

MINISTRY OF EDUCATION AND TRAINING MINISTRY OF HEALTH

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**RESEARCH THE COPD STATUS AND EFFECTIVENESS OF
HEALTH EDUCATION CAMPAIGN AT KIEN THIET AND
KIEN BAI COMMUNE, HAI PHONG CITY 2014 – 2016**

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1. RATIONALE

Chronic obstructive pulmonary disease (COPD) is a common and increased tendency. It usually occurs at the age of 40 and over, the main risk factors are smoking, environmental pollution. The common symptoms are dyspnea, chronic cough, and sputum production. Spirometric measurement is used to confirm COPD diagnosis [70] [71]. The proportion of undiagnosed COPD is rather high [40] [41] [100] [122] [135]. The knowledge, attitude, practice (KAP) on COPD of people is still limited [18]. Health education intervention (HEI) in the community helps people and patients to improve KAP about COPD. The detection and improvement of KAP for them on COPD is very necessary. Smoking is the most common risk factor of the COPD. Therefore, we select the tobacco growing commune as the location for HEI with the following objectives:

1. To determine the prevalence and factors related to COPD at Kien Thiet commune, Tien Lang district and Kien Bai commune, Thuy Nguyen district, Hai Phong from October 2014 to April 2015.
2. To describe the status of knowledge, attitudes of people, and practices of patients with COPD at Kien Thiet and Kien Bai commune from October 2014 to April 2015.
3. To evaluate the effectiveness of health education campaign with regards to the COPD at Kien Thiet commune after one-year of intervention.

2. Scientific contributions

- Results showed that the prevalence and factors related to COPD in two communes. Waterpipe smoking had a stronger effect on COPD than cigarette smoking. Among 310 COPD patients, 91.3% were

newly diagnosed. Of the 17 COPD patients (5,5%) with no symptoms were only detected by spirometry.

- Health education intervention in the community helped to improve people's KAP about COPD significantly. The model of COPD Club activities was easy to implement with low investment but had positive effects: patients could do self-care and respiratory rehabilitation at home and knew how to use the inhaler techniques. Health status was improved (reflected in the criteria for reducing means of exacerbation, mMRC, and CAT). The classification of airflow limitation severity and GOLD ABCD assessment of patients had little change.

3. Dissertation outline

Consisting of 124 pages: Introduction: 02 pages; Overview: 30 Pages; Subjects and methods: 18 pages; Study diagram 01 page; Results: 35 pages; Discussion: 35 pages; Conclusions: 02 pages; Recommendations: 01 page; There are 37 tables; 22 pictures; 180 references: 25 documents in Vietnamese and 155 in English

Chapter 1

OVERVIEW

1.1. History and definition: Emphysema has been described since the 1960s, In 2001 GOLD first introduced the definition of COPD. Definition of GOLD in 2017: Chronic Obstructive Pulmonary Disease (COPD) is a common, preventable and treatable disease that is characterized by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities usually caused by significant exposure to noxious particles or gases [72].

1.2. Epidemiology of the chronic obstructive pulmonary disease

In 1990, the number of deaths attributable to COPD was sixth, projecting that by 2020 it would rank third in all causes of death globally [89]. In 2016 the world was estimated to have 251 million people with COPD, by 2015 about 3.17 million people died from it, and 90% were in low- and middle-income countries [173]. Mortality has increased in the last 30 to 40 years. Recent mortality in some countries tends to be lower for males, and for females to stabilize or increase [42]. The use of spirometry for the diagnosis of COPD can detect double the number of patients compared to the detection of the disease based on the questionnaire [86]. The prevalence of COPD in people aged 40 years or older in Vietnam ranges from 3% to 8.1% [5] [10] [13] [15] [16] [17] [25] [127].

1.3. Factors related to chronic obstructive pulmonary disease

The most important risk factors for COPD is smoking; besides, factors such as dust, occupational chemicals, air pollution also play an important role. Antitrypsin deficiency, gender, infection, climate, asthma in history, etc... are also related to COPD [39] [42] [46] [44] [51] [67] [68] [70] [72] [108] [126].

1.4. Clinical features, spirometry, and COPD diagnosis

The main symptoms of COPD is a cough, chronic sputum, and dyspnea gradually. To detect early-stage disease, it's necessary to measure the ventilation function for all people who have symptoms or have a history of exposure to risk factors. Confirm COPD diagnosis when the Gaensler (FEV_1 / FVC) $<70\%$ the presence of a post-bronchodilator. Classification of airflow limitation severity depends on $FEV_1\%$ predicted. GOLD ABCD assessment now focus on exacerbation last year.

1.5 Knowledge, attitude, and practice of COPD

Many studies have found that people do not often know the name of the disease, the causes, the prevention, the harm of smoking, and are confused with other lung diseases. Patients do not often use the inhaler techniques or have not been instructed about respiratory rehabilitation [18] [29] [82] [105] [129] [140] [164].

1.6. Health education communication intervention about COPD

Health education intervention about COPD equips people with KAP on the disease. The goal is to reduce the incidence and burden of the disease. Education about knowledge can be the causes, symptoms, preventions, place of examination and treatment, and the harm of smoking; attitudes when they or their relatives have the COPD. Care gaps between the patient and the respiratory specialist are mainly due to different perceptions about the disease [138]. Health education programs can provide to patients with easy access to medicines, spirometry and cost savings [123]. The intervention significantly reduced the frequency of exacerbations and improved health status when compared with the control group [180]; Overcome the false of inhaler using [63]. The benefits of pulmonary rehabilitation include decreased dyspnea and improved health [158]. Home pulmonary rehabilitation may apply to COPD patients who do not access to rehabilitation center [33].

Chapter 2

SUBJECTS AND METHODS

2.1. Research subjects

- Subjects for studying prevalence and KAP on COPD is 5,220 people aged 40 and over living in two communes including 310 patients.

- Interventions on the same subjects at Kien Thiet commune consists of 2,206 people including 139 patients.
- Selection criteria: people 40 years and older living more than 5 years in two communes have mental health to answer the questionnaire and are voluntary to participate in the research.
- Confirm COPD diagnosis: Spirometry is required to make the diagnosis; the presence of a post-bronchodilator the Gaensler ($FEV1 / FVC$) $< 70\%$ confirms the presence of airflow limitation [12] [70] [71] [72]. Bronchodilator applies to all subjects with airway limitation. These subjects inhale 400 μg Salbutamol within 6 minutes and measure FEV1 after 20 minutes. The post-bronchodilator, FEV1 increase $< 200\text{ml}$ and/or under 12% and The Gaensler $< 70\%$ to confirm COPD.
- Diagnosis of chronic bronchitis: patients have a persistent cough continuously at least 3 months in a year and at least two consecutive years and have no airflow limitation.
- Diagnosis of asthma: patients with a history of asthma. Measurement of ventilation function, the post-bronchodilator, FEV1 increases $> 200\text{ml}$ and/or $\geq 12\%$ and The Gaensler $\geq 70\%$ to confirm asthma.
- Eligibility criteria: people having mental disorders, temporary residence, temporary absence and living in communes under 5 years. Subjects can not measure ventilation function due to throat malformations, heart failure, goiter level III, etc... or do not agree to participate in research.

2.2. Time of the study: from oct 2014 to dec 2016.

2.3. Location study: Kien Thiet commune, Tien Lang district, and Kien Bai commune, Thuy Nguyen district in Hai Phong.

2.4. Research methodology

2.4.1. Research design

- A cross-sectional study: to research epidemiology and KAP of people and patients about COPD.
- Interventional study: One - year of HEI to improve KAP for population, especially focus on the education at COPD Club with the aim of improving practice, health status and respiratory function for COPD patients.

2.4.2. Sample size and sampling technique

- Sample size for the prevalence [22]: $n = Z_{1-\alpha/2}^2 p(1-p) / (p \cdot \epsilon)^2$

$$Z_{1-\alpha/2} = 1.96 ; p = 0.057 [5] [25] ; \epsilon = 0.2.$$

Because of studying in two communes so We take DE to be 2. We calculated sample size: $n = 5,196$. In fact that we selected all subjects 40 years old and over in two communes and get 5,220 subjects.

- Intervention size [22]:

$$n = Z_{(\alpha, \beta)}^2 [p_1 (1 - p_1) + p_2 (1 - p_2)] / (p_1 - p_2)^2$$

p_1 : good knowledge about COPD before intervention estimates 5%.

p_2 : good knowledge about COPD after intervention reaches 20%.

$Z^2(\alpha, \beta) = 10.5$ (table Z with $\alpha=0.05$; $\beta=0.10$). Calculate $n = 97$.

All research subjects before the intervention are selected. We receive 2206 people, including 139 patients.

2.4.3. Variables and Method of data collection

- Epidemiological inquiry questionnaire based on epidemiological of international applying in Vietnam [26]. We used the KAP questionnaire of Đinh Ngoc Sy [18]. Practice questionnaires based on the National Program for the Prevention of COPD [12] [18] [24].
- Age groups: from 40 to 49; 50 to 59; 60 to 69 and 70 years old. Gender male or female. Education: illiterate, elementary, secondary,

and high school+. Occupations: farmer, worker, staff, retire, free work. Symptoms: chronic cough, dyspnea, sputum production.

- Chronic bronchitis, asthma, pulmonary tuberculosis in history.

- The smoking status: We calculated and converted into pack-years (P-Ys). P-Ys is the number of cigarette packs (one including 20 cigarettes) smoked a day multiply with the number of years smoked [10] [53]. Convert from pipe tobacco to cigarette: 1 cigarette = 1 gram of pipe tobacco = 5 times as much as 1/20 P-Ys.

- Fuels used in the kitchen: gas, coal, firewood, straw, etc. The exposure time is calculated based on the number of years of using.

-The prevalence of COPD and newly diagnosed. The prevalence of COPD and related categories by ages, sex, education, smoking status.

- The COPD prevalence according to clinical symptoms and a history of respiratory disease. Characteristics of patients: smoking, obstructive airway obstruction, and COPD stage assessment.

- Knowledge of COPD has 15 questions, including 25 correct answers, good knowledge if there are 18 correct answers or more. Included knowledge is the name, cause, symptoms, characteristics, drugs, and prevention.

- The attitudes towards COPD have five questions, including 11 correct answers, good attitude if there are 8 correct answers or more: attitude if you or people around have COPD, if people smoke, about living and activities with COPD patient.

- There are 6 sentences about the practice of COPD: 4 correct answers or more is good practice. It includes the use of inhaler techniques, quit smoking, breathing exercise, cough control [18] [24].

- COPD exacerbations are an acute worsening of respiratory symptoms that result in additional therapy.

- Assessment of symptoms by mMRC and health status by the COPD Assessment Test (CAT).
- Classification of airflow limitation severity base on FEV1% predicted [70] [72]. GOLD 1 (mild): $FEV1 \geq 80\%$; GOLD 2 (moderate): $50\% \leq FEV1 < 80\%$; GOLD 3 (severe): $30\% \leq FEV1 < 50\%$; GOLD 4 (very severe): $FEV1 < 30\%$ predicted.
- GOLD ABCD assessment (GOLD-2017) base on exacerbations, mMRC, and CAT [72].

2.4.4. Research steps

- Interview the epidemiology and KAP on COPD, screening and measure ventilation function for subjects with symptoms or risk factors.
- Intervention network: the author and local health staffs do directly with the coordination of the commune authorities.
- Training on communication skills, KAP, diagnosis, and treatment of COPD for health workers and make the communication materials.
- Indirect communicate by loudspeakers of villages and communes and hand out leaflets to each household. Communicate directly at the COPD Club once a month. Participants are educated about KAP and issues related to COPD. Guide to quit smoking, practice breathing exercises, cough control, use the inhale techniques.
- Evaluate after intervention about KAP, re-measure of ventilation function for patients.
- Intervention Efficiency (IE): $IE\% = (|p2 - p1| / p1)100\%$.

p1: value proportion before the intervention. p2: value proportion after the intervention. Practice assessment by checklist.

2.5. Data processing: input data on software Epi-data 3.1; cleaned and processed on spss 21.0 software.

2.6. Ethics in research: The dissertation was approved by Haiphong University of Medicine and Pharmacy. The study was approved by the local government and health authorities. Participants are voluntary in research and are kept confidential. All patients are consulted about their diseases and honesty of the researcher.

Chapter 3

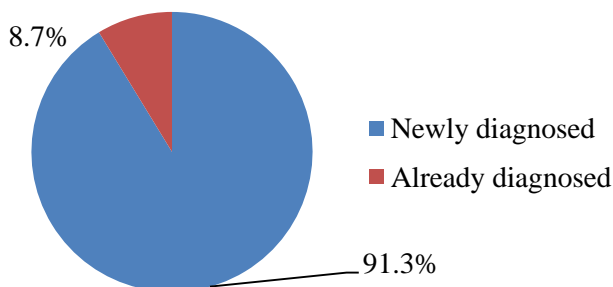
RESULTS

3.1. Prevalence and factors related to COPD

Table 3.5. COPD prevalence of the subjects

Subjects Commue	Total (n = 5220)	COPD (n = 310)	%	p
Kien Thiet	2540	177	7.0	< 0.01
Kien Bai	2680	133	5.0	
Total	5220	310	5.9	

Comments: prevalence of COPD was 5.9% (Kien Thiet 7.0% vs Kien Bai 5.0%).



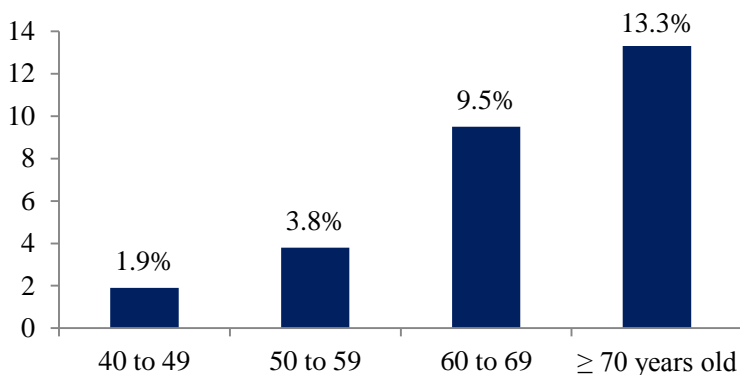
Picture 3.4. Diagnosed status of COPD patients (n = 310)

Comments: there were 283/310 (91.3%) new COPD patients detected. Therefore it is necessary to measure ventilation function for subjects 40 years old and over having risk factors.

Table 3.6. Relation between prevalence of COPD to the gender of subjects (n = 5220)

Subjects Sex	Total (n = 5220)	COPD (n = 310)	%	OR (95%CI)	p
Male	2326	202	8.7	2.45 (1.9-3.1)	< 0.01
Female	2894	108	3.7		
Total	5220	310	5.9		

Comments: proportion of COPD in male is 8.7% and female is 3.7%. Men increased the risk of having COPD by 2.45 (1.9-3.1) times to compare with women.



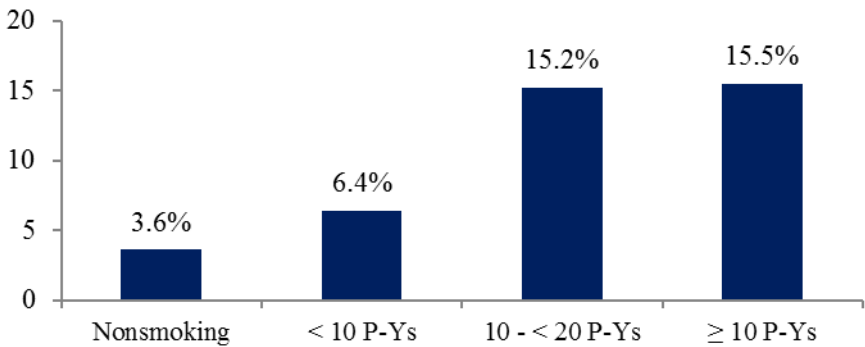
Picture 3.6. Relation between prevalence of COPD with ages of subjects (n = 5220)

Comments: prevalence of COPD tends to increase with age, lowest at 40 to 49 group (1.9%) and highest at 70 years old and over (13.3%); $\chi^2 = 158.8$; $p < 0.001$.

Table 3.8. Relation between prevalence of COPD to smoking of subjects

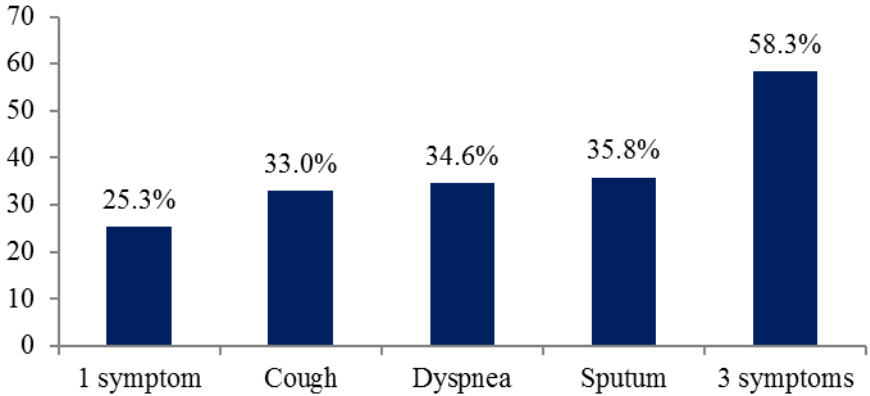
Smoking status	Subject (5220)	COPD (310)		OR (95%CI)	p
		n	%		
Non smoking	3051	110	3.6	ref	
Smoking	2169	200	9.2	2.72 (2.14-3.45)	< 0.001
Waterpipe	1221	122	10.0	2.97 (2.27-3.88)	< 0.001
Cigarette	472	36	7.6	2.21 (1.50-3.26)	< 0.001
Two kinds	476	42	8.8	2.59 (1.79-3.74)	< 0.001

Comments: smoking affected COPD by 2.72 (2.14-3.45) times than the non-smoking. Overall Waterpipe or Cigarette smoking all affected COPD.



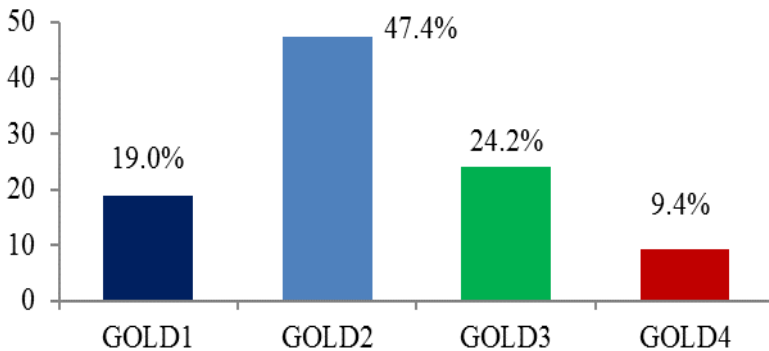
Picture 3.7. Relation between prevalence of COPD to smoking levels of subjects (n = 5220)

Comments: The prevalence of COPD tends to increase with the levels of smoking, $\chi^2 = 125.9$; $p < 0.001$.



Picture 3.10. Prevalence of COPD among subjects with respiratory symptoms

Comments: The proportion of COPD is high in subjects with cough, dyspnea, sputum symptoms. Subjects with above chronic symptoms should measure ventilation function to detect COPD.



Hình 3.12. Air limitation classification of COPD patients

Comment: COPD patients having mild and moderate obstructive stage accounted for 66.4%.

3.2. Knowledges, attitudes, practices of subjects before intervention

Table 3.14. Knowledge of subjects about COPD symptoms

Subjects \ Knowledge	Total (n = 5220)		COPD ¹ (n = 310)		Non COPD ² (n = 4910)		P (1&2)
	n	%	n	%	n	%	
Cough	2075	39.8	121	39.0	1954	39.8	> 0.05
Sputum	1093	20.9	52	16.8	1041	21.2	> 0.05
Dyspnea	1883	36.1	120	38.7	1763	35.9	> 0.05
3 symptoms	689	13.2	30	9.7	659	13.4	> 0.05
Unknown	2614	50.1	145	46.8	2469	50.3	> 0.05

Comments: knowledge of people about COPD symptoms is poor.

Table 3.15. Knowledge of subjects about the causes of COPD

Subject \ Knowledge	Total (5220)		COPD ¹		Non COPD ²		P (1&2)
	n	%	n	%	n	%	
Smoking	2280	43.7	136	43.9	2144	43.7	> 0.05
EP ¹	1861	35.7	115	37.1	1746	35.6	> 0.05
OD ²	787	15.1	41	13.2	746	15.2	> 0.05
Genetic factor	608	11.6	23	7.4	585	11.9	< 0.05
Unknown	2471	47.3	137	44.2	2334	47.5	> 0.05

(EP¹: Environmental pollution; OD²: Occupation dust)

Comments: 43.7% of subjects knew smoking was the cause of COPD. Not knowing the causes of the disease make prevention more difficult.

Table 3.19. Attitudes of subjects when they know they have COPD

Subject Attitudes	Total (5220)		COPD ¹		Non COPD ²		p (1&2)
	n	%	n	%	n	%	
Quit smoking	2052	39.3	125	40.3	1927	39.2	> 0.05
Avoid dust	1241	23.8	54	17.4	1187	24.4	< 0.01
Breath exercises	785	15.0	45	14.5	740	15.1	> 0.05
Cold prevention	1190	22.8	65	21.0	1125	22.9	> 0.05

Comments: overall attitudes of subjects when they knew about COPD was not good. Only 39.3% of smokers would quit smoking.

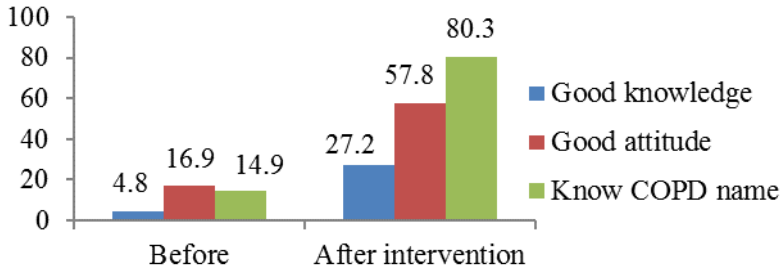
3.3. Effect of health education communication to COPD after the one-year intervention

Table 3.26. Knowledge of subjects about the causes and symptoms of COPD before and after intervention

Intervention Knowledge	Before (2206)		After (2206)		p	I-E (%)
	n	%	n	%		
Causes						
Smoking	956	43.3	1960	88.8	< 0.001	105.1
EP ¹	800	36.3	1715	77.7	< 0.001	114.0
OD ²	336	15.2	758	34.4	< 0.001	126.3
Genetic factor	268	12.1	460	20.9	< 0.001	72.7
Symptoms						
Cough	862	39.1	1609	72.9	< 0.001	86.4
Sputum	459	20.8	774	35.1	< 0.001	68.8
Dyspnea	836	37.9	1758	79.7	< 0.001	110.3
3 symptoms	312	14.1	634	28.7	< 0.001	103.5

(EP¹: Environmental pollution; OD²: Occupation dust)

Comments: after the intervention, most people knew the causes of COPD due to smoking, environmental pollution, and symptoms of COPD included cough, dyspnea.



Picture 3.18. Knowledge, attitudes, and knowledge of the COPD name of the subjects on COPD before and after the intervention.

Comments: after the intervention, the knowledge and attitude of people improved significantly. Most of them knew the name of the disease.

Table 3.31. The attitude of subjects when they know they have COPD themselves before and after intervention

Intervention attitudes	Before (n=2206)		After (n=2206)		p	IE (%)
	n	%	n	%		
Quit smoking	845	38.3	2004	90.8	<0.001	137.1
Avoid dust	542	24.6	1607	72.8	<0.001	195.9
Breath excieses	338	15.3	724	32.8	<0.001	114.4
Cold prevention	518	23.5	1001	45.4	<0.001	93.1
Unknown	614	27.8	48	2.2	<0.001	92.1

Comments: when having COPD, most people would quit smoking, avoid dust and chemist.

Table 3.33. The Practice of patients about COPD before and after intervention

Correct practice	Before(n=139)		After(n=139)		p	IE (%)
	n	%	n	%		
Cough control	01	0.7	104	74.8	<0.001	14,757
Breath excises	00	0.0	102	73.4		
Inhaler using	14	10.1	104	74.8	<0.001	640.6
Accuhaler using	01	0.7	64	46.0	<0.001	6,471
Turbuhaler using	0	0.0	68	48.9	<0.001	
Nonsmoking	76	54.7	103	74.1	< 0.05	35.5
Correct practice	00	0.0	87	61.9		

Comments: after the intervention, most of the patients practiced correctly about cough control, breath and inhaler using. The proportion of smoking reduced and 61.9% practiced correctly.

Table 3.34. Result of CAT, mMRC, exacerbations last year and ventilation function before and after intervention

Intervention Indexes	Before (n=139)		After (n=139)		p
	n	%	n	%	
mMRC \leq 1	74	53.2	93	66.9	< 0.05
CAT < 10	26	18.7	26	18.7	> 0.05
No exacerbation	75	54.0	89	64.0	> 0.05
Means of mMRC	1.47 \pm 1.07		1.17 \pm 0.97		< 0.05
Means of CAT	17.69 \pm 5.87		16.14 \pm 4.88		< 0.05
Exacerbations	0.76 \pm 0.96		0.52 \pm 0.81		< 0.05
Means of FEV1%	59.96 \pm 22.13		58.33 \pm 22.12		> 0.05

Comments: after the intervention, means of CAT, mMRC, exacerbations reduced significantly, and means of FEV1% changed negligibly.

Chapter 4

DISCUSSION

4.1. Prevalence and relative factors to COPD

Participants in the study included 5,220 people, of which females accounted for 55.4% and males accounted for 44.6%; $p < 0.05$. Means age of subjects at Kien Thiet was 56.91 ± 11.65 ; Kien Bai was 58.04 ± 12.52 ; $p < 0.05$. Smokers accounted for 41.6% (Kien Thiet 47.1% vs Kien Bai 36.7%; $p < 0.001$). Respiratory symptoms of the subjects were: a cough accounting for 14.9%; dyspnea 14.4%; sputum 10.6%. The proportion of chronic bronchitis accounted for 3.1%; asthma 2.0% and history of TB treatment 1.2%. COPD studies generally focused on subjects 40 years old and over, and the females usually participated more than males. The investigation focused on smoking status, occupations, symptoms, and history of respiratory diseases [5] [41] [100] [120]. The prevalence of COPD in the two communes was 5.9% (male 8.7% vs. female 3.7%; $p < 0.001$). The prevalence of COPD at Kien Thiet was 7.0% and Kien Bai was 5.0%; $p < 0.01$. There are 283 newly detected patients, accounting for 91.3%. The proportion of smoker and female at Kien Thiet was higher than Kien Bai, and age of the subjects at Kien Thiet was lower. Maybe the prevalence of COPD at Kien Thiet was higher than Kien Bai because of smoking. The prevalence of COPD tends to increase with age, $\chi^2 = 158.8$; $p < 0.001$). In individuals ≥ 70 years old, the risk of developing the disease increased 5.31 (3.3-8.6) times to compare with aged 40 to 49 years. The proportion of COPD in male

was 8.7% and female was 3.7%; OR = 2.45(1.9-3.1), after adjustment, OR = 1.82 (1.3-2.6), $p < 0.01$. Studies about COPD epidemiology in the world had different results, depending on geography, diagnostic methods. The COPD prevalence increases with age, male was higher than the female, most of cases were newly diagnosed [1] [4] [5] [16] [25] [41] [76] [78] [86] [100] [150] [150] [159]. The higher the education, the lower the COPD prevalence, $\chi^2 = 33.7$; $p < 0.001$. Subjects with lower secondary education increased the risk of having COPD by 1.50 (1.1-2.0) times to compare with higher education. Maybe high education people had got healthcare better than others. Nanshan Zhong [120]; Seok Jeong Lee [159]; Danielsson [135]: the proportion of COPD was high among people with low education. The proportion of COPD in farmers and staffs was 5.9%; highest in retirees 15.8%; OR = 1.27 (0.9-1.9). Retirees are usually older, so the proportion of COPD may be higher than other subjects. The COPD proportion among non-smokers was 3.6%; smokers 9.2%. The proportion of COPD tended to increase with the levels of smoking, $\chi^2 = 125.9$; $p < 0.001$. Waterpipe smokers with ≥ 10 pack-years effected to COPD increasing by 4.88 (2.8-8.5) times and with ≥ 20 pack-years increasing by 5.96 (1.9-18.7) times than the cigarette smoker. Smoking is mainly a risk factor for COPD. Waterpipe Smoking had a stronger effect on COPD than cigarette smoking because waterpipe smokers often inhaled deeply, so smoke had more effect on the respiratory organs. Emphysema was more common in waterpipe smokers than cigarette smokers [19]. Studies in the world

have shown that smoking is closely related to COPD [5] [16] [31] [37] [115] [178]. Subjects who were exposed to kitchen smoke > 30 years had more risk of COPD than those having no exposure or less exposure, OR = 7.35 (1.0-53.4); $p < 0.05$. Many studies also show that kitchen smoke exposure affected COPD [120] [145] [179]. To minimize the effects of kitchen smoke on COPD, the place of cooking should be ventilated or the clean fuel should be used. Results showed that 66.4% of COPD patients were at mild and moderate airflow limitation stage. Our study result was the same to study about COPD epidemiology of Ngo Quy Chau; Douglas W Mapel, the COPD patients were often at the stage of mild and moderate obstruction [4] [56]. Among 310 COPD patients, there were 17 patients with no symptoms (5.5%) only detected by spirometry.

4.2. Knowledge, attitude, and practice about the COPD

Before the intervention, only 15.1% of the respondents had heard the name of the COPD. Good knowledge about COPD was 4.7%; good attitude with the disease reached 16.4%. Understanding the symptoms and causes of subjects about COPD was very poor. As regards the symptoms, there was 39.8% of subjects supposed that COPD had a cough; 20.9% sputum and 36.1% dyspnea. Subjects who thought the cause of COPD due to smoking accounted for 43.7%; environmental pollution 35.7%. The study of Dinh Ngoc Sy showed that only 4.3% of respondents knew the name of the disease, knowledge of symptoms and causes was limited [18]. The study of authors also shown that the knowledge of the population and patients about COPD was very poor [103] [140] [164] [175]. According to the

interview, 42.9% of the respondents said that no smoking was the way of prevention. If they got COPD, 39.3% of subjects would quit smoking; 23.8% avoided dust or chemical. Because knowledge about the causes and symptoms was poor, the people didn't know how to prevent the disease and didn't have the right attitude. Before the intervention, no patient had practiced correctly about COPD. Most of the patients did not know how to do breathing exercise, cough control and use of inhaler techniques. Many studies also found that patients practiced incorrectly about COPD [63] [105].

4.3. Effect of health education communication to COPD after one-year of intervention

After one year of intervention, good knowledge about COPD of people at Kien Thiet increased from 4.8% to 27.2%; effective 466.7%; good attitudes from 16.9% to 57.8%; effective 242%; knowing the name of disease from 14.9% to 80.3%; the efficiency 438.9%. Masaharu Asai studied the COPD educational intervention for people in Japan, after intervention good knowledge about COPD only reached 24.5% [109]. Knowledge of cough symptom increased from 39.1% to 72.9%; sputum from 20.8% to 35.1%; dyspnea from 37.9% to 79.7%; The effect was 86.4%; 68.8% and 110.3% respectively. Knowledge of disease symptoms of the people improved significantly but not uniform. People knowing to smoke could cause COPD increased from 43.3% to 88.8%; Environmental pollution from 36.3% to 77.7%; non-smoking as a prevention way from 44.5% to 88.2%; quit smoking from 28.2% to 85.5%. If they got COPD, subjects who would stop smoking increased from 38.3% to 90.9%; those who would avoid dust and toxic chemicals increased from 24.6% to 72.8%. The results show that HEI helped people to

improve their knowledge of the causes, symptoms, and preventions on COPD. We educated patients about breathing exercises, cough control, smoking cessation, how to use some inhale techniques and detect the exacerbations, etc. Results showed that the correct practice of patients increased from zero to 61.9% after HEI. The proportion of patients practiced correctly cough control accounting for 74.5%; breathing 73.4%; inhale techniques using 74.8%. Some patients who practiced incorrectly were elderly or weak patients, so they need support from relatives or healthcare workers. The proportion of smokers reduced from 45.3% to 25.9%. Among smokers, the proportion of those already quitting smoking was 42.9% and those who reduced smoking was 46%. Because of planting tobacco commune, smoking is a habit difficult to remove, so it is necessary to communicate continuously about smoking cessation for patients. Studies on the effectiveness of HEI to patients worldwide have also achieved different results depending on the kind of intervention [62] [104] [155] [170]. Respiratory rehabilitation aims to improve the health and ventilation function of COPD patients [91] [106] [110] [144]. After HEI, means of mMRC reduced (1.47 ± 1.07 vs 1.18 ± 0.97); exacerbation (0.76 ± 0.96 vs 0.52 ± 0.81); CAT (17.69 ± 5.87 vs 16.14 ± 4.88) significantly, $p < 0.05$. The classification of airflow limitation severity and GOLD ABCD assessment of patients changed negligibly. Research showed that the activities of COPD Club at the commune was easy for patients to participate, bring a positive effect on improving health status, minimizing declined respiratory function and improving the quality of life for people with COPD.

4.4. Limitation of the research

- Selection of the epidemiological sample was not representative of the population.
- The research focused on determining the prevalence, KAP intervention for COPD, so it did not mention other characteristics of clinical and subclinical characteristics such as organ symptoms, other diseases X-ray, etc...
- + No relation was found between passive smoking and COPD due to rural characteristics of waterpipe, people directly processing or using so it is difficult to evaluate that. We could not intervene to change the planning of waterpipe tobacco to the other economic forms.
- We did not evaluate the smoking situation of people after the intervention.

CONCLUSIONS

After studying the epidemiology and KAP on COPD at Kien Thiet and Kien Bai communes, and one-year health education intervention at Kien Thiet commune, we had some conclusions:

1. Prevalence and factors related to chronic obstructive pulmonary disease

- The prevalence of COPD in population 40 years old and over was 5.9% (Kien Thiet 7.0% and Kien Bai 5.0%). Men increased the risk of having COPD by 1.82 times to compare with women.
- The proportion of COPD among smokers was 2.6 times higher than non-smokers (9.2% vs 3.6%; $p < 0.001$).
- With ≥ 10 P-Ys of smoking, waterpipe smoking effected on COPD 4.88 times more than cigarette smoking.
- The main factors related to COPD were old age, men, smoking, low education, exposure to kitchen smoke over 30 years. Did not relate between ages of patients with smoking level.

- Among COPD patients, there was 91.3% undiagnosed; 5.5% with no symptoms and 66.4% at the mild and moderate obstructive stage.

2. Knowledge, attitude, and practice about COPD before intervention

- Knowledge: good knowledge of people about COPD was 4.7%.

- 84.9% of subjects did not know the name of the disease, the proportion of subjects knew about COPD symptoms: a cough 39.8%, sputum 20.9%; dyspnea 36.1%.

- Only 43.7% of subjects knew the cause of the disease due to smoking and 42.9% knew non-smoking as a preventive measure.

- Attitude: good attitude about COPD before the intervention was 16.4%. When they had the disease, 39.3% would quit smoking; 23.8% would avoid dust, chemicals.

- Practice: None of the patients practiced COPD well, most of them did not know to use inhale techniques and respiratory rehabilitation.

3. Effectiveness after one-year of HEI about the chronic obstructive pulmonary disease.

Knowledge: good knowledge of people increased from 4.8% to 27.2%; IE: 446.7%; 80.3% known COPD name, IE: 438.9%.

- The proportion of subjects knew about COPD symptoms: cough 73%; dyspnea 79.7%; sputum 35.1%; IE: 86.4%; 110.3%; 68.8% respectively.

- The proportion of subjects who knew smoking as the cause of COPD increased to 88.9%; IE: 105.1%. Non-smoking is COPD prevention 88.2%; IE: 98.2%.

Attitude: the good attitude after intervention increased from 16.9% to 57.8%; IE: 242%. When they had the disease, 90.9% would quit smoking; IE: 137%; 72.8% would avoid dust, chemicals, IE: 195.9%.

Practice: the good practice of patients increased by 61.9%. The proportion of smoking patients decreased from 44.7% to 25.5%; IE: 43%. Among smoking patients, 42.9% had stopped and 46% reduced smoking. Most patients practiced correctly about cough control, breath, inhaler techniques.

Health status and ventilation function of the patient: means of CAT, mMRC, exacerbation of patients last year reduced significantly. The classification of airflow limitation severity and GOLD ABCD assessment of patients changed negligibly.

SUGGESTION

1. The health system should plan, screen and measure the ventilation functions for all subjects aged 40 and older with risk factors in the community for early COPD detection and proper preventive measures and treatment.
2. The health system in collaboration with the media center should regularly do health education communication to improve knowledge and attitude and practice for people about COPD.
3. Local authorities and healthcare should combine to establish COPD clubs in the community to help COPD patients participate easily.

**LIST OF RESEARCH WORKS OF THE AUTHOR THAT
WERE PUBLISHED RELATED TO THE THESIS**

1. Nguyen Duc Tho, Pham Minh Khue, Pham Thu Xanh, Tran Quang Phuc (2017), “Knowledge, attitude and practice toward chronic obstructive pulmonary disease among people aged of 40 and older in two communes, Hai Phong in 2015”, *Journal of Preventive Medicine*, Vol. 27, No.10, Pages. 11-18
2. Nguyen Duc Tho, Pham Thu Xanh, Pham Minh Khue, Tran Quang Phuc (2017), “Prevalence of chronic obstructive pulmonary disease among people aged 40 years and older in two communes in Hai Phong”, *Journal of Preventive Medicine*, Vol. 27, No.10, Pages. 19-25
3. Nguyen Duc Tho, Pham Minh Khue, Dao Quang Minh, Tran Quang Phuc (2018), “Effectiveness of a health education and communication campaign about copd in Kien Thiet, Tien Lang, Hai Phong”, *VietNam Medical Journal*, Vol 472, Nov. 1, Pages. 181-186.