Quality of life in COPD patients

Mohammed A. Zamzam, Nourane Y. Azab, Rabab A. El Wahsh, Afaf Z. Ragab, Enas M. Allam

Chest Department, Faculty of Medicine, Menoufiya University, Shebin El-Kom, Egypt
Psychiatry Department, Faculty of Medicine, Menoufiya University, Shebin El-Kom, Egypt
Chest Hospital, Shebin El-Kom, Egypt

Received 17 July 2012; accepted 28 August 2012
Available online 10 February 2013

Abstract Quality of life (QOL) can be severely impaired in patients with COPD. They usually show an accelerated decline in lung function and progressive impairment of physical performance.

Aim: To study quality of life in patients with COPD and to examine its relationship with the severity of the disease.

Patients and methods: Quality of life was determined in 40 COPD patients using the St. George’s Respiratory Questionnaire for COPD patients (SGRQ-C).

Results: Mild COPD patients differed significantly from other grades of COPD in their total SGRQ-C score, symptoms score, activity score and impact score ($p \leq 0.001$). There was a statistically significant negative correlation between spirometric data (FEV$_1$, FEV$_1$/FVC, PEFR, FEF$_{25-75}$) and SGRQ-C score (total score, symptoms score, activity score and impact score). There was a statistically significant positive correlation between smoking index and both symptoms score and impact score.

Conclusion: Quality of life is impaired in patients with COPD and it deteriorates considerably with increasing severity of disease. Increasing severity of COPD is associated with a significant increase in SGRQ-C score. A higher smoking index affects the COPD subjects’ QOL especially with patients’ symptoms and impact of disease. Psychological assessment and psychiatric consultation are important for improving COPD symptoms, QOL and for early detection and treatment of superimposed psychiatric symptoms that could worsen COPD condition and seriously affect QOL.

Introduction

Chronic obstructive pulmonary disease (COPD) is a major and increasing global health problem with enormous amount of expenditure of direct/indirect health-care costs [1]. COPD impairs quality of life, by preventing people with the condition from socializing and enjoying their hobbies. It also
makes many feel frustrated and angry about not being able to do the things they want to [2].

The Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines have identified the goals of treatment for patients with COPD, these include the patients’ goals of improved exercise tolerance and emotional function (health-related quality of life) and also important clinical goals such as prevention of disease progression and minimization of symptoms [3].

Anxiety and depression are frequently associated with COPD and with acute and chronic respiratory diseases in general. Whereas anxiety may appear earlier than depression, the latter is related to the severity of COPD and to the degree of impaired functioning. Both conditions significantly affect COPD prognosis. Unfortunately, psychiatric disorders are not systematically evaluated and diagnosed in COPD patients, and consequently they are not always treated adequately. This negatively affects the evolution of the respiratory disease and the patient’s quality of life; it also increases healthcare and social costs [4].

Quality of life (QOL) is an important domain for measuring the impact of chronic disease. Both general and disease-specific instruments have been used to measure QOL in patients with COPD [5,6].

Among the disease specific questionnaires frequently used to evaluate the QOL of pulmonary patients is St. George’s Respiratory Questionnaire (SGRQ). A new version of the SGRQ, the SGRQ-C specific only to COPD, is now available [7].

**Aim**

The aim of this work was to study quality of life (QOL) in patients with COPD and to examine its relationship with the severity of the disease.

**Patients and methods**

This work was carried out on 40 patients with COPD diagnosed and classified according to GOLD 2010 [8], referred to chest hospital in Shebin El-Kom during the period, from January 2011 to December 2011.

**Criteria of exclusion**

1- Acute exacerbation of COPD or respiratory failure.
2- Other underlying chest diseases.
3- Underlying heart diseases.

4- Other medical conditions that affect the QOL as diabetes mellitus, hypertension, malignancy, etc.

After having an informed consent; each patient underwent:

1- Full history taking and each patient underwent:
2- Chest X-ray (postero- anterior and lateral views).
3- Pulmonary function tests:

Morning spirometry was done and post bronchodilator spirometry was performed after giving the patient a bronchodilator, such as an inhaled beta-agonist e.g. salbutamol 200 μg) [3].

The following parameters were measured:

a- Forced expiratory volume in the first second (FEV1) pre and post bronchodilator.
b- Forced vital capacity (FVC).
c- FEV1/FVC ratio.
d- Peak expiratory flow rate (PEFR).
e- Forced expiratory flow at 25%- 75% of maximal lung volume (FEF25-75%).

Patients were classified according to GOLD staging system (GOLD 2010) [8] into:

Stage I: Mild COPD (FEV1/FVC <70%; post bronchodilator FEV1 ≥80% predicted)
Stage II: Moderate COPD (FEV1/FVC <70%, 50% ≤post bronchodilator FEV1 ≤80% predicted)
Stage III: Severe COPD (FEV1/FVC <70%, 30% ≤post bronchodilator FEV1 ≤50% predicted)
Stage IV: Very Severe COPD (FEV1/FVC <70%, post bronchodilator FEV1 ≤30% predicted or post bronchodilator FEV1 ≤50% predicted plus chronic respiratory failure).

1- St. George’s Respiratory Questionnaire for COPD patients (SGRQ-C) [9]:

A – Administration:

Using simple Arabic version of SGRQ-C consisting of 14 questions, the questionnaire was completed in a quiet area, free from distraction and the patient was sitting at a desk or table. We explained to the patients why they were completing it, and how important it is for clinicians and researchers to understand how their illness affects them and their daily life. Patients were asked to complete the questionnaire as honestly as they can and stress was made that there are no right or wrong answers, simply the answer is that they feel best applies to them [10].
### Quality of life in COPD patients

<table>
<thead>
<tr>
<th>Question</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most days</td>
<td>76.8</td>
</tr>
<tr>
<td>Several days</td>
<td>47.0</td>
</tr>
<tr>
<td>With chest infections</td>
<td>30.2</td>
</tr>
<tr>
<td>Not at all</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Question 3: I have shortness of breath**

| Most days                  | 87.2       |
| Several days               | 50.3       |
| Not at all                 | 0.0        |

**Question 4: I have attacks of wheezing**

| Most days                  | 86.2       |
| Several days               | 71.0       |
| A few days                 | 45.6       |
| With chest infection       | 36.4       |
| Not at all                 | 0.0        |

**Question 5: How many attacks of chest trouble have you had**

- 3 or more: 80.1
- 1 or 2 attacks: 52.3
- None: 0.0

**Question 6: How often do you have good days (with little chest trouble)?**

- None: 93.3
- A few: 76.6
- Most are good: 38.5
- Every day: 0.0

**Question 7: If you have a wheeze, is it worse in the morning?**

- No: 0.0
- Yes: 62.0

**Question 8: How would you describe your chest condition?**

- The most important problem I have: 82.9
- Causes me a few problems: 34.6
- Causes no problem: 0.0

**Question 9: Questions about what activities usually make you feel breathless**

- Getting washed or dressed: 82.8
- Walking around the home: 80.2
- Walking outside on the level: 81.4
- Walking up a flight of stairs: 76.1
- Walking up hills: 75.1

**Question 10: More questions about your cough and breathlessness**

- My cough hurts: 81.1
- My cough makes me tired: 79.1
- I get breathless when I talk: 84.5
- I get breathless when I bend over: 76.8
- My cough or breathing disturbs my sleep: 87.9
- I get exhausted easily: 0

**Question 11: Questions about other effects your chest trouble may have on you**

- My cough or breathing is embarrassing in public: 74.1
- My chest trouble is a nuisance to my family, friends or neighbors: 79.1
- I feel that I am not in control of my chest problem: 87.7
- I have become frail or invalid because of my chest: 90.1
- Exercise is not safe for me: 89.9
- Everything seems too much of an effort: 75.7

**Question 12: Questions about how activities may be affected by your breathing**

- I take a long time to get washed or dressed: 74.2
- I cannot take a bath or shower, or I take a long time: 81.0
- I walk more slowly than other people, or I stop for rests: 71.7
B – Item weights:
Each questionnaire response has a unique ‘weight’ [11]. The lowest possible weight is zero and the highest is 100.

C – Scoring algorithm:
A total and three component scores are calculated: symptoms, activity, impacts. Each component of the questionnaire is scored separately:

a- Sum the weights for all items with a positive response

1- Symptoms component:
This consists of all the questions in part 1. The weights for questions 1–7 are summed. A single response is required to each item.

1- Activity component:
This is calculated from the summed weights for the positive responses to items in questions 9 and 12 in part 2 of the questionnaire.

1- Impacts component:
This is calculated from questions 8, 10, 11, 13, 14 in part 2 of the questionnaire. The weights for all positive responses to items in questions 10, 11, 13 are summed together with the responses to the single item that should have been checked (ticked) in questions 8 and 14. In the case of multiple responses to either of these items, the average weight for the item should be calculated.

a- Calculate the score

The score for each component is calculated separately by dividing the summed weights by the maximum possible weight for that component and expressing the result as a percentage:

\[
\text{Score} = 100 \times \frac{\text{summed weights from all positive items in that component}}{\text{sum of maximum possible weights for all items in that component}}.
\]

The total score is calculated in a similar way:

\[
\text{Score} = 100 \times \frac{\text{summed weights from all positive items in the questionnaire}}{\text{sum of maximum possible weights for all items in the questionnaire}}.
\]

Sum of maximum possible weights for each component and total

Symptoms 566.2
Activity 982.9
Impacts 1652.8

Total (sum of maximum for all three components) 3201.9
(Note: these are the maximum possible weights that could be obtained for the worst possible state of the patient).

Statistical analysis:
Data were collected, tabulated, statistically analyzed by computer using SPSS version 16, two types of statistics were done:

1- Descriptive statistics:
Quantitative data are expressed to measure the central tendency of data and diversion around the mean, mean (x) and standard deviation (SD).
Qualitative data expressed in number and percentage.

1- Analytic statistics:
Krauskal Wallis test was used for comparison of more than two groups of non normally distributed variables, LSD post hoc test was used to detect the intergroup differences. Pearson correlation (r) was used to detect association between quantitative variables.

\( P \text{ value} > 0.05 \) was considered statistically non significant.
\( P \text{ value} \leq 0.05 \) was considered statistically significant.
\( P \text{ value} \leq 0.001 \) was considered statistically highly significant.
Results

Table 1  Characteristics of the studied patients.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in years</td>
<td>47–70</td>
<td>59.9 ± 4.7</td>
</tr>
<tr>
<td>Sex No. (%) Male/Female</td>
<td>Male 39 (97.5%), Female 1 (2.5%)</td>
<td></td>
</tr>
<tr>
<td>Smoking habits No. (%) Yes/No</td>
<td>Yes 38 (95%), No 2 (5%)</td>
<td></td>
</tr>
<tr>
<td>Smoking index (pack-year) No. (%)</td>
<td>Mild &lt;10 1 (2.6%), Moderate 10–20 2 (5.3%), Heavy &gt;20 35 (92.1%)</td>
<td></td>
</tr>
<tr>
<td>Spirometric parameters (x ± SD)</td>
<td>46.5 ± 22.5</td>
<td></td>
</tr>
<tr>
<td>FEV1 % of predicted</td>
<td>57.95 ± 10.1</td>
<td></td>
</tr>
<tr>
<td>FVC % of predicted</td>
<td>68.25 ± 25.1</td>
<td></td>
</tr>
<tr>
<td>PEFR % of predicted</td>
<td>28.65 ± 16.1</td>
<td></td>
</tr>
</tbody>
</table>

Table 2  Comparison between grades of COPD severity regarding age and smoking index.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>COPD</th>
<th>Kruskal Wallis test</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in years (x ± SD)</td>
<td>Mild (I) (n = 6)</td>
<td>62 ± 4</td>
<td>5.65</td>
</tr>
<tr>
<td>Smoking index in pack.years (n = 38)</td>
<td>Moderate (II) (n = 11)</td>
<td>61.73 ± 4.5</td>
<td>6.72</td>
</tr>
<tr>
<td>Smoking index in pack.years (n = 38)</td>
<td>Severe (III) (n = 13)</td>
<td>57.9 ± 5.1</td>
<td>6.57</td>
</tr>
<tr>
<td>Smoking index in pack.years (n = 38)</td>
<td>Very severe (IV) (n = 10)</td>
<td>59.1 ± 4.1</td>
<td>6.57</td>
</tr>
<tr>
<td>Smoking index in pack.years (n = 38)</td>
<td>Mild &lt;10 1 (2.6%), Moderate 10–20 2 (5.3%), Heavy &gt;20 35 (92.1%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking index in pack.years (n = 38)</td>
<td>Post bronchodilator</td>
<td>46.5 ± 22.5</td>
<td></td>
</tr>
<tr>
<td>Smoking index in pack.years (n = 38)</td>
<td>FVC % of predicted</td>
<td>57.95 ± 10.1</td>
<td></td>
</tr>
<tr>
<td>Smoking index in pack.years (n = 38)</td>
<td>PEFR % of predicted</td>
<td>28.65 ± 16.1</td>
<td></td>
</tr>
</tbody>
</table>

** Highly statistically significant.

Table 3  Comparison between grades of COPD severity regarding SGRQ-C score.

<table>
<thead>
<tr>
<th>SGRQ-C score</th>
<th>Grades of severity of COPD patients</th>
<th>Kruskal Wallis test</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total score (x ± SD)</td>
<td>Mild (I) (n = 6)</td>
<td>14.22 ± 5.6</td>
<td>15.56</td>
</tr>
<tr>
<td></td>
<td>Moderate (II) (n = 11)</td>
<td>42 ± 4.9</td>
<td>** I&amp;II ≤0.001</td>
</tr>
<tr>
<td></td>
<td>Severe (III) (n = 13)</td>
<td>44.25 ± 10.01</td>
<td>I&amp;III I&amp;IV</td>
</tr>
<tr>
<td></td>
<td>Very severe (IV) (n = 10)</td>
<td>44.83 ± 10.5</td>
<td>I&amp;IV I&amp;IV</td>
</tr>
<tr>
<td>Symptom score (x ± SD)</td>
<td>Mild (I) (n = 6)</td>
<td>23.03 ± 6.6</td>
<td>15.9</td>
</tr>
<tr>
<td></td>
<td>Moderate (II) (n = 11)</td>
<td>60.65 ± 9.5</td>
<td>** I&amp;II ≤0.001</td>
</tr>
<tr>
<td></td>
<td>Severe (III) (n = 13)</td>
<td>67.55 ± 14.6</td>
<td>I&amp;III I&amp;IV</td>
</tr>
<tr>
<td></td>
<td>Very severe (IV) (n = 10)</td>
<td>65.38 ± 16.8</td>
<td>I&amp;IV I&amp;IV</td>
</tr>
<tr>
<td>Activity score (x ± SD)</td>
<td>Mild (I) (n = 6)</td>
<td>15.67 ± 15.4</td>
<td>15.51</td>
</tr>
<tr>
<td></td>
<td>Moderate (II) (n = 11)</td>
<td>65.97 ± 9.4</td>
<td>** I&amp;II ≤0.001</td>
</tr>
<tr>
<td></td>
<td>Severe (III) (n = 13)</td>
<td>67.98 ± 16.32</td>
<td>I&amp;III I&amp;IV</td>
</tr>
<tr>
<td></td>
<td>Very severe (IV) (n = 10)</td>
<td>71.81 ± 21.01</td>
<td>I&amp;IV I&amp;IV</td>
</tr>
<tr>
<td>Impact score (x ± SD)</td>
<td>Mild (I) (n = 6)</td>
<td>8.68 ± 1.47</td>
<td>15.8</td>
</tr>
<tr>
<td></td>
<td>Moderate (II) (n = 11)</td>
<td>20.65 ± 3.30</td>
<td>** I&amp;II ≤0.001</td>
</tr>
<tr>
<td></td>
<td>Severe (III) (n = 13)</td>
<td>20.90 ± 3.1</td>
<td>I&amp;III I&amp;IV</td>
</tr>
<tr>
<td></td>
<td>Very severe (IV) (n = 10)</td>
<td>21.57 ± 3.09</td>
<td>I&amp;IV I&amp;IV</td>
</tr>
</tbody>
</table>

** Highly statistically significant.
is a male dominant disease, the high prevalence in males is due to this, one might expect patients with severe COPD to be older. 

Exercise impairment is frequently poor. The correlation between measures of airways obstruction and independently of disturbances in FEV1. The second is that capacity may cause breathlessness and exercise limitation, there is increasing evidence that increased functional residual capacity may cause breathlessness and exercise limitation.

The first is that no single measurement of lung function can satisfactorily summarize the various disturbances that may cause breathlessness in patients with COPD. For example, there is increasing evidence that increased functional residual capacity may cause breathlessness and exercise limitation, independently of disturbances in FEV1. The second is that the correlation between measures of airways obstruction and exercise impairment is frequently poor.

So, the aim of this work was to study QOL in patients with COPD and to examine its relationship with the severity of the disease.

This work was carried out on 40 patients with COPD diagnosed and classified according to GOLD 2010.

Six patients had grade I (mild) COPD, 11 patients had grade II (moderate) COPD, 13 patients had grade III (severe) COPD and 10 patients had grade IV (very severe) COPD.

In this study, the mean age of the patients was 59.9 ± 4.7 years, there was a non statistically significant difference between different grades of COPD severity regarding their age (P > 0.05) Tables 1 and 2.

When evaluating age as a risk factor for COPD, an important issue is also the spirometric criteria of COPD. A fixed ratio for the definition of airway obstruction (FEV1/FVC < 0.7) will overestimate COPD in elderly and underestimate COPD among young adults.

Fletcher and Peto [14] reported that COPD is characterized by an accelerated rate of decline of FEV1 with age. According to this, one might expect patients with severe COPD to be older.

In the present work, 97.5% of patients were males. COPD is a male dominant disease, the high prevalence in males is due to higher prevalence of smoking in this gender, and also males are more exposed to smoking than females [16]. Also, more frequent occupational exposures of significance are present in men [17].

In the present study there was a highly statistically significant difference between different grades of COPD severity as regarding their smoking index (p ≤ 0.001) Table 2.

Many epidemiological studies have found that cigarette smoking is by far the most important risk factor for COPD. It is also known that total pack-years of smoking are predictive of COPD mortality [18,19].

According to Lindstrom et al. [20] there is a relation between the increased risk of lung toxicity of chronic smoking with the time and amount of smoking. Also, Lindberg et al. [21] found a high cumulative incidence of COPD after 10 years of smoking. This emphasizes the importance of early smoking cessation in the reduction of incidence of COPD.

In this study there was a statistically significant positive correlation between smoking index and both symptoms score and impact score. While the correlations between both total score and activity score and smoking index were non significant Table 4.

Prigatano et al. [22] reported that smoking was found to affect QOL regardless the presence of COPD. There was a report that showed worse QOL scores in younger and current smoker patient with high FEV1 values than ex-smoker patients with COPD. However, they found that COPD severity was influenced by smoking status but current smoking affected the quality of life by causing COPD exacerbations although it did not directly cause QOL deterioration.

George and Constantine [23] have shown that Smoking cessation was related to improved QOL scores, and a reduction in COPD related symptoms, indicating the necessity for active interventions by health professionals to help COPD patients quit smoking as a primary tool for the adequate management of COPD and the patient’s QOL.

### Table 4 Correlation coefficient (r) between smoking index and SGRQ-C score (total, symptoms, activity, and impact) in COPD patients (n = 38).

<table>
<thead>
<tr>
<th>SGRQ-C</th>
<th>Smoking index (N = 38)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
</tr>
<tr>
<td>Total score</td>
<td>0.27</td>
</tr>
<tr>
<td>Symptoms score</td>
<td>0.39</td>
</tr>
<tr>
<td>Activity score</td>
<td>0.25</td>
</tr>
<tr>
<td>Impact score</td>
<td>0.43</td>
</tr>
</tbody>
</table>

* statistically significant.

** Highly statistically significant.

### Table 5 Correlation coefficient (r) between SGRQ-C score and spirometric parameters (n = 40).

<table>
<thead>
<tr>
<th>Spirometric parameter</th>
<th>Total SGRQ-C score</th>
<th>Symptoms SGRQ-C score</th>
<th>Activity SGRQ-C score</th>
<th>Impact SGRQ-C score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>P value</td>
<td>r</td>
<td>P value</td>
</tr>
<tr>
<td>FEV1</td>
<td>−0.65</td>
<td>≤0.001**</td>
<td>−0.64</td>
<td>≤0.001**</td>
</tr>
<tr>
<td>FEV1/FVC</td>
<td>−0.53</td>
<td>≤0.001**</td>
<td>−0.51</td>
<td>≤0.001**</td>
</tr>
<tr>
<td>FVC</td>
<td>0.02</td>
<td>&gt;0.05</td>
<td>0.52</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>PEFR</td>
<td>−0.37</td>
<td>≤0.05*</td>
<td>−0.35</td>
<td>≤0.05*</td>
</tr>
<tr>
<td>FEF2.5–75%</td>
<td>−0.33</td>
<td>≤0.05*</td>
<td>−0.32</td>
<td>≤0.05*</td>
</tr>
</tbody>
</table>

* statistically significant.

** Highly statistically significant.

### Discussion

The importance of measurement of quality of life (QOL) in COPD subjects is indicated because of two important facts. The first is that no single measurement of lung function can satisfactorily summarize the various disturbances that may cause breathlessness in patients with COPD. For example, there is increasing evidence that increased functional residual capacity may cause breathlessness and exercise limitation, independently of disturbances in FEV1. The second is that the correlation between measures of airways obstruction and exercise impairment is frequently poor.

So, the aim of this work was to study QOL in patients with COPD and to examine its relationship with the severity of the disease.

This work was carried out on 40 patients with COPD diagnosed and classified according to GOLD 2010.

Six patients had grade I (mild) COPD, 11 patients had grade II (moderate) COPD, 13 patients had grade III (severe) COPD and 10 patients had grade IV (very severe) COPD.

In this study, the mean age of the patients was 59.9 ± 4.7 years, there was a non statistically significant difference between different grades of COPD severity regarding their age (P > 0.05) Tables 1 and 2.

When evaluating age as a risk factor for COPD, an important issue is also the spirometric criteria of COPD. A fixed ratio for the definition of airway obstruction (FEV1/FVC < 0.7) will overestimate COPD in elderly and underestimate COPD among young adults [13].

Fletcher and Peto [14] reported that COPD is characterized by an accelerated rate of decline of FEV1 with age. According to this, one might expect patients with severe COPD to be older [15].

In the present work, 97.5% of patients were males. COPD is a male dominant disease, the high prevalence in males is due to higher prevalence of smoking in this gender, and also males are more exposed to smoking than females [16]. Also, more frequent occupational exposures of significance are present in men [17].

In the present study there was a highly statistically significant difference between different grades of COPD severity as regarding their smoking index (p ≤ 0.001) Table 2.

Many epidemiological studies have found that cigarette smoking is by far the most important risk factor for COPD. It is also known that total pack-years of smoking are predictive of COPD mortality [18,19].

According to Lindstrom et al. [20] there is a relation between the increased risk of lung toxicity of chronic smoking with the time and amount of smoking. Also, Lindberg et al. [21] found a high cumulative incidence of COPD after 10 years of smoking. This emphasizes the importance of early smoking cessation in the reduction of incidence of COPD.

In this study there was a statistically significant positive correlation between smoking index and both symptoms score and impact score. While the correlations between both total score and activity score and smoking index were non significant Table 4.

Prigatano et al. [22] reported that smoking was found to affect QOL regardless the presence of COPD. There was a report that showed worse QOL scores in younger and current smoker patient with high FEV1 values than ex-smoker patients with COPD. However, they found that COPD severity was influenced by smoking status but current smoking affected the quality of life by causing COPD exacerbations although it did not directly cause QOL deterioration.

George and Constantine [23] have shown that Smoking cessation was related to improved QOL scores, and a reduction in COPD related symptoms, indicating the necessity for active interventions by health professionals to help COPD patients quit smoking as a primary tool for the adequate management of COPD and the patient’s QOL.
On the other hand, another study stated that current smoking and a higher number of pack-years have a weak negative influence on health status [24]. Some studies reported no correlation [25,26].

In the present work, mild COPD patients differed significantly from other grades of COPD in their total SGRQ-C score, symptoms score, activity score and impact score ($p \leq 0.001$ Table 3.

COPD is associated with significant reductions in QOL, even among patients with mild airway obstruction. A poor QOL has been shown to be associated with high levels of dyspnea, physical impairment, depression, and anxiety, and a poor prognosis in terms of readmission to hospital and death [27].

Also, it was mentioned that the patients with the greatest impairment in their quality of life are those that present with cough and exertional dyspnea, have a longer duration of the disease and take more drugs [28].

The relationship of the SGRQ-C score with the symptoms (symptoms score) has been extensively documented in the case of dyspnea, but it is more interesting to check its relationship to cough and expectoration. Patients with high scores presented cough with a greater frequency and a tendency to a greater frequency of expectoration, the effect of cough and expectoration on the quality of life has been observed in young patients with mild bronchial disease [29].

According to Doll and Miravitlles [30], Seemungal [31] and Miravitlles [32] the effect of exacerbations on the quality of life of patients with COPD has been demonstrated as patients with a poor quality of life had more exacerbations.

Moreover, other studies have found respiratory symptoms to be more closely related to QOL than impairment in FEV$_1$. This could indicate that QOL is impacted more by symptoms than the actual airway narrowing that FEV$_1$ measures [33–35].

Javier et al. [36] have shown that COPD had a considerable impact on daily activities in patients. Aspects of daily life are most affected, either due to the severity of the disease or the existence of social, economic, or occupational factors that could interfere with the management of the disease or complicate its progression.

Disease severity in COPD affects exercise tolerance such as walking distance. A study in pulmonary rehabilitation has shown that assessment of exercise tolerance correlates well with disease severity. Also, it corresponds well with QOL scores. [37]

With respect to the different domains of the SGRQ-C, Battle and Esther [38] found that patients showed higher scores in the impact domain than in the symptoms or activity domains; the impact domain was also strongly associated with anxiety (alone or with depression). The origin of the impact domain, covering psychological disturbances resulting from respiratory disease, partly explains these findings. An analysis excluding psychological items from SGRQ-C resulted in still clinically relevant and statistically significant associations between anxiety, depression, or both, and the Impact domain, suggesting that psychological status plays an important role also in the social function of COPD patients.

Hill et al. [39] and Maurer et al. [40] had highlighted the negative impact of psychological comorbidity on QOL in COPD patients. Specifically, previous studies of large samples of COPD patients have found an association between psychological impairment (i.e., anxiety and/or depressive symptoms) and worse respiratory-specific QOL, independent of COPD severity [41,42].

Hajiro et al. [43] found that patients with mild-to-severe COPD, reported that anxiety was associated with impairment of QOL only in the subset of patients with FEV$_1$ below 60% of the predicted value.

Recently, it was found that when anxiety and depression appear together, their influence on QOL is greater in patients with severe-to-very severe COPD than in those with mild-to-moderate COPD [44].

In the present work, there was a statistically significant negative correlation between FEV$_1$, FEV$_1$/FVC, PEFR, FEF$_{25-75%}$ and SGRQ-C score (total score, symptoms score, activity score and impact score). But, the correlation with FVC was non significant Table 5.

Wijkstra et al. [45] observed a correlation between the pulmonary function parameters and the SGRQ-C, through its components. The SGRQ-C activity domain was found to correlate with all pulmonary function parameters. Finally, in the multiple regression analysis, only FEV$_1$ correlated significantly with the SGRQ-C.

However other investigations indicated a relatively weak relationship between pulmonary function and QOL in patients with COPD [46,47].

Although spirometry is traditionally seen as the most important determinant of the diagnosis and severity of COPD, the relation between health status and all spirometric values mainly FEV$_1$ is weak. This indicates that assessment of COPD severity in clinical practice could benefit from the additional measurement of health status [48].

Conclusion

Quality of life is impaired in patients with COPD and it deteriorates considerably with increasing severity of disease. Increasing severity of COPD is associated with a significant increase in SGRQ-C score. A higher smoking index affects the COPD subjects’ QOL especially with patients’ symptoms and impact score (which describe patients’ psychological state). Evaluation of COPD patients should not be based only on pulmonary function tests, but also on measurement of QOL. Psychological assessment and psychiatric consultation are important for improving COPD symptoms, QOL and for early detection and treatment of superimposed psychiatric symptoms that could worsen COPD condition and seriously affect QOL.

References


