

Awareness of chronic obstructive pulmonary disease in current smokers: a nationwide survey

So Yeong Mun^{1,*}, Yong Il Hwang^{1,*}, Joo Hee Kim¹, Sunghoon Park¹, Seung Hun Jang¹, Jae Yong Seo¹, Ja Kyung Kim¹, Yong Bum Park¹, Jae Jung Shim², and Ki-Suck Jung¹

¹Division of Pulmonary, Allergy and Critical Care Medicine, Department of Internal Medicine, Hallym University Medical Center, Anyang; ²Department of Pulmonary, Allergy and Critical Care Medicine, Korea University Guro Hospital, Seoul, Korea

Received: December 29, 2013
Revised: April 7, 2014
Accepted: July 10, 2014

Correspondence to Ki-Suck Jung, M.D.

Division of Pulmonary, Allergy and Critical Care Medicine, Department of Internal Medicine, Hallym University Sacred Heart Hospital, 22 Gwanpyeong-ro 170beon-gil, Dongan-gu, Anyang 431-796, Korea
Tel: +82-31-380-3715
Fax: +82-31-380-3973
E-mail: pulmoks@hallym.ac.kr

*These authors contributed equally to this work.

Background/Aims: Cigarette smoking is the most common risk factor for chronic obstructive pulmonary disease (COPD). However, few studies of the attitudes toward COPD of smokers, the group at risk of developing this condition, have been conducted. The purpose of this study was to explore the awareness of and attitudes toward COPD of current smokers.

Methods: The sample consisted of 502 individuals aged 45 and older from throughout Korea who smoked at least 10 packs of cigarettes per year. Telephone interviews using a structured questionnaire were conducted with respondents.

Results: First, we evaluated the health status of subjects, finding that 45.4% considered themselves to be in good health. We also asked about COPD-related symptoms, and 60.6% of subjects reported such symptoms. However, only 1.2% of subjects had been diagnosed with or treated for COPD, only 0.4% spontaneously mentioned COPD as a respiratory disease, and only 26.5% recognized COPD as a respiratory disease after seeing a list of such diseases. Television ranked as the top source of information about COPD. The willingness of 45.0% of subjects to stop smoking increased after being informed about COPD.

Conclusions: Despite having COPD-related symptoms, most smokers did not know that COPD is a respiratory disease. The attitudes of smokers toward COPD and smoking cessation varied according to socioeconomic status. In summary, a continuous effort to increase the awareness of COPD among smokers is needed. Additionally, strategies tailored according to different socioeconomic groups will also be necessary.

Keywords: Pulmonary disease, chronic obstructive; Attitude; Awareness

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response to noxious particles or gases in the airways and the lungs [1]. COPD continues to be an important cause of morbidity, mortality, and healthcare costs worldwide [2]. However, COPD is a highly underdi-

agnosed disease, with the diagnosis typically missed or delayed [3]. The reported underdiagnosis rate of COPD has ranged from 72% to 93% [4-7].

The 4th Korean National Health and Nutrition Examination Survey (KNHANES), which was conducted from 2007 to 2009, reported that the prevalence of COPD, confirmed by spirometry, was 12.9%. According to the 4th KNHANES, 15.0% and 11.3% of subjects with severe airflow limitation (Global Initiative on Obstructive Lung

Disease 3 and 4) were diagnosed with and treated for COPD, respectively [8]. These data confirmed that COPD is also underdiagnosed and undertreated in Korea. Additionally, only 57% of currently treated COPD patients in Korea were aware of their precise current diagnostic status [9]. Therefore, increased awareness about COPD is an important aspect of the diagnosis and treatment of this disease.

Cigarette smoking is the most common risk factor for COPD [1], but few studies have been conducted about the attitudes toward COPD of smokers, the group at risk of developing COPD. The purpose of this study was to explore the awareness of and attitudes toward COPD among current smokers.

METHODS

Study design

This study used a cross-sectional design, and subjects were randomly selected from across Korea. Eligible subjects were current smokers aged 45 and older who smoked at least 10 packs per year. Telephone interviews were conducted by Gallup Korea, a specialized research company, with eligible subjects who agreed to participate in this survey.

Data collection and analysis

The telephone interviews were conducted using a structured questionnaire that addressed current health status, symptoms, awareness of COPD, and attitudes toward COPD. The average time to complete the full questionnaire was 20 minutes.

The questionnaire included five sections in addition to the section gathering demographic data. The first section addressed current health status and symptoms. The second focused on awareness of smoking-related respiratory diseases. The third examined being diagnosed with COPD by a physician or being treated for this condition. The fourth explored attitudes toward COPD after informing respondents about this disease. The last part addressed willingness to be treated for COPD.

All interview data were collected and managed anonymously. Descriptive statistics (e.g., frequencies and mean \pm standard deviation) were calculated for all qualitative and quantitative study variables, respectively.

RESULTS

Demographic characteristics

The sample consisted of 502 subjects from across Korea. Women accounted for only 3.4% of the study subjects. The age distribution was as follows: 26.3% were aged 45 to 49 years, 42.6% were aged 50 to 59 years, 22.5% were aged 60 to 69 years, and 8.6% were aged 70 or older. Data regarding place of residence, amount smoked, smoking duration, occupation, educational level, and approximate household income were also obtained (Table 1).

Current health status and symptoms

First, we evaluated the health status of the subjects: 45.4% reported that they were in good health and 15.7% reported that they were in poor health. A total of 27.1% of smokers who had smoked for more than 50 years were in poor health. A greater proportion of subjects who smoked more than two packs per day than of those who smoked less than two packs per day were in poor health (Table 2).

We also asked subjects about their experience with COPD-related symptoms (e.g., cough or sputum irrespective of upper respiratory infection, dyspnea on exertion equivalent [DOE] to modified Medical Research Council questionnaire 2 or more, and resting dyspnea) [10]. A total of 60.6% of subjects suffered from COPD-related symptoms, and 26.8% reported sputum. Cough and DOE were reported by 16.2% and 14.8% of the subjects, respectively (Fig. 1). A total 35.9% of the subjects with COPD-related symptoms believed that they were in good health (Table 2), and 50.3% of the subjects with symptoms did not do anything about their symptoms. Only 13.5% of symptomatic subjects saw a physician for their symptoms; these figures were 3.8% and 8.5% in those aged 45 to 49 years and 50 to 59 years, respectively (Fig. 2).

Awareness of COPD

We evaluated awareness of COPD in two ways. First, we asked subjects to name three respiratory diseases. Second, we showed respondents a list of respiratory diseases, including COPD, and then asked the same question. Lung cancer was the most frequently cited respiratory disease, and only 0.4% of the subjects mentioned COPD as a respiratory disease in response to the first question

Table 1. Demographic characteristics of responders (n = 502)

Characteristic	No. (%)
Sex	
Male	485 (96.6)
Female	17 (3.4)
Age group, yr	
40–49	132 (26.3)
50–59	214 (42.6)
60–69	113 (22.5)
≥ 70	43 (8.6)
Smoking duration, yr	
10–19	17 (3.4)
20–29	123 (24.5)
30–39	195 (38.8)
40–49	119 (23.7)
≥ 50	48 (9.6)
Smoking amount, pack/day	
< 1	365 (72.7)
1–2	83 (16.5)
> 2	54 (10.8)
Residence	
Seoul	80 (15.9)
Incheon/Gyeonggi	130 (25.9)
Gangwon	26 (5.2)
Daeseon/Chungcheong	62 (12.4)
Gwangju/Jeolla/Jeju	78 (15.5)
Daegu/Gyeongbuk	48 (9.6)
Busan/Ulsan/Gyeongnam	78 (15.5)
Occupation	
Agriculture/fishery/livestock	67 (13.3)
Self-employment	139 (27.7)
Blue-collar worker	104 (20.7)
White-collar worker	68 (13.5)
Housewife	7 (1.4)
Unemployed	114 (22.7)
Not answered	3 (0.6)
Education	
High school or less	378 (75.3)
College or more	122 (24.3)
Not answered	2 (0.4)
Income, KRW/mon	
< 2,000,000	203 (40.4)
2,000,000–3,990,000	130 (25.9)
≥ 4,000,000	124 (24.7)
Not answered	45 (9.0)

KRW, Korean won.

Table 2. Self-reported health status

Variable	Good	Moderate	Poor
Total	45.4	38.8	15.7
Age group, yr			
45–49	47.0	43.2	9.8
50–59	44.9	42.1	13.1
60–69	46.9	31.0	22.1
≥ 70	39.5	30.2	30.2
Smoking duration, yr			
10–19	47.1	41.2	11.8
20–29	47.2	45.5	7.3
30–39	44.6	40.0	15.4
40–49	47.1	31.9	21.0
≥ 50	39.6	33.3	27.1
Smoking amount, pack/day			
< 1	46.0	38.6	15.3
1–2	44.6	39.8	15.7
> 2	42.6	38.9	18.5
COPD related symptoms			
Present	35.9	43.1	21.1
Absent	60.1	32.3	7.6
History of asthma			
Asthma (+)	16.0	56.0	28.0
Asthma (–)	47.0	37.9	15.1
COPD patients	0	50	50

Values are presented as percentage.

COPD, chronic obstructive pulmonary disease.

(Fig. 3). A total 26.5% recognized COPD as a respiratory disease in response to the second question. Among subjects with COPD-related symptoms, 27.6% cited COPD as a respiratory disease in the second step.

Television was the top source of information regarding COPD, and 66.2% of subjects obtained information about COPD from television. Only 18.0% of subjects received information about COPD from physicians.

Changes in attitudes after learning about COPD

Only 1.2% of respondents had been diagnosed with or treated for COPD, and 75.5% were aware that smoking was the cause of COPD. Among subjects with COPD-related symptoms or awareness of COPD, more than 20% were not aware that smoking is the cause of this condition (Table 3).

A total of 57.5% of subjects responded that they would

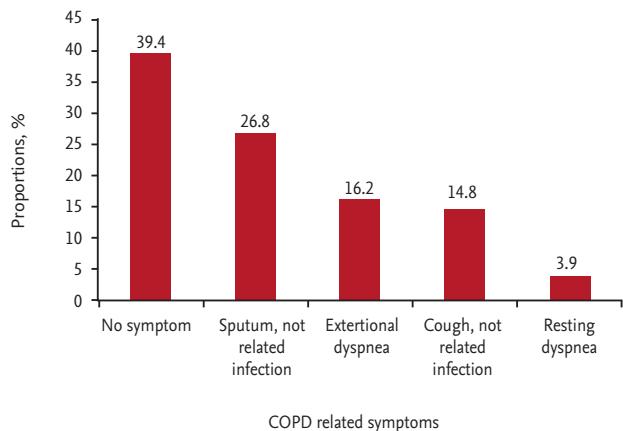


Figure 1. Distribution of chronic obstructive pulmonary disease (COPD)-related symptoms.

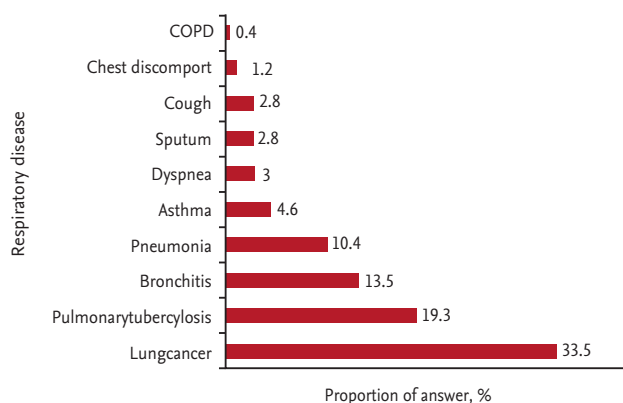


Figure 3. First impressions about lung or respiratory diseases among smokers. COPD, chronic obstructive pulmonary disease.

see a physician for medical treatment if diagnosed with COPD; this value differed among the subgroups. Subjects who had smoked for 20 to 39 years were less willing to undergo COPD treatment (Table 4).

The willingness to stop smoking increased in only 45.0% of subjects after they had been informed of COPD, and only 33% of subjects who had been smoking more than 50 years expressed enhanced willingness to stop after receiving this information. Willingness to stop smoking differed according to awareness of COPD and the presence of COPD-related symptoms. The willingness to stop smoking increased in a larger proportion

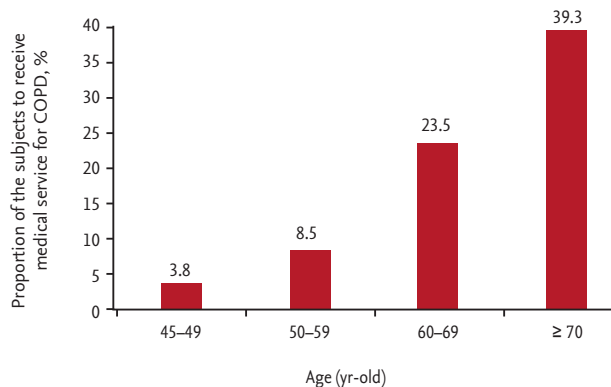


Figure 2. Proportion of subjects who received medical services for chronic obstructive pulmonary disease (COPD)-related symptoms according to age group.

of subjects (53.4%) who were previously aware of COPD compared with those without such prior awareness of COPD. Additionally, 48.0% of subjects with COPD-related symptoms reported increased willingness to stop smoking (Table 5).

DISCUSSION

This study found that 60.6% of smokers had COPD-related symptoms and that about half of this group did not do anything about their symptoms. Only 13.5% of symptomatic subjects visited physicians due to their symptoms. Additionally, 45.4% of subjects perceived that they were in good health, and about 40% of heavy smokers endorsed this description of their health. This finding is consistent with previous results showing that COPD patients often regarded their disease as mild to moderate [11] and that many COPD patients adapt their lifestyle to compensate for their deteriorating health [12].

Most subjects in this study did not know that COPD is a respiratory disease, and only 0.4% of smokers were aware of this fact. This figure is considerably lower than that found by the CONOCEPOC study conducted in Spain, which reported that 17.0% of subjects spontaneously mentioned COPD as a respiratory disease [13]. When a list of respiratory diseases, including COPD, was shown to subjects, this figure increased to 26.5%; however, more than 70% of smokers were unaware of

COPD. Indeed, only 27.6% of symptomatic smokers were aware of COPD. Although spontaneous mentions of COPD tended to decrease with age in the CONOCE-POC study [13], this study found no such difference according to age.

This study identified television as the most common source of information about COPD. A total of 66.2% of subjects received information about COPD from tele-

vision, and only 18.0% received such information from physicians. These results differ from those of a previous study that found that physicians provided sufficient information about COPD to 88.0% of COPD patients [9]. Thus, new strategies to provide information about

Table 3. Proportion of subjects who answered smoking is the cause of chronic obstructive pulmonary disease

Variable	%
Total subjects	75.5
Smoking duration, yr	
10–19	82.4
20–29	81.3
30–39	74.4
40–49	75.6
≥ 50	62.5
Income, KRW/mon	
< 2,000,000	71.4
2,000,000–3,990,000	76.2
≥ 4,000,000	82.3
Education	
High school or less	73.8
College or more	81.1
Subjects with awareness of COPD	79.7
Subjects with COPD related symptoms	76.6
Subjects diagnosed with COPD before	100

KRW, Korean won; COPD, chronic obstructive pulmonary disease.

Table 4. Proportion of subjects who answered to see doctors in case of being diagnosed with chronic obstructive pulmonary disease

Variable	%
Total subjects	57.5
Sex	
Male	56.8
Female	76.5
Age group, yr	
45–49	56.1
50–59	54.5
60–69	62.7
≥ 70	63.4
Smoking duration, yr	
10–19	70.6
20–29	55.3
30–39	53.6
40–49	62.1
≥ 50	63.0
Income, KRW/mon	
< 2,000,000	54.5
2,000,000–3,990,000	56.9
≥ 4,000,000	65.9

KRW, Korean won.

Table 5. Willingness to stop smoking cigarettes after education of chronic obstructive pulmonary disease

Variable	Increased	Not changed	Decreased
Total, %	45.0	50.6	3.6
Awareness of COPD, %			
Yes	53.4	39.8	6.0
No	42.0	54.5	2.7
COPD related symptoms, %			
Present	48.0	48.7	2.6
Absent	40.4	53.5	5.1

COPD, chronic obstructive pulmonary disease.

COPD to the general population are needed.

COPD is a substantially underdiagnosed disorder, with the diagnosis typically missed or delayed until it is advanced [3]. In this study, we found that 1.2% of current smokers had been diagnosed with and treated for COPD. Thus, the undiagnosed rate found in this study was higher than that of a previous study in Korea [8] and other countries [4-7]. Although we did not ask if spirometry was used to diagnose COPD, these data reconfirmed that COPD is underdiagnosed and undertreated in Korea.

As the current medications for COPD cannot change the natural course of this disease, patient education is an important aspect of COPD management. The most important topics for patient education are smoking cessation and basic information about COPD [1]. It has also been recently reported that smoking cessation before 40 years of age reduces the risk of smoking-related death by about 90% [14]. Therefore, smoking-cessation advice should be offered repeatedly, irrespective of the presence of COPD. Only 45.0% of subjects in this study reported an increased willingness to stop smoking after being informed of COPD, although 75.5% of this group were aware that COPD is caused by smoking. This low rate of increased willingness to stop smoking may also reflect the low level of awareness of COPD among smokers. It has also been reported that patients with less knowledge about COPD were more likely to have poor adherence to treatment [15]. A personalized educational program is needed to enhance smoking-cessation willingness and clarify the relationship between COPD and smoking.

Only 57.5% of subjects responded that they would see a physician for medical treatment if they were diagnosed with COPD. Subjects who had smoked for 20 to 39 years expressed a more negative attitude toward COPD treatment. Thus, undertreatment continues to be a major problem in COPD management even though early diagnosis of COPD is possible. This may be another reason to enhance awareness of COPD. Although smoking is known to be the cause of COPD, only 75.5% of the subjects in this study knew that smoking caused COPD, and this figure varied according to group. A total of 81.1% and 82.3% of those with the most education and the highest income, respectively, were aware that smoking is the cause of COPD. However, these figures decreased to 73.8% and 71.4% among those with the least education

and lowest income, respectively (Table 3). This finding may explain why COPD is more common among those with low socioeconomic status [16]. Thus, additional efforts will be needed to increase the awareness of COPD of this population.

In conclusion, we found that COPD is underdiagnosed and undertreated in smokers. Additionally, Korean smokers have low levels of awareness of COPD, and many smokers perceived their health to be good despite the presence of COPD-related symptoms. Smokers' attitudes toward COPD and smoking cessation varied according to their socioeconomic status. Additionally, television was the top source of information about COPD among smokers. As the subjects of this study were recruited from across Korea, we believe our results may represent the actual situation in this country. Therefore, continuous efforts to increase the awareness of COPD among smokers and to develop strategies fashioned according to socioeconomic status will be needed.

KEY MESSAGE

1. Chronic obstructive pulmonary disease (COPD) is underdiagnosed and undertreated in smokers, and Korean smokers have very low levels of awareness of COPD.
2. Smokers' attitudes toward COPD and smoking cessation vary according to their socioeconomic status.
3. Continuous efforts to increase the awareness of COPD among smokers and to develop strategies fashioned according to socioeconomic status are needed.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

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