medicine (4). Considering that there is no cure for this disease, and current applications can not make any change in the progress of the disease, the main action is focused on managing symptoms and improving quality of life. Therefore calculating and measuring the impact of the disease on quality of life is very important (3).

By knowing the relationship between quality of life and severity of the disease, it can be understood that spirometric findings not only should be applied for a complete review of these patients, but also the patient's quality of life should be examined to assess progress trend or treat disease. Such communication also shows that the reduced lung function over time, can predict changes in different dimensions of the patients' quality of life, and thus knowing the problem, the health providers should use the necessary solutions and measures to prevent negative impact on patient's quality of life. The aim of this study was to determine the relationship between quality of life and disease severity in patients with COPD.

Materials and Methods

This is a cross-sectional study in which. 40 patients with COPD admitted to the hospitals affiliated to the Ahvaz Jundishapur University of Medical Sciences (AJUMS), enrolled. Samples were selected according to the inclusion criteria.

Inclusion criteria were included as follow: spirometric evidence and physician's diagnosis, 40-70 years of age. If the patient had an exacerbafion during the past month or was under the corticosteroid therapy, or had cardiovascular, psychiatric and other diseases was excluded from the study. St. George's questionnaire of the life quality as a standardized questionnaire was applied. St. Geroge questionnaire that is designed to measure quality of life in patients with COPD, and examines the effects of airway obstruction on health and well-being, was used for collecting data (10).

The St. George's questionnaire of the life quality has three dimensions where including symptoms, activities and impacts of respiratory disease. This questionnaire has 16 questions. In the symptom's section (question 1-8), questions refer to the frequency and severity of respiratory symptoms; in the activity's section(question 10 and 14), the activities that are limited by dyspnea will be measured; and in the disease impacts' part (question 9, 11-13 and 15-16), the questions represent the social performance and psychological disorders caused by airway difficulties. The score that calculated from questionnaire was between zero and 100 when higher score indicates much direr situation of the life quality of patient.

The validity and reliability of St.George's quality of life questionnaire were assessed in a study by Tavalaee et al. (2006) and Ferrer, Cronbach's alpha for the overall scores, symptoms, activity and impact of the disease, has been noted 94.0, 72.0, 89.0, 89.0 respectively (11).

Validity and reliability (α =93.0) of this questionnaire have been confirmed by Fallah Tafti and colleagues (α =93.0) in Iran (12). A questionnaire was designed to collect demographic information such as age, sex, marital status, education and smoking.

Software SPSS version 16 was used for data analysis and descriptive statistics and Spearman's test were used to examine the relationship between quality of life and disease severity.

Results

The age range of patients was 40-70 years, with a mean age of 56.86 and a standard deviation of 8.8. Most patients (91.7%) were male and all were married. Most participants (38.9 %) had the occupational exposure to pollutants, namely they either work as a farmer or were labor in the steel industries. 25% of the samples were illiterate; 52.7% were high school ; and 19.4% had diploma or higher education. In terms of smoking, 38.9% were smokers; 22.2% were nonsmokers; and 38.9% has been previously smokers. The distribution of disease severity (mild, moderate, severe, very severe) in patients were 41.7%, 16.7%, 16.6%, and 25% respectively. Mean and standard deviation of scores for quality of life in patients were 35.61 ± 19.1, 36.85±27.09, 45.28 ± 11.61, and 52.77 ± 10.13 for patients with mild, moderate, severe, and very severe disease conditions, respectively (Table 1).

Table 1: The correlation between quality of life and disease severity in patients with COPD

Dimension of Quality of life / Variable	Dimension of disease symptoms	Dimension of activity	Dimension of impact	Total score of the Quality of life
The correlation coefficient	0.36	0.51	0.21	0.38
p-value	0.03*	0.002†	0.21	0.02*

* Significance level in $p< 0.05$
† Significance level in $p< 0.01$

Based on the results of the Pearson's test, there is a significant positive correlation between the total score and two dimensions of symptoms and activity of the life quality with the severity of disease, while such correlations could not be seen in the impacting dimension. The higher score of the quality of life in the questionnaire shows the worse condition of the quality of life.

Discussion

Quality of life is a self-perception of the physical and mental health. Patients with COPD experience shortness of breath and limited physical activity, which this causes inability to change in their lifestyle, and will ultimately, reduce their quality of life. Findings showed that the total score of quality of life in both the activity, and symptoms are associated with the severity of disease, and with increasing the severity of disease; Quality of life will also be worsening.

Ferrer et al., found that the quality of life in Spain is variable according to the severity of COPD. Furthermore, quality of life has a progressive trend toward to become worse in the mild to severe degrees of illness, and on the contrary of expectations, even in patients with very mild disease show a reduced quality of life. The relationship between full- forced expiratory volume in the first second and scores for the life quality in St. George's questionnaire has been determined from 2.0 to 4.0 (13). In this study, the coefficient was calculated from 3.0 to 5.0.

Perruza et al., in Italy found that there is a relationship between the total score and two dimensions of affecting and activity with the severity of the disease, but this association was not significant in the dimension of symptoms (10). In the present study and the study of Perruza et al., in Italy the activity dimension had the highest correlation with disease severity.

One of the main similarities of the present study and study of Perruza et al., in Italy was exclusion of samples with the underlying disease, especially cardiovascular diseases. Furthermore, all participants used an established medication regimen, and recently they have not had a relapse attack of disease.

One of the differences between two studies was age, when in the Perruza et al's study, they enrolled patients more than 65 years old and we enrolled only patients with age 40-70.

In the study of Bak-Drabik and Ziora in Poland, results showed that; a low level of forced expiratory volume in the first second is associated with a reduction in the total score of affecting dimension of the disease (14), whereas in the present

study, the significant relationship was not seen. Bak-Drabik and Ziora found that the severity of disease not only reduces quality of life, but factors such as the reduced diffusion capacity of the lungs, pressure of environmental oxygen, the increased shortness of breath, anxiety and depression are effective on the quality of life. It also has shown that the social and economic situation are essential factors in the quality of life of these patients, which it can be a higher priority than the pathophysiological status (14). Study of Voll-Aanerud et al., in Norway showed that both physical and mental dimensions in quality of life are associated with symptoms of disease more than disease severity (15). In the Voll-Aanerud et al's study, the relationship between quality of life and disease' severity in two groups of healthy subjects and COPD was studied. Because two groups were compared, respiratory disease-specific questionnaire was not used; instead SF12 was used so that the obtained results showed impressive consequences. Moreover, the severe and extremely severe degree of illness were placed into one group, that can causes change in quality of life for different stages of disease and thus, it could not be measured accurately. Many studies have shown a relationship between the amount of tracheobronchial obstructions, and physical dimension of quality of life is more than psychological dimension (18-16). The results of present study are in line with these findings. In the present study, the relationship between the activity dimension and severity of disease was r=51.0, p =002, while there was not any significant relationship between symptoms dimension and quality of life.

In the study of Okubadejo et al., a significant relationship was seen only between the activity dimension and forced expiratory volume in the first second, and no significant relationship was seen in other dimensions and quality of life (19). These findings may due to the small sample size in the study of Okubadejo et al.

In a study conducted by Ketelaars et al., the Netherland results showed a weak relationship between forced expiratory volume in first second and quality of life. The same study showed that the autonomy of the individual and physical activity are more associated with quality of life than the severity of disease. In this study, the relationship between disease' severity and quality of life was reported in moderate range (20). Since the mild degree of disease not included in the mentioned study, accordingly its findings cannot express that; how quality of life will change different degrees of disease. According to the results of our study and similar studies, activity dimension is most associated with disease severity; is indicating that; with increasing the severity of illness, limitation of patients in activities of daily living will increase, and as a result, their quality of life is impaired. Even one study has shown that the relationship between lung function and quality of life can be predicted based on self-efficacy of patients in their physical functioning (21). Thus, although all aspects of quality of life are important, but the activity has more importance, as it can impair the independency of individual and as a result patients will be more dependent to his/her family with the worsening of the disease.

In the study of Stahl et al., in Sweden; only the total score of quality of life was significantly associated with disease severity (22). One of the reasons for this

result is; the effects of psycho- social variables. In the study of Stahl et al., quality of life in samples was better than other people with the same degree of disease that it can lead to the lack of significant differences in scores of different aspects of life quality with disease severity in the study.

In the study of Jones et al., it was suggested that a decrease in forced expiratory volume in first seconds not related to the patient's understanding of symptoms and quality of life (23). Perhaps, one assumed reason for a lack of relationship is that; the affecting dimension more refers to the social functioning and psychological orders which are caused due to airway problems, and regarding this fact that; the most patients were illiterate or low-literate, thus have fewer social relations, so the changes were not obvious .

The main limitation of the present study was the low sample size. It may be due to the fact that; there are not the centers for periodical follow-up and examination of patients in Iran, and patients hospitalized are also those who are at the stage of relapse, and if they filled the questionnaire, responses were affected by their physical and mental state. Furthermore, the majority of patients were male, which makes the results of this study cannot be generalized to the population of women., due to the Iranian culture , women are less interested to use tobacco. Sectional nature of the study also prevents results to show how the progression of the disease affects quality of life.

Further study with sufficient sample size and considering other factors affecting the quality of life e.g. depression, anxiety and socio- economic status, to determine which factors could deteriorate quality of life, as well as the severity of the disease is recommended. This knowledge can help us for prevent the loss of life quality in these patients .

Conclusion

The results show that not only the quality of life in all degrees of disease in patients with COPD is impaired, but also by the increasing severity of disease, the status of life quality for these patients is worse. The study also showed that aspect of the activity compared to other aspects, has a stronger association with disease severity.

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References

1. Kasper DL, Braunwald E, Fauci AS, Hauser SL, Longo DL, Jameson JL. Harrison's Principles of Internal Medicine. 16th ed. New York City: McGraw-Hill Professional; 2004: 1486.
2. Blinderman CD, Homel P, Billings JA, Tennstedt S, Portenoy RK. Symptom distress and quality of life in patients with advanced chronic obstructive pulmonary disease. J Pain Symptom Manage. 2009; 38(1): 115-23.
3. Talley CH, Wicks MN. A pilot study of the self-reported quality of life for patients with chronic obstructive pulmonary disease. Heart Lung. 2009; 38(2): 141-50.
4. KheirAbadi G, Akoochakian Sh, Amanat S, Nemati M. Quality of life of patients with COPD compared with controls. Journal of Hormozgan University of Medical Sciences. 2009; 12(4): 255-60. [Persian]
5. Omachi TA, Katz PP, Yelin EH, Gregorich SE, Iribarren C, Blanc PD, et al. Depression and health-related quality of life in chronic obstructive pulmonary disease. Am J Med. 2009; 122(8): 778.e9-15.
6. Abasi M, Jamali H, OmidiOskouei A. Quality of Life of Chemically-Disabled War Veterans Involved in Pulmonary Complications of Sulfur Mustard Gas in Sardasht. Journal of Qom University of Medical Sciences. 2012; 5(4): 34-9.[Persian]
7. MirbagherAN, Memarian R. The effects of rehabilitation techniques on the pulmonary function tests in moderate severity COPD patients. Ofogh-e-danesh, Journal of Gonabad University of Medical Sciences And Health Services. 2009; 14(4): 19-25 [Persian].
8. Mirbagheri N, Mohammadi I, Memarian R. Effects of regular walking programme on quality of life of elderly patients with moderate COPD. IJNR. 2008; 2(7): 19-27. [Persian]
9. McConnell AK. The role of inspiratory muscle function and training in the genesis of dyspnoea in asthma and COPD. Prim Care Respir J. 2005; 14(4): 186-94.
10. Peruzza S, Sergi G, Vianello A ,Pisent C, Tiozzo F, Manzan A, et al. Chronic obstructive pulmonary disease (COPD) in elderly subjects: impact on functional status and quality of life. Respir Med. 2003; 97(6): 612-7.
11. Tavallaie SA, Assari SH, Habibi M, Aziz Abadi Farahani M, Panahi Y, Alaeddini F, et al. Health Related Quality of Life in Subjects with Chronic Bronchiolitis Obliterans due to Chemical Warfare Agents. Journal of Military Medicine. 2006; 7(4): 313-320.[Persian]
12. FallahTafti S, Marashian S, Cheraghvandi A, Emami H. Investigation of Validity and Reliability of Persian Version of the "St. George Respiratory Questionaire". Pejouhandeh Journal. 2007; 12(1): 43-50. [Persian]
13. Ferrer M, Alonso J, Morera J, Marrades RM, Khalaf A, Aguar MC, et al. Chronic obstructive pulmonary disease stage and health-related quality of life. The Quality of Life of Chronic Obstructive Pulmonary Disease Study Group. Ann Intern Med. 1997; 127(12): 1072-9.
14. Bak-Drabik K, Ziora D. The impact of socioeconomic status on the quality of life in patients with chronic obstructive pulmonary disease. Pneumonol Alergol Pol. 2010; 78(1): 3-13.
15. Voll-Aanerud M, Eagan TM, Wentzel-Larsen T, Gulsvik A, Bakke PS. Respiratory symptoms, COPD severity, and health related quality of life in a general population sample. Respir Med. 2008; 102(3): 399-406.
16. Tsukino M, Nishimura K, Ikeda A, Koyama H, Mishima M, Izumi T. Physiologic factors that determine the health-related quality of life in patients with COPD. Chest. 1996; 110(4): 896-903.
17. de La Fuente Cid R, de La Iglesia Martínez F, Ramos Polledo V, Pellicer Vázquez C, Nicolás Miguel R, Diz-Lois Martínez F. Factor analysis of the health related quality of life of patients with stable chronic obstructive pulmonary disease. Arch Bronconeumol. 2001; 37(10): 411-6.
18. Carrasco Garrido P, de Miguel Díez J, Rejas Gutiérrez J, Centeno AM, Gobartt Vázquez E, Gil de Miguel A, et al. Negative impact of chronic obstructive pulmonary disease on the health-related quality of life of patients. Results of the EPIDEPOC study. Health Qual Life Outcomes. 2006; 4: 31-9.
19. Okubadejo AA, Jones PW, Wedzicha JA. Quality of life in patients with chronic obstructive pulmonary disease and severe hypoxaemia. Thorax. 1996 Jan; 51(1): 44-7.
20. Ketelaars CA, Schlösser MA, Mostert R, Huyer Abu-Saad H, Halfens RJ, Wouters EF. Determinants of health-related quality of life in patients with chronic obstructive pulmonary disease. Thorax. 1996 Jan; 51(1): 39-43.

21. Kohler CL, Fish L, Greene PG. The relationship of perceived self-efficacy to quality of life in chronic obstructive pulmonary disease. Health Psychol. 2002; 21(6): 610-4.
22. Ståhl E, Lindberg A, Jansson SA, Rönmark E, Svensson K, Andersson F, et al. Health-related quality of life is related to COPD disease severity. Health Qual Life Outcomes. 2005; 3: 56-64.
23. Jones PW, Quirk FH, Baveystock CM, Littlejohns P. A self-complete measures of health status for chronic airflow limitation: the St. Georges Respiratory Quastionnaire. Am Rev Respir Dis. 1992; 145(6): 1321-7.