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Predictive Factors of Quality of Life among Chronic Obstructive Pulmonary Disease PatientsinCommunity Hospitals, Thailand

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Abstract: This cross-sectional survey study aims to find the predictive factors of quality of life among patients with chronic obstructive pulmonary disease (COPD) atcommunity hospitals, Chachoengsaoprovince, Thailand. The 270 COPD patients were included during 2016 – 2017through a multi-stage random sampling. Data were collected by interviewing and analyzed by frequency distribution, percentage, mean, standard deviation, Chi-square test and binary logistic regression analysis. The results showed that the factors significantly correlated with quality of life ($p<0.05$) were occupation, agesymptoms, exacerbation, co-morbidity, dyspnea, drug use behavior, avoiding causes of exacerbation, exercise, health benefits,health education, health service accessibility. The predictive factorsof quality of life among COPD patients were dyspnea, co-morbidity, health service accessibility, health education, drug use behavior and symptoms of the disease. Thesefactors predicted quality of life of the COPD patients as correctly as59.6%. According to this study, the suggestions are health promotionon pulmonary rehabilitation and physical exercise. The health education on right drug administration behavior to decrease symptom or dyspnea and improve health service to be easily accessed. All of these will lead to increase quality of life among COPD. Patients.

Key words: Quality of life · Chronic Obstructive Pulmonary Disease · Community hospital

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is an irreversible dilation and lung parenchymadestruction from long-term exposure of cigarettesmoking [1]. Persistent symptoms are breathlessness from chronic bronchitis and emphysema lead to limit the patients' ability to perform daily tasks and function within society. Management of people with COPD aims to optimize function and prevent deterioration.It should maximize quality of life [2]. It is a major cause of morbidity and mortality across the world.The prevalence continues to increase global health problem with enormous amount of expenditure of direct/indirect health-care costs [3]. In Thailand, COPD is the 5th rank of major cause of Thai people death. There are 4 – 5 million patients in Thailand and places a burden on the health-care system. These patients may experience disease exacerbation 3-4 times per year, often requiring hospitalization 1.6 times with a length of stay 5-14 days with costs of 7000-10,000 bahts (200-300 US dollars) for each hospital stay [4]. 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 notbeing able to do the things they want to [5].

The goals of treatment include exercise tolerance improvement and emotional function (health-related quality of life) and also important clinical goals such as prevention ofdisease progression and minimization of symptoms [6]. The negative factors affect the evolution of the respiratory disease and the patient's quality of life; it also increases healthcare and social costs [7]. Quality of life is an important domain for measuring the impact of chronic disease. Both general and disease-specific instruments have been used to measure quality of life in COPD patients [7, 8]. Among the disease specific questionnaires frequently used to evaluate the quality of life 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 [9].

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The treatment aims to decrease symptoms and increase quality of life and results in an ever-increasing pressure on the health care system [10]. Consequently, there is a growing need for enhanced management of patients with COPD, not only to prevent deterioration of lung function but also to improve the patient's ability to function within society despite their impairments and avoid some of the aforementioned complications associated with the disease. Educational interventions forchronic illnesses aim to provide patients with the knowledge and skills to dealwith limitations imposed by the disease. Education programs for asthma, in particularself-management education, have been shown to be an effective means of improving health outcomes including health care utilization, days lost from work and quality of life [11, 12]. Education is now a key recommendation in asthma management guidelines [13]. Thus, the predictive factors especially health education of quality of life among patients with COPD are useful to plan treatment and implementation of health education.

Objective and Methodology

Objective: The aim of this study was to find predictive factors of quality of life (QOL) in patients with COPD.

MATERIALS AND METHOD

This study was carried out on 270 patients with COPD diagnosed and classified according to GOLD 2010 [9], referred to community hospital in Thailand during the period, from November 2016 to May 2017.The systematic random sampling was conducted. St. George's RespiratoryQuestionnaire for quality of life among patients with COPD (SGRQ-C) [14]: A – Administration: Using simple Thai 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 [15].

Question 1:	
I cough	Weight
Most days	80.6
Several days	46.3
With chest infections	28.1
Not at all	0.0
Question 2:	
I bring up phlegm (sputum)	
Most days	76.8
Several days	47.0
With chest infections	30.2
Not at all	0.0
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
Part 2	
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:	
Morequestions 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	0.0
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 get afraid or panic when I cannot get my breath	87.7
I feel that I am not in control of my chest problem	90.1
I have become frail or invalid because of my chest	89.9
Exercise is not safe for me	75.7
Everything seems too much of an effort	84.5

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
Jobs such as housework take a long time, or I have to stop for rests	70.6
If I walk up one flight of stairs, I have to go slowly or stop	71.6
If I hurry or walk fast,I have to stop or slow down	72.3
My breathing makes it difficult to do things such as walk up hills, carry things up stairs, light gardeningsuch as weeding, dance	74.5
My breathing makes it difficult to do things such as carry heavy loads, dig the garden or jog or walk at 8 kilometers per hour, play tennis or swim	71.4
Question 13:	
We would like to know how your chest trouble usually affects your daily life I cannot play sports or games	64.8
I cannot go out for entertainment or recreation	79.8
I cannot go out of the house to do the shopping	81.0
I cannot do housework	79.1
I cannot move far from my bed or chair	94.0
Question 14:	
It does not stop me doing anything I would like to do	0.0
It stops me doing one ortwo things I would like to do	42.0
It stops me doing most of things I would like to do	84.2
It stops me doing everything I would like to do	96.7

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

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.

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.

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 inquestions 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.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:

Score = 100 summed weights from all positive items in that component/sum of maximum possible weights for all items in that component.

The total score is calculated in a similar way: Score = 100 summed weights from all positive items in the questionnaire/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 18, descriptive statistics: percentage and analytic statistics: chi-square and binary logistic regression were done.

RESULTS AND DISCUSSION

Totally, 270 patients with COPD, there were 216 (70%) patients with good quality of lifeand 54 (20%) patients with bad quality of life. The details of personal factors, health status factors, exacerbation prevention behavior factors, Health service system factors were showed in Table 1. The personal factors significantly correlated with quality of life ($p<0.05$) were occupation and age. Health status factors significantly correlated with quality of life ($p<0.05$)were symptoms, exacerbation of the disease, co-morbidity with underlying disease and dyspnea. Exacerbation prevention behavior factors significantly correlated with quality of life ($p<0.05$) were drug administration behavior, the behavior to avoid causes of exacerbation and physical exercise behavior. Health service system factors significantly correlated with quality of life ($p<0.05$) were health benefits, receiving health education on drug administration, receiving health education on pulmonary rehabilitation or physical exercise and difficulties in using health service.

The factors that could predict the quality of life among COPD patients together included dyspnea, co-morbidity with underlying disease, difficulties in using health service, receiving health education on pulmonary rehabilitation or physical exercise, drug administration

Table 1: Related factors of QOL among COPD patients.

Independent Variables	QOL No. (%) Bad	Good	95% CI Odd ratio	P-value
Gender				
Women	19(21.6)	69 (78.4)		
Men*	35 (19.2)	147 (80.8)	0.9 (0.5 -1.6)	0.651
Marital status				
Married	30 (17.2)	144 (82.8)		
Other*	24 (25.0)	72 (75.0)	1.6 (0.9-2.9)	0.131
Religion				
Buddhist	52 (19.5)	214 (80.5)		
Other*	2 (50.0)	2 (50.0)	4.1 (0.6-29.9)	0.132[F]

Table 1: Related factors of QOL among COPD patients (cont.)

Independent Variables	QOL No. (%) Bad	Good	95% CI Odd ratio	P-value
Education				
Educated	42 (18.3)	188 (81.7)		
Not educated*	12 (30.0)	28 (70.0)	1.9 (0.9-4.1)	0.087
Occupation				
Work	18 (12.7)	124 (87.3)		
Not work*	36 (28.1)	92 (71.9)	2.7 (1.4-5.1)	0.002
Age				
Elder	43 (24.0)	136 (76.0)		
Adult*	11 (12.1)	80 (87.9)	0.4 (0.2-0.9)	0.020
Income				
Enough	23 (16.3)	118 (83.7)		
Not enough*	31 (24.0)	98 (76.0)	1.6 (0.9-3.0)	0.113
BMI				
Obese	9 (12.3)	64 (87.7)		
Not obese*	45 (22.8)	152 (77.2)	2.1 (1.0-4.6)	0.055
Smoked				
Ever	41 (21.2)	152 (78.8)		
Never*	13 (16.9)	64 (83.1)	0.8 (0.4-1.5)	0.419
Stop smoking				
Yes	44(18.5)	194 (81.5)		
No*	10 (31.3)	22 (68.7)	2.0 (0.9-4.5)	0.090
Symptom				
Severe	32 (46.4)	37 (53.6)		
Not severe*	22 (10.9)	179 (89.1)	0.1 (0.1-0.3)	<0.001
Exacerbation				
2 or more	26 (42.6)	35 (57.4)		
Less than 2*	28 (13.4)	181 (86.6)	0.2 (0.1-0.4)	<0.001
Co-morbidity				
Yes	42 (27.3)	112 (72.7)		
No*	12 (10.3)	104 (89.7)	0.3 (0.2-0.6)	0.001
Dyspnea				
Yes	17 (63.0)	10 (37.0)		
No*	37 (15.2)	206 (84.8)	0.1 (0.5-0.3)	<0.001
Health education				
Yes	36 (15.0)	204 (85.0)		
No*	18 (60.0)	12 (40.0)	10.1(4.9-20.9)	<0/001
Medicine				
Right	6 (4.1)	141 (95.9)		
Not right*	48 (39.0)	75 (61.0)	15.0 (6.2-6.8)	<0.001

Table 1: Continued

Independent Variables	QOL No. (%) Bad	Good	95% CI Odd ratio	P-value
Avoid causes				
Yes	12 (10.3)	104 (89.7)		
No*	42 (27.3)	112 (72.7)	3.3 (1.6-6.5)	0.001
Exercise				
Yes	4 (4.9)	77 (95.1)		
No*	50 (26.5)	139 73.5)	6.9 (2.4-19.9)	<0.001
Accessibility				
Difficult	12 (10.3)	104 (89.7)		
Easy*	42 (27.3)	112 (72.7)	0.3 (0.2-0.6)	<0.001

* Reference Group[F] F.E. Test

Table 2: Predictive factors of QOL among COPD patients

Predictive factors	b	Exp(b)	95%CI Lower	Upper	p-value
Dyspnea	-3.198	.041	.008	.197	.000
co-morbidity	-1.316	.268	.090	.797	.018
Accessibility	-1.398	.247	.089	.689	.008
Health education	1.519	4.566	1.412	14.764	.011
Medication	1.743	5.715	1.769	18.467	.004
Exercise	-3.198	.223	.078	.637	.005
Symptom	-1.502	.041	.008	.197	.000

Constant = 4.551 R^2= 0.596

behavior and the symptoms of the disease. They could predict the quality of life together of the samples as correctly as59.6% as showed in Table 2.

CONCLUSION

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 respiration. The second is that the correlation between measures of airways obstruction and exercise impairment is frequently poor [16]. 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. 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 inSGRQ score. 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. The findings showed that predictive factors were dyspnea, co-morbidity with underlying disease, difficulties in using health service, receiving health education on pulmonary rehabilitation or physical exercise, drug administration behavior and the symptoms of the disease. The study results suggest that health education should be promoted to provide knowledge and instructions on patients' self-management; there should be the monitor and evaluation of educational activity and the provision of care for COPD patents; and a holistic approach should be applied in the provision of care, which would contribute to a better quality of life among the patients with COPD.

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