Factors Associated with Quality of Life among Patients with Lung Cancer*

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Abstract

Purpose: To determine factors associated with QOL among patients with lung cancer in Vietnam.

Design: Descriptive correlational design.

Methods: Sample was 115 patients who received treatment at Bac Mai Hospital, Hanoi, Vietnam. Data were collected from the patients' hospital records, assessed Forced Expiratory Volume in 1 second scale (FEV1), and interviewed with 3 questionnaires: the Hamilton Anxiety Rating Scale (HAM-A), the Multidimensional Scale of Perceived Social Support (MSPSS), and Quality of Life for cancer (EORTC QLQ-C30). Spearman's Rho was employed to test the relationship among studied variables.

Main findings: The findings revealed that QOL of patients with lung cancer was low (Mean = 48.97, SD = 7.94). Lung function was significant positively correlated with QOL ($r_s = .190$, $p < .05$). Conversely, anxiety was significant negatively correlated with QOL ($r = - .347$, $p < .05$).

Conclusion and recommendations: Lung function and anxiety were significantly correlated with QOL of patients with lung cancer. In order to improve the QOL, nurses and health care team should assess and well manage anxiety and provide social support to patients.

Keywords: quality of life, lung function, anxiety, social support, lung cancer

J Nurs Sci. 2017;35 Suppl 1:79-86

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ปัจจัยที่มีความสัมพันธ์กับคุณภาพชีวิตของผู้ป่วยมะเร็งปอด*

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาปัจจัยที่มีความสัมพันธ์กับคุณภาพชีวิตของผู้ป่วยมะเร็งปอด ประเทศเวียดนาม

รูปแบบการวิจัย: วิจัยเชิงสหสัมพันธ์

วิธีดำเนินการวิจัย: ผู้วิจัยเก็บข้อมูลจากผู้ป่วย จำนวน 115 คน ที่มารับการรักษาในโรงพยาบาลแบคมาย เมืองฮานอย ประเทศเวียดนาม เก็บข้อมูลโดยประเมินค่าสมรรถภาพของปอด (FEV1) บันทึกข้อมูลจากแฟ้มประวัติ และใช้แบบสอบถามวัดความวิตกกังวล (HAM-A) การสนับสนุนทางสังคม (MSPSS) และคุณภาพชีวิต (EORTC QLQ-C30) วิเคราะห์ข้อมูลโดยใช้ค่าสถิติ Spearman's Rho

ผลการวิจัย: ผู้ป่วยมีคุณภาพชีวิตอยู่ในระดับต่ำ (Mean = 48.97, SD = 7.94) ค่าสมรรถภาพของปอดมีความสัมพันธ์เชิงบวกกับคุณภาพชีวิต (r_s = .190, $p < .05$) และความวิตกกังวลมีความสัมพันธ์เชิงลบกับคุณภาพชีวิต ($r = -.347$, $p < .05$).

สรุปและข้อเสนอแนะ: ค่าสมรรถภาพของปอดและความวิตกกังวลมีความสัมพันธ์เชิงลบกับคุณภาพชีวิต ดังนั้น ผู้ป่วยควรได้รับการประเมินและส่งเสริมสมรรถภาพของปอด ตลอดจนการประเมินความวิตกกังวลเป็นระยะช่วงมาตรวจตามนัด และควรพัฒนาโปรแกรมจัดการความวิตกกังวลสำหรับผู้ป่วย เพื่อให้ผู้ป่วยได้รับการดูแลที่ครอบคลุม และมีคุณภาพชีวิตที่ดีขึ้น

คำสำคัญ: คุณภาพชีวิต ความวิตกกังวล ความสนับสนุนทางสังคม ผู้ป่วยมะเร็งปอด สมรรถภาพของปอด

J Nurs Sci. 2017;35 Suppl 1:79-86

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Background and Significance

Lung cancer was a major cause of death worldwide and many new cases were still found annually. In Asia, a number of lung cancer was forcasted to grow substantially, especially among males, more than 50% of world's lung cancer cases occurred in Asia.[1,2] Moreover, there are five countries in Asia with the high numbers of patients with lung cancer like China (652,842 cases), Japan (94,885 cases), India (70,275 cases), Indonesia (34,694 cases), and Turkey (24,489 cases). These five countries comprise a total of 877,157 cases; 84.84% of all cases in Asia.[3]

Vietnam is also known as a country with a high rate of lung cancer. Males suffered a higher incidence than females with rates in males of 51.4 per 100,000 compared to 12.2 per 100,000 in females.[4] Furthermore, the major risk factor for lung cancer was smoking which caused poor quality of life (QOL) until death in Vietnemese men with 28%.[4] A better QOL among patients with lung cancer should be an ultimate goal for every patient who suffered from these symptoms.

Lung cancer patients has been proven to have quite poor lung function and quality of life. The disease and treatment process could cause patients suffered many serious problems such as fatigue, loss of appetite, dyspnea, cough, blood-stained mucus, nausea, vomiting and pain.[5,6] Patients were often afraid of uncertainty of the disease and therapy outcomes. Thus, they would be subjected to have stress and anxiety, which reduced their self-esteem. Furthermore, it negatively impacted their QOL.[6] Patients with advanced lung cancer usually suffered from dyspnea with low lung volume when assessed by force vital capacity measurement (FEV1). A study showed that FEV1 level with moderate/severe obstruction contributed to diminished QOL of the patients.[7] Moreover, dyspnea led to various psychological symptoms including fear, anxiety, depression, and guilty. Accordingly, the strong negative relationships emerged between anxiety and QOL.[8] The emotional state of patients with new cancer treatment declined and patients' anxiety often increased and was highest during the treatment resulting in a low QOL.[5,8,9]

Almost all patients in the late stage of lung cancer had severe and treatment-related symptoms. The most severe symptom was fatigue followed by sleep difficulty, dyspnea, loss of appetite, nausea, vomiting, and diarrhea.[10] As a result, patients with lung cancer needed all dimensions of social support from their healthcare team, family and friends.[11] Social support was an important resource that contributed to the physical and social functioning and psychological well-being of patients.[12] In addition, the significant relationship between support from medical personal and QOL were observed more frequently (67%), compared with support from only families and friends (53%).[13] Thus, the healthcare personnel should concern about social support for improving QOL among lung cancer patients.

Health-related quality of life model from Ferrans et al., represented a person's sense of well-being that resulted from their physical health, psychological state, level of independence, social relationships, personal beliefs, and their relationship to the environment.[14] There were four domains: health and functioning, psychological/spiritual health, social and economic influences, and family health. Moreover, QOL has been found to be an essential indicator of survival in lung cancer patients investigated by a number of researchers.[6-8,13,15] However, little if any study on QOL of lung cancer patients in Vietnam has been reported. Therefore, this study aimed to determine factors associated with the QOL of lung cancer patients such as lung function (FEV1), anxiety, and social support. The findings obtained from this study could be used to guide nursing practice to promote QOL of patients with lung cancer in Vietnam.

Objective

To determine factors associated with quality of life among patients with lung cancer in Vietnam.

Hypothesis

1. Lung function and social support were positively correlated with QOL of patients with lung cancer.

2. Anxiety was negatively correlated with QOL of patients with lung cancer.

Methodology

Population and Sample

The population was adult patients with minimum age of 18, who were diagnosed with lung cancer and admitted to The Nuclear Medicine and Oncology Center, Bach Mai Hospital and able to verbally communicate in the Vietnamese language.

The sample size was calculated using G*power program to determine the minimum number of participants needed for correlational and regression design.[16] The level of significance was set at $\alpha = .05$, Power $1-\beta = .80$, calculated effect size from medium correlation ($r = .3$)[17] giving $f^2 = .099$. So the sample size was calculated to be 115 patients.

Research Instruments

1. The demographic data questionnaire consisted of age, gender, weight, height, BMI, province, occupation, marital status, level of education, income, payment method for treatment, health insurance, and illness history as well as lung function (FEV1).

2. The Hamilton Anxiety Rating Scale (HAM-A) was used to assess anxiety level. The HAM-A scale developed by Maier et al.[18] There were 14 items, each item was rated as "Not present" (0), "Mild" (1), "Moderate" (2), "Severe" (3), "Very severe" (4). A total score ranged from 0-56, score < 17 indicated mild severity, 18-24 mild to moderate severity and 25-30 moderate to severe severity.

3. The Multidimensional Scale of Perceived Social Support (MSPSS), the MSPSS was developed by Zimet et al.[19], used to assess social support. It composed of 12 items divided into groups of factors related to the source of the social support: family, friends, or significant other. The score of each item was from 1 to 7, 1 = very strongly disagree, 2 = strongly disagree, 3 = mildly disagree, 4 = neutral, 5 = mildly agree, 6 = strongly agree, 7 = very strongly agree. Total score of social support ranged from 12 to 84 and high score showed better social support.

4. The Forced Expiratory Volume in 1 second scale (FEV1)[20] was used to assess lung function, administered by the respiratory investigation unit of Bach Mai Hospital. This instrument was used effectively to evaluate air volume and airway obstruction that had previously been associated with quality of life[20] and survival time[21] among lung cancer patients. When the pulmonary function was tested with the FEV1 index as a percentage of the volume capacity; the evaluation for airflow limitation with FEV1 > 80% was considered mild obstruction, FEV1 of 50-79% was moderate obstruction, FEV1 of 30-49% was severe obstruction and FEV1 of < 30% was very severe obstruction.[22]

5. The Quality of life questionnaire for cancer developed by European Organization for Research and Treatment of Cancer (EORTC QLQ - C30) was used to measure the QOL of lung cancer patients in this study. There were 28 items to assess functionality, symptoms, and financial impact which had 4 points, ranged from 1 (not at all) to 4 (very much). The other 2 items assessed global health and quality of life with the scale ranged from 1-7 (very poor to excellent). All scales of 30 items were linearly transformed to a 0-100 scale. High scores meant good QOL.[23]

These instruments were translated into Vietnamese using back translation technique and were verified by 5 experts. Reliability was calculated for Cronbach's Alpha with 115 patients. The reliability of the scales was as follows: HAM-A = .80; MSPSS = .87 and EORTC QLQ – LC30 = .95.

Protection Right of Human Subjects

This project was approved by the Institutional Review Board (IRB) of Faculty of Nursing, Mahidol University, Thailand (COA No.IRB-NS 2016/352.0205) and IRB of Vietnam

National University, Vietnam. The researcher recruited subjects as standard process specified by the IRB. The issues of independently to make decision to consent, anonymity, and confidentiality were warranted.

Data Collection Process

1) After obtaining permission to collect data, the researcher met head of dialysis department, head nurse, doctors, and staff of the department to explain the purpose for data collection.

2) The research assistant self-introduced, made a relationship with the patients and provided information about the objectives of the data collection; asked for the patient's cooperation, and introduced the researcher to the patients.

3) The researcher met the patient at his/her bed, explained the objective of study, data collection procedures, participant's role and rights. If the patient voluntarily agreed to participate in the study, the researcher asked patient to sign a consent form.

4) The researcher organized a private room to interview the patient or have the patient completed the questionnaires by himself/herself. The time for completing questionnaires was about 30-45 minutes.

Data Analysis

The data were analyzed using computer statistical package with the significance level of .05 as follows:

1. The descriptive statistics using frequency, percentage, mean, standard deviation, and range were used to describe the general characteristics, medical data, and studied variables including lung function, anxiety, social support, and QOL of the patients.

2. All studied variables were not normal distributed. Therefore, the Spearman's Rho correlation was used to examine associations between lung function, anxiety, social support, and QOL in patients with lung cancer.

Findings

The majority of patients were males (73%) and the mean age was 58.9 years (SD = 10.0). More than half of patients lived in rural areas (55.79%), 34.8% completed secondary school, 34.8% were farmers, and 33.9% were retired, 99.1% had governmental insurance.

More than half of patients stayed in hospital less than 2 weeks, 33% had stage 4 of lung cancer, 34.8% received chemotherapy, and 10.4% received radiotherapy. All patients had co-morbidity; hypertension was the most common at 18.3%, asthma 5.2%, tuberculosis 2.6%, and COPD 2.6 %.

The correlation between lung function, anxiety, and social support with quality of life of lung cancer patients

The results partially supported the proposed hypotheses that lung function was positively correlated with QOL (r_s = .190, $p < .05$). Anxiety was negatively correlated with QOL (r_s = - .347 $p < .05$). Whereas, no correlation was found between social support and QOL (r_s = - .004, $p > .05$). (Table 1)

Table 1: Correlation between lung function, anxiety, and social support with quality of life of lung cancer patients (n = 115)

	1	2	3	4
1. Lung function	1.00			
2. Anxiety	- .504*	1.00		
3. Social support	.059	- .222*	1.00	
4. QOL	.190*	-.347*	- .004	1.00

*p < .05, Spearman's Rho Correlation

Discussion

The results of this study showed that there was a positive correlation between lung function and QOL (r_s = .190, p < .05), which meant that the more serious a patient's lung is affected, the lower QOL they had. Lung function (FEV1) of patients indicated that the majority of patients suffered with moderate obstruction (73%) followed with mild and severe obstruction (14.8% and 12.2%), respectively. These problems were found generally in lung cancer patients and were related to their longevity with an inability to carry out activities of daily living or work.[10] Particularly, FEV1 was one of the essential markers of prognosis of patients with lung cancer.[21] The study of Willson et al., suggested that pulmonary function was closely linked to post-operative dyspnea, complications, and QOL of lung cancer patients receiving surgery.[24] Likewise, the study of Sarna et al., reported that 21% of the patients spent time mostly in bed over the last 12 months of their life due to the respiratory problems such as wheezing (31%) and dyspnea (39%).[20] However, FEV1 in this study were more severe than in Sarna et al., study that showed 36% of the patients had a moderate or severe obstructive.[22] Accordingly, our patient's lungs had lower functionality to perform oxygenation. Finally, patients would become easily tired, fatigued, and exhausted, even during their light daily tasks, therefore affecting their QOL.[10]

This study also revealed that anxiety had a significantly negative correlation with QOL (r_s = - .347 p < .05). It could be explained that the more anxious a patient was, the lower QOL they had. This finding was similar to the results of several other studies.[5,8,11,25] Similarly, anxiety and depression closely related to the patient's QOL with psychological problems reported to influence around 23-40% of lung cancer patients, while fear and anxiety about 16-23% of them.[5] The anxiety level has been seen to increase during therapy, which greatly contributed to the decrease in global QOL and its role and emotional domains.[11] The similarity was reported by Brown Johnson, Brodsky and Cataldo that the level of anxiety had a strong negative relationship with QOL.[8] While the study of Li et al., showed an anxiety rate of 72% among lung cancer patients who received 4th chemotherapy courses[25] which was higher than this finding.

However, in this study social support was quite high with major support from family but not associated with QOL. Indeed, as observed in the interview, many patients said that their advanced stage illness was a huge burden to their family members. When they earned low monthly incomes because of illness, they would receive less tangible support or received inadequate resources in their lives. However, the traditional culture of Vietnamese patients might restrict them from actually requesting specific support related to their needs; even when they had several severe symptoms and felt anxiety that led to low quality of life. It was similar to the study of Wesley, Zelikovsky and Schwartz showed that received support from friends and family were not significantly related to physical symptoms.[26] Dai et al., found that social support was negatively associated with scores of the social functional domain only. In fact perceiving greater emotional/informational support from their social network might not be sentimental by the Taiwanese patients, thereby strongly negatively influencing their social domain of QOL (b = .43, 95% CI [0.63, 0.22], p < .001).[11] In contrast, this result was opposite with study of Luszczynska et al., who showed that social support was associated with QOL.[13] Patients with lung cancer reported that they received more support from health care (67%) than family and friends (53%).[13] This needs more exploration in the cultural dimensions and situation of a crowded hospital in Vietnam.

Conclusion and Implications

This research found that factors such as anxiety and lung function were related to quality of life of patients with lung cancer according to the health-related quality of life

theory (HRQOL) of Ferrans et al., which is divided into 3 main groups; physical stage, psychological dimension, and social aspects. However, in this study social support was not directly associated with QOL. Therefore, understanding the associations between lung function, anxiety and QOL is very important to improve QOL of these patients. Accordingly, nurses should take into serious consideration the influential determinants to enhance patients' health status either physically or emotionally. It is recommended that patients should have their anxiety level assessed and better managed during the follow-up period. A continuous program for symptom management along with anxiety management should be implemented and tested to provide patients with comprehensive care. This will help patients to be more independent and confident in managing and dealing with symptoms during and after treatment.

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