FACTORS RELATED TO SELF-MANAGEMENT BEHAVIORS OF ELDERLY PATIENTS WITH COPD IN HAI PHONG, VIETNAM.

ปัจจัยที่มีความสัมพันธ์กับพฤติกรรมการจัดการตนเองของผู้ป่วยผู้สูงอายุโรคปอดอุดกั้นเรื้อรังในเมืองไฮฟอง เวียดนาม

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Abstract

The purposes of this study were to describe self-management behaviors and its related factors including COPD knowledge, anxiety and social support of elderly patients with COPD. Simple random sampling was used to recruit the sample of 100 elderly patients with COPD at Viet-Tiep Friendship Hospital and Kien An General Hospital in Hai Phong, Vietnam. Five questionnaires were used to collect data during June to July 2015. Data were analyzed by using descriptive statistic, Pearson Product Moment Correlation Coefficient. The mean score of COPD self-management was at a moderate level (M = 2.72, SD = .42). The highest score was daily life management (M = 2.94, SD = .57) followed by self-efficacy (M = 2.85, SD = .65), symptom management (M = 2.78, SD = .58), emotion management (M = 2.49, SD = .65), and information management (M = 2.28, SD = .71) respectively. There were positive relationship between COPD self-management and COPD knowledge ($r = .45$, $p < .01$), as well as social support ($r = .50$, $p < .01$). However, no statistically significant relationship was found between anxiety and COPD self-management ($r = 0.08$, $p > .05$). Finally, the findings of this study suggest that nursing intervention program in regarding of COPD knowledge and social support should be recommended for improving self-management behaviors of elderly patients with COPD.

Keywords: self-management behaviors; **COPD** elderly; Vietnam

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Introduction

Chronic obstructive pulmonary disease (COPD) is distinguished by progressive decline in lung function, marked by chronic airflow obstruction which interferes with normal breathing (Wouters, 2005) and is one of major global public health problems, especially in older adults (World Health Organization [WHO], 2008). In USA, the cost of COPD in 2010 was approximately US $50 billion, which includes $20 billion in indirect costs and $30 billion in direct health care expenditures (Guarascio, Ray, Finch & Self, 2013). Both ageing and COPD lead to patients' poor quality of life, as well as their impairment of physical function, psychological well-being and social behavior (Blinderman, Homel, Andrew, Tennstedt & Portenoy, 2009), and those have a greater burden of disease, including more dyspnea and lower exercise tolerance, particularly, those who are 75 years of age or older (Kobayashi, Yanai, Hanagan & Yamanda, 2014). Thus, COPD not only affect to health status of those diagnosed, butalso has substantial influence on healthcare resources and represent a heavy economic burden for individuals and for society (Bourbeau et al., 2003). Sharing the same situation, COPD in Vietnam has emerged as the third leading cause of death (WHO, 2002) and was ranked as the sixth cause of loss of disability adjusted life years (DALYs) in elderly (Haper, 2011). Compared to other Asia-Pacific countries this rate is the highest with 6.7 % in general population, 9.2 % in elderly population, and also demonstrated as major causes to re-hospitalization and related to high mortality rate people aged over 60 years (Lan, 2011). The number of patients with COPD accounts for 25.1 % of in-patients Department of Respiratory and account for 32.6 % cause of death in the Intensive Care Unit (Hanh, 2014).

Currently, self-management is apopular term in health promotion for chronic illness which was identified as a part of life long treatment. This term was described by Bandura (1986) as the natural process in which people achieved skills and knowledge from learning principles into operations perform by themselves to control his or her own behaviors which expressed as a set of skills or actions to deal with all chronic disease entails, including symptoms, treatment, physical and social consequences and lifestyle changes (Barlow, Wright, Sheasby, Turner & Hainsworth, 2002). Hence, to prevent COPD exacerbations, the elderly with COPD not only need to follow the doctor's prescriptions and understand the disease but also need to adjust their lifestyle. For example, they have to take medications correctly, prevent infections, recognize and respond to worsening symptoms, and work with healthcare providers (Effing et al., 2007). COPD self-management is a term that describes the process in which COPD patients change their lifestyle and develop self-efficacy through managing their COPD symptoms, treatments, and physiological and psychological changes. Components of self-management in COPD consisted of five tasks that must practiced day-to-day by patients including: 1) symptoms management, 2) daily life management, 3) emotion management, 4) information management, and 5) self-efficacy (Zhang et al., 2013). Regarding self-management, it has been reported to have positive effects on health outcomes. Particularly, for older

people has been proved that the reduced admission rate and emergency room visited and experience significantly with less dyspnea (Gadoury et al., 2005; Effing et al., 2007). Self-management behavior was determined by a variety of factors including personal, behavioural and environmental (Bandura, 1989). Literatures indicate inconclusive roles of personal factors as knowledge (An & Choi, 2012; Wang, Sung, Yang, Chiang & Perng, 2012), anxiety (Disler, Gallargher & Davidson, 2012) and environmental factor as social support (Parvin, 2013) in self-management behaviors for the COPD patients. Despite the encouraging reports, the status of COPD self-management and its related factors are insufficient in elderly populations in Vietnam. The basis for the current study to fulfill this gap and provide scientific evidence for nursing practice and nursing research development aiming to enhance self-management behaviors in elderly patients with COPD at a typical city with high prevalence rate COPD patient in Vietnam as Hai Phong.

Research objectives

1. To describe self-management behaviors of elderly patients with COPD in Hai Phong city, Vietnam.

2. To examine the relationships between COPD knowledge, anxiety, social support and self-management behaviors of elderly patients with COPD in Hai Phong city, Vietnam.

Conceptual framework

The framework for this study is based on the social cognitive theory of Bandura (1989). According to Bandura (1989), social cognitive theory includes a model where the complementary operation of behavior, cognitive and other personal factors, and the environment reciprocate to each other in both directions. In this theory, personal factors include cognitive and affective factors that used to motivate and regulate human behavior.While environmental factors play a role of facilitator or inhibitor an individual to perform their specific activities. Focus on human behavior which includes actions and reactions of an individual and recognizes that this can be achieved through observational learning-learning through direct experience, watching others, or even vicariously. Hence, to have an effect on health behavior, the dynamism involves the interaction of the personal and the environmental factors (Bandura, 1989).

Based on social cognitive theory, knowledge and anxiety are concepts of personal factor which directly or indirectly influence on perform self-management behavior of COPD patients. Knowledge of individual can directly relate to observing others, from this influence to process of self-management. Bandura (2004) posits that people lack knowledge of their conditions and its consequences on their life; they have little reason to change behavior to achieve self-management behaviors. Besides, anxiety can indirectly influence to self-management behavior throughout self-efficacy or directly affect to the process self-management including self-observation, self-evaluation, and self-reaction. While, social support can be viewed as a potential facilitator to adhere to a self-management behavior (Bandura, 1998). Theoretically, knowledge, anxiety, and

social support are demonstrated significantly related to self-management behaviors.

Research methodology

Design

The study employed a cross-sectional correlational design

Participants

A simple random sampling technique of elderly in-patients with COPD was recruited from Respiratory Department of Viet-Tiep Hospital and Cardiology Department of Kien An General Hospital in Hai Phong city, Vietnam from June to July, 2015. Participants were considered if they were: (1) older adults in the age of 60-74, (2) have stable health conditions which allow them to participate into the whole study, (3) Do not have cognitive impairment assessed by Mini Mental State Examination (MMSE) Part 1- Orientation and (4) are able to communicate and read well in Vietnamese. The sample size was calculated by using G*power (with ES = .27, α = .05, β = .80). In this study, 20% of participants was added to reduce the risk participants withdraw out of the research (Lemeshow, Hosmer, Klar & Lwanga, 1990). Finally, 100 participants were total of this sample.

The Instruments for Data collection

(a) Demographic questionnaire was asked about age, gender, income, educational level, marital status, and time since diagnosis of COPD, co-morbidity or systemic disease, and medication use.

(b) The COPD Self-Management Questionnaire (CSM-Q) was used to assess self-management behaviors in older adults with COPD. CSM-Q was modified from COPD self-management questionnaire scale of Zhang et al (2013). It consisted of 30 items which divided into five subscales including symptom management, daily life management, emotion management, information management and self-efficacy. Participants respond using 4-point Likertscale from 1(never) to 4 (always). A total score was obtained by calculating a mean score, ranging from 1 to 4, with higher score indicated the better practice of self-management behaviors. The mean score is also classified into 3 levels: Low level (1-2), moderate level (2.01-3) and high level of COPD self-management (3.01-4). The validity of COPD Self-Management Questionnaire (CSM-Q) was 1.00 which was tested for content validity by 3 experts. The Cronbach's alpha coefficient was .83.

(c) The Chronic Obstructive Pulmonary Disease Questionnaire(COPD-Q) was used to measure COPD knowledge of elderly patients. The COPD-Q was developed by Maples and colleagues (2010). This instrument contained 13 multiple-choice questions. For each item, participant receives +1 score for every correct answer, whereras participant receive "0" when answer wrong or missing. The maximum and the minimum total score are 13 and 0, higher score representing higher knowledge. The Kuder-Richardson 20 (KR-20) was .80.

(d) The Anxiety Subscale from Hospital Anxiety and Depression Scale (HADS-A) was developed by Zigmond and Snaith (1983) which used to measure level of anxiety of elderly patients with COPD. The anxiety subscale (HADS-A) consist of 7 items addressing one's experience, including feeling tense, frightened, restless, panicked, and

unable to relax Each item was answered by the participants on a four point (0-3), ranging from 0 to 21, with higher score represent more anxiety. The Cronbach's alpha was .83.

(e) The Multidimensional Scale of Perceived Social Support (MSPSS) was used to assess the degree of perceived social supportof elderly patients with COPD which was developed by Zimet, Dahlem, Zimet and Farley (1988). MSPSS is composed of 12 items covering subscale areas of family, friends, and significant others. Each item was measured on a 7-point Likert-type scale from 1 "very strongly disagree" to 7"very strongly agree". The total score ranged from 12 to 84, with higher scores representing better social support, and low score indicated low social support. The Cronbach's alpha was .90, respectively.

Data collection procedures

Two general hospitals were selected for data collection and 100 eligible participants were included in this study. All data was collected by structured interview following instruments including Demographic Questionnaire, the CSM-Q, the COPD-Q, and the HADS-A and the MSPSS. Each interview performed in private room and take around 45-60 minutes. Approximately 4-6 participants were interviewed per day. The data were collected from 7.30 AM to 11.30 AM, and 1.30 PM to 5.30 PM from Monday to Saturday during June and July, 2015. The completed questionnaires were checked and immediately kept in a secure box accessible only by the researcher. Finally, Data were entered into a software computer program for subsequent analyses.

Ethical Considerations

Prior to data collection, approval was obtained from the Institutional Review Broad (IRB), Faculty of Nursing, Burapha University (IRB No. 12-05-2558) and permissions for data collection from the authorities of Viet Tiep Friendship Hospital and KienAn General Hospital. Participants were explained about the aims, benefits of this study, data collecting procedure, and sign a consent form when they express their willingness to participate in the study, as well as their right to withdraw from the study at any time without consequences.

Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 17.0. The descriptive statistics was used to describe the sample characteristics. The relationship among COPD knowledge, anxiety, social support, and self-management behavior of elderly patient with COPD were determined using Pearson's Product Moment Correlation Coefficient with alpha level for significance set at .05.

Results

Table 1: The demographic characteristic of elderly patients with COPD (n = 100)

Characteristics	Percentage
Age (years)	
60- 69	60
70- 79	40
Min = 60, Max = 74, *M* = 67, *SD* = 4.93	
Gender	
Male	72
Female	28
Marital status	
Single	3
Married	75
Divorced/Separated/Widowed	22
Living condition	
Alone	12
Couple only	10
With family	78
Educational level (Number of year of study)	
No schooling (0 year)	8
Primary school (1-5 years)	37
Secondary school (6-9 years)	26
High school (10-12 years)	20
Graduate and higher (>12 years)	9
Individual Income(Vietnamese Dong VND/month)	
< 2,000,000 VND	56
2,000,000 - 3,000,000 VND	28
3,000,000 -4.000,000 VND	7
≥ 4,000,000 VND	9
Paying for the treatment	
By health insurance	87
By themselves	13
Duration of being diagnosed with COPD (years)	
1-5 years	53
6-10 years	35
> 10 years	12
Min = 1, Max = 30, *M* = 6.55, *SD* = 5.13	
Having co-morbidity	
No	36
Yes	64
Having oxygen supply at home	
No	78
Yes	22
Medication used	
No	17
Yes	83

As shown in table 1, the characteristic of demographic data revealed that 100 elderly patients with COPD ranged in age from 60 to 74 years with the average of 67 years (SD = 4.93). The majority of the subjects were male (72 %) and in young old age (60-69 years old), accounting for 60 %. Most of subjects were married (75 %), lived with family (78 %) and paid their treatment by health insurance (87 %). Regard the education level, 83 % respondents finished general education (primary, secondary and high school). In addition, 56 % of subjects had income below 2,000,000 VND per month (approximately 90.34 USD). Around 53 % of subjects had the duration of illness between 1 year to 5 years with mean duration 6.55, SD = 5.13. The majority of them had co-morbidity (64 %), 87 % of sample used COPD medications at home, and 75 % no have oxygen supply at home.

The mean score of self-management behaviors total of the present sample was 2.72 (SD = .42) which indicated that self-management of elderly patients with COPD at moderate level. When independently considering each subscales, the daily life management had highest score (M = 2.94, SD = .57), followed by self-efficacy, symptom management, emotion management, (M = 2.85, SD = .65; M = 2.78, SD = .58; M = 2.49, SD = .65, respectively) and information management was the lowest score (M = 2.28, SD = .71). Value of median and mean of subscales were nearly equal. Details were presented in table 2.

Table 2: Range, mean, median, standard deviation and level of COPD self-management behaviors of elderly patients with COPD (n = 100)

COPD Self-management behaviors	Range		Median	M	SD
	Possible	Actual			
COPD self-management behaviors	1-4	1.77-3.77		2.72*	.42
Symptom management	1-4	1.38-3.75	2.88	2.78	.58
Daily life management	1-4	1.43-4.00	2.86	2.94	.57
Emotion management	1-4	1.25-4.00	2.50	2.49	.65
Information management	1-4	1.00-4.00	2.25	2.28	.71
Self-efficacy	1-4	1.29-4.00	2.85	2.85	.65

*Moderate level

Table 3: Range, mean, standard deviation of COPD knowledge and social support of elderly patients with COPD (n = 100)

Variables	Range		M	SD	Level
	Possible	Actual			
COPD knowledge	0-13	2-13	6.97	2.37	-
Social support	7-84	28-84	61.87	14.72	-
Anxiety	0-21	0-13	5.49	3.59	Mild

COPD older adults had mean score of COPD knowledge was 6.97 (SD = 2.37). The mean score of social support was 61.87 (SD = 14.72). With regard to anxiety, the mean score was 5.4 (SD = 3.59), suggesting that the subjects had mild level of anxiety (Table 3).

Table 4: Relationships between COPD knowledge, anxiety, social support and self-management behaviors of elderly patients with COPD (n = 100)

Variables	COPD self-management behaviors
COPD knowledge	.45**
Anxiety	.08
Social support	.50**

** $p < .01$

There were moderatepositive relationships between COPD knowledge and COPD self-management behaviors ($r = .45$, $p < .01$) as well as social support and COPD self-management behaviors ($r = .50$, $p < .01$)However, there was no significantly relationship between anxiety and self-management behaviors of elderly patients with COPD ($r = .08$, $p > .05$) (Table 4).

Discussion

Overall, the results of study showed that the total mean scores of self-management of elderly patients with COPD at was moderate level (M = 2.72, SD = .42). This result is consistent with other studies which found that self-management of patients with COPD in Bangladesh sample (Parvin, 2013) and in older adults with chronic illness reported a similar finding (Gallagher, Donoghue, Chenoweth & Stein-Parbury, 2008). However, the patients in this study exhibited uneven performances in various dimensions of self-management behavior. Better self-management was observed in the administration of symptom, daily life and self-efficacy; whereas the management of information was worth noting which had lowest score, though range score was the widest (1-4). Such findings might be related to following reasons. Firstly, nearly half of participants (47%) had their illness for more than 5 years, and over that time had developed resilient self-management strategies, including methods to manage their symptoms as well as change their life style to deal with disease and prevent illness exacerbations. Participants in this study might have learnt ways for taking care themselves through experiences. Secondly, the sample of the study was elderly; changes in physiology related to aging may be prevented older adults with COPD to perform self-management behaviors fully. For example, cognitive impairment, loss of vision, reducing of physical abilities and communicate with health care provider which could make older adults difficultly to learning and maintaining self-management (Gallagher et al., 2008). Thirdly, the overload of patients in hospitals, and a shortage of health workers is one of the health problems Vietnam; so that physicians and nurses rarely discuss with patients about their health (Health Strategy and

Policy Institute, 2015). As a consequence, patients less likely to have chance to discuss with health care workers about their disease and self-management strategies. Besides, there is a huge gap in the level of education (45% had 0-5 years schoolingand 9% > high school) which may affect the ability and opportunity to access to the information channels such as TV, internet or books. This explains why there are significant differences in managing information of elderly COPD patients in this study. This is reflected in the findings of the present study and recommended that nurses could spend more time to directly guide and discuss with elderly COPD patients as well as encourage patients' family members to participate in helping them to practice self-management behaviors better. Besides, the development of COPD patients clubs could enable them to share, exchange and learn experiences from each other.

A moderate positive correlation between COPD knowledge and self-management behaviors of elderly patients with COPD (r = .45, p< .01) was ascertained in the present study. It implies that higher of COPD knowledge contributed to higher of practice self-management behaviors of elderly patients with COPD. Bandura (1986) mentioned that knowledge was developmental variable in personal factor that can influence to changes of human behaviors to achieve self-management behaviors. In addition, Barlow and colleagues (2002) emphasized that knowledge indirectly impact on chronic diseases self-management behavior and recommended that successes of self-management require adequately knowledge regarding to diseases and its treatment. The study concurs with findings of An and Choi (2012).

In this investigation, the positive relationship between social support and COPD self-management behaviors of elderly patients were reported (r = .50, p < .01). This was in line with both theoretical basis and research results. According to Bandura (1998), social support is environmental factor which can be viewed as a potential facilitator to adhere to a self-management behavior. The finding of current study similar to Gallant (2003) highlighted the significant relationship of social support to self-management of chronic disease. In addition, Parvin (2013) reported that family support had positively direct on COPD patients (rho = .59, p < .01). This is to say, the better social support, the better practice of self-management in elderly patients with COPD.

Anxiety is a psychological and physiological state characterized by somatic, emotional, cognitive and behavioral components which can have negative effects on health behaviors, particularly likely to interfere with self-management behaviors (Schüz et al., 2015). However, it can also help subjects focus their attention on problems that need to be solved. Interestingly, anxiety scores did not associate with self-management behaviors of elderly patients with COPD. Results did not support the hypothesis. Although, previous experiences seemed to indicated that patients with moderate to severe levels of anxiety had poorer self-management behaviors (Dowson, Town, Framton & Mulder, 2004). While in our study, COPD patients reported the mild level of anxiety (only 26% reported moderate and no one had

severe level of anxiety). This is likely explained why this study did not find correlation between anxiety and self-management behavior. In fact, it recommended that this variable should be continuously investigated in other settings for a holistic consideration of influence of level of anxiety to self-management of elderly patients with COPD.

Conclusion

The results indicated elderly patients with COPD had moderate level of COPD self-management and highlighted a lowest score of information management sub-domain of COPD self-management. Exploration of the moderated positive relationship between COPD knowledge, social support and self-management behaviors is needed to strongly validate to enhance self-management behaviors of elderly patients in the model of COPD management. Although, anxiety is common in COPD patients, but the results of current study indicated no significantly correlated between anxiety and self-management behaviors of elderly patient with COPD.

Implementations

The findings of the study provide valuable information for nurse in providing nursing care to older adults with COPD. Nurse must be pay more attention in information for elderly COPD patients to practice better self-management behaviors as well as encouraged family members, friends, and other significant to support and take the patients, especially, the health care provider need focus on family domain area.

Recommendations for future research

Based on the results of the study, following are the recommendations for future research:

1. Future research should be conducted in other hospitals or areas in Vietnam as well as in other ASEAN countries in order to enhance the generalization of the result are more acceptable.

2. Nursing intervention in regarding of COPD knowledge and social support should be designed and researched in order to enhance self-management behaviors of elderly patients with COPD.

3. A study with predictive design should be conducted to explore the ability to explain the variance of COPD self-management of COPD knowledge and social support.

4. Moreover, future investigating COPD self-management behaviors studies can be conducted in qualitative research to increase the quality of final results and provide a more comprehensive understanding of these behaviors.

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References

An, M-H., & Choi, J-Y. (2012). Relationship of knowledge, attitude, correct meteed dose inhaler use, and self-management compliance among patients with COPD. *Korean Journal of Adult Nursing*, *24(2)*, 183-190.

Bandura, A. (1986). *Socialfoundations of thought and action: a social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. *(1989). Social cognitive theory. In R. Vasta (Ed.), Annals of child development (6th ed.). Six theories of child development. Greenwich, CT: JAI Press*

Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology and Health*, *13*, 623-649.

Bandura, A. (2004). Health promotion by social cognitive means. *Health Education Behavior*,*31(2)*, 143-164.

Barlow, J., Wright, C., Sheasby, J., Turner,, A. & Hainsworth, J. (2002). Self-management approaches for people with chronic condition: a review. *Patient Education and Counseling*, *48*(2), 177-187.

Blinderman, C. D., Homel, P., Andrew, B. J., Tennstedt, S., & Portenoy, R. K. (2009). Symptom distress and quality of life in patients with advanced chronic obstructive pulmonary disease. *Journal of Pain and Symptom Management*,*38*(1), 115-123.

Bourbeau, J., Julien, M., Maltais, F., Rouleau, M., Beaupre A., Begin R., Renzi, P., Nault, D., Borycki, E., Schwartzman, K., Singh, R.,& Collet, J. (2003). Reduction of hospital utilization in patients with chronic obstructive pulmonary disease: a disease-specific self-management intervention. *Archives of Internal Medicine, 163*(5), 585-591.

Disler, R. T., Gallagher, R. D., & Davidson, P. M. (2012). Factors influencing self-management in chronic obstructive pulmonary disease: an integrative review. *International Journal of Nursing, 49*(1), 230-242.

Dowson, C. A., Town, G. I., Framton, C., & Mulder, R. T. (2004). Psychopathology and illness beliefs influence COPD self-management. *Journal of Psychosomatic Research, 56*(3), 333-340.

Effing, T. W., Monninkhof, E. E. M., vander Valk, P. P., Zielhuis, G. G. A., Walters, E. H., van der Palen, J. J., & Zwerink, M. (2007). Self-management education for patients with chronic obstructive pulmonary disease. *Cochrane Database of Systematic Reviews*, Issue 4. Art. No: CD002990.

Gadoury, M. A., Renzi, P., Rouleau, M., Maltais, F., Julien, M., Beaupré, A., Nault, D., Schwartzman, K., & Bourbeau, J.(2005). Self-management reduces both short-and long-term hospitalization in COPD. *European Respiratory Journal*, *26*(5), 853-857.

Gallagher, R., Donoghue, J., Chenoweth, L., & Stein-Parbury, J. (2008). Self-management in older patients with chronic illness. *International Journal of Nursing Practice*, *14*(1), 373-382

Gallant, M. P. (2003). The influence of social support on chronic illness self-management: a review and direction for research. *Health Education & Behavior*, *30(2)*, 170-195.

Guarascio, A. J., Ray, S. M., Finch, C. K., & Self, T. H. (2013). The clinical and economic burden of chronic obstructive pulmonary disease in the USA. *Clinico Economics and Outcomes Research*, *5*, 235-245. Doi: 10.2147/CEOR.S34321

Hanh, C. T. (2014). Cardiovascular with comobirdities with chronic obstructive pulmonary disease at out-patient unit for management of chronic obstructive pulmonary disease - Bach Mai. *National Journal of Tuberculosis and Lung Diseases*, 17*(1)*, 35-38.

Haper, C. (2011). *Vietnam noncommunicable disease prevention and control programme 2002-2010 implementation review*. Retrieved from http://www.wpro.who.int/vietnam/topics/chronic_diseases/vietnam_noncommunicable_disease_prevention_and_control_program_2002_2010_imple_review.pdf

Health Strategy and Policy Institute. (2015). Retrieved from http://www.hspi.org.vn /vcl/Nghien-cuu-thuc-trang-qua-tai-duoi-tai-cua--he-thong-benh-vien-cac-tuyen-va-de-xuat-giai--phap-khac-phuc-t85-8128.html

Kobayashi, S., Yanai, M., Hanagan, M., & Yamanda, S. (2014). The burden of chronic obstructive pulmonary disease in the elderly population. *Respiratory Investigation*, *52*(5), 296-301.

Lan, L. T. T. (2011). Tình hình bệnh phổi tắc nghẽn mạn tính (COPD) tại Việt Nam: The actuality of chronic obstructive pulmonary disease (COPD) in Vietnam. *Journal of French-Vietnamese Association of Pulmonology*, *2(4)*, 1-3.

Lemeshow, S., Hosmer, J. D. W., Klar, J., & Lwanga, S. K. (1990). Adequacy of sample size in health studies. Behalf of WHO, 9(11), 1382. Doi: 10.1002/sim.4780091115

Maples, P., Franks, A., Ray, S., Stevens, A. B., & Wallace, L. S. (2010). Development and validation of low-literacy chronic obstructive pulmonary disease knowledge questionnaire (COPD-Q). *Patient Education and Counseling,*81*(1)*, 19-22.

Parvin, S. S. (2013). *Factors relating to self-management behaviors of patients with chronic obstructive pulmonary disease*. Master' thesis, Master of Nursing Science, Prince of Songkla University, Thailand.

Schüz, N., Walters, J. A. E., Cameron-Tucker, H., Scott, J., Wood-Baker, R., & Walters, E. H. (2015). Patient anxiety and depression moderate the effects of increased self-management knowledge on physical activity: a secondary analysis of a randomized controlled trial on health-mentoring in COPD. *Journal of Chronic Obstructive Pulmonary Disease.* Retrieved from http://www.researchgate.net/publication/273638216

Wang, K. Y., Sung, P. Y., Yang, S. T., Chiang, C. H.., & Perng, W. C. (2012). Influence of family caregiver caring behavior on COPD patients' self-carebehavior in Taiwan. *Respiratory Care*, *57*(2), 263-272.

World Health Organisation [WHO]. (2002). Innovative Care for Chronic Conditions.

World Health Organisation [WHO]. (2008). *Burden of COPD*. Retrieved from http://www.who.int/respiratory/copd/burden.

Wouters, E. F. M. (2005). COPD management-a hospital physician's view. *Respiratory Medicine*, *1*(1), 3-17.

Zhang, C., Wang, W., Li, J., Cai, X., Zhang, H., Wang, H., & Wang, X. (2013). Development and validation of a COPD self-management scale. *Respiratory Care*, *58*(11), 1931-1936.

Zigmond, A., & Snaith, R. (1983). The Hospital Anxiety and Depression Scale. *Acta Anaesthesiological Scandinavica, 67*, 361-370.

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment, 52*(1), 30-41.