



Assessment of asthma and chronic obstructive pulmonary disease awareness in university students

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Abstract

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Objective: The study was aimed to identify the awareness of the chronic obstructive pulmonary disease (COPD) and asthma among university students and to compare awareness of COPD and asthma at the faculty of health science and education.

Method: The universe of this cross-sectional observational study was students at Faculty of Health Science and Education in Hatay Mustafa Kemal University. Students divided into two groups (Group I: 317 Faculty of Health Science students, and Group II: 308 Faculty of Education students). TC Ministry of Health Chronic Airway Diseases Prevention Control Program Asthma-COPD Awareness Questionnaire Form was applied to volunteer face to face or via the internet.

Results: Correct answers about COPD awareness were approximately above 70% except for questions: "Is COPD a treatable disease?" and "What test is required for the diagnosis of COPD?". Correct answers about asthma awareness were approximately above 60% except for questions "Are asthma medications addictive?" and "Is asthma a disease that can be cured completely?". The questions about awareness of COPD and asthma were answered more correctly in Group I more than in Group II except for questions: "In which age group is COPD most common" and "Are asthma medications addictive?" ($p<0.05$).

Conclusion: COPD and asthma awareness was greater in students from the health sciences faculty than those from the education faculty. However, the university students showed an inadequate knowledge of the diagnosis and management of COPD and the medication and management of asthma. It is thought that providing education and awareness about chronic respiratory diseases to all university students will facilitate disease management

Keywords: Chronic Obstructive Pulmonary Disease, Asthma, Students, Awareness, Chronic Respiratory Disease

Öz

Üniversite öğrencilerinde astım ve kronik obstrüktif akciğer hastalığı farkındalığının değerlendirilmesi

Amaç: Çalışmada üniversite öğrencilerinde kronik obstrüktif akciğer hastalığı (KOAH) ve astım farkındalığını belirlemek ve sağlık bilimleri ve eğitim fakültesinde okuyan öğrencilerin KOAH ve astım farkındalığını karşılaştırmak amaçlanmıştır.

Yöntem: Bu enine kesitsel gözlemsel çalışmanın evreni Hatay Mustafa Kemal Üniversitesi Sağlık Bilimleri ve Eğitim Fakülteleri öğrencileriydi. Öğrenciler iki gruba ayrıldı (Grup I: 317 Sağlık Bilimleri Fakültesi öğrencisi ve Grup II: 308 Eğitim Fakültesi öğrencisi). T.C. Sağlık Bakanlığı Kronik Havayolu Hastalıkları (KHH) Önleme Kontrol Programı Astım-KOAH Farkındalık Anketi Formu yüz yüze ve internet aracılığı ile uygulandı.

Bulgular: KOAH farkındalığına yönelik doğru cevaplar "KOAH tedavi edilebilir bir hastalık mıdır?" ve "KOAH tanısı için hangi test gereklidir?" soruları dışında yaklaşık %70'in üzerindeydi. Astım farkındalığı ile ilgili doğru cevaplar "Astım ilaçları bağımlılık yapar mı?" ve "Astım tamamen tedavi edilebilir bir hastalık mıdır?" soruları dışında yaklaşık %60'ın üzerindeydi. KOAH ve astım farkındalığı ile ilgili sorulara "KOAH en sık hangi yaş grubunda görülür" ve "Astım ilaçları bağımlılık yapar mı?" soruları dışında Grup I'de Grup II'ye göre daha fazla doğru yanıt verildi ($p<0.05$).

Sonuç: Sağlık Bilimleri Fakültesi öğrencilerinde KOAH ve astım farkındalığı, Eğitim Fakültesi öğrencilerine göre daha fazlaydı. Ancak üniversite öğrencilerinin, KOAH tanı, yönetimi ile astım ilaç tedavisi ve yönetimi konusunda bilgileri yetersizdi. Tüm üniversite öğrencilerine kronik solunum yolu hastalıkları konusunda eğitim ve farkındalık sağlamanın hastalık yönetimini kolaylaştıracağı düşünülmektedir.

Anahtar Kelimeler: Kronik Obstrüktif Akciğer Hastalığı, Astım, Öğrenci, Farkındalık, Kronik Solunum Yolu Hastalığı

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INTRODUCTION

Chronic respiratory diseases are among the critical causes of mortality and morbidity in the world (1). Asthma, and chronic obstructive pulmonary disease (COPD) constitute the vast majority (65%) of chronic respiratory diseases, and it was reported that COPD was the third leading causes of death (2,3). The global prevalence of COPD is 13.1% in the world and 5.8% in Turkey (4,5). In addition, for asthma, global prevalence rates was 4.3% in the world, 4.4% in Turkey (6,7).

The prevalence of these diseases is on the rise due to various factors such as smoking, air pollution, climatic changes, and the transmission of microorganisms. Therefore, it is crucial to identify the level of awareness and prevalence of the disease (1).

Chronic respiratory diseases and risk factors are not well known by healthcare professionals and managers, or by patients, patients' relatives or the media (2,8). These diseases are not diagnosed and treated adequately, and preventive measures cannot be applied sufficiently (8). The World Health Organization (WHO) called for urgent action for the prevention and control of chronic diseases, and the Global Alliance against Chronic Respiratory Diseases (GARD), the "new way to battle with chronic respiratory diseases", was established. The goal of GARD is to reduce the global burden of chronic respiratory diseases (9). Therefore, planning and practices aimed at reducing hospital admissions and mortality rates due to chronic respiratory diseases have begun to be put forward. To initiate a comprehensive approach of GARD to combat chronic airway diseases, strategies such as increasing awareness and information sharing of the parties involved about chronic respiratory diseases (communication), gaining global social support, and mobilizing resources for preventing chronic respiratory diseases (social movement) have been determined. Protective measures within the scope of this plan were to inform the public about chronic airway diseases, increase social awareness and carry out studies to create positive and permanent behavioral changes in terms of significant risk factors to prevent the development of chronic respiratory diseases (asthma and COPD) (10,11).

There is a lack of information in the literature about the awareness of chronic respiratory disease among university students. Studies investigated the awareness of respiratory diseases among medical and dental

college students (12,13). The awareness of respiratory diseases among primary care doctors and the Turkish community was previously evaluated (2,8). However, the awareness of COPD and asthma in university students, especially in different faculties, has not been assessed. Therefore, the current study aimed to compare the knowledge of COPD and asthma awareness in university students at the faculty of health science and education.

METHOD

Participants

In this cross-sectional observational study, a total of 625 students at Hatay Mustafa Kemal University Faculty of Health Science and Faculty of Education were enrolled between March and October 2020.

Study design

Students who participated in the study were divided into two groups as Group I, who attended the Faculty of Health Science and Group II attending the Faculty of Education. TC Ministry of Health Chronic Airway Diseases (CHD) Prevention Control Program Asthma-COPD Awareness Questionnaire Form was used to evaluate the awareness of asthma and COPD. The questionnaire was developed by the Ministry of Health and included 11 items of COPD awareness and 11 items of asthma awareness questions.

This study was conducted manually and also by online survey forms due to the Covid-19 pandemic. The questionnaire was completed using the Google Forms tool (Google, Mountain View, CA, USA).

The sampling technique could not be used due to the pandemic. Based on the estimated population (1200 students of Faculty of Health Science and 2300 students of Faculty of Education) and the distribution of 50% response, using the Raosoft sample size calculator, the required sample size was calculated as at least 347 students with a 95% confidence level and a maximum margin of error of 5%.

Statistical Analysis

A Windows-based SPSS 20.0 statistical analysis program was used (Armonk, NY: IBM Corp). Kolmogorov–Smirnov/Shapiro Wilk tests were used for data normality. The results for the survey questions were expressed as a percentage. Baseline characteristics of the groups were compared using a Mann–Whitney U test, and differences between groups were reported as median (interquartile

range; IQR). The chi-square test or Fisher's exact test (when chi-square test assumptions do not hold due to low expected cell counts) was used to compare the answers given to the questionnaire in groups. A p-value ≤ 0.05 was considered statistically significant.

RESULTS

A total of 625 students (20.83 ± 2.80 Y, 441 F, 184 M) were enrolled on the study. There were 317 students (20.69 ± 2.58 Y, 236 F, 81 M) in Group I and 308 students (20.98 ± 3.0 Y, 205 F, 103 M) in Group II. Table 1, 2 have shown the baseline characteristics of the students. There were no significant differences between groups in age, weight, height, body mass index, smoking and socioeconomic status, and exercise habits ($p > 0.05$, Table 1, 2). Female students were more in Group I ($p = 0.030$, Table 2). According to the smoking status, 496 (79.4%) students were non-smokers, 52 (8.3%) were ex-smokers, and 77 (12.3%) were current smokers.

Table 1. Demographic characteristics of students

Variables	Group I	Group II	p
	Median (IQR)	Median (IQR)	
Age (years)	20.0(19.0-21.5)	20.0(19.0-22.0)	0.414
Weight (kg)	60.0(53.9-68.0)	60.0(53.0-68.75)	0.630
Height (cm)	167.0(162.0-173.0)	167.0(160.0-177.0)	0.440
Body mass index (kg/m ²)	21.48(19.68-23.46)	21.52(19.77-23.80)	0.973

Mann-Whitney U Test, $p < 0.05$.

The results for the survey items, including all of the students enrolled on the study and comparison between faculties were shown in Table 3. Correct answers of questions about COPD awareness were approximately above 70% except for two questions: "Is COPD a treatable disease?" and "What test is required for the diagnosis of COPD?" (Table 3). The question "Is COPD a treatable disease?" was answered correctly by 46.2% of all students and 34.4% of the students said they did not know (Table 3). The answer "respiratory function test" was chosen by 56% of the students for the question "What test is required for the diagnosis of COPD?" (Table 3). There were significant differences between faculties in all COPD awareness questions ($p < 0.05$, Table 3). The only question that was answered correctly more in Group II than Group I was "In which age group is COPD most common?" ($p < 0.001$, Table 3). The other questions were answered correctly more in Group I than Group II ($p < 0.05$, Table 3).

Correct answers about asthma awareness were approximately above 60% except for two questions "Are

Table 2: Demographic characteristics of students

Variables	Group I		Group II		p
	n	%	n	%	
Gender					
Female	236.0	74.4	205.0	66.6	0.030
Male	81.0	25.6	103.0	33.4	
Smoking status					
Current	30.0	9.5	47.0	15.3	0.063
Ex-smoker	30.0	9.5	22.0	7.1	
Non-smoker	257.0	81.1	239.0	77.6	
Socioeconomic status					
Low	48.0	15.1	46.0	14.9	0.665
Average	216.0	68.1	202.0	65.6	
High	53.0	16.7	60.0	19.5	
Exercise habit					
Yes	141.0	44.5	138.0	44.8	0.934
No	176.0	55.5	170.0	55.2	

Chi-square test; $p < 0.05$.

asthma medications addictive?" and "Is asthma a disease that can be cured completely?" (Table 3). While 47.8% of the students said they did not know whether asthma medications were addictive or not, 35.4% answered correctly (Table 3). 'In response to the question "Is asthma a disease that can be cured completely?", approximately 40% of the students stated that they did not know, and 47.2% said it cannot be cured completely (Table 3). There were significant differences between faculties in asthma awareness questions ($p < 0.05$) except for questions "In which age group can asthma be seen?", "How are asthma medications usually used?", and "Which doctor do you consult if you suspect asthma disease?" (Table 3). The question "Are asthma medications addictive?" was answered correctly by 34.7% in Group I and 36% in Group II ($p < 0.001$, Table 3). The other questions were answered correctly in Group I more than in Group II ($p < 0.05$, Table 3).

DISCUSSION

This study provides information concerning awareness about COPD and asthma in university students at the faculty of health science and education. The results indicated that students' COPD awareness was approximately above 70%, and asthma awareness was approximately above 60% except for two questions. Students of the health sciences faculty had more COPD and asthma awareness than those in the education faculty. However, the university students showed an inadequate knowledge of the diagnosis and management of COPD and the medication and management of asthma.

Table 3. Comparison of COPD and asthma knowledge between faculties

COPD awareness questions	Group I		Group II		Total		p
	n	%	n	%	n	%	
COPD is a disease associated with lungs							<0.001
True	313	98.7	250	81.2	563	90.1	
False	0	0	7	2.3	7	1.1	
Do not know	4	1.3	51	16.6	55	8.8	
Smoking is the most important factor causing the development of COPD							<0.001
True	298	94.0	237	76.9	535	85.6	
False	5	1.6	10	3.2	15	2.4	
Do not know	14	4.4	61	19.8	75	12.0	
COPD develops in people who are exposed to dust, smoke and chemicals for occupational reasons, in poorly ventilated homes, as a result of the use of wood, coal and dung used for cooking and heating.							<0.001
True	274	86.4	194	63.0	468	74.9	
False	8	2.5	11	3.6	19	3.0	
Do not know	35	11	103	33.4	138	22.1	
In which age group is COPD most common?							<0.001
Childhood	0	0	9	2.9	9	1.4	
Over 40 years old	252	79.5	264	85.7	516	82.6	
Young adults	23	7.3	29	9.4	52	8.3	
All age groups	42	13.2	6	1.9	48	7.7	
What are the complaints of a patient with COPD?							0.003
Cough	9	2.8	14	4.5	23	3.7	
Sputum production	6	1.9	3	1.0	9	1.4	
Increased dyspnea	60	18.9	93	30.2	153	24.5	
All of them	242	76.3	198	64.3	440	70.4	
Is COPD a treatable disease?							<0.001
Yes	155	48.9	134	43.5	289	46.2	
No	85	26.8	36	11.7	121	19.4	
Do not know	77	24.3	138	44.8	215	34.4	
The first step in preventing COPD is to quit smoking or not to be in a smoking environment.							<0.001
True	302	95.3	249	80.8	551	88.2	
False	3	0.9	8	2.6	11	1.8	
Do not know	12	3.8	51	16.6	63	10.1	
What test is required for the diagnosis of COPD?							0.035
Blood analysis	3	0.9	6	1.9	9	1.4	
Respiratory function test	195	61.5	155	50.3	350	56.0	
Lung X-ray	114	36.0	139	45.1	253	40.5	
Sputum culture	5	1.6	8	2.6	13	2.1	

(Continuation of the Table-3)

COPD awareness questions	Group I		Group II		Total		p
	n	%	n	%	n	%	
Asthma awareness questions							
Is asthma transmitted (microbial)?							<0.001
Yes	1	0.3	7	2.3	8	1.3	
No	305	96.2	269	87.3	574	91.8	
Do not know	11	3.5	32	10.4	43	6.9	
Can asthma be hereditary?							<0.001
Yes	227	71.6	168	54.5	395	63.2	
No	42	13.2	73	23.7	115	18.4	
Do not know	48	15.1	67	21.8	115	18.4	
What are the complaints of a patient with asthma?							<0.001
Cough	7	2.2	10	3.2	17	2.7	
Dyspnea	75	23.7	130	42.2	205	32.8	
Wheezing	8	2.5	9	2.9	17	2.7	
All of them	227	71.6	159	51.6	386	61.8	
In which age group can asthma be seen?							0.323
Children	13	4.1	7	2.3	20	3.2	
Adults	14	4.4	18	5.8	32	5.1	
All ages	290	91.5	283	91.9	573	91.7	
How are asthma medications usually used?							0.585
Injector	1	0.3	3	1.0	4	0.6	
Pill	7	2.2	7	2.3	14	2.2	
Inhaler	309	97.5	298	96.8	607	97.1	
Are asthma medications addictive?							0.001
Yes	70	22.1	35	11.4	105	16.8	
No	110	34.7	111	36.0	221	35.4	
Do not know	137	43.2	162	52.6	299	47.8	
Is asthma a disease that can be cured completely?							<0.001
Yes	37	11.7	39	12.7	76	12.2	
No	180	56.8	115	37.3	295	47.2	
Do not know	100	31.5	154	50.0	254	40.6	
Which doctor do you consult if you suspect asthma disease?							0.471
Cardiology	3	0.9	7	2.3	10	1.6	
General surgery	6	1.9	11	3.6	17	2.7	
Chest diseases	257	81.1	241	78.2	498	79.7	
Internal Medicine	44	13.9	43	14.0	87	13.9	
Pediatrician / pediatric allergist	7	2.2	6	1.9	13	2.1	
Cardiology	3	0.9	7	2.3	10	1.6	

Chi-square test; p<0.05.

COPD awareness is widely investigated in researches about different populations and countries (2,13-16). In a study, 25.2% of the final year medical students were able to correctly define COPD (13). Soriano et al. showed spontaneous COPD knowledge was 17% in their study, which assessed knowledge of COPD in the general population (15). Another study that evaluated asthma and COPD awareness in the general population showed 49.6% of the individuals answered correctly that COPD is a disease associated with the lungs (2). In a recent study, it was revealed that 71.4% of the participants knew lungs are affected in COPD (14). Asai et al. stated that 21.3% of the respondents were aware of COPD (16). In our study, 98.7% of the students at the faculty of health sciences and 81.2% of the students at the faculty of education were aware of "COPD is a disease associated with lungs". The higher number of correct answers than those in other studies might be due to different features of the questions. Raising public awareness is important in the management of COPD. It is also known that increasing COPD awareness with mass communication via television and the Internet has been making severe effect (17). COPD awareness should be increased not only among students in health sciences but also in all students.

In addition to tobacco smoking, which is the most critical risk factor for COPD, indoor and outdoor air pollution, occupational exposures, genetic factors, age, sex, lung growth and development, socio-economic status, chronic bronchitis, and infections are all risk factors for COPD (18). Ozoh et al. stated that over 90% of the medical students responded that cigarette smoking was a risk factor for developing COPD although awareness about other risk factors were lower (19). A recent study showed that 61% of the general population said air pollution/smoke and dust were causes for COPD (14). Following the literature, cigarette smoking awareness (94% at the health sciences faculty; 76.9% at the education faculty) were higher than other risk factors (86.4% at the health sciences faculty; 63% at the education faculty) in our study. Furthermore, awareness of students at the education faculty was lower than the health sciences faculty. Awareness of risk factors for COPD should be increased.

A study stated that 34% of the students recognized a cough, expectoration and dyspnea as symptoms of the disease. On the other hand, dyspnea was the most frequent answer among the students (80.6%) (13). In Spain, a study showed that knowledge about COPD symptoms improved from 2002 to 2011 (15). In the current study, 76.3% of the students at the health sciences faculty and 64.3% at the education faculty answered cough, sputum production and increased dyspnea are the symptoms of COPD. According to the GOLD, COPD should be considered in any patient with dyspnea, chronic cough or sputum (18). It is known that the actual burden of

COPD might also be much higher, as the majority of patients with COPD are not diagnosed (20). Therefore, awareness about symptoms of the disease plays a key role in guidance, especially in university students.

COPD is defined as a standard, preventable and treatable disease (18). In the general population, 63% of the participants do not know that COPD is a treatable disease (2). Another study stated that 85.5% of the participants in Japan answered that COPD can be prevented and is treatable (16). In the current research only 48.9% of students at the health sciences faculty, and 43.5% at the education faculty answered that COPD is a treatable disease. Spirometry is essential to diagnosing COPD and measuring airflow limitation (18). A study stated that about 80% of the medical students identified spirometry for the diagnosis of COPD; however, 25.9% of them thought it was the only test for this purpose (19). In another study, it was found that 41.9% of the male smokers were aware of spirometry (21). In our study, only 61.5% of the health science students and 50.3% of the education students answered that a respiratory function test is required to diagnose COPD. Activities and studies to increase awareness of the treatment and diagnosis of COPD in universities are needed.

Asthma is one of the most common chronic diseases that affects 1–18% of the population in different countries in the world. Asthma, which affects children and adults, is a chronic inflammatory disease associated with symptoms of wheezing, shortness of breath, chest tightness and cough. It poses a significant burden and morbidity both socially and economically for patients, families and the health system (22). It is a complex disease with both genetic and environmental risk factors (23). In a study, 58% of the participants stated that asthma is not transmitted, and 80% said it can be seen in all ages (2). Students in our study – both from the health sciences and the education faculty – are aware that asthma is not a transmitted disease (96.2%, 87.3%), and it can be seen in all ages (91.5%, 91.9%). Symptoms of asthma were correctly identified by more students from the health science faculty (71.6%) than by those in the education faculty (51.6%). A study showed 27% of the general population identified asthma medications as not addictive, and also 35.2% of them answered that asthma cannot be cured completely (2). In the current study, 34.7% of health science students and 36% of education students stated asthma medications are not addictive. Students in the health sciences faculty answered more correctly (56.8%) than those in the education faculty (37.3%). Misinformation and thoughts about asthma treatment may affect treatment adherence and control in asthma treatment. Awareness of the medication and the prognosis of the disease is essential in disease management. Studies on awareness of asthma are inadequate compared to COPD. Factors associated with patients' disease management and treatment adherence

should be understood, and analyses are needed to increase asthma awareness.

Limitations

There are limitations to the study. This survey was conducted at a specific university in a particular region. Future studies should include different regions and universities. Secondly, questions about COPD and asthma did not have overall specific questions, as the study did not include only students attending the health sciences faculty.

CONCLUSION

This cross-sectional study demonstrated that COPD and asthma awareness was greater in students from the health sciences faculty than those from the education faculty. However, the university students showed an inadequate knowledge of the diagnosis and management of COPD and the medication and management of asthma. Education and awareness of chronic respiratory diseases should be made available to all university students, not only those in health science or medicine, to prevent and manage the diseases.

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Conflict of Interest

The authors declare that they have no conflict of interests regarding content of this article.

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Ethical Declaration

Ethical permission was obtained from the Hatay Mustafa Kemal University, Medical Faculty Non Invasive Clinical Research Ethics Committee for this study with date 05.03.2020 and number 03, and Helsinki Declaration rules were followed to conduct this study.

Authorship Contributions

Concept: N.K., İ.H., Design: N.K., N.D., İ.H., B.Y., Data Collection or Processing: N.K., N.D., Analysis or Interpretation: N.K., İ.H., Literature Search: N.K., B.Y., Writing: N.K., İ.H.

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