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Review Article

Health-Related Quality of Life in COPD Patients and SGRQ: A Review Analysis

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ABSTRACT

Objective: The objective of the review was to create awareness among health care professional regarding impact of Health related quality of life among COPD patients as measured by St George Respiratory Questionnaire (SGRQ).
Results: COPD is a common chronic condition that severely affects patients' health-related quality of life. The patients in more sever disease stages, as defined by the GOLD guidelines, presented with a poorer HRQOL. Dyspnoea is one of the major symptoms that- impact their quality of life. Physiologic recovery after an exacerbation is often incomplete. Exacerbation decreases health-related quality of life and resistance to future exacerbations. COPD is associated with significant co-morbidities and extra-pulmonary manifestations. The effort made to describe the disability in COPD by FEV_1 predicted % is inadequate. Hence additional measurements of breathlessness-dyspnea and functional capacity (6-MWT) are necessary. COPD is an irreversible and progressive disease, and hence medical and surgical care results in very little improvement of lung function or survival of these individuals.
Conclusion: Pulmonary rehabilitation and regular physical activity are indicated in all severities of COPD to improve quality of life. Since cure is impossible, improvement of HRQOL is an important objective of the treatment and nursing care. The questionnaire most widely used to assess HRQOL in COPD is the Saint George's Respiratory Questionnaire (SGRQ).

Key words: Health related quality of life (HRQOL), COPD, St George Respiratory Questionnaire (SGRQ), GOLD classification of severity of COPD, Dyspnea.

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a debilitating disease characterized by inflammation, induced airflow limitation, and destruction of parenchyma. Chronic symptoms of bronchitis and emphysema often lead to a diagnosis of CO. [1] Patients with COPD develop systemic problems, including nutritional abnormalities, weight loss, and adverse psychological responses. They often complain of dyspnoea on exertion, reduced exercise capacity and develop a progressive decline in lung function with increasing age. COPD often significantly influences physical, social and psychological functioning and leads to impaired Health-Related Quality of Life. The long term interventions are directed towards physical, psychological and social aspects of the health of the individual's with an attempt to improve Health-Related Quality of Life (HRQOL).

BODY OF THE CONTENT

Health-Related Quality of Life:

The current concept of health-related quality of life acknowledges that subjects put their actual situation in relation to their personal expectation. [2] Patients with chronic obstructive pulmonary disease present with a variety of symptoms and

pathological consequences. Although primarily viewed as respiratory disease, COPD has both pulmonary and extra-pulmonary effects, which have an impact on many aspects of physical, emotional and mental well-being. In order to supply a comprehensive read of the results of interventions in clinical trials, it's essential that spirometry is in the middle of assessments mistreatment patient-reported outcome instruments-. [3]

PHYSIOLOGIC VARIABLES

The physiologic variables included in this review were lung function variables as measured in the Pulmonary Function Test (FEV_1, FVC, FEV_1/FVC; post bronchodilator predicted %) by Spirometry and the distance covered in 6-minute walk test (6-MWT).

Lung function:

COPD is devastating lung diseases which affect the airways and lung parenchyma resulting in decreased lung function. Decreased lung function leads to a pronounced deterioration in health status and diminished quality of life. The decline in healthy non-smokers is reported to be 15-30 ml/years from approximately 35 years of age (American Thoracic Society, 1995). [4] Maximum lung function is normally reached at approximately 20 years of age, in men somewhat later than in women. There is a plateau phase with stable lung function until about 35 years of age. The lung function starts to decline from 40 years of age, women usually earlier than men. [5] Smoking is most well known risk factor for accelerated decline in lung function.

This was proved in one study when lower lung functions were assessed by the St George Respiratory Questionnaire and worst quality of life was reported in patients with chemical warfare-induced COPD. [6,7] The SGRQ total score and FEV_1were correlated inversely ($r = -0.46$, $p < 0.001$); greater increases in FEV_1 were associated with greater reductions (improvements) in SGRQ. This study analysis indicated that improvement in mean trough FEV_1 is associated with proportional improvements in health status. [8]

6-Minute Walk Test (6-MWT):

Lung function values investigated included the FEV1, FEV1 / FVC, FVC and residual volume (RV) / TLC ratio, most of which showed a weak association with health status. So, measurement of health status in addition to spirometry to better informed about the influence of the disease on typical health statuses such as symptoms, impairment and mental state. A major contributor to the level of daily activity is obviously exercised tolerance. A 6-minute walking distance is a more sensitive measurement and a time and energy saving for evaluating COPD patients properly. Six-MWT can be used to measure functional capacity and response to medical interventions in patients with moderate to severe lung/heart disease. The patient is instructed by a trained practitioner to walk as far as possible for 6 minutes, stopping when short of breath and continuing when able. [9] COPD patients, generally, cut down activities to avoid breathing difficulty due to progressive dyspnoea. Engström CP observed that dyspnoea-related limitation, depression scores, and 6-MWT were important to vary degrees of HRQOL as measured by SGRQ. [10]

The limitations of exercise tolerance also caused due to muscle wasting. The patients with COPD reduce their activities of daily living as a result of dysponea and exercise intolerance. The relationship between 6-MWT, Dyspnoea, BMI and HRQOL were evaluated by YX, et al., in Beijing, China. COPD Patients were followed monthly for 12 months. At baseline BODE index was gradually increased with baseline SGRQ total and subscales (p trend <0.001). The individual components of the BODE index, a decrease of airflow limitation, 6-MWT, increased of MRC dyspnea grade with SGRQ total and subscales were increased correspondingly ($P < 0.05$). [11]

The findings of the various studies reported that there is a correlation between

the HRQOL of COPD patients with regard to physiological parameters. The physiological variables include such as lung function indices and exercise intolerance as measured by 6-MWT. The previous studies reported a significant correlation between HRQOL and physiological variables in different parts of the world.

SEVERITY of DISEASE

GOLD classification of severity of COPD:

The lung function parameterFEV_1 is mostly used for the classification of severity of COPD. Patients with $FEV_1 \geq 50$ predicted% (stage-I disease) had lower values for HRQOL compared with a normal population. [12] The approach to COPD would facilitated by a staging system that would categorize a heterogeneous population of patients. [13] Generally, COPD is categorized by the degree of airflow limitation; FEV_1predicted%.It is highly correlated with morbidity and mortality. The Global Initiatives for Obstructive Lung Disease (GOLD, 2001) [14] proposed a staging of patients with COPD on the basis of post bronchodilator FEV_1.

Disease severity (based on FEV_1) influenced HRQOL significantly among subjects with COPD. [15] Therefore, staging criteria for COPD based on FEV_1predicted% separated groups of patients have varying degrees of impairment in HRQOL. Different stages of COPD severity defined according to GOLD criteria correlate with meaningful differences in health status. The largest variation in health status is usually observed at the transition from stage II to stage III, with no other significant differences between consecutive stages. Both female sex and co-morbidity were associated with a greater impact of COPD on the health status. [16] Additionally, the importance of dyspnea causing patients with COPD to reduce their activities of daily living was also demonstrated, dyspnea showing a stronger correlation with HRQOL than FEV_1. [17]

Habraken JM, et al., examined the development of HRQOL and functional status over time of COPD patients in GOLD stage IV. Eighty two COPD patients completed the SGRQ and the Groningen Activities for Daily Living Restriction Scale (GARS) for functional status every 3 months during the year following enrolment. Survival was followed up to 5 years after enrolment. The activity tolerance decorates with severe COPD patients, as well as HRQOL becomes eventually poor. This did not support much additional information for differentiating the end stage of COPD by considering HRQOL and functional status using the SGRQ and GARS respectively. [18] Han MK, et al., emphasized the importance of symptom and exacerbation risk when assessing COPD severity by the GOLD classification. [19] Jones PW, et al., examined the characteristics of COPD patients recruited from routine clinical settings and classified using the GOLD framework. Total 1041 European COPD patients with information on CAT, MMRC, spirometry and exacerbation history in the previous year were analyzed. Their mean age (SD) was 64.9 (9.9) years and mean FEV_1 was 62.5 (17.8%) predicted. The incidence of diabetes, hypertension and hyperlipidemia increased with worsening GOLD group (all $p < 0.0001$).Among the patients seen in routine clinical settings, 25% of GOLD low risk patients had one exacerbation per year. The incidence of cardio-vascular and metabolic diseases increases with worsening of GOLD group. [20]

Dysponea:

Many studies were conducted on the impact of COPD on QOL and role of dysponea. Findings of studies reported that dyspnea is a common symptom that accompanies a diagnosis of COPD. Many researchers found that patients with COPD who reported more severe dyspnea and exhibited more impaired lung function had, lower scores for HRQOL. StåhlE, et al., reported that HRQOL in COPD deteriorates with disease severity and age. These data showed a relationship between HRQOL and

disease severity obtained by lung function. [21]

The common symptoms of COPD cases during exercise were as dysponea and leg fatigue. This study tested whether dysponea and leg fatigue during exercise affects the HRQOL of patients with COPD. [22] Symptoms, such as the degree of dysponea and leg fatigue during exercise, affects the HRQOL of COPD patients. Dyspnea often interferes with the patient's health-related quality of life, yet it is often underreported by the patients and under recognized by the clinician. [23] There should be an integration of pulmonary rehabilitation and pharmacological therapies that can positively modify severity and distress of dyspnea. Effective assessment and therapeutic management of dyspnea for the patients living with COPD are opportunities to improve their HRQOL.

Katsura H, et al., [24] evaluated gender differences in dysponea and HRQOL in patients with COPD. Dyspnea showed significantly lower values for female patients. Disease-specific HRQOL assessed by SGRQ was significantly worse, except for symptom, in female patients. Gvozdenović BS, et al., [25] concluded that there were highly significant correlations ($p < 0.01$) between values of dysponea and health-related quality of life. The highest degree of correlation of total SGRQ scores was found ($r = 0.731$).

While talking about the various factors and disease severity indices influencing the HRQOL of COPD patients, an Indian study conducted by Shavro SA, et al., [26] can be taken into account. There was no association between QOL and age, quantum of smoking, education, co-morbid illnesses or occupational exposure. The Indian patients with COPD had impaired HRQOL. Longer disease duration, patients' perception of disease severity and worsening dysponea impacted negatively on HRQOL.

Acute exacerbations:

The health status and quality of life were mostly affected by acute exacerbation. Exacerbations, acute worsening of symptoms, have serious health consequences and are associated with an increased decline in lung function, hospitalization and even death. [27]
There is decline in lung function with exacerbation of COPD. Langsetmo L, et al, [28] reported that there was a clinically important decline in health status for 52% of patients with reported exacerbation and 43% with unreported exacerbations. This study has shown that less than one-third of the exacerbations were reported. The number of symptoms at onset was the most important predictor of reporting an exacerbation both reported and unreported exacerbations had an impact on health status.

Hospitalizations for exacerbations of COPD have an independent and negative impact on the evolution of HRQOL, regardless of COPD severity. [29] Development and evaluation of self-management emphasizing early recognition of exacerbations and consequent action appear to be necessary. Acute exacerbations seriously impair health status and quality of life. [30]

Suzuki M, et al., concluded, a high SGRQ total score, especially its activity score, and a low body mass index was strongly associated with exacerbation-free survival, exacerbation frequency and development of recurrent exacerbations. Despite the low exacerbation frequency, impaired HRQOL and weight loss were found to be independent risk factors for COPD exacerbations. [31]

As the disease progresses, those living with COPD are prone to exacerbations which leads to frequent hospitalizations, thereby considerably amplifying the burden of the disease. This is proved by Fan VS, et al., [32] in 610 participants, 26.6% had a COPD exacerbation over 1-year follow-up. He had come to the conclusion that combining physiologic variables, dyspnea, prior exacerbations and co-morbidity may be

useful in identifying patients at high risk for COPD exacerbations.

Co-morbid condition:

The level or degree of impairment in HRQOL is partly explained by co-morbidity in COPD patients. The level or degree of impairment in HRQOL in COPD patient does not clearly distinguished by other patient characteristics. Therefore, it remains important to ask for problems in daily functioning rather than to rely on patients characteristics alone. [33]

van Manen JG,et al., conducted a study on the influence of co-morbidity on health-related quality of life of patients with COPD. The cases of COPD in general practice, ≥ 40 years, were selected. Controls were recruited by a random sample of persons without COPD and ≥ 40 years. HRQOL was assessed with the SF-36 and co-morbidity was determined by questionnaire. The influence of COPD on HRQOL independent of co-morbidity was significant for physical functioning, role functioning. Due to: physical problems, vitality and general health. Co-morbidity contributed significantly to the HRQOL of all domains (-7.6 to -27.1). [34] Further, there was a meta-analysis concluded that reduced lung function was associated with increased levels of systemic inflammatory markers. Which may be involved in the pathogenesis of co-morbid conditions such as cardiovascular disease, osteoporosis and muscle wasting. [35] Other studies reported the association with lung cancer and COPD. Obstructive lung function impairment in Obstructive Sleep Apnoea Syndrome (OSAS) contributes to deterioration in day time blood gases.

COPD is a common chronic condition that severely affects patients' health-related quality of life. The patients in more sever disease stages, as defined by the GOLD guidelines, presented with a poorer HRQOL. Dyspnea results from the chronic inflammation of the bronchial tubes. Dyspnea is one of the major symptoms that impact their quality of life. Physiologic recovery after an exacerbation is often incomplete. Exacerbation decreases health-related quality of life and resistance to future exacerbations. COPD is associated with significant co-morbidities and extra-pulmonary manifestations. It has been observed that the HRQOL varies in relation to severity of disease. Hence hypothesis formulated to determine the correlation between HRQOL of COPD patients in relation to severity of disease such as GOLD classification of severity of COPD by FEV_1 predicted %, modified medical research council (MMRC) scale for dysponea, acute exacerbation of COPD, co-morbid condition.

CONCLUSION

COPD is a systemic disease with considerable impact on several dimensions of daily life.In recent years, a profound analysis available of COPD outcomes and risk factors has been provided by the scientific community. However, HRQOL measures have shown an inconsistent relationship with clinical and functional components of the disease.It is apparent from the literature that the functional status of COPD patients is multi-factorial in terms of pulmonary function, six-minute walk test, disease severity, dysponea, acute exacerbation and comorbid conditions.Treatment of COPD is largely palliative, directed toward symptom control and the reduction of acute exacerbations.

COPD is a chronic, progressive, expensive and difficult disease to treat. As of now, there is no cure for this disease. We need more knowledge about the interventional measures associated with COPD and the relative contribution of each of these in the Indian scenario, before these interventional measures can be recommended. Good quality research studies from different regions of the country will be required to generate this new knowledge, and this will ultimately help make policy decisions.

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