ORIGINAL RESEARCH

Evaluation of family physicians' knowledge level, attitudes and behaviours on Asthma, Chronic obstructive pulmonary disease

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Abstract

Objective: The most common complaints about chest diseases that we encounter in family practice centers are of asthma and Chronic obstructive pulmonary disease (COPD). Thus, it was aimed to evaluate the attitudes, behaviors and knowledge level of family physicians on asthma and COPD.

Methods: Our research is a descriptive cross-sectional study. Our study was conducted between September-November 2019 by including family physicians, family physician research assistants and family physician specialists. 387 physicians participated in the study. The 35-question survey in our study consists of sociodemographic data and consists of questions aiming to evaluate the knowledge level, attitudes and behaviors on asthma-COPD.

Results: A total of 387 family physicians including 251 family physicians, 31 family physician specialists and 105 family physician research assistants were included in this study. When the rates of using the spirometry device in suspected asthma-COPD, were compared, the difference between family medicine research assistants and family physicians was found to be statistically significant (p<0.001). When the rates of answer to the "Would you give pneumococcal and influenza vaccines to your patients over 65 years of age?" question were compared, the difference between family medicine specialist and family medicine research assistants and family physicians was found to be statistically significant (p<0.001)

Conclusion: According to our study, it was seen that family physicians do not possess sufficient knowledge about asthma-COPD and there are severe shortcomings in diagnosis and treatment stages. Active, applied training seminars should be given importance in primary care, practical guides that physicians can easily reach and communication channels with chest diseases specialists should be increased.

Keywords: Family Practice, Knowledge, Attitude, Asthma, COPD

INTRODUCTION

Chronic diseases are important causes of mortality and morbidity in Türkiye and in the world. According to studies conducted recently, 305.467 (71%) of the 430.459 deaths in Türkiye were caused by chronic diseases. Death from respiratory system diseases is 34,211 (7.9%). Majority of the chronic causes of respiratory system diseases (65%) are chronic airway diseases [asthma, chronic obstructive pulmonary disease (COPD)]. However, it is thought that the level of knowledge of patients, patient relatives and health personnel about the risk factors, findings, diagnosis and treatment of chronic airway diseases is not sufficient (1).

Asthma is a heterogeneous group of diseases in which many cells and cell products in the body play a role, consisting of chronic inflammation and obstruction in the airways. Asthma is estimated to affect approximately 300 million people worldwide. This number is approximately 3.5 million people in Türkiye. Chronic airway inflammation and bronchial hyperresponsiveness

cause wheezing, shortness of breath, chest tightness and/or coughing spells, especially at night or in the morning. Symptoms and airflow limitation often resolve spontaneously or with treatment. Asthma is a chronic disease that poses a high-cost burden for the patient or society. But if the disease is not treated, it causes higher costs to society (2).

Chronic Obstructive Pulmonary Disease (COPD) is a common, preventable disease characterized by persistent airflow limitation and respiratory symptoms, often due to airway and/or alveolar damage caused by exposure to harmful particles or gases. The most important cause of COPD formation is being an active cigarette/tobacco product smoker or being passively exposed to cigarette smoke. In some studies, it was reported that the number of patients with COPD was 384 million in 2010, and the global prevalence was found to be 11.7%. Worldwide, approximately 3 million people die each year due to COPD. It is estimated that the prevalence of COPD will increase in the next 30 years, and deaths from COPD and related causes will exceed 4.5 million annually until 2030, due to the increasing use of cigarettes in developing countries and the increase in the elderly population in developed countries (3). Since this disease has a high rate of mortality and morbidity, the knowledge, attitude and behavior of family physicians, who are the first pillar of the health system, in the diagnosis and treatment process is critical. Like many chronic diseases, patients with COPD and asthma also apply to primary health care centers to benefit from health services (4).

There have been significant changes in the health system in Türkiye and the importance of family medicine in primary healthcare services is increasing day by day. Family physicians are the first and most frequently see patients in the provision of health services. Asthma and COPD are the most common diseases we encounter in complaints about chest diseases that come to family medicine. The study will make important contributions to asthma and COPD. It will be useful in closing the lack of education and raising awareness. For this reason, in our study, it was evaluated the level of knowledge, attitudes and behaviors of family physicians in terms of asthma and COPD.

METHODS

This study named the evaluation of knowledge levels, attitudes and behaviors about asthma and COPD in family physicians, was conducted between September and November 2019 by including family physicians, family medicine research assistants and family medicine specialists. The population of our cross-sectional and descriptive study consists of approximately 30000 family physicians working as family physicians in Turkey. When the sample size is calculated based on a 5% margin of error and 95% confidence interval and a frequency value of 0.50 used for cases where

the prevalence is unknown, it turns out to be 380. Considering the possibility of data loss, it is reached 390 people. A total of 387 physicians participated in the study. Participants mostly participated in the research from Kahramanmaraş and its surroundings. The interviews were conducted face-to-face by the researcher or questionnaires were applied over the internet via social media. Of the questionnaires, 186 were filled in face to face and 201 were completed online. The physicians who participated in the study were told that the questionnaire was designed for scientific research, it was not an evaluation that had the quality of an examination, and it was a study in which personal information was not obtained.

In the study, a questionnaire consisting of 35 questions was used, which was formed because of the literature review, which evaluated the knowledge levels, attitudes and behaviors of family physicians about asthma-COPD. The 1–8, among questions in the content of the 35-question survey are based on the sociodemographic data of the participants. Questions 9–15, 19, 21–29, 35 are measuring the asthma-COPD knowledge level of family physicians; Questions 17, 18, 30, 31 are attitude questions; 20, 32-34 the questions consist of behavioral questions. Each question questioning the level of asthma and COPD knowledge was accepted as 1 point, and knowledge scores were obtained, with a maximum of 8 points for asthma and a maximum of 9 points for COPD. Ethics committee approval was obtained with the date 04.09.2019 and number 09.

Statistical analysis was performed using the SPSS 19.0 for Windows (SPSS, Inc.; Chicago, USA) package program. Descriptive values are given as number (n), percentage (%), mean (mean), standard deviation (SD), median (median). Pearson chi-square and Fisher tests were used to compare categorical variables. Continuous variables were compared with nonparametric tests (Mann-Whitney U test and Kruskal-Wallis test) since they did not fit the normal distribution according to the normality assessment made by Kolmogorov-Smirnov and Shapiro-Wilk tests. The effects of different predictors determined by pairwise comparisons in predicting asthma and COPD knowledge scores were evaluated with multivariate logistic regression analysis. The Hosmer-Lemeshow test was used to evaluate the model fit. Statistical significance level was set at $p < 0.05$.

RESULTS

A total of 387 family physicians, including 251 family physicians, 31 family medicine specialists and 105 family medicine research assistants, were included in our study. The mean age of the physicians participating in our study was 37.06 ± 9.57 years, and their length of service was 11.68 ± 9.36 years. The mean ages were 40.76 ± 9.31 for family physicians, 36.23 ± 7.13 for family medicine specialists, and 28.47 ± 3.04 for family medicine research assistants. The average length of

Table 1. Comparison of descriptive characteristics of study groups

| | Working Groups | | | | | | Total | | p* |
| | Family Physician | | Family Medicine Research Assistant | | Family Medicine Specialist | | | | |
	n	%	n	%	n	%	n	%	
Gender									
Male	154	61.4	32	30.5	13	41.9	199	51.4	<0.001
Female	97	38.6	73	69.5	18	58.1	188	48.6	
Marital status									
Married	207	82.5	66	62.9	26	83.9	299	77.3	<0.001
Single	43	17.1	38	36.2	4	12.9	85	22.0	
Other	1	0.4	1	1.0	1	3.2	3	0.8	
Work Place									
City Center	207	82.5	103	98.0	24	77.4	334	86.3	<0.001
District	33	13.1	1	1.0	7	22.6	41	10.6	
Village-town	11	4.4	1	1.0	0	0.0	12	3.1	
Number of Patients per Day									
<20	32	12.7	66	62.8	11	35.5	109	28.2	0.003
20-49	123	49.0	26	24.8	8	25.8	157	40.5	
>50	96	38.2	12	11.4	12	38.7	121	31.3	
Number of Cigarettes per Day									
Not smoke	169	67.3	93	88.6	22	71.0	284	73.4	0.003
<10	35	13.9	6	5.7	2	6.5	43	11.1	
10-19	34	13.5	4	3.8	7	22.6	45	11.6	
20-29	10	4.0	2	1.9	0	0.0	12	3.1	
>30	3	1.2	0	0.0	0	0.0	3	0.8	

service is 15.00±9.28 years for family physicians, 10.71±7.04 years for family medicine specialists, and 3.97±4.16 years for family medicine research assistants.

The most studied place was the city center with 86.3%. 82.5% of family physicians, 98.1% of family medicine research assistants and 77.4% of family medicine specialists working in the city center. Of the physicians participating in the study, 40.6% mostly care for patients between the ages of 20-49. On the other hand, 49.0% of family physicians care for patients between the ages of 20-49. Family medicine research assistants deal with less than 20 patients a day, 62.9% of them. Family medicine specialists deal with more than 50 patients, 38.7% of them. When the physicians were asked about their smoking status, 73.4% of the physicians stated that they did not smoke (Table 1).

The comparison and statistical comparisons of the answers given by the study groups to the asthma information questions are given in Table 2. When the answers given to the questions 'What is the pathophysiological feature of asthma', 'Which is the most common physical examination finding in asthma', 'It is not a condition that increase the risk of asthma attack', 'Which is wrong about asthma treatment', a statistically significant difference was found according to the study groups. No statistically significant difference was found in the comparison of the answers given to the other information questions according to the study groups.

A comparison of the answers given by the study groups to the COPD information questions is given in Table 3. Because of the comparison of the answers given to each COPD information question according to the study groups, the statistical difference was found to be significant for each question.

Table 2. Comparison of the study groups' responses to asthma information questions							
	Working Groups						p*
	Family Physician		Family Medicine Research Assistant		Family Medicine Specialist		
	n	%	n	%	n	%	
Pathophysiological feature of asthma							
Air confinement	27	10.8	5	4.8	1	3.2	0.009
Restriction	25	10.0	3	2.9	1	3.2	
Airway obstruction#	167	66.5	91	86.7	24	77.4	
Alveolar damage	26	10.4	4	3.8	5	16.1	
Interstitial fibrosis	6	2.4	2	1.9	0	0.0	
Asthma prevalence in Türkiye							
%2-6 #	48	19.1	29	27.6	4	12.9	0.076
%7-8	83	33.1	29	27.6	12	38.7	
%9-11	63	25.1	33	31.4	9	29.0	
%12-14	36	14.3	6	5.7	6	19.4	
%15-20	21	8.4	8	7.6	0	0.0	
It is not one of the personal factors in terms of asthma etiology?							
Cigarette #	80	31.9	34	32.4	7	22.6	0.053
Genetic	29	11.6	10	9.5	4	12.9	
Gender	85	33.9	23	21.9	8	25.8	
Obesity	45	17.9	32	30.5	12	38.7	
Atopy	12	4.8	6	5.7	0	0.0	
Which is not a clinical feature of asthma?							
Shortness of breath	10	4.0	0	0.0	0	0.0	0.184
Cough	12	4.8	2	1.9	0	0.0	
Weight loss #	207	82.5	95	90.5	30	96.8	
Wheezing	7	2.8	3	2.9	1	3.2	
Chest tightness	15	6.0	5	4.8	0	0.0	
Most common physical examination finding in asthma							
Wheezing and rhoncus #	203	80.9	102	97.0	30	96.8	0.008
Tachycardia	11	4.4	1	1.0	0	0.0	
İntercostal retraction	23	9.2	0	0.0	1	3.2	
Cyanosis	6	2.4	1	1.0	0	0.0	
Speech difficulties	8	3.2	1	1.0	0	0.0	
The most objective indicator of the presence and severity of asthma attack.							
İncrease in symptoms	68	27.1	28	26.7	5	16.1	0.209
Findings on physical examination	36	14.3	17	16.2	8	25.8	
Radiological findings	17	6.8	2	1.9	0	0.0	
Pulmonary function tests disorders #	122	48.6	56	53.3	18	58.1	
Eosinophil test	8	3.2	2	1.9	0	0.0	

Table 2. Comparison of the study groups' responses to asthma information questions

It is not one of the conditions that increase the risk of attacks in asthma?							
Pregnancy	46	18.3	4	3,8	2	6.5	<0.001
Smoking	15	6.0	0	0,0	1	3.2	
FEV1>70#	102	40.6	78	74,3	18	58.1	
Using high-dose rescue medication (>1 box per month)	50	19.9	17	16,2	9	29.0	
Rhinosinusitis	38	15.1	6	5.7	1	3.2	
Which is wrong about asthma treatment?							
Drugs used in the treatment of asthma are divided into two as controlling and reliever (symptom reliever).	23	9.2	0	0.0	0	0.0	0.001
Long-acting inhaled beta 2 agonists alone are currently the most effective control drugs #	69	27.5	43	41.0	15	48.4	
Inhaled steroids are currently the most effective anti-inflammatory drugs used in the treatment of persistent asthma.	53	21.1	17	16.2	3	9.7	
Rapid-acting inhaled beta 2 agonists are the drugs of choice for the prevention of exercise-induced bronchoconstriction.	22	8.8	4	3.8	4	12.9	
Patients who do not use inhaled steroids are at increased risk for remodeling and loss of lung function.	84	35.5	41	39.0	9	29.0	

n=frequency, %=column percentage, #correct answer, *Pearson chi-square test

Table 4 shows the comparison of the answers given by the physicians to the attitude questions. The rate of using the spirometry device in suspected asthma-COPD was the research assistants with the highest rate of 24.6% among all groups. There was a significant difference between the groups in terms of using the spirometry device (p<0.001). Because of the paired comparisons, it was seen that the difference was due to the difference between the family doctor and the research assistant. The group that gave the highest yes answer to the question "Would you give pneumococcal and influenza vaccines to your patients with COPD over 65 years of age" was research assistants with 90.5%. There is a significant difference between the groups (p<0.001). Because of the paired comparisons, it was seen that the difference was due to the differences between the family physician and the research assistant, and between the family physician and the specialist.

Table 5 shows the comparison of the answers given by the physicians to the questions measuring behavior. When asked "Can you give a practical explanation about how to use metered dose devices in patients," 44.4% of the physicians said "I sometimes tell." Looking at the working groups; 51.4% of family physicians said I sometimes tell, 37.1% of research assistants said I always tell, 48.4% of specialists said I sometimes tell. There is a significant difference between the groups (p<0.001). In the paired comparisons, it was seen that the difference was due to the difference between family physicians and research assistants. All physicians 45.5%, 36.7% of family physicians, 60.0% of research assistants and 67.7%

of specialists answered yes to the question "Do you want a consultation from a pulmonologist in the diagnosis-treatment steps of asthma-COPD?" There is a significant difference between the groups (p<0.001). In the paired comparisons, it was seen that the difference was due to the differences between family physicians and research assistants, and between family physicians and specialists. To the question "Which resource do you usually use when prescribing medication for a patient with asthma-COPD?" 64.9% of the physicians' answers were asthma-COPD guidelines. Family physicians gave the answer 57.8%, family medicine research assistants 77.1%, and family medicine specialists 80.6% asthma-COPD guidelines. Only in terms of asthma-COPD guidelines there was a significant difference between the groups in terms of the resources used (p<0.001). In the paired comparisons, it was seen that the difference was between family physician-research assistant and family physician-specialist.

Each question questioning the level of asthma and COPD knowledge was accepted as 1 point, and knowledge scores were obtained with maximum points of 8 points for asthma and a maximum of 9 points for COPD. The mean asthma knowledge score was 4.32±1.59 for all physicians, 3.98±1.63 for family physicians, 5.03±1.33 for research assistants, and 4.71±1.07 for specialist family physicians. There is a significant difference between the groups (p<0.001). Because of the pairwise comparisons, it was seen that the difference was due to the differences between the family physician-research assistant and the family physician-family medicine specialist. The mean COPD knowledge score was 4.64±1.85

for all physicians, 4.18±1.86 for family physicians, 5.44±1.49 for research assistants, and 5.61±1.61 for specialist family physicians. There is a significant difference between the groups (p<0.001). Because of the pairwise comparisons, it was

seen that the difference was due to the differences between the family physician-family medicine research assistant and the family physician-family medicine specialist.

DISCUSSION

Asthma and COPD are disease groups that cause significant mortality and morbidity and are frequently referred to family medicine in primary care. These patients frequently apply to their family physicians both to have their prescribed medications prescribed and because of their active complaints. For these reasons, family physicians should approach this chronic disease group in a disciplined manner in terms of both diagnosis-treatment and prevention methods. While there are many studies on the approach to asthma and COPD in primary care in the world, we found few studies as a result of our literature review on this subject in Türkiye whereas primary care plays a very important role in the fight against asthma and COPD. In our study, it was aimed to evaluate the knowledge levels, attitudes and behaviors of family physicians about asthma-COPD.

Among the asthma knowledge evaluation questions, the participants gave the correct answer to the question of the pathogenesis of asthma with a rate of 72.9%. Looking at the literature, Ersu R. et al. in his research, similar results were obtained using our study; it was observed that physicians marked the question about the pathogenesis of asthma correctly at a rate of 83%-85% (5). However, it was observed that the pathogenesis information was at lower levels in older studies. In the study by Boyacı et al. on primary care physicians in Kocaeli in 2001, it was determined that the rate of correct answers to the question about the pathogenesis of the participants was 46% (6). Likewise, in the study by Çalıkoğlu et al. with general practitioners in 2001, this rate was found to be 33%, and it was suggested that physicians did not have sufficient knowledge on the definition and pathogenesis of asthma (7). This makes us think that the interest and awareness of physicians about asthma has increased over the years.

In studies conducted in Türkiye, the prevalence of asthma shows differences in adult and childhood age groups. According to a study, it has been shown that the prevalence of asthma varies between 5 and 10% in childhood and 2%-6% in adulthood (8). To the question asked about the prevalence of asthma in adults in Turkey, 32.0% of the physicians answered 7%-8% and 7.5% gave the answer of 15%-20%. When we look at other studies, we see that similar results are obtained (5). The low percentage of correct answers given by physicians to this question, we attribute due to regional differences in the

prevalence rate and the possibility that its emphasis in adults may be overlooked. In the question asked family physicians about asthma risk factors, the correct answer rate is 31.3%, and we see that physicians have difficulty in distinguishing between personal and environmental factors in the etiology of asthma. The underlying causes of the development of a disease should be known very well. Because knowing the underlying causes well will guide us in the treatment and prevention of the disease.

When the asthma information questions are evaluated in general, the questions that family physicians give the correct answers are; Physical examination findings of asthma with 86.6%, asthma symptoms with 85.8%, and the pathophysiology of asthma with 72.9%. The other questions are marked correctly with low percentages as stated above. In a study conducted in Canada found that well-trained physicians are more likely to evaluate and manage patients with asthma (9). In a study conducted in Crete, a course was given to family physicians and their knowledge of asthma diagnosis and treatment was evaluated before and after the course. Although the family physicians' awareness of asthma increased after the course, it was determined that their level of knowledge about asthma diagnosis and treatment was insufficient (10). In a study conducted in Canada in 2013, the lack of knowledge of family physicians about asthma control, use of spirometry and theoretical knowledge of asthma was mentioned (11). According to a study conducted in primary care in Kuwait in 2014, doctors' asthma knowledge and treatment scores were found to be low (12). Similar results were obtained in a study on family physicians in Türkiye in 2016 (5). Similar to other studies in the literature, in this study, physicians' general knowledge of asthma diagnosis and treatment were low. Training and courses to be given to physicians are critical in this context and will contribute to public health.

In our study, when the effect of demographic data on the level of asthma knowledge was examined, according to the results of the analysis, family medicine research assistants had 3.06 times more knowledge points than family physicians, and the difference was statistically significant. In addition to it was observed that family medicine specialists had a significantly higher asthma knowledge score than family physicians. A significant effect was not found on the asthma knowledge score of other demographic data. Only one study has been found in the literature on this subject. In the study

Table 3. Comparison of study groups' responses to COPD information questions							
	Working Status						p*
	Family Physician		Family Medicine Research Assistant		Family Medicine Specialist		
	n	%	n	%	n	%	
What is the definition of COPD?							
Chronic bronchitis + Asthma	47	18.7	16	15.2	5	16.1	<0.001
Bronchiolitis +Asthma	21	8.4	2	1.9	0	0.0	
Chronic bronchitis+Emphysema#	136	54.2	81	77.1	25	80.6	
Bronchiectasis+Emphysema	47	18.7	6	5.7	1	3.2	
Which is not a COPD risk factor?							
Cigarette	8	3.2	0	0.0	1	3.2	
High socioeconomic status#	176	70.1	94	89.5	22	71.0	0.017
Particles	11	4.4	1	1.0	1	3.2	
Low birth weight	45	17.9	9	8.6	7	22.6	
Biomass exposure	11	4.4	1	1.0	0	0.0	
The first symptom of COPD							
Dyspnea	91	36.3	48	45.7	15	48.4	0.035
Palpitation	11	4.4	3	2.9	0	0.0	
Cough#	107	42.6	48	45.7	16	51.6	
Wheezing	36	14.3	6	5.7	0	0.0	
Speech disorder	6	2.4	0	0.0	0	0.0	
Which sound is heard first in COPD physical examination?							
Ral	34	13.5	7	6.7	3	9.7	
Ronkus#	114	45.4	56	53.3	21	67.7	0.001
Crepitation	20	8.0	0	0.0	0	0.0	
Frotman	16	6.4	2	1.9	0	0.0	
Decreased breath sounds	67	26.7	40	38.1	7	22.6	
What is the definitive diagnosis of COPD?							
CT	39	15.5	16	15.2	3	9.7	
PA Chest X-ray	16	6.4	0	0.0	0	0.0	
Spirometer#	171	68.1	86	81.9	27	87.1	0.020
Sputum sample	9	3.6	1	1.0	0	0.0	
Arterial blood gas	16	6.4	2	1.9	1	3.2	
Which is not a physical examination finding of advanced COPD?							
Keg thorax	23	9.2	3	2.9	1	3.2	
Hyperresonance in percussion	34	13.5	16	15.2	7	22.6	0.001
Decreased breath sounds	45	17.9	6	5.7	3	9.7	
Deep heart sounds	48	19.1	14	13.3	3	9.7	
Expiratory shortening#	101	40.2	66	62.9	17	54.8	
Which is wrong in the treatment of stable COPD?							
Inhaled bronchodilators are the mainstay of symptomatic treatment	11	4.4	3	2.9	3	9.7	0.009
Regular and, when necessary, short-acting beta-agonist-anticholinergic use improves FEV1 and symptoms.	43	17.1	8	7.6	5	16.1	
Regular inhaled corticosteroid therapy reduces the risk of pneumonia#	100	39.8	58	55.3	20	64.5	
Beta agonist + anticholinergic is better than a single drug in improving FEV1	47	18.7	16	15.2	1	3.2	

Table 3. Comparison of study groups' responses to COPD information questions							
Long-term use of oral glucocorticoids has side effects	50	19.9	20	19.0	2	6.5	
Not associated with bad prognosis in COPD exacerbation?							
Old age	38	15.1	14	13.3	6	19.4	
Increased body mass index#	63	25.1	45	42.9	11	35.5	0.002
Heart failure	27	10.8	4	3.8	1	3.2	
History of previous hospitalization for COPD exacerbation	86	34.3	18	17.1	9	29.0	
Lung cancer	37	14.7	24	22.9	4	12.9	
It is not one of the common comorbidities seen in COPD?							
Vitamin D deficiency	95	37.8	50	47.6	13	41.9	
Systemic hypertension	24	9.6	4	3.8	3	9.7	
Metabolic syndrome	27	10.8	13	12.4	0	0.0	0.008
Depression	23	9.2	1	1.0	0	0.0	
Peripheral neuropathy#	82	32.7	37	35.2	15	48.4	
Which is true about the differential diagnosis of asthma-COPD?							
Asthma usually starts in middle age	24	9.6	7	6.7	1	3.2	
COPD is progressive but lung function may return to normal	44	17.5	12	11.4	3	9.7	
The most important etiological factor in asthma is genetics.	80	31.9	28	26.7	4	12.9	0.030
Smoking history in COPD is over 20 pack-years#	91	36.3	51	48.5	19	61.3	
There is no need for spirometry in COPD patient follow-ups	12	4.8	7	6.7	4	12.9	
n=frequency, %=column percentage, *Pearson chi-square test							

conducted on family physicians in Sakarya province in 2018, be a family medicine specialist and family medicine research assistant; it was concluded that asthma had a positive effect on attitude and behavior compared (13). As can be seen here, the contribution of education in family medicine is undeniable. Meetings and seminars should be organized for family physicians for proper and regular follow-up of patients with asthma. Family physicians should be encouraged to specialize.

As it is known in COPD, smoking is one of the most important etiological agents. Since smokers attribute their cough and sputum complaints to smoking, patients do not apply to the doctor or apply late; thus, early diagnosis of COPD becomes difficult. Additionally, the lack of knowledge of family physicians on COPD makes an early diagnosis difficult (14). The role of primary care physicians is critical in the fight against COPD, which is an important cause of mortality and morbidity worldwide.

When we look at the COPD knowledge-level questions of the physicians in our study; The first 3 most known questions; 'Which one of the following is not a risk factor for COPD' with 75.5%, 'which one of the following is the definitive diagnosis of COPD' with 73.4% and 'which is the definition of COPD' with 62.5%. In other questions (COPD symptom, COPD physical examination findings, COPD treatment, COPD attack questions), the rate of marking the correct answer was less than half. Generally, when the COPD knowledge questions

were evaluated, the knowledge levels of the physicians were found to be low. When we look at the studies in the literature, Başyiğit et al. showed that general practitioners working in primary care have a lack of knowledge about COPD (15). In this study, similar to our study, it was mentioned that the level of knowledge of the physicians in the cause of COPD is good, but the level of success of the physicians in the treatment steps is low. Decramer et al. In a study they conducted on general practitioners, it was suggested that the level of knowledge of physicians in the treatment steps was insufficient and antibiotics were prescribed to patients unnecessarily (16). In a study by Kesten et al. on primary care physicians, physicians were given a virtual case and their approaches were evaluated, according to the results of the study, the obstructive disease thinking index of the physicians was low; although they saw that COPD and asthma are not the same diseases, it was observed that they approached the two diseases with the same treatment (17). When we look at the studies on general practitioners in Türkiye, similar to our study, it was mentioned that the knowledge level of physicians about COPD was weak; it was stated that postgraduate training and seminars should be given to physicians (18,19).

When we examine the factors affecting the answers given to the COPD information questions in general terms, the importance of education has been seen once again. In our study, be a family medicine specialist and a family medicine research assistant; the effect on the COPD knowledge score was statistically significant compared to the family physician.

Table 4. Comparison of physicians' responses to attitude questions									
	Working Groups						**Total**		**p***
	Family Physician		**Family Medicine Research Assistant**		**Family Medicine Specialist**				
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	
Do you use the spirometry device in suspected asthma-COPD?									
I use	7	5.6	16	24.6	2	12.5	25	12.2	<0.001
I sometimes use	41	33.1	4	6.2	5	31.3	50	24.4	
I start treatment without using	6	4.8	1	1.5	0	0.0	7	3.4	
I will refer you to a pulmonologist	70	56.5	44	67.7	9	56.3	123	60.0	
Do you think your level of knowledge in using spirometry is sufficient?									
Definitely yes	19	7.6	4	3.8	3	9.7	26	6.7	0.550
Partially	111	44.2	50	47.6	11	35.5	172	44.4	
I don't think	121	48.2	51	48.6	17	54.8	189	48.8	
Would you apply pneumococcal and influenza vaccines to your COPD patient over 65 years old?									
Yes	130	51.8	95	90.4	25	80.6	250	64.6	<0.001
I recommend to some patients	109	43.4	9	8.6	6	19.4	124	32.0	
No	12	4.8	1	1.0	0	0.0	13	3.4	
n=frequency, %=column percentage, #correct answer, *Pearson chi-square test									

When we look at the literature, there is no study comparing family medicine specialists and general practitioners in this regard. In a study conducted respiratory tract diseases, the rate of diagnosing respiratory tract diseases by primary care physicians were lower than specialists in general (20).

According to our study, the other variable that statistically affected the knowledge level of COPD was working in a county-village-town. Those who work in district-village-town have a 2.44 times higher level of knowledge than those in the city center. No studies were found on this subject. Village-towns do not have health facilities other than family health centers, and patients often apply to family health centers, including their urgent complaints. Physicians in the village-town may have felt the need for more self-development in this regard, as they frequently encounter attack patients with COPD primarily. Generally, the number of physicians participating in this study from districts and villages is very few. Therefore, we believe that the other reason for the high level of COPD knowledge of the physicians working in the village-town may be the low number of participants from the village-town.

According to our study, the demographic data asked the physicians and the level of COPD knowledge; age, gender, the number of patients cared for daily, the smoking behavior of the physician, the years of employment of the physician, and the settlement (province, district) where the physician worked were not affected. In a study conducted on general practitioners in 2006, it was shown that the length of practice did not affect the response rates of information questions about COPD (15). In this study also coincides with the

conclusion that the length of service of the physicians in our study has no effect on the level of knowledge of COPD.

Exacerbations seen in COPD are among the leading causes of significant mortality and morbidity. Considering the etiology of COPD exacerbations, approximately 80% of them are caused by bacterial/viral lower respiratory tract diseases. In this context, it is critical to vaccinate patients to combat COPD exacerbations. When physicians were asked about their pneumococcal and influenza vaccinations for patients with COPD over the age of 65, 64.6% answered yes. Studies have shown that vaccination rates in the community are low. According to a study conducted in five different Latin American cities, influenza vaccination percentages; Caracas (Venezuela) was the lowest with 5.1%, and Santiago (Chile) was the highest with 52% (21). In a study by Özsu et al. on 129 people in Türkiye, the rate of getting influenza and pneumococcal vaccines was 11.6% (22). Again, in a study examining the vaccination rates of 85 patients hospitalized for COPD attack in Türkiye in 2018, it was found that only 5 (5.8% of the whole group) of the patients had influenza and pneumococcal vaccines (23). In a study conducted in Germany, it was noted that the most important factor in the vaccination of patients was the doctor's recommendation (24). Another reason for the low vaccination rate in society may be the low socioeconomic level. In a study conducted in Mersin in 2016, it was reported that 52.5% of those with an income level below 1000 Turkish Liras did not get vaccinated (25). The reason for the low vaccination rates in the community; the physicians' inability to spare enough time for the patient due to their workload may be due to the insufficient level of

Table 5. Comparison of physicians' responses to questions measuring behavior							
	Working Groups						p*
	Family Physician		Family Medicine Research Assistant		Family Medicine Specialist		
	n	%	n	%	n	%	
Do you give a practical explanation on how to use metered dose devices the patients?							
Yes, I always tell	64	25.5	39	37.1	11	35.5	<0.001
Sometimes I explain	129	51.4	28	26.7	15	48.4	
No, I don't tell	27	10.8	4	3.8	1	3.2	
I do not explain because my level of knowledge is not enough	31	12.4	34	32.4	4	12.9	
When the patient who comes to print his asthma-COPD reports and applies to your clinic							
I do not write a prescription at the request of the patient	45	17.9	19	18.1	8	25.8	
I write a prescription partly at the request of the patient	158	62.9	73	69.5	20	64.5	
I write directly reported drugs without assessment	48	19.2	13	12.4	3	9.7	
Would you like a consultation from a pulmonologist in the diagnosis-treatment steps of asthma-COPD?							
Yes	92	36.7	63	0.0	21	67.7	<0.001
Sometime	79	31.5	26	24.8	5	16.1	
No, I sending directly	80	31.9	16	15.2	5	16.1	
The Resource You Usually Use When Prescribing Medication to a Patient with Asthma-COPD							
Pharmaceutical companies and brochures							
Yes	21	8.4	7	6.7	3	9,7	0.812
No	230	91.6	98	93.3	28	90.3	
Online drug prospectus							
Yes	71	28.3	23	21.9	6	19.4	
No	180	71.7	82	78.1	25	80.6	
Asthma-COPD guidelines							
Yes	145	57.8	81	77.1	25	80.6	<0.001
No	106	42.2	24	22.9	6	19.4	
Main source books (textbook, literature, etc.)							
Yes	54	21.5	25	23.8	9	29.0	0.612
No	197	78.5	80	76.2	22	71.0	
Other							
Yes	33	13.1	14	13.3	1	3.2	0.271
No	218	86.9	91	86.7	30	96.8	
n=frequency, %=column percentage, *Pearson chi-square test							

knowledge of the patients about the possible effects of the vaccine. Brochures and posters can be useful to increase the awareness of patients in this regard. The key factor here is family physicians in primary care, who encounters patients frequently. According to a survey conducted by evaluating 61 patients in the chest diseases outpatient clinic in Düzce, none of the family physicians recommended pneumococcal vaccine to patients in primary care, whereas influenza vaccine was recommended to 16% of patients (26). This rate was found to be lower than in our study. In our study,

influenza and pneumococcal vaccination recommendations by family medicine specialists and family medicine research assistants to patients were higher among compared to family physicians. When we look at the literature, no study has been found on this subject that compares family medicine specialists and family physicians.

In this section, which evaluates the behavioral status of family physicians on asthma-COPD, 29.5% of the physicians answered yes to the question "Can you inform the patient

about how to use inhaler drugs?" Especially, when using inhaler drugs in elderly patients, misuse techniques often arise due to the decline of cognitive functions with age. Misuse makes it difficult to control the disease. In an external-centered study, misuse technique was found in 71% of 4078 asthma patients who were treated with metered dose inhalers and steroids. It has been concluded that asthma control in patients who receive asthma inhaler medication with the correct technique is better than those who use their medication with the wrong technique (27). In a study by Chopra et al. in which they investigated the skills of using inhaler techniques on healthcare workers, correct inhaler technique was found that they used it in 81.6% of respiratory therapists, 77.7% of primary care physicians, 57.7% of pharmacists, 54.4% of nurses and 53.8% of assistants (28). In a study conducted in Türkiye in 2014 in which the skills of healthcare professionals on inhaler techniques were investigated, it was found that specialist physicians had a significant level of inhaler use skills compared to other healthcare professionals (family physician, nurse, pharmacist). There was no significant difference between other healthcare professionals groups. It was mentioned that they had moderate and bad use skills (29). When these studies were examined, results similar to our study emerged. In this section, the role of health professionals, especially physicians, as a guide is critical. Patients should be questioned about their use of drugs at each visit, and how they should be used in practice should be explained with visual techniques if necessary. Of course, physicians should also be aware of this issue. In this question, 17.8% of the physicians stated that they did not know about this issue, and 8.3% of them answered 'no,' probably because they did not have knowledge or because of the density of patients. It would not be right to expect family physicians to show the patient these technical methods that they do not know. The deficiencies of family physicians and nurses can be eliminated by including in-service trainings and seminars. Additionally, it was concluded that family medicine research assistants were significantly more sensitive than family physicians in informing the patient about inhaler preparations.

"Would you like a consultation with a thoracic specialist?" 45.5% of the physicians answered yes to the question on asthma-COPD. In this section, it is questioned how relevant and sensitive the physicians are to the patient in the diagnosis and treatment steps, and how active they are about adherence to treatment and clinical course. In a study conducted in primary care in Türkiye in 2014, when family physicians were asked the question "Do you call the specialist you common follow your patient with information?" 27% of them answered yes (30). When we look at the family physicians in our study, 36.7% stated that they wanted a consultation,

and similar results emerged. Physicians may need to refer the patient to a pulmonologist because of the lack of additional necessary materials for diagnosis in the family health center and limited opportunities to start asthma-COPD preparations in the treatment. In this section, in the chronic follow-ups of the patient, the chest diseases consultation results and medications should be checked without losing contact with the patient and should be in contact with the chest diseases specialist if necessary. The feedback of information about patients consulted with chest diseases is critical for both the follow-up of patients and for the professional development of family physicians. In our study, it is surprising that family medicine specialists and family medicine research assistants requested consultation at a higher rate than family physicians. This situation contradicts the fact that despite their low scores, family physicians in asthma-COPD information questions ask for consultation less than specialists and research assistants. Here, this contrast suggests that family medicine specialists and research assistants better know the possible comorbidities and complications about asthma-COPD, and their more cautious approach to patients may lead to higher referrals to pulmonologists in these groups.

Physicians stated that the most common sources they use when prescribing drugs to patients are asthma-COPD guides, and they use prospectuses on the internet as the second most frequent source. In a primary care study in Kuwait, it was emphasized that education level, knowledge about asthma, and clinical practice were important determinants of adherence to asthma guidelines (12). In our study, it was observed that family medicine specialists and research assistants benefited from asthma-COPD guidelines statistically significantly more than family physicians. Accordingly, it was concluded that as the level of education increases, the rate of resource use increases and the treatment is more scientifically approached.

CONCLUSION

In this study, which evaluated the knowledge levels, attitudes and behaviors of family physicians about asthma-COPD diseases, it was observed that family physicians did not have sufficient knowledge levels and there were great deficiencies in diagnosis and treatment steps. There is an obligation to have a spirometry or peak flowmetry device in family health centers in Türkiye. Despite this, the inadequacy of diagnosis and treatment in primary care is thought-provoking. The fact that family medicine specialists and family medicine research assistants have higher levels of knowledge and positive attitudes in our research reveals the necessity of education in family medicine. Therefore, family physicians should be encouraged to specialize in family medicine.

Active, applied training seminars should be given importance in primary care. Practical guidelines that physicians can easily reach in primary care should be increased. The focus should be on system models that will create active communication channels with the pulmonologist and/or other specialties, if necessary, to improve the family physicians, both in terms of improving themselves and to provide excellent disease control. Additionally, informative brochures and posters about asthma-COPD should be disseminated in society and supported with trainings for prevention of the development of the disease, its early diagnosis, the prevention of the progression of the disease and its effective treatment, in order to reduce mortality and morbidity. The limitations of the study are that the study was conducted in a certain region and that it was carried out with a standard scale. Conducting studies with a country-wide population and a standard scale may strengthen the results to be obtained.

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