

Prevalence of Asthma, Allergy, and Respiratory Symptoms in Hasacelebi/Hekimhan/Malatya in Eastern Turkey

Ahmet Uęur Demir, MD; A. Fuat Kalyoncu, MD; Toros Seluk, MD; Mustafa Artvinli, MD; Altay Őahin, MD

Hacettepe University Dept. of Chest Diseases Ankara, Turkey

Abstract

Objectives: to assess the prevalence of asthma and to compare our findings with other countries involved in European Community Respiratory Health Survey (ECRHS).

Design: A cross-sectional study using a screening questionnaire adopted from ECRHS.

Participants: Adults living in Hasacelebi, a small town of Malatya from the eastern region of Turkey at 20-97 years of age, in both genders (232 men, 290 women).

Measurements and Results: The mean age was 46.3 years (SD=17.2 years), and 50% of the population was above 44 years of age. The prevalence of wheezing in the last 12 months, diagnosis of asthma and asthma attack in the last 12 months, use of asthma medicine, and any other allergic symptom were 22.6%, 2.3%, 4.5%, 4.3%, and 18.8%, respectively.

Those who had wheezing (age: 52.6 vs 44.4 years), or an asthma attack in the last 12 months (age: 56.2 vs 45.8 years), or received asthma medicine (age: 54.6 vs 45.9) were significantly older than those who did not report the corresponding conditions.

Conclusion: The prevalence of asthma was within the range of other parts of Turkey, and the other Mediterranean countries. The old age observed in this population could at least be partly due to the immigration of the younger people from the town for economic reasons. Compared with the others, the older age of the subjects who reported asthma symptoms and use of medicine for asthma could reflect the severity of asthma in the elderly, which is a frequently underdiagnosed condition in this population.

Turkish Respiratory Journal, 2001;2 (2):29-34

Abbreviations: CI: Confidence interval, ECRHS: European Community Respiratory Health Survey, ISAAC: International Study of Asthma and Allergy in Childhood, SD: Standard deviation, vs: Versus

Correspondence: Dr. Ahmet Uęur Demir
Hacettepe Üniversitesi, Göęüs Hastalıkları Bölümü,
Ankara, Türkiye

Introduction

Worldwide concern exists for the increasing prevalence, morbidity and mortality related to bronchial asthma in the last decades (1). As different methodologies have been used in various studies, comparison of the findings from these studies is not reliable. Keeping with the global attention to investigate the status of asthma, there is an urge to deal with this problem. Thus, there have been efforts to standardize the methodology used for the epidemiology of asthma, which resulted in the ECRHS (European Community Respiratory Health Survey) and ISAAC (International Study of Asthma

and Allergy in Childhood) initiated by European Respiratory Society in the adult populations and in children, respectively (2,3).

In the ECRHS, countries such as Algeria, India, Canada, United States of America (USA), Australia, and New-Zealand were also involved besides the European countries. The study consisted of two stages in the study populations, which were selected from urban centers, within the age range of 20-44 years from both genders. The first was a screening stage with a short questionnaire including information on age and gender and "Yes"/"No" type questions on asthma symptoms, and smoking behaviour. The second stage involved a subgroup selected from the first stage population with an interviewer administering detailed questionnaire including questions on respiratory symptoms and asthma treatment, skin testing, bronchial provocation testing, and blood sampling for serum IgE. The main objective of the study was to assess the prevalence and determinants of asthma. Sixty-three centers from 23 countries participated in the study to enable the comparisons of the centers within and among various countries (2).

Turkey was not involved in either the ECRHS or ISAAC. However, studies have been conducted from various centers using a methodology similar to that proposed for the screening stage of ECRHS. The results of these studies range from 0.3% to 3% for the asthma attack in the last 12 months, and 2%-8% for the asthma symptoms (4).

We conducted a study in the adult population of Hasançelebi, which is a small town of Malatya in the Eastern region of Turkey. The main objective of our study was to assess the prevalence of asthma and to compare our findings with other countries involved in ECRHS.

Materials and Methods

Study population

The study population included the inhabitants of Hasançelebi, at or above 20 years of age were available and gave consent to the study.

Study region

The study region was Hasançelebi, a town of Malatya, in the Eastern region of Turkey, with a population of 2087 (1995 National Census findings). The town did not have any industry worth mentioning, and the main economic activity was farming and live-stocking. Local authorities informed us about the high rate of immigration among the young adults to work in the industri-

alised cities. Thus, only about a 1000 of the population was living in the town for the whole year. The town has a dry and cold climate, and the air pollution level is much lower than the Turkish mean due to the scarce industry.

Study design

This was a cross-sectional study including a short questionnaire adopted from ECRHS and administered by interviewers. We also conducted a verbal autopsy to assess the general causes of mortalities in the last 10 years.

Statistical Analysis

Findings of the study are presented as the mean and standard deviation (SD) for the numbers and the prevalence rate for the frequencies. Statistical comparisons used t-test and chi-square test for the above, respectively. Statistical significance was assumed for a p value smaller than 0.05.

Results

Table 1 shows the age, gender and smoking behaviour of the study population. Of the 522 adults, who attended the survey 232 were men (45%) and 290 (55%) were women. The age range of the survey population was 21 to 97 years with the mean age of 46.27 years (SD=17.17 years). There were 145 men (68.4%) and 16 (5.8%) women who admitted that they have smoked regularly for at least a month. Almost half of the study population was at or above 45 years of age, and almost 20% of the study population were at or above 65 years of age.

Table 1. Gender, age, and smoking behaviour of the study population

	Men	Women	Total
n %	232 (45)	290 (55)	522 (100)
Age (year)			
Range	21-97	20-90	20-97
Mean (SD)	47.45 (16.86)	45.32 (17.38)	46.27 (17.17)
Ever smoked n, %	145 (68.4)	16 (5.8)	161 (32.8)

Table 2 shows the smoking behaviour of the study population according to the age. The prevalence of ever smoking was high among the young adults between 25-49 years of age, which reached to 80-90% among the men.

Table 3 shows the distribution of the occupations that the study subjects reported. Most of the women (94%) were

Age group (year)	Ever smoked Men n (%)	Ever smoked Women n (%)	Total n (%)
20-24	4 (50.0)	2 (7.1)	6 (16.7)
25-29	18 (94.7)	5 (12.2)	23 (38.3)
30-34	23 (74.2)	0	23 (35.4)
35-39	22 (84.6)	2 (9.1)	24 (50.0)
40-44	15 (83.3)	2 (9.1)	17 (40.5)
45-49	27 (90.0)	2 (8.3)	28 (48.3)
50-54	7 (58.3)	1 (3.6)	8 (26.7)
55-59	11 (73.3)	1 (5.6)	12 (42.9)
60-64	2 (22.2)	1 (7.7)	2 (7.7)
65- +	16 (36.4)	0	18 (18.4)
Total	145 (68.4)	16 (5.8)	161 (32.8)

Occupation	Men n (%)	Women n (%)	Total n (%)
Housewife	-	263 (93.9)	263 (54.7)
Retired	68 (32.1)	2 (0.7)	70 (14.2)
Worker	51 (24.1)	-	51 (10.4)
Farmer	23 (10.8)	2 (0.7)	25 (5.1)
Unemployed	24 (11.3)	1 (0.4)	25 (5.1)
Tradesman	16 (7.5)	2 (0.7)	18 (3.7)
Teacher	9 (4.2)	2 (0.7)	11 (2.29)
Nurse	-	5 (1.8)	5 (1.0)
Other	41 (19.3)	13 (4.6)	54 (11.0)
Total	212 (100)	280 (100)	492 (100)

housewives. The most common occupations among men were: retired (32%), worker (24%), and farmer (11%). Eleven percent reported that they were unemployed. The Table does not include 30 individuals who did not respond the question about their occupation.

Table 4 shows the distribution of respiratory and allergic symptoms and diseases in the study population. Wheezing in the last 12 months (current wheeze), current wheeze without cold, and current wheeze with dyspnoea were reported by 22.6%, 18.1%, and 19.2% of the study population, respectively. Asthma diagnosis ever made by a physician, asthma attack in the last 12 months, and the use of medicine for asthma (in the form of inhaled drug, oral tablet or parenteral drug) were reported by 2.3%, 4.4%, and 4.2%, respectively. Awakening with chest tightness, or with shortness of breath, or with cough were reported as 16.3%, 15.3%, and 17.0%, respectively. Almost one fifth (18.8%) of the study population reported the presence of at least one allergic symptom. The common allergic symptoms were hay fever (8.2%), perennial rhinitis (2.3%), chronic or recurrent urticaria

(4.0%), eczema (1.7%), drug allergy (3.8%) and bee-sting allergy (6.5%). There was not a statistically significant difference between men and women in the prevalence of respiratory and allergic symptoms, except for a higher prevalence of drug allergy in women than that of men.

	Men n (%)	Women n (%)	Total n (%)
Symptoms in the last 12 months			
Wheezing	59 (26.0)	59 (20.7)	118 (22.6)
Without cold	47 (20.5)	48 (16.8)	95 (18.1)
With breathlessness	49 (21.4)	51 (17.8)	100 (19.2)
Woken up with chest tightness	45 (19.4)	40 (14.1)	85 (16.3)
Woken up with shortness of breath	38 (16.6)	42 (14.7)	80 (15.3)
Woken up with cough	44 (19.2)	45 (15.7)	89 (17.0)
Wheezing ever	57 (24.9)	59 (20.6)	116 (21.8)
Asthma diagnosis	4 (1.7)	8 (2.8)	12 (2.3)
Asthma attack in the last 12 months	10 (4.3)	13 (4.8)	23 (4.4)
Use of medicine for asthma	10 (4.3)	12 (4.1)	22 (4.2)
Any allergic symptom	41 (18.1)	57 (19.7)	98 (18.8)
Hay fever	15 (6.6)	28 (9.8)	43 (8.2)
Perennial rhinitis	6 (2.6)	6 (2.1)	12 (2.3)
Food allergy	12 (5.2)	9 (5.1)	21 (4.0)
Eczema (dryness and itching of the skin)	5 (2.2)	4 (1.4)	9 (1.7)
Drug allergy*	4 (1.7)	16 (5.6)	20 (3.8)
Urticaria	9 (3.9)	12 (4.2)	21 (4.0)
Bee-sting allergy	18 (7.9)	16 (5.6)	34 (6.5)

*Statistically significant (p<0.05)

Table 5 shows the comparison of the mean ages of those who reported asthmatic symptoms with those who did not. Those who had wheezing (mean age: 52.6 vs

	Symptom present		Symptom absent	
	n	Age (year) Mean (SD)	n	Age (year) Mean (SD)
Wheeze in the last 12 months	118	52.64 (15.55)	404	44.45 (17.25)*
Asthma diagnosis	12	48.17 (13.59)	510	46.28 (17.27)
Asthma attack in the last 12 months	23	56.22 (17.71)	499	45.86 (17.04)*
Use of medicine for asthma	22	54.68 (13.88)	500	45.95 (17.24)*
Any allergic symptom	98	45.13 (15.23)	424	46.59 (17.64)

*Statistically significant (p<0.05)

Table 6. Comparison of the standardized prevalence of asthma symptoms found in Hasacelebi with some of the centers participated in ECRHS*

	CW	Current wheeze (CW)		Woken with chest tightness	Asthma drug use/attack
		With breathlessness	Without cold		
Hasacelebi	16.0	12.1	12.2	9.7	3.8
Iceland	18.0	9.0	11.4	11.7	3.4
Norway	24.6	13.6	15.8	11.4	4.3
Sweden	19.2-23.2	10.4-12.3	11.6-13.5	9.7-14.7	5.8-6.8
Netherlands	19.7-21.1	13.9-14.6	12.3-14.5	11.3-13.1	4.3-4.7
Germany	13.3-21.1	5.0-8.0	7.2-13.3	8.9-9.6	2.1-4.4
Austria	14.3	6.0	9.4	8.8	3.1
France	13.6-15.7	8.1-9.3	8.9-9.9	14.8-16.9	3.5-5.5
United Kingdom	25.2-29.8	13.9-16.3	17.3-20.5	17.4-19.9	7.5-8.4
Ireland	24.0-32.0	12.0-15.2	16.2-21.6	13.8-17.8	5.0-5.4
Greece	16.0	9.4	9.8	11.7	2.9
Italy	8.5-10.7	1.4-4.4	5.1-7.6	6.2-8.0	3.3-4.2
Spain	16.2-29.2	5.6-13.2	8.6-18.2	6.7-18.5	2.1-5.0
Portugal	17.7-19.0	8.3-9.8	12.1-12.9	16.2-18.8	4.3-6.0
Algeria	4.2	3.3	2.8	6.4	3.0
India	4.1	3.0	2.0	7.0	3.5
New Zealand	24.2-27.3	14.7-16.0	16.1-18.0	18.1-19.5	11.3-9.0
Australia	28.8	16.1	20.7	20.5	11.9
USA†	25.7	10.5	14.9	16.6	7.1
Minimum	4.1	1.4	2.0	6.2	
25. percentile	14.9	7.7	9.3	9.7	
Median	20.7	9.8	12.7	13.5	4.5
75. percentile	25.2	13.9	16.2	17.5	
Maximum	32.0	16.3	21.6	20.5	

*Range of the standardized prevalence figures is given for each country.

†United States of America

44.4 years), or an asthma attack in the last 12 months (mean age: 56.2 vs 45.8 years), or received medication for asthma (mean age: 54.6 vs 45.9 years) were significantly older than those who did not report these conditions.

The prevalence rate of current wheezing was standardized according to the suggestion offered for the ECRHS, by giving equal weights to male and female gender (5). Age groups of 20-29 and 30-39 years had twice the weight of the age group of 40-44 years. There was no current wheezing in the age group of 20-24 years. The standardized prevalence rate was 16.05% (95% confidence interval [CI]: 14.17, 17.94). Comparison of the standardized prevalence of asthma symptoms found in Hasacelebi with some of the centers participated in ECRHS is shown in Table 6. The prevalence figures were in the lowest 25th percentile of the general distribution of ECRHS and within the range of the other

Mediterranean countries such as Greece, Spain, Portuguese, and Italy (5).

Comparison of the subjects who reported current wheezing with those who did not report current wheezing in the age groups of 20-44 years, and 45 years or above is shown in Table 7. Current wheeze was associated with presence of any allergic symptom in both age groups, but there was not a significant association between current wheeze and gender, or smoking, or the occupations in either age group. There was a significant difference in the distribution of current wheeze between the two age groups among the entire group, the female gender and the housewives.

Table 8 shows the mortality figures of Hekimhan as compared to that of Turkey. There was a statistically significant difference in the distribution of the causes of death between Hekimhan and Turkey. Death due to

Table 7. Comparison of the subjects who reported current wheeze with those who did not in the age groups of 20-44 years and 45 years or above

	Age 20-44 years n (%)	Age 45 years or above, n (%)
n	263	256
Current wheeze (CW)	42 (16.0)	77 (30.3) [†]
CW + Female	19 (7.2)	40 (15.7) [†]
CW + Ever smoked	17 (6.8)	21 (8.7)
CW + Any allergic symptom	17 (6.5) [*]	26 (10.2) [*]
CW + housewife	16 (6.5)	37 (15.4) [†]
CW + worker	6 (2.4)	2 (0.8)
CW + teacher	6 (2.4)	0 (0)
CW + retired	2 (0.8)	18 (7.5)

*Statistically significant association between current wheeze and the factor in this age group (20-44 years or 45 years or above) (p<0.05).

[†]Statistically significant difference between the two age groups for the prevalence of current wheeze (eg, the prevalence of current wheeze in the ever smoked in the age group 20-44 years vs that prevalence in the age group 45 years or above) (p<0.05)

heart diseases was more frequent in Hekimhan than that of Turkey.

Discussion

The symptom "Wheeze in the last 12 months" is a proposed definition of asthma, which has been found valid to be used in epidemiologic studies (6). However, there is not a good one-word substitute in some other languages such as, German, French, and Turkish. This was stated as a possible reason for the lower prevalence of asthma in the participating countries of ECRHS, which do not speak English (5). The questionnaire used in our survey was adopted from that used in ECRHS. Validation of the questionnaire in Turkey was not achieved and remains as a task for proper comparisons.

The old age observed in the study population could at least be partly due to the emigration of the younger people from the town for economic reasons. Those, who reported wheeze or receiving medicine for asthma in the last 12 months, were older than those, who did not report these conditions. This could mean that older subjects with asthma had a severe disease and require medication more than the younger asthmatics.

The questionnaire used in this study was found suitable for the young adults (20-44 years of age). However, use of the same questionnaire among the older subjects may not

Table 8. Causes of adult deaths recorded in Hekimhan as compared to that of Turkey

	Hekimhan n (%)	Turkey* n (%)
Heart disease	58 (34.5)	67540 (46.9)
Malignancies	31 (18.4)	17114 (11.9)
Tuberculosis	5 (2.9)	901 (0.6)
Pneumonia	1 (0.6)	3120 (2.2)
Asthma	3 (2)	869 (0.6)
Others	75 (44.6)	54463 (37.8)
Total	173 (100)	144007 (100)

*Statistical Yearbook of Turkey 1995, State Institute of Statistics Prime Ministry Republic of Turkey, State Institute of Statistics, Printing Division, January 1996.

be that valid. The differential diagnosis of wheeze includes bronchial tumours, larynx dysfunction, chronic bronchitis, emphysema, recurrent aspirations, constrictive bronchiolitis, herpetic tracheobronchitis, sarcoidosis, congestive heart failure, hypersensitivity pneumonitis, pulmonary embolism, angiotensin converting enzyme inhibitor drug use (7). These conditions are much more common among the older individuals. Poor recognition of the asthma symptoms in the older patients also complicates the problem of investigating asthma in the elderly (8). Our study did not allow us to distinguish the wheezing due to asthma from that due to the other conditions mentioned above. There was an association between the presence of any allergic symptom and current wheezing in both age groups of 20-44 years, and 45 years or above (Table 7). This suggests that the misclassification of current wheeze did not change much due to age.

This was the first asthma survey conducted in Malatya. Another survey in this region was from Elazığ based on the ECRHS questionnaire responded by 2454 adults (9). The prevalence of current wheezing, diagnosis of asthma, and any allergic symptom were 19.1% (17.3% in men, 20.5% in women), 3.1% (2.6% in men, 3.5% in women), and 23.6% (21.0% in men, 25.5% in women), respectively (9). These are similar to the findings of our study.

Prevalence of asthma was within the range of other parts of Turkey, and that of the other Mediterranean countries (4,5). However, Hasacelebi may not be a representative sample for the general Turkish population as the age range was older, the frequency of clerical jobs among men was higher, and the prevalence of smoking was lower in Hasacelebi than that of Turkey.

Validation of the ECRHS questionnaire to be used in Turkey and detailed studies in the elderly will help to investigate the status of asthma in Turkey and in the elderly.

References

1. Burney P. Why should we study the epidemiology of asthma? *Thorax* 1988;43:425-428
2. Burney RGJ, Luczynska S, Chinn S, Jarvis D, for the European Community Respiratory Health Survey (ECRHS). The European Community Respiratory Health Survey. *Eur Respir J* 1994; 7:954-960
3. Asher MI, Keil U, Anderson HR, Besley R, Crane J, Martinez F, Mitchell EA, Pearce N, Sibbald B, Stewart AW, Strachan D, Weiland SK, Williams HC. International Study of Asthma and Allergy in Childhood (ISAAC): rationale and methods. *Eur Respir J* 1995; 8:483-491
4. A. Fuat Kalyoncu (1999). *Epidemioloji*. In: A. Fuat Kalyoncu and Haluk Türkteş, Eds. *Ulusal verilerle astma (national asthma data. 1st Ed)*: Ankara: Kent Matbaacılık, 1999, s8-39.
5. Burney PGJ. Variations in the prevalence of respiratory symptoms, self reported asthma attacks, and use of asthma medication in the European Community respiratory Health Survey (ECRHS). *Eur Respir J* 1996;9:687-695
6. Burney PGJ, Chinn S, Britton JR, Tattersfield AE, Papacosta AO. What symptoms predict the bronchial response to histamine? Evaluation in a community survey of the Bronchial Symptoms Questionnaire (1984) of the IUATLD. *Int J Epidemiol* 1989;18:165-173.
7. Chan ED, Welsh CH. Geriatric respiratory medicine. *Chest* 1998; 114:1704-1733.
8. Parameswaran K, Hildreth AJ, Chadha D, Keaney NP, Taylor IK, Bansal SK. Asthma in the elderly: unperceived, underdiagnosed and undertreated, a community survey. *Respir Med* 1998; 92:573-577
9. Tuğ T, Açıık Y, Avcı M, Kalyoncu AF. Elazığ il merkezinde erişkin astma prevalansı. *Türkiye Solunum Araştırmaları (TÜSAD) XXV. Kongresi 5-9 Haziran 1999, İstanbul. Özet kitabı P011.*