Quality of Life and Related Factors in Patients with Chronic Obstructive Pulmonary Disease

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ABSTRACT

Background: Chronic obstructive pulmonary disease (COPD) is a major cause of morbidity and mortality worldwide and is probable to be the third cause of death in the world in 2020.

COPD is a highly prevalent, irreversible, and disabling disease with no definite cure which will stay with the patient for life affecting physical, mental and socioeconomic status as well as the quality of life. Therefore, 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 treatment and care of these patients. To reach this goal, first, the quality of life in these patients should be evaluated to assess the effects of mental, social and physical aspects of the disease on the life style of these patients.

Materials and Methods: A descriptive case series study was undertaken. The understudy population comprised 80 COPD patients which were selected consecutively. They all filled out the standard respiratory disease questionnaire including: 1) Demographic specifications 2) the St George's Respiratory Questionnaire (SGRQ, includes symptoms, activities, and impact).

To collect the data, COPD patients who met the inclusion criteria were selected and questionnaires were filled through interviewing or self-reporting in 20 minutes. The questionnaire was scored from 0 to 100 points. The lower score indicated the better life quality and the higher score indicated deterioration. The collected data were analyzed using Microsoft Excel and SPSS 11.5 software.

Results: Mean and standard deviation of the SGRQ total score in understudy patients were 58.31±16.14 (63.09±19.52 for symptoms, 76.35±17.65 for activities and 46.41±17.79 for impact parts). There were no significant differences between the SGRQ total score and sex, age, occupation and level of education.

One sided variance analysis and Pearson's correlation coefficient demonstrated a significant difference between the total score and duration of disease (p=0.01), stages of disease (p=0.02) and also the causes of COPD (p=0.02).

Regarding the stages of disease, a significant difference was found between stages 2, 3 and 4 respectively according to SGRQ total score (p=0.02, P=0.04). A significant difference was also seen between smoking and a combination of factors regarding the causes of the disease (p=0.02).

Conclusion: According to our study results, quality of life in COPD patients was moderate to low and this would deteriorate with duration of the disease and its severity. Also, high-risk occupations in addition to cigarette smoking deteriorate the quality of life considerably. **(Tanaffos 2006; 5(3): 51-56)**

Key words: Quality of life, Chronic obstructive pulmonary disease, St George's Respiratory Questionnaire (SGRQ)

INTRODUCTION

COPD has a long chronic course resulting in irreversible reduction of lung function along with dyspnea and other respiratory symptoms significantly affecting the patient's health status (1). Also, COPD is a major cause of morbidity and mortality in both developing and developed countries with an increasing prevalence (2).

It is estimated that after the diagnosis, the 10 years survival is 50% and eventually more than one third of patients die as the result of respiratory failure. At present, COPD is the forth cause of morbidity and mortality following cardiovascular diseases, cancer and cerebral vascular disease and is estimated to become the third cause of death in 2020 (3).

Also, this disease is the fifth disabling disease after ischemic heart disease, major depression, accidents and cerebral vascular diseases. On the other hand, COPD causes great changes in the life style of these patients. The patients become increasingly dependent on their families to perform their daily tasks. Sometimes, progression of disease causes a feeling of weariness and indifference in patients and in those nursing them. All these factors affect the physical and mental status of the patients (4). This process is also accompanied by direct (care and therapy) or indirect (absence from work, etc.) costs (5) that pose a social and financial burden on the society (6) and eventually deteriorate the quality of life of the patients. Quality of life is defined as the happiness or satisfaction of the person from life. Health-related quality of life reflects the insight and perception of the patient regarding his/ her current life as well as his/ her perception of health (1).

COPD being a highly prevalent, disabling disease with no definite cure that stays with the patient all his life affects his quality of life. Creation of a positive perception of health and upgrading and preserving the quality of life in these patients are of great importance and should be considered the essential goal in treatment and care for these patients. On the other hand, the quality of life also affects the patients' survival and hospitalization as well as the result of treatment (1).

By evaluating the quality of life, the physician and the medical personnel can assess the result of treatment and eliminate the ineffective interventions and make use of effective ones (7). Therefore, analyzing the quality of life is beneficial especially for assessing the effect of mental, physical and social aspects of the disease on the life style of the patients.

MATERIALS AND METHODS

This descriptive case series study evaluated the quality of life of COPD patients and assessed the effect of each confounding variable. Eighty COPD patients referring to the Shaheed Sadoughi Medical Center or hospitalized in the internal medicine department of this hospital were consecutively selected. Data were collected through two questionnaires. One included the demographic information and factors affecting the disease such as age, sex, level of education, history of cigarette smoking, history of drug addiction, history of asthma and allergy, occupation (including occupation related disease such as industry workers, farmers, canal diggers, mine workers, shepherds, and those exposed to smoke while cooking and occupations not related to disease such as employees and businessmen), duration of disease, and spirometric results.

The second was the St George's Respiratory Questionnaire (SGRQ) which was first designed by Jones PW in the UK. It is a standard questionnaire with a high profile value in a large number of studies approved by the researchers (8).

In this study, we translated the questionnaire to Farsi and sent it to 5 members of the board of administrators. To verify its reliability, test-retest were used and its reliability was confirmed (r= 0.85).

Also, in each question, different activities requiring the same level of energy were included. Therefore, in each question, there are some activities that are not specific to western life style and are included in our daily routine activities. This questionnaire included three major parts. Part one is the "symptoms score" including questions 1 to 8 that indicates the patient's symptoms within a period of one month to one year.

The second part is the "activity score" including questions 11 and 15 that indicate the current status of the patient and the effect of the disease on daily physical activities. The third part is the "impact score" consisting of questions 9,10,12,13,14,16,17 include a wide range of mental and social disorders. Data collected through this questionnaire were entered the Microsoft Excel software specifically designed for this questionnaire. A total score of 100 indicated a poor health status while the total score of zero indicated the best. Patients who had a history of cough, sputum or long standing dyspnea or mentioned a history of smoking or were exposed to other COPD risk factors and also had FEV1/FVC<70% and FEV1< 80% predicted in their spirometric tests entered the study. Also, asthma was ruled out according to their clinical history and response to bronchodilators (less than 12% increase in FEV1 after inhalation of 400 μgr salbutamol spray) (9,10). After obtaining consent and assuring secrecy of information, the questionnaires were filled out within 20 minutes through interview or self-report.

Those who had diabetes mellitus, cancer, left heart failure, sensory-motor neural diseases and chronic renal failure were excluded from the study. SPSS software version 11.5 along with statistical tests (mean, standard deviation, independent t-test, one sided variance analysis, and Pearson's correlation coefficient) were used for analyzing the data and assessing the effect of confounding variables.

RESULTS

In this study, 80 COPD patients were evaluated. There were 85% males and 15% females with a mean age of 66.39±11.05 (34-86) years and 72.5% had occupations related to COPD (industry workers, farmer, canal diggers, mine workers, shepherd, exposure to smoke in the house while cooking) and 27.5% had occupations not related to the disease (employee or businessman). Regarding the level of education, 62.5% were illiterate, 26.3% were below diploma, 7.5% had diplomas and 3.8% had university education.

In terms of severity of disease (according to COPD's criteria) none of the patients were in stage 1, 27.5% were in stage 2, 38.8% were in stage 3 and 33.7% were in stage 4. COPD risk factors were smoking in 21.3% of the patients, other than smoking (occupations related to disease) in 45% and a combination of smoking and other factor-related to COPD in 33.8%.

The total score of life quality in COPD patients in this study was 58.31±16.14 (87.91-19.31).

The mean score of the symptoms, activity and impact parts was 63.09±19.52 (97.71-12.59); 76.35±17.65 (100-29.53), and 46.41±17.79 (84.31-3.76) respectively (Table 1).

According to the results, Pearson's correlation coefficient, independent t test and one-sided variance analysis showed no significant difference between the quality of life in COPD patients and age, sex, occupation or level of education.

According to the one-sided variance analysis there was a significant difference between the total score of quality of life and severity of disease. According to Tukey statistical analysis a significant difference was detected regarding the total score of life quality between stage 2 and 3 (CI= 1.00-21.73 p=0.02) and stage 2 and 4 (CI=0.5-21.32 p=0.04). Also, there was a significant difference between the quality of life and cause of disease. Although, according to the Tukey test, a significant difference was only

observed between the COPD patients and smoking as the cause and also COPD patients and a combination of factors (smoking and other factors related to COPD) (p=0.01-2.30-25.30) (Table 2). Also, by using Pearson's correlation coefficient, a significant difference was found between the duration of disease and total score of life quality in COPD patients (p=0.01 r=0.23).

Table 1. Mean and standard deviation of life quality in COPD patients according to SGRQ scores.

Score	Number	Minimum score	Maximum score	Mean score	SD
Symptoms	80	12.59	97.71	63.09	19.52
Activity	80	29.53	100	76.35	17.65
Impacts	80	3.76	84.31	46.41	17.79
Total score life quality	80	19.31	87.91	58.31	16.14

Table 2. Mean and SD of life quality score of COPD patients according to the severity/ stage of disease and causes of COPD.

Variable		No.	Mean	SD	Statistical analysis
Stage of disease	Stage 1	22	50.32	16.41	
	Stage 2	31	60.68	17.57	P= 0.02
	Stage 3	27	61.95	11.95	F=4.01
	Total	80	58.31	16.14	
Cause of COPD	Smoking	17	50.15	19.04	
	Other factors	36	57.93	16.37	P= 0.02
	(Smoking+ other factors)	27	64.95	11.43	F=4.13
	Total	80	58.31	16.14	

DISCUSSION

According to the results, life quality in our patients was moderate to low which was almost consistent with similar studies.

Okubadejo evaluated the life quality of COPD patients through SGRQ questionnaire and reported a score of 55.3±18.2 which was not satisfactory (11).

Also, Miravitlles et al. found a score of 47.9 which indicates the low quality of life in COPD patients (12). Alvarez-Mon et al. reported the score of 37.5±17.5 revealing an unpleasant life quality in COPD patients (13). On the other hand, Ferrer and colleagues stated that COPD was one of the factors responsible for decreasing the quality of life in their study patients (14). We evaluated the life quality in a group of healthy people who were matched with COPD patients in terms of demographic specifications. Results indicated that the total score of life quality was 4.74±4.62 (0-18.59) in healthy individuals. Mean scores in the parts of symptoms, activities, and impacts was 3.86±5.08 (0-18.28), 10.68±12.30 (0-35.80), and 1.07±2.49 (0-10.62) respectively and there was a significant difference between the healthy group and COPD patients regarding the quality of life. Jones and colleagues in evaluating the life quality in a normal population reported a total score of 6 (the minimum of 5 and maximum of 7) (8). His findings confirmed the reliability of the questionnaire and revealed differences between the two groups.

As it was mentioned earlier, life quality of COPD patients in our study and other researches is not satisfactory this might be due to the inability of patients to change their life style to control the signs and symptoms of disease. Their lack of knowledge in regard to taking care of themselves as the result of absence of proper training, absence of proper rehabilitation programs for these patients, and last but not least absence of proper screening methods are other causes.

Also, the high costs of health care services and the inability of patients to pay these costs delays their need for hospitalization. Quality of life in the part of activity and after that, symptoms was lower than in the impact part. This might be due to the irreversibility of the disease and airway obstruction as the result of which the patient develops dyspnea

and exhaustion immediately following any activity by limiting activity. The quality of life in the part of impact is relatively low as well. This point towards the fact that COPD despite the physical impacts, affects the social and mental status of the patients. Although due to the pathology of the disease, its impact on signs and symptoms and physical activity of the patients is greater than on their mental status. Di Marco and colleagues report that prevalence of anxiety and depression in COPD patients is higher than in the normal population (15). Quality of life based on the stage of disease revealed significant differences between stage 2 and 3 and stage 2 and 4; as by progression of disease and its exacerbation the life quality of patients deteriorates. In stage 2, the patient develops dyspnea and seeks the medical advice and in stage 3 the symptoms exacerbate and the patient requires higher levels of treatments and nursing and sometimes has to be hospitalized. This reminds us the importance of detection of the disease in earlier stages. Although, it must be mentioned that none of our study patients were in stage 1 which could be due to the mildness of symptoms in this stage obviating the need to seek medical advice by the patient.

Antonelli-Incalzi and colleagues state that in stage 3 of the disease, a considerable change occurs in the patients' life quality as compared to stage 2. (16). Also, Simon and colleagues demonstrated a linear correlation between the SGRQ total score and stage of disease, and by exacerbation of disease the life quality of patients in each stage of the disease deteriorates considerably as compared to the previous stage (17). Peruzza et al. also reported a significant correlation between the reduction of FEV1 and exacerbation of airway obstruction with a poor score of SGRQ and drop of life quality in these patients (18).

Regarding the causes of COPD, life quality of patients who were smokers and had a high-risk occupation as well was significantly worse compared to patients who smoked. But, there was no significant difference between the smokers and non-smoker patients regarding the quality of life.

Simon and colleagues found no significant difference regarding the total SGRQ score between smoker and non- smoker patients (17).

This confirms the previous finding that people with high- risk occupations are more exposed to smoking related complications and combination of these two not only increases the risk of complications but also deteriorates the quality of life considerably.

Also, according to the results, the quality of life deteriorates as the duration of disease increase.

Therefore, in general life quality of COPD patients is moderate to low and life quality in the activities part was worse comparing to the parts of symptoms and impacts. It is recommended that at initiation and continuation of treatment in these patients the quality of life should be evaluated, the efficacy of different treatments and drugs should be assessed and the most appropriate type of treatment be selected.

By applying appropriate screening methods, afflicted patients may be detected in early stages of the disease and by using effective therapeutic methods (rehabilitation programs, mental and emotional support) and educating the patients with regard to changing their life styles (quitting smoking, avoiding high- risk occupations) the progression of disease and the resultant drop in the life quality may be prevented.

Acknowledgement

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