Health-Related Quality of Life of COPD Patients Attending Outpatient Clinic at Institute of Respiratory Medicine, Kuala Lumpur, Malaysia

Maria J, Aslinda CM, Nurul Ain AR and Fatim TM

Physiotherapy Program, Faculty of Health Sciences, Universiti Teknologi MARA

ABSTRACT

Introduction: *This study measured the health-related quality of life (HRQoL) among COPD patients attending outpatient clinic at Institute of Respiratory Medicine, Kuala Lumpur.* **Materials and Methods:** *A cross-sectional survey was conducted from November 2008 to January 2009 on 99 COPD patients. Subjects were interviewed through socio-demographic and health characteristics. The HRQoL was measured using the SF-36v2 questionnaires.* **Results:** *Majority of the subjects were above 60 years (64.6%) with mean age of 64.10 ± 11.04 years, male (84.8%), Malays (49.5%), married (74.7%), primary educational level (57.6%), income level below RM1000 (39.4%), ex-smoker (64.6%), moderate COPD (40.4%), 1 to 5 years of illness (62.6%), presence of co-morbidities (65.7%) and satisfied with support from caregiver (48.5%). The total mean score for physical health component summary (PCS) was 41.64 ± 7.99 and mental health component summary (MCS) was 46.53 ± 13.21.* **Conclusion:** *There were significant differences in PCS for different educational level ($p<0.05$) and socio-economic status ($p<0.01$). The MCS were significantly different between ethnicity ($p<0.05$) and level of satisfaction with support from caregiver ($p<0.01$). This finding provides information that needed focus in healthcare services.*

KEYWORDS: COPD, health-related quality of life, Malaysia

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) continues to be a global cause of healthcare burden.[1] In Malaysia, COPD was ranked 5th as a burden of disease.[2] COPD which is characterized by progressive airways obstruction that is not fully reversible,[3] is typically diagnosed late in the course of disease and many individuals with significant disease were unrecognized due to the large reserve in lung function and long preclinical phase of disease.[4] This condition was the leading cause of morbidity and mortality worldwide due to the gradual decline in health over the years that greatly affecting their health-related quality of life (HRQoL).[1,5]

HRQoL of patients suffering from the multiple structural and functional changes is increasingly being accepted as one the most important health outcomes to consider in managing the disease.[6] Previous studies have shown that HRQoL was influenced not only by health but by various factors such as job satisfaction, financial security, family and social interaction, and spiritual fulfillment.[7] In addition, studies have shown that almost half of COPD patients (46%) that were found to present with functional limitation had the most negative effect on their daily lives, including feeling chronically tired, depressed and frustrated and being unable to take part in hobbies or play with grandchildren.[8]

Many factors that were not examined in the previous study might influence the perception of HRQoL of an individual with COPD such as demographic variables and disease severity.[9] Clinicians and investigators recognized the importance of measuring HRQoL as a patient-important outcome in clinical trials of patients with COPD and other chronic lung diseases.[10] Knowledge about the HRQoL impairments in COPD patients is needed, because this gives information on the specific problems that patients experienced and therefore, guide treatment priorities and adequate care. This requires further research to be conducted to determine the socio-demographic and clinical history variables that affect the quality of life in COPD patients especially in Malaysia in order to improve their physical and mental health status.

The main purpose of this study was to compare the level of HRQoL among COPD patients with regards to age, gender, ethnicity, marital status, level of education, socio-economic status, history of smoking, severity of illness, duration of illness, presence of co-morbidities and level of satisfaction with support from caregiver. This information is beneficial to focus on the affected subgroup in order to increase their health-related quality of life.

Corresponding author;
Maria Justine
Physiotherapy Program, Faculty of Health Sciences
Universiti Teknologi Mara
e-mail: maria205@salam.uitm.edu.my

MATERIALS AND METHODS

This cross-sectional study was conducted at Institute of Respiratory Medicine, Kuala Lumpur, Malaysia from November 2008 until January 2009. Data was collected on all subjects who attended the outpatient clinic and diagnosed with COPD. Entry criteria included the following: age ≥ 40 years, confirmation of diagnosis of COPD based on medical record,[11] and ability to speak Malay or English and ability to give inform consent. Only those who presented with < 5 co-morbidities were included in this study as previous finding have shown that there is a significant correlation of increasing co-morbidities (range 5 -32, SD = 7) with poor quality of life.[12] Exclusion criteria included a poor mastering of English or Malay language, and presence of any disabilities such as deaf, dumb, mentally handicapped or on wheelchair ambulation. The study design was approved by the Ethical Committee of Universiti Teknologi MARA (UiTM) and Ministry of Health Malaysia. All subjects completed an informed-consent form approved by UiTM. Permission to conduct the study was given by the director of the Institute of Respiratory Medicine, Kuala Lumpur.

Subject's socio-demographic information (age, sex, ethnicity, employment status, level of income, marital status), years of smoking, years of COPD diagnosis, smoking history and level of satisfaction with support from caregiver were gathered using a pre-tested questionnaire. Information was gathered by asking patient and counterchecked with subject's medical record. Presence of co-morbidities (yes or no) that included several diseases was ticked according to the subject's medical record.

The HRQoL was measured using the Short Form 36-Item Health Survey (SF-36) version 2. The SF-36 comprised of two summary measures of physical health component summary (PCS) and mental health component summary (MCS).[13] The scores for the SF-36 were based on a 0 to 100 scale; zero represents the lowest possible score, and 100 represent the highest possible score. Higher scores represent better health. Previous evidence suggested that reliability of the SF-36 usually exceed 0.90.13 In this study, the reliability reported as Cronbach's Alpha is 0.91 which indicates good internal consistency.

All data was entered and analyzed using the SPSS for Windows version 16.0. Descriptive analysis was used to report the respondent frequency distribution based on the responses to all the questions being asked in the questionnaire. Independent t-test and ANOVA were used to analyze significant differences of related variables, where statistical significance was met at a minimum level of $p < 0.05$

RESULTS

A total of 99 COPD subjects consented to participate in this study. Subject's socio-demographic and health characteristics are shown in Table 1. Majority of subjects were above 60 years (64.6%) with mean age of 64.10 ± 11.04 years, male (84.8%), Malays (49.5%), married (74.7%), had primary educational level (57.6%), income < RM1000 (71.7%), and ex-smoker (64.6%). Most subjects presented with moderate COPD (40.4%) and with 1 to 5 years of duration of illness (62.6%), 65.7% subjects presented with co-morbidities, while 48.5% subjects were satisfied with their support from caregiver.

There were no significant differences among age group in the PCS ($p = 0.54$) and MCS ($p = 0.45$). However, subjects above 60 years old had the lowest mean for PCS (41.01 ± 7.77), while subjects between 50 to 59 years old had the lowest mean for MCS (45.72 ± 8.65). Males were found to have better PCS and MCS compared to female but both were not statistically significantly different. In terms of ethnicity, significant differences were found in MCS ($p = 0.04$). Tukey HSD's post-hoc test revealed significant difference between Malay and Indian ($p = 0.02$). Malays showed the highest MCS (49.63 ± 12.75), while Chinese had the highest PCS (42.45 ± 7.08).

With regards to marital status, married subjects had better PCS (42.42 ± 7.40) ($p = 0.09$) and MCS (47.03 ± 12.97) ($p = 0.81$) compared to those single and widowed or divorced (All, $p > .05$). Educationally, significant differences were found in PCS ($p = 0.02$). Tukey HSD's post-hoc test revealed that the significant differences exist in PCS between primary education level with secondary education level ($p = 0.04$), and with tertiary education level ($p = .005$). Subjects with tertiary level of education had better HRQoL (PCS = 47.22 ± 5.01, MCS = 49.44 ± 9.92) compared to those with no education, primary and secondary level of education. Summary scores for the SF-36v2 instruments were also computed and were shown in Figure 1.

There were significant differences in PCS among different level of socio-economic ($p = 0.01$). Tukey HSD's post-hoc test showed that PCS were significantly different between income < RM1000 with those getting income RM1000-RM2000 ($p = .002$), and with those getting income > RM2000 ($p = .005$). Subjects with income level > RM1000 had the lowest PCS (39.82 ± 7.71) and MCS (44.90 ± 13.43). For smoking history, ex-smokers had better PCS (41.80 ± 7.87) ($p = 0.95$) and MCS (48.45 ± 14.07) ($p = 0.13$) compared to those active- and non-smokers. In terms of severity of illness, subjects with mild COPD had better PCS (43.63 ± 9.72) ($p = 0.60$) and MCS (51.64 ± 11.37) ($p = 0.34$) compared to moderate, severe and very severe COPD. It was also found that subjects with < 1 year of COPD had the lowest MCS (42.45 ± 12.37) ($p = 0.49$), while subjects with 1-5 years of COPD had the lowest PCS (40.92 ± 7.67) ($p = 0.15$). Subjects without co-morbidities presented with lower PCS (40.99 ± 9.52) ($p = 0.57$), while those with co-morbidities were lower in MCS (45.99 ± 13.91) ($p = 0.58$). In terms of level of satisfaction with support from caregiver, subjects who responded as "satisfied" showed the lowest PCS (40.77 ± 8.84). There were significant differences

in MCS among different level of level of satisfaction with support from caregiver, with subjects responded "dissatisfied" being the lowest (36.19 ± 11.22). Tukey HSD's post-hoc test revealed significant differences between dissatisfied with "very satisfied" (p = 0.01) and with "satisfied" (p = 0.01).

Table I . Characteristics of study subjects

Characteristics (N=99)	n (%)
Age group	
1. 40-49 years	11(11.1)
2. 50-59 years	24(24.2)
3. Above 60 years	64(64.6)
Gender	
1. Male	84(84.8)
2. Female	15(15.2)
Ethnic group	
1. Malay	49(49.5)
2. Chinese	32(32.3)
3. Indian	18(18.2)
Marital status	
1. Single	9(9.1)
2. Married	74(74.7)
3. Widowed/divorced	16(16.2)
Level of education	
1. None	10(10.1)
2. Primary	57(57.6)
3. Secondary	22(22.2)
4. Tertiary	10(10.1)
Socio-economic status	
1. < RM1000	71(71.7)
2. RM1000-RM2000	19(19.2)
3. > RM2000	9(9.1)
History of smoking	
1. Active smoker	22(22.2)
2. Ex-smoker	64(64.6)
3. Non-smoker	13(13.1)
Severity of illness	
1. Mild	15(15.2)
2. Moderate	40(40.4)
3. Severe	35(35.4)
4. Very severe	9(9.1)
Duration of illness	
1. < 1 year	13(13.1)
2. 1-5 years	62(62.6)
3. > 5 years	24(24.2)
Co-morbidities	
1. Yes	65(65.7)
2. No	34(34.3)
Satisfaction with support from caregiver	
1. Very satisfied	30(30.3)
2. Satisfied	48(48.5)
3. Dissatisfied	21(20.2)

DISCUSSION

In this study, no significant differences were found in PCS and MCS among different age group which is inconsistent with previous finding.[14] This could be due to the small number of sample compared to the earlier study. It has also been shown that younger individuals experienced more negative cognitions and emotions and reported a greater impact of COPD on daily life.[15] This study showed that older subjects (above 60 years) had the lowest mean for PCS probably as age increases, their physiological capacity tend to decline. Meanwhile, younger subjects (50-59 years) had the lowest mean for MCS as they are still in the early stage of accepting and adapting to their health condition. Older patients were able to accept the reality of their deteriorating health after many years and with increasing age.

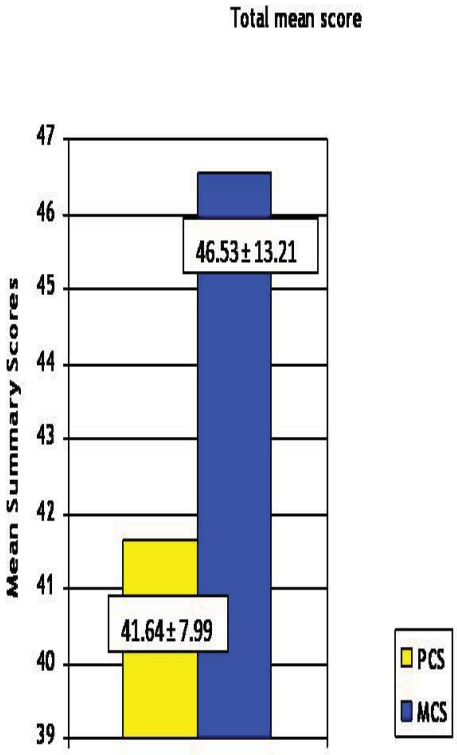

Figure 1. Total Mean Score of the SF-36v2 by Physical Health Component Summary (PCS) and Mental Health Component Summary (MCS)

Consistent with previous finding, women had lower level of HRQoL than men, both in PCS and MCS.[14] In contrast, one study found that women yielded lower scores in the mental health but not in the physical dimension.[16] Studies have shown that females with COPD had higher prevalence of anxiety and depression that might have contributed to the lower MCS scores.[17] For ethnic group, this current finding is inconsistent with previous evidence that some differences appear to exist across different ethnic groups, but these were not statistically significant.[18] Malay had better MCS, probably because their spiritual belief helps them to cope with worsening health.[19-20] While Chinese subjects exhibited better physical health, probably because they have better access to health care services knowing ethnic Chinese in Malaysia have better socioeconomic status compared to Malays and Indians.[21-23] In terms of marital status, consistent with previous finding,[24] married subjects had better PCS and MCS compared to single and widowed or divorced subjects. It has been shown that married people were healthier and happier compared with singles, divorced and widowed.[16] This study also revealed that subjects with higher level of education showed better HRQoL.[14,18] Subjects with higher education had better income thus have greater purchasing power and more material resources especially in terms of healthcare provisions. Similarly for socio-economic status, patients with higher social

class are able to adjust to the impact of progressively disabling disease because of greater financial and material resources.[25,26]

In this study, no significant differences were noted in both PCS and MCS between active smoker, ex-smoker and non-smoker, which is consistent with previous study.[27] However, one study reported that patients who smoke reported worse HRQoL than never-smokers,[28] which explained the detrimental effects of smoking on the condition of the lungs.[29-31] It has been shown that the SF-36 psychosocial scales were most affected by smoking status.[32] In terms of COPD severity, similar findings were noted with previous study that MCS did not decline with greater severity of COPD.[33] Studies have also shown that no significant increase in psychological complaints in patients with severe or very severe COPD compared with patients with mild or moderate COPD.[34] In contrast, one study has shown that severity of the lung disorder was associated with worsening HRQoL.[18] Finding on the duration of illness in this study is consistent with previous study that there is no significant difference in HRQoL among different duration of illness of COPD patients.[35] However, one study showed that quality of life deteriorates steadily in patients with chronic COPD over a 3 years period.[36] In this study, subjects with less than one year of COPD had the lowest MCS probably due to denial stage, while PCS was lower in patients with 1-5 years of COPD, which could be due to declining functional capacity.

For presence of co-morbidities, this study was inconsistent with the previous study who reported that impairments in the HRQoL seem primarily related to the presence of co-morbidity rather than to COPD itself.[11] In addition, COPD individuals with depression were more likely to experience disability, worse health status and quality of life.[37] It is also possible that patients with co-morbidities tend to seek more medical attention in order to lessen their health burden. In terms of satisfaction with support from caregiver, the findings of this study were consistent with previous study.[38] It has been shown that perceived social support associated with better HRQoL and particularly with better mental health.[39] This study revealed that MCS was reduced in "dissatisfied" with support from caregiver, probably because patients lacking the physical and psychological support that led to decline in psychological well-being. However, PCS was lower in patients who were "satisfied" with support from caregiver as these subjects became too dependent with their family or friends that led to subjects lacking in physical capacity.

CONCLUSION

It can be concluded that PCS is mostly being affected in COPD patients compared to MCS. These findings certainly have implications on healthcare professionals practice such as physiotherapy, occupational therapy and nurses, as well on public health policy. Healthcare professionals should be alerted that physical health component is mostly being affected in COPD patients and implement interventions to increase activities of daily living such as encourage patients participate in pulmonary rehabilitation program as a method to improve HRQoL. It is also suggested that HRQoL instruments be used in clinical practice for evaluation purposes and facilitation of discussion of quality of life issues between patients and clinicians. Further longitudinal study with larger sample size and Malaysian wide is therefore needed to clarify these findings.

ACKNOWLEDGMENT

The authors would like to thank the Institute of Respiratory Medicine Kuala Lumpur, the participants of the study and all staff of the Laboratory of Lung Function Test who assisted in the study.

REFERENCES

1. Mannino DM, Buist AS. Global burden of COPD: Risk factors, prevalence, and future trend. Lancet 2007; 370:765-73
2. Ministry of Health Malaysia. Malaysia Burden disease [online]. Available at: http://www.nih.gov.my. Accessed October 31, 2008.
3. Reid WD, Chung F. Clinical management notes and case histories in cardiopulmonary physical therapy. New Jersey: Slack Incorporated, 2004:203
4. Kaplan RM, Ries AL. Quality of Life as an Outcome Measure in Pulmonary Disease. J Cardiopulm Rehabil 2005; 25:321-31
5. Gysels M, Higginson IJ. Access to services for patients with chronic obstructive pulmonary disease: The invisibility of breathlessness. J Pain Symptom Manage 2008; 5:451-60
6. Stucki A, Stucki G, Cieza A, et al. Content comparison of health-related quality of life instruments for COPD. Respir Med 2007; 101: 1113-22
7. Reardon JZ, Lareau SC, ZuWallack R. Functional status and quality of life in chronic obstructive pulmonary disease. Am J Med 2006; 119:532-7
8. Partridge MR, Small IR, Long D, et al. Tailoring COPD treatment to everyday impact of disease can help patients lead the lives they want [online]. Available at: http://www.medicalnews-today.com/articles/110549.php. Accessed February 18, 2009
9. Hu J, Meek P. Health-related quality of life in individuals with chronic obstructive pulmonary disease. Heart Lung 2008; 34:415-22
10. Puhan MA, Guyatt GH, Goldstein R, et al. Relative responsiveness of the chronic respiratory questionnaire, St. George's respiratory questionnaire and four other health-related quality of life instruments for patients with chronic lung disease. Respir Med 2007; 101:308-16
11. Nguyen HQ, Cuenco DD, Kohlman VC. Associations between symptoms, functioning,

and perceptions of mastery with global self-rated health in patients with COPD: A cross-sectional study. Int J Nurs Stud 2008; 45:1355-65
12. Yeo J, Karimova G, Bansal S. Co-morbidity in older patients with COPD – its impact on health service utilization and quality of life, a community study. Age Ageing 2006; 35:33-7
13. Ware JE. SF-36 Health Survey Update [online]. Available at: www.sf-36.org. Accessed June 24, 2008.
14. Garrido PC, Diez JM, Gutierrez JR, 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
15. Howard C, Hallas CN, Wray J, et al. The relationship between illness perceptions and panic in chronic obstructive pulmonary disease. Behav Res Ther 2009; 47:71-6
16. Garrido PC, Diez JM, Gutierrez JR, et al. Characteristics of chronic obstructive pulmonary disease in Spain from a gender perspective. BMC Pulmonary Medicine 2009; 9:2
17. Katsura H, Yamada K, Wakabayashi R, et al. Gender-associated differences in dyspnoea and health-related quality of life in patients with chronic obstructive pulmonary disease. Respirology 2007; 12:427-32
18. Bakri R, Bakar AA, Sararaks S, et al. Quality of Life of Asthmatics in Malaysia.. Institute of Public Health 2001, National Institutes of Health, Ministry of Health, Malaysia.
19. Harvey IS, Silverman M. The role of spirituality in the self-management of chronic illness among older African and Whites. J Cross Cult Gerontol 2007; 22:205-20
20. Sulmasy DP. Spirituality, religion, and clinical care. Chest 2009; 135:1634-42
21. Ismail IS, Wan Nazaimoon WM, Wan Mohamad WB, et al. Socioedemographic determinants of glycaemic control in young diabetic patients in peninsular Malaysia. Diabetes Res Clin Pract 1999; 47:57-69
22. Shafii Z, Abiddin NZ, Ahmad AR. Ethnic heterogeneity in the Malaysian economy: A special reference to the ethnic group participation in financial planning activities. J Int Soc Res 2009; 2:394-409
23. Wu ZH, Rudkin L. Social contact, socioeconomic status, and the health status of older Malaysians. Gerontologist 2000; 40:228-34
24. Engstrom CP, Persson LO, Larsson S, et al. Health-related quality of life in COPD: Why both disease-specific and generic measures should be used. Eur Respir J 2001; 18:69-76
25. Yohannes AM, Roomi J, Waters K, et al. Quality of life in elderly patients with COPD: Measurement and predictive factors. Respir Med 1998; 92:1231-6
26. Talley CH, Wicks MN. A pilot study of the self-reported quality of life for patients with chronic obstructive pulmonary disease. Heart Lung 2009;38:141-50
27. Stahl E, Lindberg A, Jansson S, et al. Health-related quality of life is related to COPD disease severity. Health Qual Life Outcomes 2006; 3:56
28. Sippel JM, Pedula KL, Vollmer WM, et al. Associations of smoking with hospital based care and quality of life in patients with obstructive airway disease. Chest 1999; 3:691-6
29. Garcia-Aymerich J, Lange P, Benet M, et al. Regular physical activity modifies smoking-related lung function decline and reduces risk of chronic obstructive pulmonary disease. Am J Respir Crit Care Med 2007; 175:458-63
30. Gold DR, Wang X, Wypij D, et al. Effects of cigarette smoking on lung function in adolescent boys and girls. N Engl J Med 1996; 335:931-7
31. Screaton NJ, Koh T. Emphysema and smoking-related lung diseases. Imaging 2004; 16:50-60
32. Spencer S, Calverley PMA, Burge PS, et al. Health status deterioration in patients with chronic obstructive pulmonary disease. Am J Respir Crit Care Med 2001; 163:122-8
33. Aanerud MV, Eagan TML, Larsen TW, et al. Respiratory Symptoms, COPD severity, and health-related quality of life in a general population sample. Respir Med 2007; 102:399-406
34. Wagena EJ, Arrindell WA, Wouters EFM, et al. Are patients with COPD psychologically distressed? Eur Respir J 2005; 26:242-8
35. Miravitlles M, Molina J, Naberan K, et al. Factors determining the quality of life of patients with COPD in primary care. Ther Adv Respir Dis 2007; 1:85-92
36. Aaron SD, Vandemheen KL, Clinch JJ, et al. Measurement of short-term changes in dyspnea and disease specific quality of life following an acute COPD exacerbation. Chest 2002; 121:688-96
37. Ng TP, Niti M, Fones C, et al. Co-morbid association of depression and COPD: A population-based study. Resp Med 2009; 103:895-901
38. Blinderman CD, Homel P, Billings JA, et al. Symptom distress and quality of life in patients with advanced chronic obstructive pulmonary disease. J Pain Symptom Manage 2009; 1:9
39. Keyes CL, Michalec B, Kobau GR, et al. Social support and health-related quality of life among older adults. Morb Mortal Wkly Rep 2005; 17:433-7